

ISCTE Business School

Department of Marketing, Operations and General Management,  
Management Research Centre (BRU-IUL)

**Determinants of Entrepreneurial Intentions & Behavior:  
Social Cognitive Career Theory Test, New Propositions and  
Longitudinal Analysis.**

Ricardo Figueiredo Belchior

Thesis specially presented for the fulfillment of the degree of  
Doctor in Management with Specialization in Strategy and Entrepreneurship

Supervisor:

Ph.D. Virgínia Maria Trigo, Professor Emeritus,  
(ISCTE-IUL)

[April, 2019]

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## Abstract

Entrepreneurship is believed to be related to such important phenomena as firm performance, technological innovation, economic development and growth and (un)employment. Given the relevance of the potential outcomes, a significant effort has been made by policymakers and educators to promote an entrepreneurial mindset and entrepreneurial activity.

Entrepreneurship research aims to provide knowledge about the nexus between individuals and opportunities, and one of the most relevant research questions in this academic field has to do with ‘*why some people act entrepreneurially, while others do not?*’ (Shane 2012).

This thesis addresses this important research question using Social Cognitive Career Theory (SCCT) to test the determinants of entrepreneurial intentions and behavior and their explanatory power.

Based on a sample of Portuguese higher education students from the *Entrepreneurship Education Project*, results provide general support for the applicability of the SCCT model and its superiority to a non-cognitive model based on demographic, educational and experience-based variables. Nevertheless, it still provides a relatively small explanatory power for these students’ entrepreneurial intentions.

Making use of both exploratory and confirmatory methods, several improvements to the model’s application to students’ entrepreneurial intentions, are proposed and tested. These propositions include improvements in the testing of the self-efficacy construct and the measurement of entrepreneurial outcome expectations.

Finally, in a five-year longitudinal study, evidence is provided relative to the stability of entrepreneurial intentions and its direct cognitive antecedents and how these relate to entrepreneurial behavior.

**Keywords:** Entrepreneurship, entrepreneurial intentions, entrepreneurial behavior, entrepreneurial outcome expectations, entrepreneurial motivations, entrepreneurial self-efficacy, general self-efficacy.

**JEL Classification:** L26, M13, D91

## Resumo

Acredita-se que o empreendedorismo esteja relacionado com fenómenos tão importantes como a performance das empresas, a inovação tecnológica, o desenvolvimento e o crescimento económico e o (des)emprego. Dada a relevância destes potenciais resultados, políticos e educadores tem efetuado um esforço significativo para promover o espírito e a atividade empreendedora.

A investigação em empreendedorismo visa proporcionar conhecimento sobre a relação entre os indivíduos e as oportunidades, e uma das questões de investigação mais relevantes nesta área académica relaciona-se com o *'porquê que algumas pessoas agem de forma empreendedora, enquanto outros não?'* (Shane, 2012).

Esta tese aborda esta importante questão de investigação com base no referencial teórico fornecido pela Teoria Sociocognitiva da Carreira (SCCT), para testar as determinantes das intenções e do comportamento empreendedor e o seu poder explicativo.

Com base numa amostra de estudantes do ensino superior em Portugal, do *Entrepreneurship Education Project*, em geral, os nossos resultados suportam a aplicabilidade do modelo da SCCT e da sua superioridade face a um modelo não cognitivo, com base em variáveis demográficas, educacionais e baseadas na experiência. Não obstante, a sua capacidade explicativa das intenções empreendedoras destes estudantes é ainda relativamente pequena.

Tirando proveito de métodos exploratórios e confirmatórios, propõem-se e testam-se várias melhorias na sua aplicação às intenções empreendedoras dos estudantes. Essas proposições incluem melhorias no teste do construto das perceções de autoeficácia, e na mensuração das expectativas sobre os resultados do empreendedorismo.

Finalmente, num estudo longitudinal de cinco anos, analisa-se a estabilidade das intenções empreendedoras e dos seus antecedentes cognitivos diretos e como estas variáveis se relacionam com o comportamento empreendedor.

**Palavras-chave:** Empreendedorismo, intenções empreendedoras, comportamento empreendedor, expectativas sobre os resultados do empreendedorismo, motivações empreendedoras, perceções de autoeficácia empreendedora, perceções de autoeficácia geral.

**Classificação JEL:** L26, M13, D91

## Executive Summary

Entrepreneurship has been related with important phenomena, such as (un)employment, firm performance, technological innovation and economic development and growth (*e.g.* Ireland & Webb 2007; Audretsch et al., 2015; Coad et al., 2016). Legitimized by the potentially relevant outcomes, many researchers, policymakers and educators focus on promoting an entrepreneurial mindset and entrepreneurial behavior (EB) - here defined as the process of creating a new business venture (Gartner, 1989) - among individuals.

Within the general goal of providing knowledge on the nexus between individuals and opportunities, one of the most relevant research pursuits in entrepreneurship is to find an answer to the question of '*why some people act entrepreneurially, while others do not?*' (Shane 2012). For this purpose, entrepreneurial intentions (EI) has become a research field in its own right, due to being considered the best predictor of future EB (Bird, 1988; Krueger, et al. 2000; Liñán & Fayolle, 2015; Bird, 2015).

Theoretical frameworks explaining the cognitive process behind EI are multiple and, although theory of planned behavior is far more popular (TPB: Ajzen, 1991), this thesis is based on social cognitive career theory (SCCT: Lent, Brown, & Hackett, 1994, 2002) to test the determinants of higher education students' EI and EB. Despite its still modest influence on entrepreneurship literature, SCCT has been considered to have superior theoretical soundness and completeness for entrepreneurship, when compared to TPB (Lucas & Cooper, 2012; Liguori et al., 2018).

Based on a sample of 835 Portuguese (HEI) students, from the *Entrepreneurship Education Project* Portuguese survey, results provide general support for the applicability of the SCCT EI model and its superiority to a non-cognitive model. However, this model still provides a relatively modest predictive power and, although entrepreneurial self-efficacy beliefs (ESE) and entrepreneurial outcome expectations (EOE) account for most of the explained variance of EI, as proposed by the theory, the EOE-EI effect was found weak, in comparison with the ESE-EI effect, and the full cognitive mediation proposition, was not found empirically supported.

Using both exploratory and confirmatory methods, several improvements were proposed and tested to the SCCT EI model. Based on our propositions and empirical results and discussions, we propose that:

- (1) The influence of self-efficacy beliefs (SE) on EI can be better explain, in a SCCT EI model, when the SE operationalization includes, both a general SE (GSE) and a new entrepreneurship specific SE measure (ESSE). A perspective that also contributes to an on-going debate - on which measure is best for EI models, GSE or ESE (*e.g.*, Bandura, 2012; Jackson et al., 2012; Schmutzler et al., 2018) - by reframing it; and
- (2) An SCCT model may be improved, in terms of EI variance explained and the strength of the EOE-EI effect, when the EOE measure is designed by taking in consideration the specific entrepreneurship motivators of the studied population. These specific motivators were explored and described, to great detail, in this thesis.

Finally, in a 5-year longitudinal study and using data from three follow-up surveys (1, 3 and 5 years later), empirical evidence is provided relative to the stability of this thesis' main constructs and the reduced explanatory power of EB by an SCCT EI model. Moreover, entrepreneurship intrinsic motivators appear to be more stable than extrinsic motivators and, while EI appears to be the most significant predictor of nascent EB, unexpectedly, GSE emerged as the most significant predictor of successful new business creation.

This thesis contributes to the empirical evidence regarding the SCCT model application to entrepreneurship and provides propositions and new avenues for future research that, if validated, may be relevant for researchers, educators, and policy-makers interested in understanding and promoting new business creation.

**Keywords:** Entrepreneurship, entrepreneurial intentions, entrepreneurial behavior, entrepreneurial cognition, entrepreneurial outcome expectations, entrepreneurial motivations, entrepreneurial self-efficacy, social cognitive career theory, new business creation, general self-efficacy.

**JEL Classification:** L26, M13, D91

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## **List of Abbreviations**

**ADF** - Asymptotically Distribution-Free Estimation Method

**AMOS** - Statistical Software (Version 25)

**AVE** - Average Variance Extracted

**Avg.** - Average

**CCA** - Confirmatory Content Analysis

**CE** - Corporate Entrepreneurship

**CEO** – Chief Executive Officer

**CFA** - Confirmatory Factor Analysis

**CI95%** - Two-tailed 95% confidence interval

**CR** – Composite Reliability

*df* – degrees of freedom

**EB** – Entrepreneurial Behavior

**EC** - European Commission

**ECA** - Exploratory Content Analysis

**EEP** – Entrepreneurship Education Project (an international research project)

**EEP Portugal** – Portuguese Research (within the international EEP)

**EFA** - Exploratory Factor Analysis

**EI** – Entrepreneurial Intentions

**EO** - Entrepreneurial Orientation

**EOE** - Entrepreneurial Outcome Expectations

**ESE** - Entrepreneurial Self-Efficacy Beliefs

**ESE[2nd]** –Entrepreneurial Self-Efficacy Beliefs Second-Order Factor

**ESSE** –Entrepreneurship Specific Self-Efficacy Beliefs

**Fup1** - First follow-up survey (school year 2011/12)

**Fup2** - Second follow-up survey (school year 2013/14)

**Fup3** - Third follow-up survey (school year 2015/16)

**GEM** – Global Entrepreneurship Monitor

**GSE** - General Self-Efficacy Beliefs

**HEI** - Higher Education Institutions

**INE** - Instituto Nacional de Estadística

**iEO** - Individual Entrepreneurial Orientations

**IQ** – Inter-Quartile

**MAR** - Missing at Random

**MBA** – Master in Business and Administration

**MC** – Motivation to Comply

**MCAR** - Missing Completely at Random

**MI** - Modification Indices (from AMOS software)

**MIT** - Massachusetts Institute of Technology

**ML** - Maximum Likelihood Estimation Method

**MWB** - Mental Health and Well-Being

**nAch** - Need for Achievement

**NB** – Normative Beliefs

**NMAR** –Missing Not at Random

**OE** – Outcome Expectations

**PA** - Personal Attitude Toward the Behavior

**PBC** – Perceived Behavior Control

**PSED** - Panel Study of Entrepreneurial Dynamics

**R&D** – Research and Development

**SCCT** – Social Cognitive Career Theory

**SCT** – Social Cognitive Theory

**SD** – Standard Deviation

**SE** - Self-Efficacy Beliefs

**SEM** - Structural Equations Model

**SEE** – Shapero’s Model of the Entrepreneurial Event

**SME** - Small and Medium-Sized Enterprise

**SN** – Subjective Norms (Normative Beliefs X Motivation to Comply)

**SPSS** – Statistical Software (Version 25)

**SSE** – Activity Specific Self-Efficacy Beliefs

**Std.** - Standardized

**TEA** - Total Early-Stage Entrepreneurial Activity

**TPB** - Theory of Planned Behavior

**TRA** - Theory of Reasoned Action

**USA** – United States of America

**1stW** - First wave survey (school year 2010/11)

# **Chapter I**

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## **Introduction**

## Chapter I: Introduction

Entrepreneurship research is a fast-growing and multidisciplinary literature domain that has been generating increased interest from researchers. Without a consensus on some of its foundational definitions, this research domain is difficult to delimit and requires special caution with the use of its own definitions, which should be carefully provided from the very outset of any research venture.

In this thesis, entrepreneurship is defined as the process of creating a new business venture (Gartner, 1989) and, consequently, entrepreneurs are those who are actively trying to start (*i.e. nascent entrepreneurs*; Carter et al., 2003) and those who have recently started a new business (*i.e. early-stage entrepreneurial activity*; Reynolds et al., 2005).

Entrepreneurial activity is proposed to be related to regional economic growth and development, organizational competitiveness and survival and to individual employment and social inclusion (*e.g.*, Schumpeter, 1934; Kirzner, 1973; Wennekers & Thurik, 1999; Audretsch et al. 2015). As such, and given the problems associated with the shortage of entrepreneurial behavior (EB), it is relevant to know ‘*why some people act entrepreneurially, while others do not?*’ (Shane 2012).

Addressing this central question, this research focuses on analyzing entrepreneurial intentions (EI), and their antecedents, while also providing some evidence on how these relate with subsequent early-stage EB. This has the potential to be especially relevant for those interested in knowing more about the social cognitive mechanisms behind EB, such as entrepreneurship educators, policymakers and entrepreneurs.

Next section will present an overview of what research on EI has been and where this research fits in the literature, after which, the thesis research questions, the population of interest and methodology will be identified. Concluding this introduction, the thesis structure will be presented, clarifying the overall research design and the relative importance of each chapter to the thesis objectives.

## 1.1 - Research Focus

Research on EI can be traced back to the early works of Shapero and Sokol 1980s (Shapero and Sokol 1982; Shapero 1984) and, since the early 1990s, it is said to “have seen an explosion of research using entrepreneurial intention models as a framework” (Liñán & Fayolle, 2015, p. 908).

Theoretical frameworks explaining EI include models specific to the field of entrepreneurship (e.g., Shapero & Sokol, 1982; Shapero, 1984; Bird, 1988; Davidsson, 1995), as well as models imported from social psychology (e.g., Ajzen, 1991; Lent, Brown, & Hackett, 1994, 2002) to analyze behaviors in general. Comparatively, models from social psychology account for most empirical tests and applications of EI.

Due to the relative dominance of social psychology models, and the fact that entrepreneurship specific models also derive from social psychology research, it is relevant to note how intentions models fit this other literature. Gollwitzer (1993, p. 142) refers that the correspondence between expressed attitudes and subsequent behavior has been a central theme in modern social psychology, with the first generation of research finding that the attitudes-behavior relationship is sometimes verified; the second generation of research focused on identifying situational factors, personality variables and classes of attitudes and behaviors that could moderate this relationship; and finally, the third generation of research, where intention models are included, enquired “*the most fundamental question of attitudes-behavior consistency: how do attitudes guide behavior?*”

In this context, it becomes clear that EI research serves the purpose of providing a more consistent way of predicting EB. They are considered “the single best predictor of any planned behavior, including entrepreneurship” (Krueger et al. 2000, p. 412), they signal emerging organizations, before these can be identified by boundary and exchange processes (Katz & Gartner 1988) and provide a conceptual framework to understand the cognitive mechanisms that lead some people to identify opportunities and act entrepreneurially, while others do not (Krueger, 2000).

According to Liñán & Fayolle's (2015) literature review, of the 409 papers published from 2004 to 2013, EI research main themes can be grouped into six different categories, namely: core EI model, personal-level variables, entrepreneurship education, context and institutions,

entrepreneurial process and new research areas. Furthermore, from the most researched category (*i.e.* personal-level variables) the subtheme of personality/psychology factors is the one attracting most research.

The research in this thesis can be categorized, mainly, in the ‘core EI model’ category, since it tests social cognitive career theory (SCCT: Lent, Brown, & Hackett, 1994, 2002) and its model fit to entrepreneurship and explores new ‘configurations of motivational antecedents’. It can also be included in ‘personal-level variables’ category, as it includes the effects of the demographic characteristics in the sample, explores students’ general self-efficacy beliefs (GSE) and motivations and their impact on EI. And, finally, it can also be included in the ‘entrepreneurial process’ category, as it provides evidence on the link between EI and its determinants and EB.

Given the increasing need to integrate the various contributions from all the disciplines (Ireland & Webb 2007) and the need for careful application of all models imported from other areas of research (Kenworthy & McMullan, 2012), the testing and exploration of the SCCT application to entrepreneurship is also a good opportunity to contribute to the needed critical discussion of the integration of this theory in this literature.

## 1.2 – General Research Questions

According to the literature, entrepreneurship is desirable, and a sub-optimal entrepreneurial activity is a relevant problem (*cf.* Shane & Venkataraman, 2000; Shapero, 1985). It is relevant because some individuals could benefit themselves and their communities, by creating a new business to take advantage of existing innovation and development opportunities and, yet, cannot recognize such opportunities or do not feel capable of pursuing them.

This research problem can generate such different research questions as: ‘*where do opportunities for entrepreneurial activity come from?*’ and ‘*why some people act entrepreneurially, while others do not?*’. Here, we address this second research question and, do so, by taking a social cognitive perspective on the determinants of behavior. Based on Chapter’s II literature review and on a sample of Portuguese higher education institutions (HEI) students, in Chapters III to VI, the following narrower research questions will be addressed:

Chapter III discusses the questions of whether the SCCT model is an adequate theoretical framework to explain EI, if such model outperforms a model comprised, solely, of noncognitive demographic independent variables, in explaining EI variance and, finally, if SCCT cognitive antecedents fully mediate the effects of noncognitive demographic variables and distal social support on EI.

Chapter IV covers the issue of whether the temporal stability of entrepreneurship-related self-efficacy beliefs is associated with their level of specificity, which self-efficacy measure, entrepreneurship self-efficacy (ESE) or general self-efficacy (GSE), better explains EI and, finally, if, in a SCCT EI model, the distinct contributions of GSE and entrepreneurship related self-efficacy beliefs may be clarified with the introduction of a new measure.

Chapter V investigates motivators that Portuguese HEI students most frequently cite as a justification for self-reported EI levels, and which of these are more associated with the highest levels of EI. Also, whether these motivations can be meaningfully associated, by combining them into a reduced set of distinct motivational factors, and how these relate with EI levels. If these motivational factors are stable over time, in an intra-individual analysis, and which are the most stable factors. Whether individual demographic characteristics are associated with the salience of a specific motivational factor. Lastly, whether a new measure of entrepreneurship outcome expectations (EOE), based on population-specific motivational factors, can increase explained variance of EI in an SCCT EI model when compared with its standard measure, and if both intrinsic and extrinsic EOE measures are related with EI.

Finally, in Chapter VI it is discussed whether EI levels are stable over a period of five years, in an intra-individual analysis, and if being intrinsically motivated for entrepreneurship has a positive moderating effect on EI stability. Also, if an SCCT EI model can significantly predict EB and whether this model may be improved by introducing a new operationalization, based on the insights from the two previous chapters.

Overall, providing answers to these research questions has the potential to improve knowledge about who, among HEI students, is more likely to create a new business in the future and why. These insights may be found useful by several different groups, namely: for business and entrepreneurship educators, and professionals related with career/vocational counseling who deal with potential entrepreneurs and with those who cannot (yet) conceive new business creation as a valid career or utility-improving action; for policymakers who want, through an

increased rate of new business creation, to promote more dynamic markets, economic competition, growth and development; and, last but not least, for the more self-reflective and self-regulated entrepreneurs.

This social cognitive perspective, applied to potential entrepreneurs, may also be the basis to know more about which institutional setups work best for triggering productive EB. And this knowledge can later be expanded, from a focus on the creation of productive new businesses, to the processes of productive corporate entrepreneurship, social entrepreneurship and institutional entrepreneurship.

Finally, addressing these specific research questions, this thesis also aims to provide evidence on the interest of using SCCT as a theoretical framework for entrepreneurship research and suggests possible improvements in its operationalization. As well as empirical evidence related to the explanatory power of EI models when a considerable lag between self-reports and actual EB is expected.

### **1.3 - Population of Interest and Methodology**

This thesis empirical research is primarily based on EEP Portugal database, the Portuguese implementation of the larger international research, the Entrepreneurship Education Project<sup>1</sup> (EEP), designed to improve the knowledge on entrepreneurship education around the world and collecting data from students of more than 70 countries and 400 universities (*cf.* Vanevenhoven & Liguori, 2013). Given the international guidelines, in the EEP Portugal first wave survey sample, academic programs categorized as *Business* and *Business & Economics Related* are the most predominant and undergraduate students represent the vast majority of respondents.

College student samples comprise the majority of participants in career choice research (Sheu et al., 2010) and EI research (Bird, 2015), something that appears to be appropriate, since student samples reveal vocational preferences at a timely opportunity when respondents face important career decisions (Krueger, 1993). Such samples typically include subjects with a

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<sup>1</sup> The EEP was coordinated in the USA by Assistant Professor of Entrepreneurship Doan Winkel, from Illinois State University, College of Business, and Associate Professor of Management Jeff Vanevenhoven, from University of Wisconsin – Whitewater.

broad spectrum of EI and attitudes and, although detailed business plans may not yet have been made, global career intentions probably have (Scherer et al. 1989).

Business students and entrepreneurship students are also among the most represented populations in EI research samples (*cf.* Bird, 2015). Besides being a natural convenience sample for business school researchers, this type of sample has some advantages. According to Gelderen et al., (2008), the choice of an entrepreneurial career has particular relevance for business students, as these are usually pulled (rather than pushed) towards entrepreneurship, graduation does not provide an institutionalized professional identity, like in other areas, and there is often enough leeway relatively to the particular profession, industry and employment status (*e.g.*, entrepreneur).

The EEP Portugal database is a product of a longitudinal research design which consisted of a first wave survey followed by three other follow-up surveys - one year later, three years later and five years later. With this research design, this thesis also corresponds to the calls for more longitudinal studies (*cf.* Bygrave, 1989; Liñán & Rodríguez-Cohard, 2008; Sheu et al., 2010; Fayolle & Liñán, 2014). A brief description of these survey waves and its participation results is now presented:

- First wave (1stW) survey (school year 2010/11), with 1,309 valid surveys submitted;
- First follow-up (Fup1) survey (school year 2011/12), with 171 valid surveys submitted;
- Second follow-up (Fup2) survey (school year 2013/14), with 157 valid surveys submitted;
- Third follow-up (Fup3) survey (school year 2015/16), with 251 valid surveys submitted.

Regarding methods in this thesis, results rely, primarily, on exploratory (ECA) and confirmatory (CCA) content analysis, exploratory (EFA) and confirmatory (CFA) factor analysis and structural equations modeling (SEM). Combined, these have the potential of resulting in a richer methodology, which also corresponds to the call in the literature for more mixed method methodologies (*cf.* Shah & Corley, 2006; Molina-Azorín et al. 2012).

## 1.4 - Thesis Structure

After this introductory chapter, where the research focus and its interest are stated in the wider context of entrepreneurship research literature, Chapter II begins by briefly reviewing the research literature on EB, where its foundations are presented, and key terms and scope are defined, with the purpose of providing the context and attest the relevance and fit of the cognitive intentions models to this literature. The thesis continues by reviewing the most commonly adopted cognitive intentions models in entrepreneurship and presenting a more in-depth literature review of the thesis theoretical framework, *i.e.* the SCCT. Finally, Chapter II is concluded with a summary of this thesis research questions and hypotheses - explored and tested in Chapters III to VI - preceded with the key supporting references in the literature, both theoretically and empirically.

Using a large sample of Portuguese HEI students, in Chapter III an SCCT baseline model is tested and a comparison is made with a non-cognitive model, based on demographic variables, mainly differentiating individuals' educational and experiential exposures. After this, a new model is proposed and tested - which can be viewed as an extended version of the baseline model, but which is still supported by SCCT theoretical propositions - containing both cognitive and non-cognitive variables as determinants of EI, to test for the added value and mediating effects of the cognitive variables. This third chapter concludes by identifying the extended SCCT model fit, parsimonious and explanatory power, suggesting some weaknesses in its application to entrepreneurship, some of which will be addressed, later, in the following chapters.

Chapter IV starts by testing and comparing the temporal stability of both ESE and GSE. It then follows to compare ESE and GSE effects on EI, aiming to contribute to the debate of whether a general (GSE) or an activity specific self-efficacy measure (ESE) should be used as a predictor of EI, and their relative merits. This chapter ends by proposing and testing the adequacy of a new model, including a new measure of entrepreneurial specific self-efficacy (ESSE) and GSE, simultaneously.

Given the small EOE-EI effect found, in the SCCT EI model tested in the previous chapter, Chapter V explores the most meaningful conscious motivators of EI, as these are cited by a large sample of Portuguese HEI students. This provides a very rich and empirically driven list of the conscious motivators for entrepreneurship, for this population. To reduce the complexity

of the results, this same list of motivators is, later, subdivided into larger motivational factors. Both individual motivators and motivational factors are explored in their association with EI levels and in their temporal stability. Lastly, motivational factors were used for hypotheses testing in the SCCT model.

The thesis empirical analyses come to an end in Chapter VI, where evidence is provided on the EI temporal stability and how this stability may be moderated by having EI based on a particular motivational factor. Evidence is also provided regarding the intention-behavior relationship when using an SCCT EI model, with a 5-year timeframe, in longitudinal research design. Finally, based on Chapter's IV and V findings, improvements to the explanatory power of an SCCT EI model predicting EB, will be proposed and tested.

Chapter VII concludes this thesis by discussing empirical findings, considering existent literature, and highlighting its main contributions for researchers, educators and policymakers.

# **Chapter II**

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## **Literature Review**

## **Chapter II: Literature Review**

This chapter presents the general definitions and theoretical foundations of this thesis, to clarify and legitimize its research focus and hypotheses. First, with a brief historical account on entrepreneurship research and its definitions and, finally, with a more specific and in-depth literature review on entrepreneurial intentions (EI) and social cognitive career theory (SCCT), as this thesis' fundamental focus and theoretical framework. A summary of the most relevant literature, supporting the research questions and hypotheses, investigated in the following chapters, is finally provided.

### **2.1 –The Entrepreneur & Entrepreneurial Behavior**

Entrepreneurship research is an eclectic discipline that has been generating an increased interest from researchers and research publications, in such different disciplines as economics, management/business administration, sociology, psychology, economic and cultural anthropology, business history, strategy, marketing, finance, accounting, operations management, political science and geography — each with its own research traditions, perspectives, and methods (Ireland & Webb, 2007; Acs & Audretsch, 2010; Carlsson et al., 2013). Although, as already noted by others, “previous reviews of entrepreneurship research focus on work that is published primarily in core entrepreneurship and management journals” (Ireland & Webb 2007, p. 892).

The diversity of reach also extends to a diversity of definitions, with a long-standing lack of consensus regarding some of the field's founding concepts, such as the definitions of entrepreneur and entrepreneurship itself (*cf.* Cole, 1969; Gartner, 1988; Shane, 2012). The fast growth of the literature together with its vast, diverse and non-consensual scope, makes it especially challenging to present a complete description of the discipline's theoretical foundations and empirical evidence. Moreover, regarding its empirical evidence, the potential problem surpasses that of breadth, since, if researchers do not clearly define their terms, readers may not be able to know which phenomena the conclusions are about.

Given this context, and to define and limit the research focus, an overview of the literature on entrepreneurship research is provided, covering such important topics as: ‘*what is entrepreneurial behavior?*’, ‘*who is the entrepreneur?*’, ‘*which environmental factors influence*

*entrepreneurial behavior?*, *‘what is the scope of the entrepreneurial process?’* and *‘which relevant outcomes are attributed to entrepreneurship?’*. This will validate the use of new business creation, as a valid definition of entrepreneurial behavior (EB), as well as highlight its economic and social relevance. It will also present entrepreneurship as a multi-stage process, encompassing a set of different interrelated behaviors, and its temporal delimitation. Lastly, it will present the known outcomes of entrepreneurial activity, as the foundations for its relevance/legitimacy.

### **2.1.1 – Relevant Definitions and Perspectives**

Entrepreneurship and entrepreneurs have been defined in many different ways and, according to the literature, there is no generic definition (*cf.* Cole, 1969; Palmer, 1971 Brockhaus & Horwitz, 1986; Gartner, 1989; Amit et al., 1993; Shane, 2012; refer to Piperopoulos 2012, p. 464, for a summary of influential definitions). In this section, the main goal is to introduce some of the most significant perspectives on the nature of entrepreneurship and its definitions. This literature review, besides supporting the legitimacy of the thesis, as research on the phenomenon of entrepreneurship, will also clarify the limitations of its narrow focus. Although referring to some classical authors in the field, which are still influential, the intention is not to give a historical account of how this research domain has evolved - for this the reader may refer to other literature reviews (*e.g.*, Wennekers & Thurik, 1999; Landström, 2004; Murphy et al., 2006; Landström & Lohrke, 2010; Carlsson et al., 2013; Busenitz et al., 2014) – but, rather, to give the needed background, for the reader to understand where this research fits the entrepreneurship literature in general and how it logically follows from it.

Some authors, in both research journals and popular business magazines, have taken a personological perspective to define entrepreneurship. This portrays the entrepreneur as a personal identity, where being entrepreneurial is seen as having an enduring personality trait, or constellation of traits, that some individuals are born with, or have acquired through relevant psychosociological mechanisms (de Vries, 1977; Carland et al., 1984; Gartner, 1989; Cunningham & Lischeron, 1991; Miller, 2015; DeNisi, 2015). Other authors (*e.g.*, Schumpeter, 1934; Kent et al., 1982; Low & MacMillan, 1988; Gartner, 1989; Shane & Venkataraman, 2000) have advocated a behavioral approach to entrepreneurship. This, focusing on the entrepreneurial function and where the entrepreneur is an actor, playing a particular part through

a set of relevant behaviors. In this perspective, the performance of such behaviors provides entrepreneurs a short-lived identity or, more precisely, a temporary status. Yet, there is a third common perspective where authors view entrepreneurship as a career type (e.g., Ronstadt, 1985, 1988; Scherer et al., 1989; Katz, 1994a, 1994b; Hirschi, 2013; Ilouga et al., 2014). Such a perspective might be said to be an approach in-between the personological and the behavioral perspectives. This intermediate view identifies individuals engaged in some professional occupations or professional status – thought to require a set of entrepreneurial personality traits and/or behaviors – as entrepreneurs. Therefore, although possibly long-lived, it is an identity which is still limited (*i.e.* with beginning and end), as it is dependent on maintaining the occupation deemed entrepreneurial. As Ronstadt (1985, p. 12) puts it: “for some the passage is brief, but for many it presents the bulk of their adult lives”.

Regarding entrepreneurship fundamental research questions, Shane & Venkataraman (2000, p. 218) refer that organization scholars have focused primarily on three sets of questions: “(1) why, when, and how opportunities for the creation of goods and services come into existence; (2) why, when, and how some people and not others discover and exploit these opportunities; and (3) why, when, and how different modes of action are used to exploit entrepreneurial opportunities.”. This thesis tries to address this second set of research questions.

### ***Who is the Entrepreneur?***

As extensively acknowledged, ‘*why some individuals and not others engage in EB?*’ is a central question in entrepreneurship research (Gartner, 1989; Douglas & Shepherd, 2000; Shane & Venkataraman, 2000; Xie, 2014). According to Palmer (1971), classical economists, such as Adam Smith (1776), were not concerned with the entrepreneur as a human entity, since for their theoretical frameworks the unit of analysis was the firm itself. But, as Dewing stated (cited in Palmer 1971, p. 33), “no business (...) ever started itself” and, as such, “*who is the entrepreneur?*” quickly became the result of a natural development from the *why?* question (Gartner, 1989).

Seminal research on entrepreneurship, such as the works of Schumpeter (1934) and McClelland (1961), took an individual/psychological perspective. According to Frese & Gielnik (2014, p. 414), mainstream research changed around the years 1980–2005 to focus on explaining entrepreneurship by using economic and strategy theories. Recently, scholars are again

acknowledging the importance of a psychological perspective, because “entrepreneurship is fundamentally personal” (Baum et al., 2007, p. 1).

Examples of personality traits, used to describe the entrepreneur, by these and other classic economists are: creativity and intuition (Schumpeter, 1934), risk-taking (Mill, 1909; Knight, 1921), tolerance for ambiguity (Budner, 1962; Schere, 1982), need of/for achievement (McClelland, 1961), internal locus of control (Rotter, 1966; Shapero, 1977), self-efficacy beliefs (Bandura, 1977; Baum, 1994; Chen et al., 1998) and goal setting (Mace, 1935; Locke, 1968; Locke & Latham, 2002; Baum & Locke, 2004). For confirmation of these examples relevance, and for other examples of commonly cited characteristics of the entrepreneur, the reader may refer to Carland et al. (1984), Ahmed (1985), Shane et al. (2003) and Rauch & Frese (2007).

According to Gartner (1985), some researchers have also found value in looking into the entrepreneur's background, experience, and attitudes, such as: job satisfaction, previous work experience, entrepreneurial parents, age and education.

In an effort to prove the concept's discriminant validity and the legitimacy of the research field itself, several other entities, and their economic functions, are frequently cited as closely related, but yet distinguishable, from the entrepreneur and entrepreneurship, namely: the capitalists (*e.g.*, Schumpeter, 1934; Gartner, 1988), the inventors (*e.g.*, Dewing, 1920; Schumpeter, 1934; Braunerhjelm & Svensson, 2010) and managers or small business owners (*e.g.*, Hartmann, 1959; Brockhaus, 1976; Schere, 1982; Carland et al., 1984; Perry et al., 1985; Busenitz & Barney, 1994; Chen et al., 1998; Stewart & Roth 2001, 2007).

Gartner (1989) refers to the growing separation between ownership and management, observable during the second half of the nineteenth century, as the cause of a more salient distinction between the entrepreneur and the capitalist. At the beginning of the twentieth-century writers, such as Dewing (1920), conceptualized entrepreneurs as ‘promoters’, those who, through imagination, initiative, judgment, and restraint, transformed ideas into profitable businesses. According to the author, “all business enterprises arise first in the mind of a single man or a small group of men, and become actual only through the co-operative effort of many working toward a common end”.

For those who define entrepreneurs as individuals with particular personality traits and, also, for those who define entrepreneurship as a special type of behavior, managers and small

business owners can (but need not to) be entrepreneurs, and have been frequently used to attest for its special personal characteristics (*e.g.*, Hartmann, 1959; Brockhaus, 1976; Schere, 1982; Carland et al., 1984; Perry et al., 1985; Busenitz & Barney, 1994; Chen et al., 1998; Stewart & Roth, 2001, 2007; Zhao & Seibert, 2006; Zhao et al., 2010; Brandstätter, 2011).

Nevertheless, as one can infer from Gartner's (1989) article if one asks '*why?*' it should not be taken for granted that answering to the '*who?*' question will suffice, as different exposures to relevant environmental cues may also justify different individual behaviors.

### *The Dispositional-Situational Debate*

In the most extreme views, the causal origin of EB can be said to solely depend on: (1) the existence of entrepreneurs, individuals with certain personological characteristics deemed crucial and causal of entrepreneurship – *i.e.* individuals who will behave entrepreneurially irrespectively of the context in which they operate – a view in line with the concept of autonomous agency (*cf.* Bandura, 1989); or (2) the existence of favorable environmental factors which trigger individuals to act entrepreneurially – a view that inherently assumes that all individuals are alike (in terms of their entrepreneurial perceptions and cognitions) or that the prevalence of capable (entrepreneurial) individuals is a constant across different contexts (*e.g.*, organizations and economic regions) - a view in line with the concept of mechanical agency (*cf.* Bandura, 1989).

However, the autonomous agency is a conceptualization of human agency that “has few, if any, serious advocates” (Bandura 1989, p. 1175), as “behavior should be regarded as the consequence of person-situation interactions” (Shaver & Scott, 1991, p. 25). Shaver & Scott (1991) state that having a person, as the unit of analysis, is not equivalent to a search for transsituational personological variables, that lead, inevitably, to EB. To assign relevance to the individual entrepreneur only means that, between observable environmental stimulus and behavior, lays an organism (the individual *who* we wish to know) which may produce different classes of behaviors to the same classes of stimulus. Whether these are caused by enduring personality variables or cognitive, attitudinal or motivational variables can, unfortunately, only be inferred.

Although the extreme deterministic views of an autonomous or a mechanical agency (Bandura, 1989) are not, currently, usually explicitly defended by entrepreneurship researchers, they are implicitly. This, by empirical research that only takes into consideration a single unit of analysis, while excluding the other explanatory variables (personal or contextual). According to Sesen (2013) and Xie (2014), this appears to be the norm, although integrative approaches exist (e.g., Gnyawali & Fogel, 1994; Xie, 2014).

According to Shaver & Scott (1991, p. 39) the study of new venture creation began with assumptions about entrepreneurs' psychological characteristics, however, "through the years, more and more of these personological characteristics have been discarded, debunked, or at the very least, found to have been measured ineffectively". As a result, a tendency to focus on anything, but the individual, became the norm.

Several authors pointed out the limitations of a personological perspective in EB research, with some declaring it an empirical dead end, based on the small correlations between personality traits and EB (e.g., Brockhaus & Horwitz, 1986; Gartner, 1989; Low & MacMillan, 1988). Yet, more recently, authors call for the resurrection of the entrepreneur, as a meaningful unit of analysis and as the organism between the environmental stimulus and EB (e.g., Carland et al., 1988; Shaver & Scott, 1991; Rauch & Frese, 2007; McKenzie et al., 2007; Frese & Gielnik, 2014). A brief glance over some of these publications' titles is sufficient to confirm the debate: "'Who is an Entrepreneur?' Is the Wrong Question" (Gartner, 1989); "'Who is an Entrepreneur?' Is a Question Worth Asking" (Carland et al., 1988); "let's put the person back into entrepreneurship research (...)" Rauch & Frese (2007); and "'who is an entrepreneur?' is it still the wrong question?" (McKenzie et al., 2007).

In line with the idea that "opportunities are seized by those who are prepared to seize them" (Krueger & Brazeal 1994, p. 92) and if one assumes that: (1) the qualities required for entrepreneurship are not universal; (2) the distribution of capable/prepared individuals is not homogeneous across organizations or regions; and (3) that these differences may limit an organization's and/or the region's entrepreneurial activity; it becomes relevant to address concepts related to the size and proportion of capable individuals for entrepreneurship in an organization or economic region (cf. Schumpeter, 1934; Krueger & Brazeal, 1994; Carrier, 1994; Audretsch & Keilbach, 2005).

To describe the availability of individuals able to perform the entrepreneurial function, concepts such as *entrepreneurial potential* (Palmer, 1971; Krueger & Brazeal, 1994; Mueller & Goic, 2002; Teixeira, 2008; Gerry et al., 2008) and *entrepreneurship capital* (Audretsch & Keilbach, 2004, 2005; Audretsch, 2007; Jaén & Liñán, 2013) have been used.

### *Entrepreneurial Potential and Entrepreneurial Capital*

Entrepreneurial potential, possessed by those “who surface and take the initiative when a personally attractive opportunity presents itself”, is defined as “a preexisting preparedness to accept that opportunity” (Krueger & Brazeal, 1994, p. 91). Yet, “measures of entrepreneurial potential seem to remain wedded to various ad hoc profiles of personality and demographic characteristics with minimal predictive validity (*e.g.*, Carsrud, Gaglio, & Kemochan, 1993). As Shaver and Scott (1991) note, if we wish to understand the entrepreneur, we need to look at people's mental representations of career characteristics and how they enact their career environment” (Krueger & Brazeal 1994, p. 92). Addressing this gap, today EI research is already a very significant subdomain of entrepreneurship (Liñán & Fayolle, 2015) and can be said to proxy the potential for entrepreneurial action (Krueger et al., 2000).

Entrepreneurial capital is “a region’s endowment with factors conducive to the creation of new businesses” (Audretsch & Keilbach 2004, p. 951) it “is a specific type of social capital and refers to the capacity of a society to generate entrepreneurial activity” (Audretsch & Keilbach, 2005). Thought to be determined by the level of individuals willing to create new business and the context in which they operate - which can be considered favorable or not, depending on how it favors innovation and the existence of networks how it is socially accepted and the existence of financing partner, willing to share the risks and benefits involved (Audretsch & Keilbach, 2004). Thus, in theory, a broader concept than that of potential entrepreneurship and less centered in the individual and is own cognition. In practice, this concept has been proxied by “the number of startups relative to its population” (*cf.* Audretsch & Keilbach 2005, p. 462) and also by EI (Jaén & Liñán, 2013). Entrepreneurial capital, although requiring one to consider the environment, still fits into the ‘*who?*’ research question. The difference, here, could be stated as a move from ‘*who has this personality?*’ to ‘*who has this context?*’.

### *The Situational Approach: The Environmental Determinants*

In a review of studies that implicitly take the deterministic perspective on the influence of the environment on new venture creation, Gartner (1985) refers, for example, factors such as: venture capital availability, presence of experienced entrepreneurs, technically skilled labor force, accessibility of suppliers, accessibility of customers or new markets, governmental influences, proximity of universities, availability of land or facilities, accessibility of transportation, attitude of the area population, availability of supporting services, living conditions, areas with high occupational and industrial differentiation, areas with high percentages of recent immigrants in the population, areas with a large industrial base, larger size urban areas and availability of financial resources. The author further states that in the field of Industrial Economics such a perspective is actually the norm.

More recently, Xie (2014) proposes that there are three main streams of research in the environment approach to entrepreneurship – understood as the research on the impact of the context on new venture creation – namely, the influence of role models (*e.g.*, in their family or workplace), broad contextual supports or constraints (*e.g.*, political, economic, cultural, and support institutions) and relational and spatial embeddedness (*i.e.* the social network of actors and the density and proximity of venture firms, respectively). Symptomatic of the current importance attributed to the contextual influence, is the increasing popular concepts such as *enterprising culture* (*e.g.*, Gibb, 1993; Dana, 1995) and *entrepreneurial ecosystems* (Isenberg, 2011, 2014; Spigel, 2017).

### *Behavior as a Function of Both Person and Environment*

In sum, “behavior is a function of both person and environment (Lewin, in Cartwright, 1951). Neither alone constitutes a sufficient explanation for an individual's observable behavior.” (Shaver & Scott 1991, pp. 25-26). “Entrepreneurs do not operate in vacuums - they respond to their environments” (Gartner 1985, p. 700). Although, at first sight, some entrepreneurs do seem to be able to flourish in the less likely economic and political contexts (*cf.* Trigo, 2003). As Shane & Venkataraman (2000, pp. 218-219) so clearly write, “since a large and diverse group of people engage in the transitory process of entrepreneurship, it is improbable that entrepreneurship can be explained solely by reference to a characteristic of certain people (...) [and] when we argue that some people and not others engage in entrepreneurial behavior, we

are describing the tendency (...) to respond to the situational cues of opportunities not a stable characteristic”.

At the end of last century, Venkataraman (1997) wrote that most researchers had defined entrepreneurship solely in terms of who the entrepreneur was and its behavior, but this approach fails to recognize that entrepreneurship involves the individual-opportunity nexus: the presence of lucrative opportunities and of enterprising individuals. Entrepreneurial opportunities, as “situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than their cost of production” (Shane & Venkataraman 2000, p. 220). Different perspectives can be taken on whether these opportunities can be seen as something that can be created or as something that can be discovered by entrepreneurs (Kirzner, 1973; Alvarez & Barney, 2007).

Within the second perspective, Kirzner's (1973, p. 68) concept of entrepreneurial alertness - defined by “knowing where to look for knowledge” - becomes especially relevant, as it is said to be the very general and rare kind of knowledge that makes the basis of entrepreneurial discovery and exploitation. Shane & Venkataraman (2000) also suggest that the discovery of a particular entrepreneurial opportunity is, most likely, dependent on two factors: having prior information, that is necessary to identify the opportunity, and having the cognitive characteristics, necessary to value it.

Focusing on the role of cognitive properties, for entrepreneurial opportunity discovery, Shane & Venkataraman (2000), citing others, refer that entrepreneurs can be differentiated from others in terms of risk perception, the probability of counterfactual thinking and experiencing regret over missed opportunities and less susceptible to inaction inertia. However, discovering an opportunity is necessary but insufficient, since a potential entrepreneur has to decide to exploit this opportunity for entrepreneurship to occur (Shane & Venkataraman, 2000).

Knowing that not all identified opportunities are exploited, it appears that such exploitation may be best explained by the particular individual-opportunity matching. To this effect, opportunity costs (*e.g.*, having financial capital, social ties to resource providers, useful and transferable information from their previous work experience) and (2) some individual differences in perceptions and motivations (*e.g.*, having: the willingness to bear risk, greater tolerance for ambiguity, higher optimism, greater self-efficacy, more internal locus of control and high need for achievement) appear to be particularly important (Shane & Venkataraman,

2000). Yet, it has been noted that the attributes that increase the likelihood of opportunity exploitation may not necessarily increase the probability of success (*e.g.*, over-optimism: Shane & Venkataraman, 2000; and risk propensity: Zhao et al., 2010).

Whether it is a privileged position regarding relevant information, a superior perception or a favorable cognitive capacity or style, or a favorable opportunity costs profile, it is at the individual-opportunity nexus that lies the epicenter of entrepreneurship research and only in this greater context can one fully understand a particular EB. However, a predisposition or general intention towards EB may be researched, regardless of the presence/perception of a viable opportunity, since it can precede it. For example, Hills & Singh (2004) found that, out of 472 respondents, from the PSED database, 42.1% had first decided to start their own business and only after have they recognized their business opportunity, while the opposite sequence was reported by 36.9% and 21.0% reported that both have occurred, simultaneously.

Beside this dispositional-situational debate, another popular debate in society is that related with the question of whether entrepreneurs are born entrepreneurs, or can they be created given appropriate social influences (*e.g.*, through exposure to education and experience).

#### *Entrepreneurs: Made or Born?*

Schloss (1968) stated that most writers on economic development stress, as a key bottleneck for developing countries, the shortage of entrepreneurs. More recently, Nabi & Liñán (2011, p. 325) suggest that there is an upsurge of entrepreneurship in developed countries and that “this could be a tremendously powerful force to accelerate economic growth and development. Given that different levels of entrepreneurship activity exist and assuming that these may be negatively influenced by a scarcity of entrepreneurs (Palmer, 1971) or a lack of EB from individuals, another set of relevant questions immediately prompt, namely: *are entrepreneurs made or born?* (an old one, according to Krueger & Brazeal, 1994); *can entrepreneurship be taught and learned?* (*cf.* Ronstadt 1987; Charney & Libecap, 2003; Henry et al., 2005a, 2005b).

Relatively to the first question, Schumpeter (1934) describes the entrepreneurs as a special type because this conduct (*i.e.* activity) is “accessible in very unequal measure and to relatively few people, so that it constitutes their outstanding characteristic.” (Schumpeter 1934, p. 81, footnote 2). About the conduct itself, he states its object is different - characterized by innovation - and

that “it presupposes aptitudes differing in kind and not in degree from those of mere rational economic behavior” (Schumpeter 1934, p. 81, footnote 2). He further describes the distribution of these qualities in a population as one could describe a Gaussian distribution, in which most people can be considered to have an average capacity for it, while on the distribution’s tails one finds those who lack the needed qualities and people who could be considered as having an entrepreneurial ability, and still, for others, in the most extreme cases, it becomes their characterizing mark as a person.

Krueger & Brazeal (1994, p. 102), with a different position, state that “entrepreneurship (or the entrepreneur) is not something mystical, nor is it confined to some anointed group of people: “Entrepreneurs are made, not born. They are made through a perception-driven enactive process that begins with forging a potential for entrepreneurship. As educators, as consultants, and as policy advisers we can assist this process through helping to empower potential entrepreneurs who will be better able to seize opportunities when the environment presents them”.

In respect to the second and third questions, given the extensive literature on entrepreneurship education (*e.g.*, Katz, 2003; Kuratko, 2005; Pittaway & Cope, 2007), at least one thing can be presumed: that many researchers and educators believe entrepreneurial activity can be raised and/or improved through education. On this subject, Henry et al. (2005b) conclude that there is a fair consensus that, at least, some aspects can be successfully taught and, this becomes evident when one considers that many institutions are teaching entrepreneurship courses and programs, around the world (Solomon 2007). “The number of colleges and universities that offer courses related to entrepreneurship has grown from a handful in the 1970s to over 1,600 in 2003” (Kuratko 2003, p. 11). Posing a more relevant question regarding entrepreneurship education, Ronstadt (1987) asks: “what should be taught and how should it be taught?”. Refer to Fiet (2001a, 2001b) for an interesting discussion on the topic.

Acknowledging the importance of an individual who, in a complex and varying environment, may be (or become) the distinguishable economic/social/psychological entity that we call the entrepreneur, may not be sufficient to completely define entrepreneurship. Turning now from the literature that defines entrepreneurship ‘as the actions performed by entrepreneurs’, to the literature which defines an entrepreneur as ‘someone who performs a specific type of behavior’.

### ***What is Entrepreneurial Behavior?***

According to several authors, the quest for the entrepreneur's distinctive personality traits has proven relatively unsuccessful (*e.g.*, Gartner 1988; Wennekers & Thurik, 1999; Mitchell et al. 2002; McKenzie et al., 2007; Shaver, 2010). Gartner (1989, p. 64), calling for a more behavioral approach, writes "the entrepreneur is not a fixed state of existence, rather entrepreneurship is a role that individuals undertake to create organizations". Many years before, and without an emphasis on organization creation, Schumpeter (1934, p. 78) also explicitly favored a behavioral approach to the definition of an entrepreneur, as the following citation can confirm: "being an entrepreneur is not a profession and as a rule not a lasting condition".

So, what exactly is EB? To answer this question it may be useful to analyze it through two different perspectives: (1) the perspective that categorizes a particular activity, or set of activities, as entrepreneurial; and (2) the perspective that, validates such categorization only if the particular activity(ies) is/are related to a special type of overall economic function - with major macroeconomic outcomes, such as economic growth and development – classified as entrepreneurial.

According to Gartner (1985), organization creation separates entrepreneurship from other disciplines, where the personality characteristics of the entrepreneur are ancillary to EB. Examples of entrepreneurial activities, in the literature, have been summarized by Gartner (1985) and have mostly resulted from the theoretical discussion based on the comparison between entrepreneurs' and managers' generally observable activities. Another common comparison is to differentiate small businesses from entrepreneurial ventures. Carland et al. (1984), for example, categorize a business as (a) a small business venture, if it is not dominant in its field and does not engage in new marketing or innovative practices, and (b) as an entrepreneurial venture, if it aims for profit and growth and engages in innovative strategic practices.

### ***Entrepreneurial Behavior as an Economic Function***

According to several authors (*e.g.*, Schloss, 1968; Palmer, 1971; de Vries, 1977), one of the first known uses of the definition of entrepreneur, with an economic meaning, was from an 18th-century businessman and *financier*, Richard Cantillon. "The term 'entrepreneur' stems from the French verb 'entreprendre' derived from 'entre' (between) and 'prendre' (to take) and

has long been used to describe individuals who are “in the middle” of business activities” (Terjesen et al. 2010, p. 444). According to Hébert & Link (2007, p. 273), this was “the first writer to narrow the meaning of the term, infuse it with precise economic content, and give it analytic prominence”. In Cantillon’s (1755) posthumously published *Essai Sur La Nature Du Commerce En General*, the author defined the entrepreneur as the agent who acquires means of production, at a certain known cost, to combine them into marketable products, for which he does not know the price he will receive (*cf.* Palmer, 1971).

Later, Jean-Baptiste Say (*e.g.*, Say & Biddle, 1851) defined the entrepreneur as the coordinator of the business firm, playing a central role to its distributive and production functions and translating knowledge into production, intermediating between agents of production and the final consumer and the bearer of specific risk and uncertainty. For all this, if successful, it would receive its own profits (Palmer, 1971; Koolman, 1971; de Vries, 1977). This later functions, the bearer of risk & uncertainty and its compensation, *i.e.* the entrepreneurial profit, are also later developed by Knight (1921) another classical author widely cited in entrepreneurship literature. Schumpeter (1934, p. 74) relates the entrepreneur to what he describes as the fundamental phenomenon of economic development, the enterprise – *i.e.* the “new combination of means of production” – “the individuals whose function it is to carry them out we call ‘entrepreneurs’”. Yet, contrarily to previous authors, Schumpeter (1934, p. 75, footnote 1) states that “risk obviously always falls on the owner of the means of production or of the money-capital which was paid for them, hence never the entrepreneur as such”. Schumpeter (1934), characterized economic development as the carrying of new combinations, which included the following five cases: (1) The introduction of a new good or a new quality of a good; (2) The introduction of a new method of production; (3) The opening of a new market; (4) The conquest of a new source of supply or raw materials or half-manufactured goods; (5) The carrying out of the new organization of any industry, such as creating a monopoly position.

More recently, McKenzie et al. (2007) write that entrepreneurship has been related with: contingency, creation, market pioneering, newness and organization initiation; and Shane & Venkataraman (2000), highlight that entrepreneurship is the mechanism through which technical information is converted into products and services, economic inefficiencies are discovered and mitigated and change is processed. Finally, a reference to Douhan & Henrekson (2010), highlighting the function of equilibrium disturbance.

As it becomes apparent from this brief overview on EB, there is a vast set of behaviors and mechanisms assigned to the phenomenon of entrepreneurship. To find which of these are most commonly accepted and the real breadth of this scientific domain, it may be useful to look into the most commonly used definition of entrepreneurship.

### *Most Common Definitions of Entrepreneurship*

According to McKenzie et al. (2007, p. 28), the most frequently cited definitions of the domain of entrepreneurship are: Gartner's (1989) definition – *i.e.* “Entrepreneurship is the creation of new organizations”; Venkataraman's (1997) definition – *i.e.* “Entrepreneurship as a scholarly field seeks to understand how opportunities to bring into existence ‘future’ goods and services are discovered, created and exploited, by whom, and with what consequences”; and the Academy of Management Entrepreneurship Division's (2002) definition – *i.e.* “The Entrepreneurship Division's domain is the creation and management of new businesses, small businesses and family firms, as well as the characteristics and special problems of entrepreneurs. The Division's major topic areas include: new venture ideas and strategies, ecological influences on venture creation and demise, the acquisition and management of venture capital and venture teams, self-employment, the owner-manager, and the relationship between entrepreneurship and economic” – which according to the author it is “a general reflection of the research definition proposed by Low and MacMillan (1988)”.

These three definitions can be easily differentiated in terms of breadth, yet McKenzie et al. (2007) suggest that all these are limited, in that they are all organization-based definitions, arguing that entrepreneurship research will be richer if it is not exclusive of the business contexts and, if entrepreneurship researchers are prepared to share custody of their research domain. This will create “the opportunity to make a significant intellectual contribution to other fields of endeavor such as the arts, science and social development” (McKenzie et al. 2007, p. 38). As such, the authors propose yet another definition: “entrepreneurship involves individuals and groups of individuals seeking and exploiting economic opportunity” (McKenzie et al. 2007, p. 29). As a demonstration of the phenomenon real potential breath are the concepts of: corporate entrepreneurship (*cf.* Burgelman, 1983; Miller, 1983; Covin & Slevin, 1989; Guth & Ginsberg, 1990; Covin, 1991; Zahra, 1991; Sharma & Chrisman, 2007), institutional entrepreneurship (*cf.* DiMaggio, 1988; Fligstein, 1997; Hoffman, 1999; Garud et al., 2007) and

social entrepreneurship (*cf.* Dees, 1989, 1998; Emerson & Twerksy, 1996; Zadek & Thake, 1997; Alvord et al. 2004).

Discussing this definitional problem, Low & MacMillan (1988, p. 141) state that no definition “captures the whole picture”, while Gartner (1989) warns about the vagueness and ambiguity of some of the proposed definitions and Carlsson et al. (2013) adds that “the field seems to be in the process of being refocused, involving both broadening and narrowing down”. This presents a challenge for researchers, given that, according to Gartner (1985), much of past research has been focusing on distinguishing entrepreneurs, or their firms, from nonentrepreneurs, or nonentrepreneurial firms.

In sum, despite all definitional differences, there are some common themes that can be expected in most entrepreneurship definitions, such as: *The Entrepreneur, Innovation, Organization Creation, Creating Value, Profit or Nonprofit, Growth, Uniqueness and Owner-Manager* (Gartner, 1990).

#### *Limitations Associated with the Different Perspectives*

The reason why some definitions are more commonly used than others, in empirical research, can be multiple. It could be due to a greater consensus over the intrinsic quality of some definitions. The possibility that some research problems – which relate more with some particular definition/perspective of entrepreneurship – are of greater interest for researchers. Or, still, the fact that some definitions are more convenient due to more data availability or ease of measurement. Unfortunately, the latter cannot be ruled out, and has already been suggested (*e.g.*, Gartner, 1988; Bygrave, 1989; Audretsch & Keilbach, 2004 McKenzie et al., 2007). As an example of such admission, Bygrave (1989, p. 28) wrote: “these constructs do not lend themselves to the linear measurement of surveys and questionnaires”.

Per Davidsson & Wiklund (2001), rejecting that entrepreneurship should be measured as a dichotomous phenomenon (*e.g.*, *New firm was created?*), propose a focus on the degree of newness from the economic activity generated by the particular enterprise, irrespectively of the organizational context in which its implemented. Schumpeter (1934, p. 75), in a quite contemporary position, had, already suggested an emphasis on the particular function, writing: “[Entrepreneurs can exist] even if they are, as is becoming the rule 'dependent' employees of a

company, like managers, members of boards of directors, and so forth, or even if their actual power to perform the entrepreneurial function has any other foundations, such as the control of a majority of shares. As it is the carrying out of new combinations that constitutes the entrepreneur, it is not necessary that he should be permanently connected with an individual firm". Wennekers & Thurik (1999, p. 47) also made this distinction, between small businesses and entrepreneurship, but clarifying why such equivalence may, in fact, have some supporting rational since larger business tend to mimic smallness for entrepreneurial action. For a review on the conditions where *de novo* startups are more likely to be created, the reader may refer to Shane & Venkataraman (2000).

#### *New Business Creation: An Example of an Entrepreneurial Behavior*

The definition of EB as new business creation, is a narrower perspective, considering the entire domain of entrepreneurship research, however, its popularity and interest merit a special focus. Despite the (comparatively) narrow conceptualization, it is still an overarching definition that has been refined. Gartner et al. (2010), after defining EB as the founding of independent for-profit businesses, justify this extended definition by the necessity of distinguishing it from other types of organizations (*e.g.*, voluntary organizations, non-profit organizations, and governmental organizations) which may be created in different ways. They also write that EB is a type of behavior involving the activities associated with the creation of new organizations and not with maintaining or changing the operations of established organizations.

To reconcile this narrower definition of EB with broader definitions, Shane & Venkataraman (2000) suggest that entrepreneurship does not require, but includes the creation of new organizations. Therefore, although entrepreneurship cannot be described entirely, exclusively, by knowing everything about new business creation, the study of this phenomenon advances the knowledge on entrepreneurship.

#### *The Entrepreneurial Process - A Behavioral Approach*

As Bygrave (1989, p. 21) stated: "Entrepreneurship is a process of becoming rather than a state of being. It is not a steady state phenomenon. Nor does it change smoothly. It changes in quantum jumps". To understand new business creation, is it sufficient to focus on the single

most decisive action that leads to this outcome, or do we need to focus on a set of different actions that, together, form the EB pattern? Shaver & Scott (1991) support the latter perspective, proposing the existence of a series of prior discontinuous events that, eventually, will result in a new business being created.

According to Katz & Gartner (1988) knowing more about this preorganizational period (also called gestation and prehistory, by others) in the life of an organization is crucial, because many fundamental decisions are made during this time. Moreover, some authors refer that information based on the retrospections and conclusions of current business owners, about a past time, are destined to be biased (Gartner et al., 2010; Aldrich & Martinez, 2001). The use of such accounts of past events, emotions or rationales are open to recall, self-justification, hindsight and survivorship biases, which makes this information very unreliable for empirical evidence accumulation (Cassar, 2007; Cassar & Craig, 2009). Therefore, it becomes evident that to know more about this process, we need to inquire those who are living it, *i.e.* nascent entrepreneurs (Gartner et al., 2010).

With this process perspective, some important questions arise, such as: ‘When does the process actually start and end?’; ‘Which activities does it include?’; ‘How long does it take?’; ‘What is its prevalence in the general active population?’ and ‘What have been its success rates?’.

#### *About the Process*

Cha & Bae (2010, p. 31) suggest that “the entrepreneurial process of new business creation starts when a business opportunity is discovered or created by nascent entrepreneurs. (...) This journey will be viewed as a combination of volitional and emergent process of transforming potentiality into actuality, that is, opportunity realization”. Still, at a cognitive process level, Zapkau et al. (2017), like others before (*e.g.*, Bird & Jelinek, 1988; Hui-Chen et al., 2014), suggest that EI could be the start of the entrepreneurial process.

However, it may be argued both that intentions are prerequisite for the process to start, and not a first stage (and surely not a first step, *i.e.* behavior), or that these may occur after the process has already started. As Degeorge & Fayolle (2011) wrote, “the entrepreneurial process is considered as ‘triggered’ or initiated from the moment when the individual starts thinking seriously about setting up or taking over a business and starts devoting time and resources to

its development (Bruyat, 1993; Fayolle, 2007)” (p. 252) and “it seems difficult to know precisely when the intention appears consciously in the individual’s mind. Intention may precede the trigger of the process or may happen after the process has been initiated (as a consequence of the trigger or an external factor for instance)” (p. 256).

Taking a behavioral perspective to the entrepreneurial process can simplify some of these problems, but complexity remains. Per Davidsson & Gordon (2011, p. 861), citing others, highlight the “extreme variability and complexity of venture creation processes”, in terms of gestation period and normal sequence of nascent activities, adding that, while some chose the first activity as signaling process initiation, no single activity can be pinpointed as its reliable marker. Due to this difficulty, some authors have compiled a list of nascent EB, suggesting that individuals who have performed at least two activities from that list should be considered in the process of creating a new business (*e.g.*, McGee et al., 2009), while others have simply asked individuals if they were actively trying to start their own business (*e.g.*, Reynolds et al., 2004).

Regarding the entrepreneurial process length, according to Gartner's et al. (2010, p. 21) review of Reynolds (2007) study, with PSED I data, “seven years after entering the firm creation process: approximately one third of the nascent entrepreneurs had quit, one-third reported an on-going business, and one third were still active in the start-up process. He also found that the median time for a new firm birth was 19 to 24 months while the median time for those who quit was 25 to 30 months. By 36 months, approximately 75% of new firms are created, while 75% of quits occur by 48 months”. Wagner (2007, p. 33) suggests that between one in two and one in three, of nascent entrepreneurs, step into the next phase, becoming infant entrepreneurs in the year following the first survey. Some factors have been found to be related with start-up process success, such as planning (Liao & Gartner, 2008), cognitive variables, demographic variables, nascent activity profile and business opportunity characteristics (Wagner, 2007). Other relevant factors may be found in the following studies: Van Gelderen et al. (2006), Parker & Belghitar (2006) and Krabel & Mueller, (2009).

### *Nascent Entrepreneurs*

Because some potential entrepreneurs (*i.e.* individuals intending to create their own business) may never actually act towards this goal, and because business owners & founders are often designated entrepreneurs, there seems to be a need to distinguish those in the process of creating

(or trying to create) a new business, from those who are not. Nascent entrepreneurship has been brought to the literature, with this purpose, and it has been around for some time, now, (*e.g.*, Kiehl, 1988; Spitzer Jr & Ford, 1989; Herron & Sapienza, 1992; Reynolds and White, 1997), and with considerable popularity (*e.g.*, Delmar & Davidsson, 2000; Carter et al., 2003; Cassar, 2010; Gartner & Shaver, 2012; Stuetzer et al., 2013; Reynolds, 2016).

Reynolds and White (1997) have defined the nascent entrepreneur as someone in the process of establishing a business venture, which is similar to Delmar & Davidsson's (2000, p. 1) definition, of “individuals trying to start an independent business”. However, as Dimov (2010) notes, this is the pursuit of a perceived profitable business opportunity - *i.e.* based on an individual's own personal beliefs about the feasibility of the venture's outcomes – meaning that its value cannot be confirmed *ex-ante*, but rather, only gradually through the nascent entrepreneur's own actions.

Regarding the prevalence of nascent entrepreneurs in the general population, two different international research projects are especially relevant: the *Global Entrepreneurship Monitor* (GEM) and the *Panel Study of Entrepreneurial Dynamics* (PSED). GEM predominantly within an economic and institutional approach and PSED within a demographic and cognitive approach (Ramos-Rodríguez et al., 2015).

In the case of the Portuguese population, from *GEM PORTUGAL 2013 | 2004-2013: Uma Década de Empreendedorismo em Portugal report* (GEM last complete report available for Portugal) the *Total Early-Stage Entrepreneurial Activity* (TEA) was found to be at 8.2% - which differs across gender, namely: 9,3% for men and 6.2% for women. It is greater for the 25 to 34 years old age group (TEA of 11.9%) and for individuals with a post-graduate education level (master and doctorate degree level; TEA of 14.8%). Numbers which are close to those reported from other innovation-driven economies. Yet, it should be noted that TEA rates vary greatly with the economic development level of the analyzed region. For instance, in 2013, TEA values for innovation-driven (the most developed), efficiency-driven, and factor-driven (the least developed) economies averaged TEA of 7.9%, 14.4% and 21.1%, respective. Although, in this report one cannot find the numbers regarding the specific case of nascent entrepreneurs, extrapolating from *GEM Euroace 2014-2015 Report - Alentejo (Portugal), Centro (Portugal), Extremadura (Spain)* - which reports a TEA of 7.6%, divided into 4.3% nascent entrepreneurs and 3.3% new entrepreneurs - approximately 4.6%, of the total Portuguese population between

the ages of 18 to 64 years old, may have been nascent entrepreneurs, according to GEM definition.

Based on PSED data, Reynolds et al. (2004) provide a very complete stratified analysis of nascent entrepreneurs across different demographic groups in the US, which is particularly interesting since they find significant differences between groups (*e.g.*, age, race, education, household income, being an organizational employee). In this study, individuals identified as nascent entrepreneurs had to be either (1), trying to start a new business, or (2) starting a new business/venture for their employer, as an on-going job assignment, and anticipating a full or part ownership of the new business.

#### *New Business Creation Activities*

The start-up process can involve many different activities and stages, and different authors have presented different subdivisions for this process. For example: the *'prelaunch'*, *'launch'* and *'postlaunch'* (Baron, 2007) or *'the conception'*, *'gestation'*, *'infancy'* and *'adolescence'* (Aldrich & Martinez, 2001).

Based on Aldrich & Martinez (2001) stages, Wagner (2007) refers to both the conception and the gestation phases as the period where nascent entrepreneurs act. The transition between nascency and new firm creation happens when entrepreneurs can overcome the extreme selection forces that such ventures typically encounter. This is a period where misguided intentions, resource access and organizational control may negatively influence the probability of successful new firm creation. Citing others, the authors refer that only half of the nascency efforts succeed in creating a new business and less than 10% can make these organizations grow significantly.

Zapkau et al. (2017), following others before, suggest that the entrepreneurial process starts with EI, is followed by the gestation stage and culminates with the creation of a legal firm or generating the first sales revenues. The authors refer to the second and third stages as nascent entrepreneurship and EB, respectively. Nascent entrepreneurs are defined as “individuals who initiate serious activities that are intended to lead to the formation of a viable new venture, but have not finally become legal business owners” (Zapkau et al. 2017, p. 56).

With an emphasis on specific activities/behaviors, rather than abstract overarching stages, McGee et al. (2009, pp. 973-974) suggested that, to achieve a feasible business start-up, nascent entrepreneurs would engage in the following activities: “(1) attending a ‘start your own business’ planning seminar or conference, (2) writing a business plan or participating in seminars that focus on writing a business plan, (3) putting together a start-up team, (4) looking for a building or equipment for the business, (5) saving money to invest in the business, and (6) developing a product or service”.

Carter et al. (1996), beside also suggesting activities that signal entrepreneurial intention strength and their temporal proximity to new business creation (*e.g.*, preparing a plan, developing models, saving money to invest, organizing a start-up team and looking for facilities) also contemplate other activities, which can be said to be a step further into the new business creation process, such as: devoting full time, investing own money, asking for funding, getting financial support, forming a legal entity, applying for a license/patent, renting facilities and equipment, buying facilities and equipment and hiring employees.

In sum, the evidence suggests that starting a new business does not follow a predetermined route, that entrepreneurs and organizations are not all created equal and that new business creation is a complex process that must fit the individual entrepreneur (or team of entrepreneurs), the particular business venture and its environment (Gartner, 1985). All these, implying significant challenges for research design, findings validity and generalization and empirical evidence accumulation.

### ***Entrepreneurship as a Career Choice***

Aiming to justify and contextualize the use of SCCT as an appropriate theoretical framework, for the empirical analysis of potential (and current) entrepreneurs, this section will briefly present the theoretical foundations and main research topics in the entrepreneurial career literature.

According to Katz (1994a, p. 5), “an entrepreneur going through life at work is pursuing a career” and this perspective captures a meaningful phenomenon, although not being the most popular research focus among both entrepreneurship and career scholars, at the time. For Ronstadt (1987, p. 12), “most people, even entrepreneurs, still do not think of entrepreneurship as a career. Nevertheless, the creation and development of one or more new enterprises is a

passage, a field of pursuit, a calling, a way of life that fits the basic notion of a career”. Ronstadt (1987) stated that the prevailing view of entrepreneurship is a venture stage and this, still, appears to be the case. In the author’s own words, this view assumes that: “the majority of successful entrepreneurs start and develop a single venture during their mid-thirties and pursue this venture until they die, retire (usually forced), or somehow give or lose control to professional managers” or that, they have gone back to work for someone else (Ronstadt 1986, p. 32). Thus, this prevailing view assumes that the entrepreneurial career ends when the entrepreneur-business venture relationship reaches a closure.

However, Ronstadt (1986) finds that the majority of current entrepreneurs have started more than one company, meaning that, for example, failure (and success) should be better viewed in terms of a career, rather than as a single venture. He also introduces a new concept, called the *corridor principle*, proposing that this behavioral pattern allows the entrepreneur to gain knowledge or capabilities to enter better subsequent ventures. A compelling argument towards incentivizing new venture creation, despite the predictable low economic returns of startups, on average.

A few years later, Katz (1994, p. 23), in one of his seminal papers on entrepreneurial careers, states that there was still “little vocational theory specific to self-employment, much less entrepreneurship”. As the author implies, the study of an entrepreneurial career adds a longitudinal perspective to the study of entrepreneurship, going as far as to write that “studying entrepreneurship longitudinally is in effect a study of entrepreneurial careers”.

Yet, entrepreneurial careers can be analyzed in the frame of a single business venture (*e.g.*, House, 1974) - where the individual is still the unit of analysis, but where the entrepreneurial career may have not ended - or analyzed as episodic (Carroll & Mosakowski, 1987), where career patterns can be, for example, related with the frequency and form of these episodes and where entry and exit may be equated to career beginning and ending, or not.

Thus, an entrepreneurial career perspective of the phenomena implies a focus on the longitudinal analysis of an individual in self-employment, in opposition to a cross-sectional analysis, which is more compatible with the personological perspective of ‘*who is an entrepreneur?*’ and the behavioral perspective of ‘*what is an EB?*’. It also differs from these other two perspectives, since it focuses on the individuals’ vocational interests and intentions towards self-employment, its career path development and its outcomes.

This may be a more inclusive perspective, in terms of the range of individuals and behaviors it analyzes, since a career as self-employed may include many individuals which do not fit some definitions of the entrepreneur (*e.g.*, those with greater emphasis on the founding and innovation processes). As Katz (1992, p. 31) writes: “self-employment is the civil law commonality which unites the total population of business owners, be they founders or acquirers, small business people or entrepreneurs”.

A career perspective, on entrepreneurship, also has the potential of overcoming the limitations of measuring the entrepreneur’s success based only on firm performance measures, by leading researchers to focus also on psychological wellbeing and perception of success, that reflect the internal career. Examples of such variables, in the work and family domains, are: job, career and family satisfaction, marital adjustment and life stress (Parasuraman et al., 1996).

Throughout this section, and given that entrepreneurial career literature originates from research fields with different traditions, different expressions will be used to describe the same opposing career options. Namely, on one side, we can have wage-or-salaried individual (Schein, 1978; Katz, 1992; van Praag & Versloot, 2007) or an organizational employee (Crant, 1996, Kolvereid, 1996) while on the other side, we can have self-employed individuals (Schein, 1978, Carroll & Mosakowski, 1987) or entrepreneurs (Katz, 1994a).

Given the scarcity of literature taking the entrepreneurial career perspective, authors have looked elsewhere, namely Sociology and Psychology, and, more recently, Economics for theoretical guidance and support (Douglas & Shepherd, 2002). As Katz (1994) pointed out, in the mid-nineties, there was already a stream of literature concerned with the longitudinal analysis of people in work situations, called Vocational or Career theory. Therefore, the author concludes, “what is needed is the adaptation of career theory to better consider the people and processes of entrepreneurship” Katz (1994, p. 23).

Regarding the fundamental dimensions of a theory of entrepreneurial careers, Dyer (1994, p. 7) suggests four, which he proposes as crucial for developing a comprehensive theory: “(1) a theory of career choice; (2) a theory of career socialization; (3) a theory of career orientation; and (4) a theory of career progression from entry to exit”. The present section will mostly approach the entrepreneurial career choice (and entry), which is the one closest to this thesis’ research focus. Finally, some references will also be provided for the dimension related to career progression, from entry to exit, given the existent of relevant research.

### *Entrepreneurial Career Choice and Entry*

Segal et al. (2002) and Liguori et al. (2017), propose the application of SCCT, a well-established model of career choice, to explain self-employment intentions/goals. With Segal et al. (2002) suggesting that this model may have a superior explanatory power of EI when compared with the more popular Theory of Planned Behavior (TPB) or Shapero's model of the entrepreneurial event (SEE).

Some individuals may be better suited for self-employment than others and, as people with jobs that are more compatible with their interests, values and abilities are more likely to be successful in their jobs, a person-job fit analysis could be a promising avenue of research, also for self-employed individuals (Feldman & Bolino, 2000). This, with an emphasis on perceptions and their potential bias, since these may not actually materialize (Feldman & Bolino, 2000).

An interesting area of research, that deserves further investigation, is that related to special social/professional groups, to which, general entrepreneurship findings may not directly apply. Refer, for example, to Lee & Wong (2004) that, studying a group of academic researchers and R&D professionals, find that certain career anchors (Schein, 1978) that are typically associated with EI and behavior, cannot be found related with the EI of these specific individuals.

Also, role models and gender have been the subject of particular interest in the entrepreneurial career (e.g., Scherer et al., 1989, Scherer et al., 1990, respectively). Their rationale and some of its findings will be, later, presented in section 2.2.5 - *Other Personal & Learning Experiences*, of this review.

The following examples provide a brief overview of other popular research topics, within the choice and entry stages of the entrepreneurial career perspective: Matthews & Moser (1996), investigating both role models and gender effects on ownership interest; Schmitt-Rodermund (2004) on the effects of personality traits, family business background and parenting style on entrepreneurial competence and entrepreneurial interests (viewed as antecedents of career choice); Abebe et al. (2014), regarding minorities choice of an entrepreneurial career, investigate social factors (e.g., perceived social status and perceived social support) as predictors of entrepreneurial career intentions; Ilouga et al. (2014) linking volitional self-regulation skills (e.g., higher self-determination, self-motivation, and resistance to uncertainty about the future) with entrepreneurial intent; St-Jean & Mathieu (2015), with mentoring and career satisfaction, and Tolentino et al. (2014), with career adaptability, all also linked with EI;

Thébaud (2016) with woman's prior employment decisions and self-employment choices; and, finally, Sorgner & Fritsch (2017) on the relationship between previous occupations characteristics and the decision of employees to start their own business.

### *Career Progression from Entry to Exit*

Within the dimension of career progression, the topics have varied between theoretical discussions regarding the appropriate dimension and perspectives of analysis (*e.g.*, Katz, 1994) to entrepreneurial careers characteristics, dynamics and patterns of progression (*e.g.*, House 1974; Katz 1994) and career outcomes (*e.g.*, Feldman & Bolino, 2000). With special emphasis on entrepreneurial career exit, it is worth mentioning Ronstadt's (1986) study, which provides a very good overview on: the different nature of business ventures exits and entrepreneurial career exits; the most common reasons for new business ventures termination; the different typologies of entrepreneurial career length and their association of starting age; and terms of exit modes, and how these vary in their prevalence according to (entrepreneurial) career lengths.

Also relevant, for distinguishing the career perspective from the personological and the behavioral perspectives of entrepreneurship, Ronstadt (1986) reports that 26% of all ex-entrepreneurs reported that their business ventures continued operating after their career exit.

A final note to refer that a good source of career exit related literature comes from the Family Business Research area, namely, regarding the subject of family business succession (*e.g.*, Brockhaus, 2004; Churchill & Hatten, 1987).

## **2.1.2 – Entrepreneurship Outcomes**

This section presents the most meaningful outcomes attributed to EB, according to the entrepreneurship literature. These outcomes provide legitimacy for studying entrepreneurship by portraying, this phenomenon, as having a real practical impact, for all of us. Regarding the present section content, the reader should note that entrepreneurial process outcomes are not included here. Although some may consider these to belong to the entrepreneurship outcome literature (*e.g.*, Per Davidsson & Gordon, 2011). Here the focus is only on the 'after process'

outcomes of entrepreneurship. For a brief literature review on the former subtopic, please refer to section 2.1.1, of this thesis.

Entrepreneurship is, mostly, proposed to generate positive effects on individuals, organizations and economies & societies (*cf.* Schumpeter, 1934; Palmer 1971; Kirzner, 1973; Leff, 1979; Shapero, 1985; Plaschka & Welsch, 1990; Wennekers & Thurik, 1999; Audretsch, Carree, & Thurik, 2001; Davidsson & Wiklund, 2001; van Praag & Versloot, 2007; Baptista & Thurik, 2007; Ireland & Webb 2007; Bayarçelik & Özşahin, 2014; Audretsch et al., 2015; Coad et al., 2016).

However, it can also generate negative results, at any of these different levels (*cf.* Baumol, 1990; Singh et al., 2007; Desai & Acs, 2007; Sobel, 2008; Shane, 2009; Coyne et al., 2010; Josefy et al., 2017; Failla et al., 2017). Nevertheless, given the relevance and scope of the potential positive outcomes - as it may be confirmed next - significant attention has been given to entrepreneurship, not only by researchers but also by policymakers and educators, that have been trying to promote an entrepreneurial mindset and productive entrepreneurial activity.

Thus, after presenting some of the existing definitional and methodological issues, regarding entrepreneurship outcomes, the most salient references of this literature will be presented. These will be divided according to their most relevant outcome level, namely: research regarding outcomes at the individual-, firm- or societal-level and always trying to display both the positive and the negative outcomes.

### *Definitions and Methodological Issues*

Regarding entrepreneurship outcomes, it is again imperative that one is explicit about which type of entrepreneurial phenomenon is being defined as the causal factor of such outcomes, and this choice is often linked with the need/ease of operationalizing it (Wennekers & Thurik, 1999). According to Shepherd (2003, p. 319), in an individual/psychological perspective, self-employed “have been the primary focus of the entrepreneurship literature”. At the firm level, entrepreneurship has been mainly measured analyzing past entrepreneurial activity and self-reports of entrepreneurial strategic posture, mostly measured by corporate entrepreneurship (CE) and entrepreneurial orientation (EO) measures (*cf.* Wales, 2016; Kuratko, 2017). In a macro perspective, Wennekers & Thurik (1999, p. 49) consider that “the number of self-

employed is the only yardstick of entrepreneurship because statistical information is available only along the ownership dimension. This can be misleading”. These authors also cite other, more recent, approximations to the level of entrepreneurial activity in an economy, such as the employment share of surviving young firms (Audretsch, 1995) or the share of small firms (*cf.* Audretsch & Thurik, 1997; Carree & Thurik, 1998). This diversity should not come as a surprise, given that entrepreneurial activity may lead to relevant outcomes at different levels of aggregation. As such, entrepreneurship researchers also need to define the phenomena at the appropriate unit of analysis.

### ***Individual Level Outcomes***

A focus on the entrepreneur, rather than the firm or the population, often requires different theoretical frameworks, such as those from Psychology, such as the cognitive, the emotional or the self-regulatory (Ucbasaran et al. 2013). In general terms, at the individual level, entrepreneurship (*i.e.* self-employment) can be said to be beneficial, as a career choice, when it results in an improved satisfaction of an individual’s needs and wants (Maslow, 1943). In the case of a successful new business venture, if these needs and wants include: social recognition, fulfilling a role in society, greater independence & autonomy, learning (*e.g.*, Shane et al., 1991), a better job-person match (*e.g.*, Failla et al., 2017), job satisfaction, a better work-life balance (*e.g.*, Binder & Coad, 2013), greater self-realization, economic survival and personal wealth (*e.g.*, Wenekers & Thurik, 1999), this career option may be expected to have a positive impact on the individual entrepreneur’s working life. However, these expected outcomes are not universally true, for every entrepreneur and context, and some variables are proposed to influence the probability of their occurrence.

For example, Stephan (2018) studies the mental health, well-being, family, health and leisure time satisfaction of opportunity entrepreneurs *versus* necessity entrepreneurs. Stephan (2018) also studies the relevance of antecedents of mental health and well-being (MWB) on work characteristics, personal characteristics, human capital, firm and financial characteristics, social resources and stressors, and context characteristics. Another interesting example may be found in Binder & Coad (2013) which compare the life-satisfaction of entrepreneurs with that of organizational employees.

Regarding the negative entrepreneurial outcomes, an individual level analysis becomes especially beneficial, since this level of analysis may include a post firm existence period, *i.e.* negative effects that exceed the life of the firm, but which are relevant for their stakeholders (*cf.* Shepherd, 2003). Although having received less attention in entrepreneurship literature, this research may unveil the real scope and magnitude of the potential negative impacts of entrepreneurship for potential and current entrepreneurs (Singh et al., 2007). Examples related with surviving entrepreneurs can be found in: Binder & Coad (2013) regarding average earnings and work hours, Binder & Coad (2013) and Stephan (2018) regarding leisure time and Biggs (2002) and Failla et al. (2017) regarding job and wage security.

Moreover, a significant proportion of new ventures actually fails (Shane & Venkataraman, 2000; Ucbasaran et al. 2013) - *i.e.* a fall in revenues and/or a rise in expenses that lead the firm to become insolvent and unable to attract new funding, stopping its operations under the current ownership and management (Shepherd, 2003). Although the virtues of failure, as a source of learning, have been widely spread, “the aftermath of failure is often fraught with psychological, social, and financial turmoil” (Ucbasaran et al. 2013, p. 163). This becomes quite intuitive when one thinks about what a firm may represent (*e.g.*, Shepherd, 2003; Singh et al., 2007; Ucbasaran et al., 2013).

Furthermore, Ucbasaran et al. (2013, p. 181) suggest, it is likely that there are significant and relevant interrelationships among these costs, which may help understand some decisions that could not be fully understood in light of one single type of cost - *e.g.*, “delaying business failure can help balance the resulting financial and psychological (*i.e.*, emotional) costs”.

Learning from failure appears to be related with the ability to process this event in a productive way and, here, the concept of coping has gained some relevance. The literature regarding involuntary job loss may be a good starting point, to explore the dynamic process of coping with business failure. (Singh et al., 2007)

Finally, exiting an entrepreneurial career may have costs that go beyond its direct consequences and impact the individual’s value as an organizational worker. For example, Failla et al. (2017, pp. 162-163) find that “entrepreneurship lowers individuals’ labor market value, which in turn hinders exit from entrepreneurship and introduces frictions at the point of re-entry in the wage sector”. Although, this will probably depend on the particular industries and the formal education of the ex-entrepreneur.

### ***Firm Level Outcomes***

At the firm level, EB has been frequently addressed as corporate entrepreneurship (CE), the process of creating new business within established firms to improve organizational profitability and enhance a company's competitive position or the strategic renewal of existing business (Zahra, 1991). According to Kuratko (2017), knowledge on CE has evolved over the last 45 years, starting slowly and gaining increased importance through the decades, but research regarding its outcomes is still insufficient. To see a detailed account and reflection for the evolution of the field until 1999, refer to Zahra et al. (1999).

As a summary of what outcomes can be attributed to CE, these can be observed in product, process and administrative innovations and entry of new markets, all proposed to facilitate growth, performance, strategic renewal and value creation for customers and shareholders (Wennekers & Thurik, 1999; Ireland & Webb, 2007; Coad et al., 2016). According to Kuratko (2017), CE may be manifested through corporate venturing (internal and/or external) - where a new business is created - and strategic entrepreneurship - where opportunity- and advantage-seeking behaviors are included (e.g., strategy renewal, sustained regeneration, domain redefinition, organizational rejuvenation, and business model reconstruction).

In empirical research, this concept has been measured, to a great extent, using a dispositional type of CE proxy, designated *Entrepreneurial Orientation* (EO: Miller, 1983) and also, to a lesser extent, using other CE measures (cf. Guth & Ginsberg, 1990; Zahra, 1991; Sharma & Chrisman, 2007). The latter more commonly based on the firm's past behavior (usually regarding its activities in the last three or five years). Other concepts have also been used, but to a lesser extent than EO and CE variables, such as: *Entrepreneurial Climate* (Bayarçelik & Özşahin, 2014), *Entrepreneurial Strategy Making* (Dess et al., 1997) and *Entrepreneurial Intensity* (Morris & Sexton, 1996).

Regarding the more popular EO, it has been conceptualized as both a unidimensional and multidimensional construct (Lomberg et al. 2017) and the number of salient dimensions has also varied. According to Miller's (1983) conceptualization: innovativeness, risk-taking, and proactiveness were the adequate dimensions, while Lumpkin and Dess (1996) suggested two additional dimensions: competitive aggressiveness and autonomy (Rauch et al., 2009). However, according to Wales et al. (2013), the latter much less frequently used. Despite the high intercorrelations found between EO dimensions, recently, some scholars have suggested that research should analyze the effects of each dimension, independently, and, even, in possible

combinations of two (*e.g.*, Lumpkin & Dess, 2001) since they “may relate differently to firm performance” (Rauch et al. 2009, p. 764).

Regarding other CE proxies - with greater emphasis on the firm’s past behavior - these have been measured, for example, with the following dimensions or variables: perceptions of management support for CE (attitudes and resource availability), work discretion, rewards/reinforcements, time-availability and organizational boundaries (Hornsby et al., 2002; Kuratko et al., 2014); measures related with the percentage of new businesses, products and markets accounted in the firm’s total sales and the number of joint ventures and new SIC added to the firm’s business (Zahra, 1991); and the number of high-risk projects (with expected high rates of return), the commitment to R&D, technological leadership and innovation and CE strategy compatibility (Zahra & Covin, 1995).

At the firm level, entrepreneurial attitudes and activities have been proposed to have positive performance implications for the firm and the empirical research literature, appears to confirm such relationship, with both EO (*e.g.*, Wiklund & Shepherd, 2003) and CE (*e.g.*, Zahra & Covin, 1995). Besides innovation-type of performance outcomes, such as measures of new products, methods of production and markets and adoption of new technology (Wiklund & Shepherd, 2003; Boso et al., 2013), there is a high diversity of more general performance indicators linked to CE, both nonfinancial and financial.

According to a meta-analysis exploring the magnitude of the EO-performance, by Rauch et al. (2009, p. 761), which analyzed a combined sample of 14,259 companies, “the correlation of EO with performance is moderately large ( $r = .242$ )”. Moreover, although internal and environmental moderators could be identified, their results indicated that EO has a “similar relationships with perceived financial performance, perceived nonfinancial indicators of performance, and archival performance” (Rauch et al. 2009, p. 780). Still, there may be a time lag effect, in the translation of entrepreneurial attitudes and activities to performance, which would make this correlation a conservative estimate (*cf.* Zahra & Covin, 1995; Wiklund, 1999).

The rationale behind this CE – performance relationship, is that risk-taking, innovation, and aggressive competition will improve the identification and pursuit of lucrative opportunities - making them more likely to focus their attention and effort on opportunities (Wiklund & Shepherd 2003) - and are the basis of greater competitiveness (Zahra & Covin, 1995). Yet there are some conditions (moderators) where certain entrepreneurial postures, to strategy making,

may be more beneficial than others (*e.g.*, Lumpkin & Dess 1996, García-Quevedo et al., 2014; Engelen et al., 2015; Coad et al., 2016; Lomberg et al., 2017) and, in some cases, even detract from performance (Hart, 1992; Kuratko, 2017) and there is already relevant research regarding the management of this potential downside (*e.g.*, Covin & Miles, 1999; Shepherd et al., 2009; Josefy, 2017).

### ***Societal Level Outcomes***

At the societal level, relevant entrepreneurship outcomes are measured comparing economies start-up rates (*e.g.*, Audretsch & Fritsch, 2002; Acs & Armington, 2004; Audretsch & Keilbach, 2005) or by measuring the outcomes from entrepreneurial and conservative firms, within the same economy (*cf.* Carree & Thurik, 2010). In either case, usually, new or smaller firms are taken as evidence of entrepreneurial activity and large or mature incumbent enterprises, as evidence of conservative management. Young firms are considered the product of EB and, while not fully established, the entrepreneurial processes may be said to be ongoing (*cf.* venture emergence; Dimov, 2010); Size and, more specifically, being an SME is usually recognized as being more dynamic and responsive to environmental changes, particularly in high-tech industries (Biggs, 2002). Alternatively, the level of entrepreneurial activity has been measured using inputs into the innovative process, such as expenditures on formal R&D and outputs of the innovative process, such as patented inventions (*cf.* Acs & Audretsch, 2005). All these attributing to EB, a role that traditional growth models would credit to capital accumulation and where technological progress would be considered an exogenous factor (Carree & Thurik, 2010). Relative to the limitations of research using these measures of entrepreneurial activity, the reader may refer, for example, to Biggs (2002), Acs & Audretsch (2005) and Haltiwanger et al. (2013).

Taken together, the results from all this literature, dealing with the societal level benefits of entrepreneurship, have frequently suggested the following outcomes: competitiveness (Porter, 1990; Wennekers & Thurik, 1999), increases in productivity (McGrath, 1999), economic growth (McGrath, 1999; Wennekers & Thurik, 1999; Landström & Lohrke, 2010; Carree & Thurik, 2010), job creation and employment (McGrath, 1999; Ireland & Webb, 2007; Shane & Venkataraman, 2000; Lindquist et al., 2015), innovation, technological progress and the revitalization of economies (Wennekers & Thurik, 1999; Ireland & Webb, 2007; Lindquist et al., 2015), shaping of global cultures (Wennekers & Thurik, 1999; Ireland & Webb, 2007),

disturber of an institutional equilibrium by reforming or offsetting inefficient institutions improving welfare (Douhan & Henrekson, 2010), and solutions for practical problems, raised living standards and economic development (Schumpeter, 1934; McGrath, 1999; McKenzie et al., 2007; Terjesen, Acs, & Audretsch, 2010; Shane & Venkataraman, 2000). For an extensive references source, for the economically relevant outcomes of entrepreneurship, the reader may also refer to several special issues of entrepreneurship journals (*cf.* David Audretsch & Peña-Legazkue, 2012). This link has been proposed and tested, not only at the national level but also at the regional level (*e.g.*, Audretsch & Fritsch, 2002; Acs & Armington, 2004; Audretsch & Keilbach, 2005).

According to McGrath (1999, p. 13), “scholars often regard entrepreneurship as quite a good thing”, however, the relationship with economically relevant outcomes may not be linear (U- and S-shaped relationships, have been suggested) neither be immediately observable (Zahra & Covin, 1995; Baptista & Thurik, 2007) and it may actually work both ways – *i.e.* “entrepreneurship may impact economic development, which in turn may impact entrepreneurship“ (Terjesen et al. 2010, pp. 436-437). Despite this generally positive background, in some circumstances, successful EB at the individual, or at firm levels, may be unproductive, or even detrimental, to the economy as a whole (Baumol, 1990; Per Davidsson & Wiklund, 2001; Sobel, 2008; Coyne et al., 2010). On the contrary, in the case of entrepreneurial failure, if the resulting learning can later be capitalized with increased economic output and market efficiency, by the entrepreneur and/or its competitors, the net economic/societal levels outcomes may still be positive (Carree & Thurik, 2010; Josefy, 2017).

A central goal of public policy, across economies, is the promotion of growth and employment opportunities (Carree & Thurik, 2010). Recent initiatives, from the European Commission (EC) and from the Portuguese Government, attest for the topic’s present relevance. The fact that the EC states as one of its objectives to *promote youth employment and entrepreneurship* is already self-evident, of the importance the EC representatives attribute to it, and so is the Portuguese four-year national strategy for entrepreneurship named *Startup Portugal*<sup>2</sup>, from 2016.

The link between entrepreneurship and economic growth and development has been attributed to the newness that start-ups and innovations bring to the markets, the increased competition (Wennekers & Thurik, 1999) and the creative destruction (Schumpeter, 1942). More

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<sup>2</sup> Source: <http://www.portugal.gov.pt/pt/ministerios/meco/docs/20160606-mecon-startup-portugal.aspx> (Accessed in 14-June-2016).

specifically, the association of new and young firms with these relevant outcomes seems to be especially, and increasingly, appropriate in this new economy. An economy where: products and technologies become obsolete much faster than before (Acs & Audretsch, 2005), globalization and deregulation result in higher levels of uncertainty and appear to push the industry structures toward lesser concentration and decentralization, and where the comparative advantage of modern economies is shifting toward knowledge-based economic activity (Carree & Thurik, 2010). According to Carree & Thurik (2010, p. 557), “entrepreneurial activity, measured in terms of firm size and age, is positively related to growth”. Finally, the fact that R&D expenditures and outputs are also used as proxies for EB, may be attributed to the fact that “the outcome of the investments is uncertain” (Carree & Thurik, 2010, p. 573).

Recognizing a positive outcome bias, with the literature mostly researching the benefits of entrepreneurship, and the lack of knowledge on the actual strength of the relationship with these benefits, van Praag & Versloot (2007) studied the economic value of entrepreneurs in comparison to non-entrepreneurs. In this study, they find that: on one hand, relative to their size, these create more jobs than their non-entrepreneurial firms, even when one accounts for their higher firm resolution; on the other hand, these jobs have a disadvantage regarding their stability/security, due to a higher firm dissolution rate, and are of lower quality, on average, since they pay lower wages (except in the case of some superstars) and offer fewer benefits and hire employees with inferior human capital levels. Some authors have proposed explanations for why these less positive outcomes may not impede wanting to work for an entrepreneurial firm and why these may actually be undervalued (*e.g.*, van Praag & Versloot, 2007; Åstebro & Chen, 2014; Sorgner et al., 2017).

Regarding the potential negative side of EB, Baumol (1990, p. 898) proposed that, although typically associated with societal level benefits, “the entrepreneur is fundamentally engaged in activity aimed at increasing wealth, power and prestige”. Societal level benefits of EB are influenced by the existing institutional setup which defines “the rules of the game” or “the social structure of payoffs” (Baumol 1990). Therefore, the author concludes, the problem of lacking (productive) entrepreneurial activity may reside in that the entrepreneurial talent is being allocated into unproductive or even destructive entrepreneurial activities, rather than residing in the lack of such talent. Empirically support for this proposition can be found in Sobel (2008) and Bosma et al. (2018).

Interestingly, another relevant societal level outcome of EB may be institutional change itself, since “institutions become targets for entrepreneurial innovativeness because changing their workings is a means of earning or enhancing entrepreneurial profit” (Douhan & Henrekson 2010, p. 630). This institutional entrepreneurship disturbs the institutional equilibrium and has, also, the potential to be welfare-improving or welfare-destructive (Douhan & Henrekson, 2010).

## **2.2 - Entrepreneurial Intentions**

### **2.2.1 - Introduction and Definitions**

According to Bird (1988, pp. 442-443), “intentionality is a state of mind directing a person’s attention (and therefore experience and action) toward a specific object (goal) or a path in order to achieve something (means)” and “entrepreneurial intentions are aimed at either creating a new venture or creating new values in existing ventures” which are the basis for the organizations initial form, direction and subsequent outcomes, such as survival, development, growth and change. Cha & Bae (2010, p. 31) conceptualize it as “the obsessive motivation and internal driving forces that catalyzes the entrepreneurial journey as entrepreneurial intent: entrepreneurial mindset that can be defined as an aroused state of entrepreneurial motivation to initiate, drive and sustain the entrepreneurial journey until the opportunity is completely transformed to real business”. According to Ajzen (1991) “intentions are assumed to capture the motivational factors that influence a behavior; they are indicators of how hard people are willing to try, in order to perform the behavior in question” and are proposed as an immediate antecedent of behavior”. For a brief summary on the theoretical basis of the intentions constructs, read, for example, Gollwitzer (1993).

Epistemologically, intentions research is coherent, with an interpretivist approach, highlighting “human intentionality as a key determinant of behavior, in addition to other internal and external causal factors”. This conflicts with the functionalist paradigm (dominant in entrepreneurship), often favoring deterministic causes alone. Thus, entrepreneurship is “understood to be a chosen course of action toward the subjective ends of the entrepreneur” (Packard 2017, pp. 536-537).

EI research may be said to be included in a wider category of research named entrepreneurial cognition, a broader concept that includes many other different topics (Liñán & Rodríguez-Cohard, 2008). Grégoire et al. (2011, p. 1445) based on the literature on cognitive research from the social sciences in general, social psychology and the management sciences, propose three key features to characterize this research area: “(1) Mentalism, *i.e.* a focus on studying the mental representations of the self, of others, of events and contexts, and of other mental states and constructs. (2) A process orientation, *i.e.* a concern for studying the development, transformation, and use of these mental representations and constructs. (3) The operation of cognitive dynamics across different levels of analysis”. According to Baron (2004, p. 221), a cognitive approach is deemed beneficial in the investigation of the entrepreneurial process and to answer such important research questions as “(1) Why do some persons but not others choose to become entrepreneurs? (2) Why do some persons but not others recognize opportunities for new products or services that can be profitably exploited? (3) Why are some entrepreneurs so much more successful than others?”. Also, besides the potential benefit for researchers, Baron (2004) proposes that it may be beneficial for practitioners and educators wanting to assist entrepreneurs to create new and successful ventures.

Apparently, not only single behaviors but also goal achievement may be (and have been) predicted by intentions frameworks. In a meta-analysis of theory of reasoned action (TRA), Sheppard et al. (1988) finds that the model offers inferior results when predicting goals, rather than single behaviors, which were the initially proposed to be the adequate context for the model’s application, according to their proponents (Ajzen and Fishbein, 1975, 1980b; Fishbein 1980). In this particular context, some of the most important differences between goals and behaviors are that: the former may be comprised of innumerable different behaviors, there may be more than one way to achieve the same goal, the goal achievement may be outside the full control of the individual, and it may be impossible for him/her to have all of the necessary information to form a completely confident intention (Sheppard et al., 1988). As it can be easily recognized, conceptually, the creation of a new business venture falls into the goal-type of intentions. However, when there is a component outside the volition control of the individual, goal achievement expectation/estimation are posited to be better predictors of goal achievement than ‘pure goal intentions’ (*i.e.*, ‘It is likely that...’ *versus* ‘I intend to...’) (Sheppard et al., 1988).

It is also, “common to distinguish between two types of intentions: choice intentions and intentions to perform a given behavior (...) [and] a person's employment status choice

intentions can be conceived as the choice between pursuing an entrepreneurial career in life or a career path as an employee” (Kolvereid 1996, p. 26).

Career choice literature distinguishes a stage prior to intent, interest (Lent et al., 1994), leading Krueger (2009, p. 69) to ask: “where ‘intent’ really begins?”. Lent and Brown (2006, p. 17) define interests, as referring to “people’s pattern of likes, dislikes, and indifferences regarding different activities”. In the entrepreneurship context, entrepreneurial interests have been measured, for example, by asking subjects to evaluate statements such as ‘I like to read business journals’ (1= not true; 5= true) (Schmitt-Rodermund, 2004). However, interests, wishes and desires may be in conflict or even contradict each other, given limited time or resources, and, while these are not resolved, no actions are expected to be taken in their direction. Intentions, as an internal resolution, resolve this internal conflict and commit the individual to a coherent course of action and are found to be more correlated with the intended behavior, than attitudes (Gollwitzer, 1993).

Other constructs that are conceptually close to EI, and yet believed to be anterior to behavior/goal intention are: *attitudes* (Ajzen, 2001; Yang, 2013) *entrepreneurial potential* (Krueger & Brazeal, 1994), *individual entrepreneurial orientation* (iEO; Krauss et al., 2005) and *propensity for entrepreneurship* (Oakey et al., 2002; Prieto et al., 2010; Ribeiro et al., 2013; Belás et al., 2017).

Regarding EI relative position, in time, with opportunity identification, Engle et al. (2010 p. 40) report that “Gartner and Carter (2005) examined the question of which came first, the entrepreneurial idea or the desire, and found 44 percent of the entrepreneurs first had the desire to start a business, 34 percent first had the business idea or opportunity, and 21.5 percent felt both came at the same time”. Thus, it is not unlikely to think that some of those desiring to start a business had already intentions to act on such desire when such opportunities appeared.

Given that intentions may be developed long before a new venture opportunity is even identified (Shook et al., 2003) other cognitive constructs have been proposed to mediate the intentions-behavior link and to lay closer to behavior. Examples of such constructs are implementation intentions (Gollwitzer 1999) and entrepreneurial commitment (Fayolle & Liñán 2014). Gollwitzer (1999, p. 493) views implementation intentions as committing the individual to “specific plans as to when, where and how the latter are to be achieved (...) delegate[ing] the control of goal-directed responses to anticipated situational cues, which (when actually

encountered) elicit these responses automatically”. Entrepreneurial commitment, defined as “the moment when the individual starts devoting most of his or her time, energy, and financial, intellectual, relational and emotional resources to his or her project” (Fayolle & Liñán 2014, p. 665).

In terms of its operationalization, EI have been measured in many different ways (Bird, 2015) and it is advisable that researchers confirm that its operationalization actually matches what it is supposed to measure (*i.e.* face validity; Hardesty & Bearden, 2004). Bird (2015, p. 160), from her review of the literature on EI measurement, concludes that “while each of these 69 studies purportedly measured intention as a dependent measure, the measures were often muddled, unique, and sometimes not available to the reader to determine what exactly they measured”.

According to Bae et al. (2014) (and also Bird 2015), two EI measures, in particular, are commonly used, namely, Kolvereid (1996a, 1996b) and Liñán and Chen’s (2006, 2009). For a summary of these and other measures of entrepreneurial intention refer, for example, to Thompson (2009, p. 673, Table 1) and Bolton & Lane (2012, pp. 224-225, Table III).

Also popular is a 6-Item scale developed by Thompson (2009, p. 680, Table 2), named *Individual Entrepreneurial Intent Scale*, that questions respondents how true or untrue are the following statements for them: “1. Intend to set up a company in the future; 2. Never search for business start-up opportunities (R); 3. Are saving money to start a business; 4. Do not read books on how to set up a firm (R); 5 Have no plans to launch your own business (R); 6. Spend time learning about starting a firm”, on a scale from ‘1’ very untrue to ‘6’very true. Contrarily to other EI measures who mix intentions with their cognitive predecessors, this measure includes some items that already relate to nascent behavior. This, although it may be seen as a confirmation that those intentions really exist, it conceptually ventures into the very actions it intends to predict.

On the use of students’ samples and the validity and foundations of their EI, some particularities may exist. For example, Farashah (2015, p. 455) write: “in order to develop entrepreneurship literature further, researchers need to study real entrepreneurs at the aggregate level (Fernández et al. 2009). It is necessary to sample actors who are developing and shaping their entrepreneurial intention in a real setting, rather than students who prioritize interests over environmental contingencies (Rotefoss and Kolvereid 2005; McGee et al. 2009)”. Frazier & Niehm (2006, p. 3) suggest that time-limited conceptualizations of EI may not be appropriate

for college students samples, citing others, writing that “long-term intentions seem to be a more appropriate measure of entrepreneurial intention among college students, as short term intent is indicative of imminent start-up activities, which is likely to be relatively rare in college students”.

Regarding its conceptual importance, as a research topic, EI is concerned with finding an answer to one of the key questions of entrepreneurship research: ‘*Why do certain individuals start firms when others, under similar conditions, do not?*’ (cf. Gartner, 1989). More than a topic this is a distinct approach to this question, as a less deterministic and descriptive approach is taken, to favor the analysis of the cognitive processes associated with the behavior – processes that are based on perceptions that vary across both individuals and situations, that can be subject to change and self-determination – rather than just recognizing the personality traits most associated with the behavior (cf. Bird, 1988; Krueger & Brazeal, 1994).

Entrepreneurs are believed to be able to enhance their cognitive resources through deliberate practice, with impact, for example, on their capabilities for identification, evaluation, and exploitation opportunities (Baron & Henry, 2010). Katz & Gartner (1988) state that they can be a relevant form to identify emerging organizations, which will only be apparent later when some choices have already been made. Katz (1992, p. 29) proposes a psychosocial cognitive model of employment status choice, writing: “existing models treat the individual decision process largely in ‘black box’ terms, providing little insight on how family history or social forces shape the individual decision process [and] disregard[ing] the individual”. Investigating the particularly important role of intentions as mediators of a long-researched attitude-behavior relationship and emphasizing the mediating role of intentions, in the attitudes-behavior relationship, Bagozzi et al. (1989) state that for attitudes to cause behavior, one must first have the intention of performing that behavior.

Finally, in terms of its popularity and scope, according to Liñán & Fayolle's (2015) systematic literature review, EI is a rapidly evolving field, comprised of many themes that can be grouped into six different categories, namely: core EI model, personal-level variables, entrepreneurship education, context and institutions, entrepreneurial process and new research areas.

### **2.2.2 - The Intentions-Behavior Link**

Summarizing the relevance of the intention-behavior link, Sommer (2011) states that behavior is governed either by intentions or by automatic processes. Although behavior can be unconscious and unintended (Krueger 2009), a new business venture is not likely to be the product of such type of behaviors. Often, extended searching, planning and marshaling of resources (*cf.* Mcgee et al., 2009) are needed to create a new business venture, and these do not just happen, by chance. In this same line of reasoning, Krueger et al. (2000, p. 411) write: “in the psychological literature, intentions have proven the best predictor of planned behavior, particularly when that behavior is rare, hard to observe, or involves unpredictable time lags (...) thus, entrepreneurship is exactly the type of planned behavior (Bird, 1988; Katz and Gartner, 1988) for which intention models are ideally suited”.

In a meta-analytic review of TPB (Ajzen, 1991), Armitage & Conner (2001) found that intentions only explained 27% of the variance in behavior. According to Sheeran & Conner (2017), reviews on health-related actions typically report that only half of the intended behaviors are realized. Sheeran & Conner (2017) suggest that two factors have been mainly cited as influencing the likelihood of intentions leading to actions, namely, intention strength and the basis of intention. Relative to intention strength, Sheeran & Conner (2017, pp. 3-4) write that “intention strength refers to properties beyond the intention’s direction (intend *versus* do not intend) and intensity (how much one intends to act) that influence rates of intention realization. The most extensively studied property of intention strength is temporal stability (...) and accumulated evidence indicates that intention stability is a powerful moderator of the intention-behavior relation”.

Kautonen et al. (2015), discussing the variability of Armitage & Conner (2001) results, suggest the need for entrepreneurship specific empirical evidence to validate intention as a predictor of start-up behavior. Adam & Fayolle (2016, p. 81) also state that “the entrepreneurial intention-behavior link still has a lot to reveal, leaving a gap in the literature”. This need is most apparent when Lent & Brown (2006) raise some concerns, on intention’s potential for behavior predictability, in contexts where goals are not clearly stated, are not set proximally to the intended behavior, or refer to actions that are not subject to personal control.

Regarding studies that focused on testing the EI – EB link, empirically, Schlaegel & Koenig (2014) cited four studies with several methodological idiosyncrasies that may justify some of

the results variability, namely: Hulsink & Rauch (2010), reported 39.1% of explained variance and a std. loading of .443, but their measurement of EB was based on the number of nascent entrepreneurial activities students add engaged after one year; Kolvereid & Isaksen (2006), reported 67.1% of explained variance and a std. loading of .62, but EI was measured as the intention to become self-employed within one year and the longitudinal analysis conducted for a 19-month time window; Kautonen, van Gelderen, & Tornikoski (2013) reported 39% of explained variance and a std. loading of .168, but measured EB for a 3-year period and as an ordinal variable (measuring engagement levels in the entrepreneurial process); Kautonen et al. (2015), reported 31% of explained variance and a std. loading of .49, but EI was measured as the intention to engage in activities aimed at starting a business in the next 12 months and measured EB with a 3-item scale based on self-reported effort, time, and money invested in business start-up activities and, also, with the number of nascent activities.

More recently, Liñán & Rodríguez-Cohard (2015), reported 12,8% of explained variance and a std. loading of .357 - but measured EB as equal to a status of self-employment, three years later - and Delanoë-Gueguen & Liñán (2018) reported 29,9% of explained variance and a std. loading of .247.

Given that intent may form well before the actual intended goal or behavior is achieved or takes place (Shook et al., 2003) and high levels of EI may be reported by individuals with a wide range of career decision making decidedness (Hirschi, 2013), intentions stability is key, for the validity and interest of intentions cognitive models, to predict EB (*cf.* Ajzen, 1991; Sheeran & Conner, 2017) and for EI models in particular (*cf.* Heuer et al., 2009; Liñán & Rodríguez-Cohard, 2008). For example, Heuer et al. (2009) suggest that the evolution from intention to behavior is mediated, mainly, by two factors: the temporal stability of intentions (*i.e.* persistence of intentions in memory) and the degree of intention formation (*i.e.* high *versus* low intensity).

The possibility that EI do change does not appear to be unfounded, since these “may change as a result of new information or unforeseen obstacles to action” (Sheeran et al. 1999, p. 725) and variables measurement reliability decreases with time (Liñán & Rodríguez-Cohard, 2008). Yet, as Hirschi (2013, p. 6) writes, “theoretically, we can assume that career intentions that correspond to advanced statuses of [career decision making] and vocational identity are more likely to be stable over time because they are more likely to be self-congruent, realistic, and sustained and motivated by high choice commitment”.

However, regarding new business creation, “very few efforts have yet been made to analyze the temporal progression of intention” (Liñán & Rodríguez-Cohard 2015, p. 78) and future research, on this subject, has been called for already by many (*e.g.*, Heuer et al., 2009; Liñán & Fayolle, 2015; Walter & Heinrichs, 2015). Empirically, Matthews & Moser (1996, p. 33) found a decrease of 14% in the number of individuals expressing a strong interest in small business ownership, 5 years after the initial study. With EI measures, Liñán & Rodríguez-Cohard (2008), report TPB constructs item-structure stability, for the general sample and for a three-year period, but identify some differences between subgroups according to the timing of their initial labor experience. However, they found a correlation coefficient of .14, which is evidence of low stability. Liñán & Rodríguez-Cohard (2015), with approximately the same sample, but a regarding EI relative stability, find that EI(T2) is not explained to a great extent by EI(T1), in a structural equations model (SEM). This despite finding a high correlation, of .623, between EI(T1) and EI(T2) item averages. In terms of absolute change, no significant change was found.

### **2.2.3 - Theories of Entrepreneurial Intentions and their Antecedents**

According to Liñán & Fayolle's (2015) systematic review of the literature on EI, one framework from social psychology and another from entrepreneurship stand out as the most relevant contributions to the theoretical foundations of EI research. These are the theory of planned behavior (TPB: Ajzen, 1991; Ajzen, 2012) and Shapero's model of the ‘entrepreneurial event’ (SEE: Shapero & Sokol, 1982). More recently, from career literature, social cognitive career theory (SCCT; Lent et al., 1994; 2000; 2002) has also been used as a theoretical basis for EI models, given its robustness across domains and contexts (Liguori et al., 2017).

A common feature of these models is the reliance on perceptual variables, rather than more objective measurable reality. This is proposed to be appropriate, given that “actions are based more on what people believe than on what is objectively true, thoughts are a potent precursor to one’s level of motivation, affective states, and actions” (Markman et al., 2002, p. 152). There is, however, a potential for problems when perceptions are far from reality. This may not be critical for intentions models but may be so for their time stability, and their predictability of actual behavior (*cf.* Ajzen, 1991; Krueger & Brazeal, 1994; Lent et al., 1994).

In this section, and after a brief description of TPB and SEE, particular emphasis and detail will be provided on SCCT, since this thesis analyses rely on a dataset built within this theoretical framework.

### ***Theory of Planned Behavior***

As an extension of the theory of reasoned action (TRA: Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) - necessary by the original model's limitations in dealing with behaviors over which people have incomplete volitional control - Ajzen's (1991; 2012) TPB states that there are three key cognitive antecedents of intentions, which are all intercorrelated: (1) personal attitude toward the behavior (PA), representing the collective value attributed to a set of expected outcomes associated with the behavior; (2) subjective norms (SN), consisting of normative beliefs (NB), *i.e.* the likelihood that important referents approve or disapprove a given behavior, weighted by the motivation to comply (MC), *i.e.* how much the respondents cared whether the referents approve or disapprove the behavior; and (3) perceived behavioral control (PBC), *i.e.* people's perception of the ease or difficulty of performing the behavior - PBC is compatible with Bandura's (1977; 1982) SE. TPB proposes this construct as an indirect antecedent of behavior, through intentions, as well as a direct antecedent, together with intentions. Krueger & Brazeal (1994) state that, although most research into behavioral intentions has focused on proximal behaviors, rather than long-term goals, TPB appears applicable to entrepreneurship.

This theory, like other cognitive models, proposes that individuals processing of available information mediates the effects of other biological and environmental factors on behavior (Ajzen 1991). TPB has been found to have a strong predictive power for many different kinds of behavior, and "39% and 27% of the variance in behavioral intention and behavior itself, respectively, can be explained using the TPB (Armitage & Conner, 2001)" (Yang 2013, p. 368). Given that entrepreneurship is a type of planned behavior, for which prior intention are thought to be required, TPB could be used to predict an individual's EI (Yang 2013). For an updated description of the theory, refer, for example, to Krueger (2009) and Ajzen (2012).

### ***Shapero's Entrepreneurial Event Model***

Contrarily to TPB, SEE (Shapero & Sokol, 1982) “recognized that there were forces that moderated the intent–behavior linkage. Complex goal-focused behaviors may require some sort of precipitating factor, whether the perceived presence of a facilitating factor or the removal of a perceived critical barrier. Interestingly, the Ajzen framework assumes that the target behavior is within one’s volitional control (no barriers or facilitators can intervene)” (Krueger 2009, p. 57). As a more entrepreneurship specific model of EI this model highlights the importance of opportunity and propensity to act, for a behavior to occur.

In sum, Shapero’s model argues that EI are dependent on perceptions of perceived desirability, “as the personal attractiveness of starting a business, including both intrapersonal and extrapersonal impacts”, perceived feasibility, as “the degree to which one feels personally capable of starting a business” and propensity to act, as the “personal disposition to act on one’s decisions, thus reflecting volitional aspects of intentions (‘I will do it’)” (Krueger et al. 2000, p. 419).

Krueger (1993b) was the first to empirically test this theory, finding significant support for its propositions and reporting that these variables explained more than half of the variance in EI and with feasibility being the most relevant. A development from the original model, termed Shapero–Krueger model (Shapero & Sokol, 1982; Krueger, 1993; Krueger & Brazeal, 1994), was also proposed that “further explored the applicability of the Shapero model to multiple settings (*i.e.*, both organizational and individual entrepreneurship) by adding insights from Ajzen’s work to Shapero’s original conception” (Krueger 2009, p. 57).

According to Krueger & Brazeal (1994), the SEE model assumes the inertia of human behavior until something disturbs that inertia. The author views credibility as a sum of both desirability and feasibility, which, together with propensity to act, account for the individual potential for entrepreneurship. As with TPB, other factors influence individual intentions indirectly, through situational perceptions of desirability and feasibility and through propensity to act (specific to Shapero’s model), but not through intentions or behavior directly (Krueger & Brazeal 1994). Comparing both TPB and SEE, Krueger et al. (2000, p. 419) write that these “are largely homologous to one another. Both contain an element conceptually associated with perceived self-efficacy (PBC in TPB and perceived feasibility in SEE) and TPB’s other two attitude measures correspond to perceived desirability, from SEE. Both Krueger et al. (2000) and

Schlaegel & Koenig (2014) are good references for the reader interested in comparing both models.

### ***Social Cognitive Career Theory***

According to Lent & Brown (2006), self-efficacy theory (Bandura 1997) and its overarching social cognitive theory (SCT: Bandura, 1986), have been very popular among researchers on career behavior since the beginning of the nineteen eighties. Following the seminal work of Miller & Dollard (1941) - where social modeling is recognized as an important learning mechanism, besides the traditional direct trial and error learning that resulted from the association between behaviors and the corresponding punishers or reinforcers (*e.g.*, Thorndike, 1898; Skinner, 1938; *cf.* Bandura, 1965) - SCT ( Bandura, 1986) expands the limits of social modeling as a learning mechanism, and proposes a novel approach to understand human motivation, thought and action. SCT proposes a triadic reciprocity model where “environmental events, personal factors, and behavior all operate as interacting determinants of each other” and “accords a central role to cognitive, vicarious, self-regulatory, and self-reflected processes” as determinants of personal psychosocial functioning (Bandura 1986, p. xi). Self-beliefs are key in this new perspective and perceived self-efficacy is paramount to SCT, as a mechanism in human agency for self-development, adaption, and change (*cf.* Bandura, 1977; 1982; 1986).

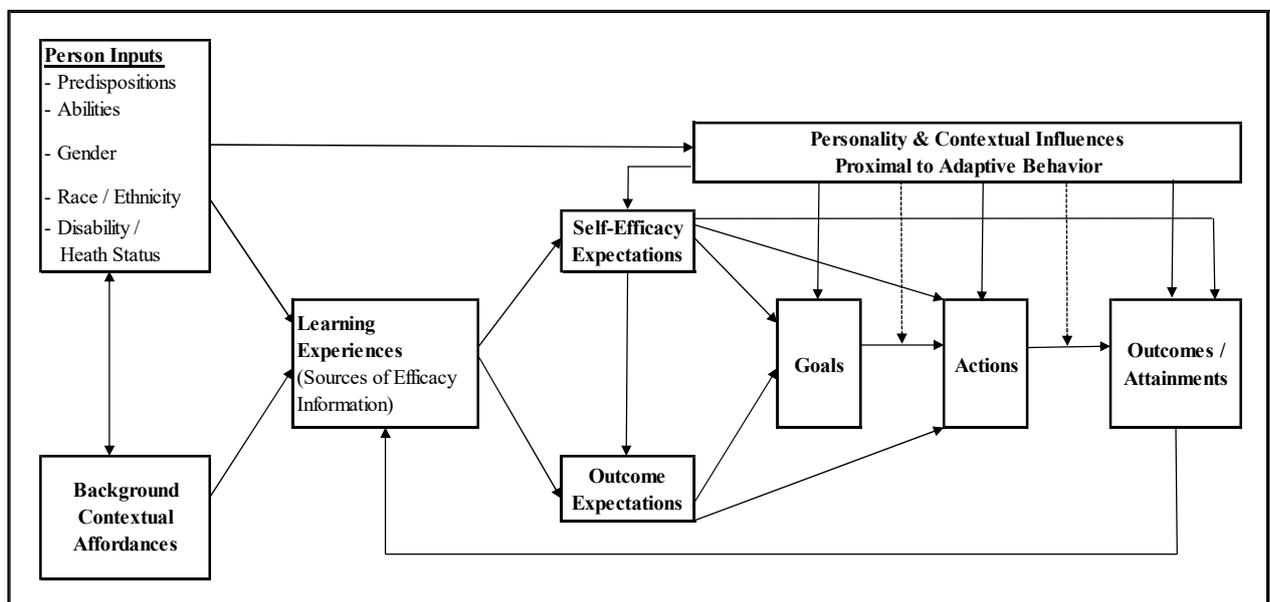
A little more than a decade after Hackett and Betz’s (1981) seminal article stated the relevance of SE for career development process, according to Lent and Brown (2006, pp. 12-13) “a sufficient research base had been accumulated on self-efficacy and related social cognitive variables to warrant development of a social cognitive career theory (SCCT: Lent, Brown, & Hackett, 1994). SCCT was intended to help organize this rapidly expanding literature and to provide specific hypotheses, anchored in general social cognitive theory, aimed at directing new inquiry”. It covers interrelated topics, such as, academic/career interest development, choice, performance and satisfaction (Lent & Brown, 2006), thus its application to entrepreneurship appears unproblematic.

Although SCCT acknowledges the usefulness of personality traits to explain certain career outcomes, it focuses on more dynamic and contextual personal aspects and environments, such as self-views and future expectations (Lent & Brown, 2006). As Lent (2005, p. 103) describes

it, “by focusing on cognitions, behavior, and other factors that, theoretically, are relatively malleable and responsive to particular situations and performance domains, SCCT offers an agenda that is complementary to that of the trait-factor perspective - namely, how people are able to change, develop, and regulate their own behavior”. Next, in Figure 2.01, the reader can see a graphic representation of the SCCT model.

As major cognitive antecedents of career interest, intentions/goals and actions, SCCT proposes career specific self-efficacy beliefs and outcome expectations (Lent et al., 1994). Self-efficacy beliefs (SE) are defined as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses” (Bandura 1986, p. 391). PBC (from TPB) has been considered the same as self-efficacy beliefs (cf. Ajzen, 1991; Ajzen, 2002; Fishbein & Cappella, 2006), although some authors disagree and find the opposite (cf. Tavousi et al., 2009).

**Figure 2.01:** The SCCT model, adapted from Lent et al. (2017, p 108).



Entrepreneurial self-efficacy beliefs (ESE) have been already related with firm performance also (Miao et al., 2017), however, results suggest that high ESE may not always benefit firms (e.g., Hmieleski & Baron, 2008; 2009). Outcome expectations (OE) are defined as the beliefs about the consequences of performing particular behaviors (Lent & Brown, 2006) and “career-related outcome expectations may map fairly neatly onto, and incorporate, traditional categories of work values (e.g., altruism, compensation, autonomy). (...) [such as] people’s beliefs about the extent to which they will be able to satisfy their primary values if they were to pursue particular career paths” (Lent 2005, p. 104).

As already pointed out, a key issue related with the predictability of capabilities, in intentions models, is that of the time lapse between intentions assessment and actual behavior. The lower the temporal gap between intentions and actual behavior the more accurate are intentions models posited to be. “This is because goals, self-efficacy, outcome expectations, and so forth are fluid percepts that are subject to change with increasing experience” (Lent & Brown 2006, p. 23). Nevertheless, Lent & Brown (2006, p. 32) also suggest that cognitive variables’ coefficients stability may improve “as skills crystallize and performance experiences mount up”.

Personal inputs, such as, predispositions, gender and race, are also emphasized by the SCCT model, as important sources of learning experiences on which cognitive determinants of career choice/intentions, both career specific SE and OE, are based upon and, also, as antecedents of particular environmental supports and barriers (Lent et al., 1994).

SCCT places an emphasis on the variables that enable individuals to influence their own career development (cognitive-person variables), as well as those in the environment, that enhance or constrain personal agency (extra-person variables) (Lent et al. 2000). These variables can be grouped into two different categories, according to their proximity to the actual career choice-making process (e.g., *Distal*: career role models and particular academic or extracurricular activities; and *Proximal*: informal career contacts or exposure to discriminatory hiring practices) (Lent et al., 2000).

Relatively to the latter, the proximal environmental supports are the favorable environmental conditions that are assumed to strengthen intentions/goals and their likelihood of promoting consistent behavior. Proximal environmental barriers are the unfavorable environmental conditions that are assumed to lessen intentions/goals and their likelihood of promoting consistent behavior. According to Lent and Brown (2006), these contextual supports and

barriers can be objective or perceived aspects of the environment and should be specific enough for one to assume that these may promote or deter career behavior and that these might be fruitful targets for intervention. They should, also, refer to the conditions that one expects to encounter while in pursuit of a given choice option (e.g., receiving social support for one's choice goal) and may be associated to process expectations (Lent et al., 2000) or OE (the latter, related with the outcomes one anticipates to receive after attaining one's choice goal).

Considering the existence of cognitive mechanisms that process/interpret the personal inputs and environmental contexts before these lead to behavior - is both theoretically sound (*cf.* SCCT: Lent et al., 1994; TPB: Ajzen, 1991; and SEE: Shapero & Sokol, 1982) and useful.

It is sound because a reasoned/planned behavior, such as entrepreneurship, is supposed to be determined by cognitive mechanisms, which capture all perceived personal and environmental effects and translate them into purposeful actions. For example, Ajzen (1991, p. 203) wrote that "if an important factor is missing in the theory being tested, this would be indicated by a significant residual effect of past on later behavior". Therefore, in the same line of reasoning, if direct effects of noncognitive variables on EI are found to account for significant extra variance explained, this signals the existence of a relevant cognitive mechanism which is not being considered in the model.

It is useful, in a developmental approach, demographic variables are not easily changed, thus identifying the cognitive mechanisms that mediate the effects of these on intention and behavior have the potential for more effective interventions to condition behavior propensity and behavior persistence (*cf.* Bandura, 1986), despite personal and environmental contexts (*cf.* Armitage et al., 2002). This has long been a basis for the legitimacy of entrepreneurship education effectiveness (*cf.* Krueger & Brazeal, 1994).

On the superior theoretical soundness/completeness of SCCT, in relation to TPB, as it applies to the entrepreneurship context, Lucas & Cooper (2012, p. 4) state that many of the behaviors used in the general TPB literature are largely under the individual's own control and can be performed in the near future, without "requiring a long-term commitment to a major course of action. By contrast, the choice of a career is subject to an array of external limitations and involves a number of years of invested effort, and would on its face seem closer to entrepreneurial processes than TPB".

SCCT has had a modest influence on entrepreneurship literature, despite its potential to provide a more complete image of the determinants of entrepreneurial interest, intentions and behavior,

than more popular EI models (Liguori, 2012). According to Liguori et al. (2018) “recent empirical work paves the way for SCCT’s adoption into entrepreneurship”. The application of SCCT to entrepreneurship is scarce but has already been reported. One of the first examples can be found in Segal et al. (2002), who tested a structural model to predict self-employment goals/intentions, of 115 USA business students, and find strong effects from ESE (.669) and EOE (.506) to EI, and from ESE to EOE (.392). The authors conclude that this model appears to have a much higher explanatory power than other models, with an adjusted r-square of .509 for EI, against results of .350 found for TPB and .408 for Shapero-Krueger, found in Krueger et al. (2000).

More recently (Zhao et al., 2005; Vázquez et al., 2010; Lent et al., 2010; Liguori, 2012; Chen, 2013; Lanero et al., 2015; Pfeifer et al., 2016; Austin & Nauta, 2016), SCCT EI models have been found to provide the following results: EI variance explained, between .330 and .532 (Lanero et al., 2015; Chen, 2013; respectively); Main effect from ESE to EI, between .350 and .391 (Lanero et al., 2015; Chen, 2013; respectively); Main effect from EOE to EI, between not significant to .288 (Lanero et al., 2015; Chen, 2013; respectively); and main effect from ESE to EOE, between .310 and .368. All ranges which have lower top values than those reported in Segal et al. (2002), except for EI variance explained which is in range.

In terms of other personal inputs and contextual supports and barriers used in SCCT EI models, the following variables have been used: gender (*e.g.*, Liguori, 2012; Pfeifer et al., 2016), prior entrepreneurial experience (*e.g.*, Liguori, 2012; Pfeifer et al., 2016), family entrepreneurial experience and role models (*e.g.*, Liguori, 2012; Pfeifer et al., 2016; Austin & Nauta, 2016), work experience (*e.g.*, Liguori, 2012), entrepreneurship education exposure (*e.g.*, Liguori, 2012; Pfeifer et al., 2016), subjective norms (*e.g.*, Chen, 2013; Pfeifer et al., 2016) and higher education level (first-year *versus* last-year students: Vázquez et al., 2010; and graduate students: Pfeifer et al., 2016).

## **2.2.4 - Direct Cognitive Antecedents of EI according to SCCT**

### ***Entrepreneurial Self-Efficacy Beliefs***

The first authors to propose the use of ESE as a meaningful antecedent of EI were Boyd & Vozikis (1994). In their own words, “self-efficacy is proposed as an important explanatory

variable in determining both the strength of entrepreneurial intentions and the likelihood that those intentions will result in entrepreneurial actions” (Boyd & Vozikis 1994, p. 66). ESE is here seen as a broader construct than, the similar construct of perceived feasibility (*cf.* Krueger & Brazeal, 1994), that had already been introduced by Shapero (SEE: 1984) and Krueger (1993). Boyd & Vozikis (1994) also suggest that the concept of PBC (TPB: Ajzen, 1991) is closely related to the concept of self-efficacy. Therefore, ESE appears as an inevitable dimension of cognitive reasoning for intent and actions and, as such, it is included in all three EI models (*i.e.* SCCT, TPB and SEE).

Self-efficacy beliefs major source of information comes from personal performance accomplishments (*i.e.* mastery experiences of the behavior) and, on a second level of influence, from observing believable models of the behavior (*i.e.* vicarious learning), verbal and social persuasion, and physiological and affective states (Bandura, 1986). “The degree to which these informational sources actually affect self-efficacy depends on such factors as how the individual attends to, remembers, and interprets them. For instance, even significant successes will not much affect self-efficacy if they are discounted, forgotten, or attributed to luck” (Lent & Brown 2006, p. 16). Farashah (2015) provides the following examples of sources of ESE: personal mastery - Business ownership experience, entrepreneurial job experience and past entrepreneurial experience; vicarious learning - exposure to role models; Social persuasion - perception of entrepreneurial success stories in public media; and for emotional state - fear of failure.

In social psychology self-efficacy beliefs relate with important cognitive and behavioral outcomes, such as: self-set goals, their difficulty, initiating and persisting at behavior under uncertainty, the consequences of goal attainment satisfaction and their motivational consequences, the likelihood of exposure to mastery experiences and reducing threat-rigidity and learned helplessness (Bandura, 1986; Markman et al., 2002). In sum, a crucial cognitive construct related with very meaningful outcomes, being “central to most human functioning” (Markman et al. 2002, p. 152).

Based on previous research, Markman et al. (2002, p. 152), provides the following reasons of why higher self-efficacy should predict entrepreneurial outcomes: “people avoid careers and environments they believe exceed their capabilities (regardless of the benefits these may hold), but they readily undertake vocations they judge themselves capable of handling (Krueger & Dickson, 1994), and the higher their self-efficacy, the more challenging the activities they

pursue. Individuals high in self-efficacy not only prefer challenging activities but also they display higher staying power in those pursuits (Bandura, 1997) (...) under taxing circumstances, individuals with higher self-efficacy perform more adeptly”.

In a meta-analysis, Sheu et al. (2010) found that SE were usually found to have better predictive power than OE, although proposing that, overall, the latter is also conceptually worthy. They find some studies where OE actually produced larger direct effects. Sheu et al. (2010) propose that the relative predictive utility of SE and OE could be moderated by cultural, field-specific, sampling or measurement issues.

The measurement instrument for ESE is a very relevant issue, due to several reasons, for example: (1) How detailed should this measure be? From a single-item ESE measure (*e.g.*, ”How confident are you that you have all the necessary knowledge, skills, and abilities to perform the tasks and activities necessary to become an entrepreneur?”; Segal et al., 2002) to a multi-item and multi-dimensional ESE measures (*e.g.*, McGee et al., 2009); (2) Against which standard should respondents compare their perceived capabilities? From none, measuring an absolute capability perception (*e.g.*, asking for general confidence levels in one’s ability to perform specific tasks/activities) to providing a very specific comparison, measuring a relative capability level (*e.g.*, asking a direct comparison to other kids in their grade or others in the business world; Wilson et al. 2007b); (3) How technical should the language of the measuring instrument be (*e.g.*, Moberg, 2013); (4) Should it include questions about critically important abilities/resources for the activity and for the focused population (*e.g.*, guanxi for Chinese population - Trigo, 2003; Yang, 2013). For a more detailed review on the most common conceptualizations and measures of SE in SCCT, refer to Lent & Brown (2006).

However, when conceived at its most global level, SE loses its domain-specificity and may be considerably closer to trait-like variables, such as: locus of control or generalized self-efficacy (GSE) (Lent & Brown 2006). Lent (2005, p. 104) state that self-efficacy “is not a unitary or global trait, like self-esteem”, it is proposed, rather as a “dynamic set of self-beliefs that are linked to particular performance domains and activities”. Yet, there is already some evidence on the limitations of ESE measures, when it is measured at the task/activity level. Crespo et al. (*in press*), for example, find that reaching the highest EI levels does not require individuals to believe that they can master every single entrepreneurial activity, rather the highest EI levels are compatible with different ESE profiles.

As a possible alternative solution to ESE, some entrepreneurship scholars have proposed the special relevance of a GSE measure and its superiority to a more activity specific ESE measure.

#### *Entrepreneurial Self-Efficacy Beliefs versus General Self-efficacy Beliefs*

The debate about the utility and theoretical soundness of using a measure of GSE (*e.g.*, Sherer et al., 1982; Schwarzer & Jerusalem, 1995; Chen et al., 2001), rather than a specific SE measure (*e.g.*, De Noble et al., 1999; Chen et al., 1998; McGee et al., 2009), is an on-going one (*e.g.*, Chen et al., 2001; Bandura, 2012; Jackson et al., 2012). According to Chen et al. (2001, p. 63) “GSE captures differences among individuals in their tendency to view themselves as capable of meeting task demands in a broad array of contexts”, which when compared with specific SE appears to reflect a more stable disposition, like a personality trait (Poon et al., 2006; Liguori, 2012; Jackson et al. 2012), although GSE has been found susceptible to being increased through training (*e.g.*, Eden & Aviram, 1993; Agarwal et al., 2000).

Regarding the debate, Chen et al. (2001) suggest that despite the mounting empirical research on GSE, social cognitive researchers continue to argue the lack of interest/utility of studying GSE for both theory and practice, claiming that GSE measures result in weak or in-existent relationships to specific SE and to behavior. These authors relate the poorer performance of GSE, predicting specific activities, in light of the concept of ‘specificity matching’, proposing that the better the match between the specificity of the measure and the behavior, the greater the predictability.

Citing standing empirical evidence, Chen et al. (2001) report that GSE has predicted general performance best and that specific SE has been better at predicting specific domain performance, concluding that GSE is not proposed as a substitute of specific SE, but, rather, a supplement expected to be useful when the performance is generalized.

Jackson et al. (2012, p. 748), also advocating the merits of GSE and directly addressing this debate, by comparing the relevance of GSE with that of other personality traits, write that “the distinction between GSE and contextualized self-efficacy is similar to the distinction between traits and contextualized assessments. GSE scores positively correlate with self-efficacy scores specific to different occupational contexts (Chen, et al., 2001), suggesting that while GSE might

not perfectly capture self-efficacy for any one domain, there is evidence that GSE is capturing something that is shared across domains”.

Proposing a more progressive definition of traits, they suggest that a polarized and dogmatic stance on this discussion may be a waste of energy and time, recommending, instead, that researchers continue to build bridges between generalized constructs (*e.g.*, the Big Five and GSE) and specific SE, (Jackson et al., 2012). They also propose that although specific SE may better predict behavior within specific contexts, broader traits can better predict behavior in novel situations.

Regarding entrepreneurship research, Schmutzler et al. (2018) write that empirical research has provided ample support for both the broad concept of GSE and ESE, as essential drivers of EI, but that disagreements about which is the best, still remains. Nevertheless, in entrepreneurship research ESE is largely dominant (Mauer et al., 2017), though some studies have used GSE (*e.g.*, Markman et al., 2002; Markman & Baron, 2003; Rauch & Frese 2007; Khedhaouria et al., 2015) while only a couple of others have used both (*e.g.*, Dimov, 2010, Liguori, 2012). Recently, in a meta-analysis based on 27 independent samples and an overall sample of 5,065 entrepreneurs, ESE has also been related to firm performance (Miao et al., 2017), but the effect size .309 is not significantly different than .247, found by Rauch & Frese (2007), in a meta-analysis based on 116 independent samples and an overall sample of 26,700 entrepreneurs, based on GSE measures.

According to Liguori et al. (2018), those advocating for the use of the GSE in entrepreneurship, suggest that entrepreneurs must have a diverse set of skills related to multiple domains (*e.g.*, marketing, human resources, sales, finance, accounting) and that it is unpractical to list all the specific tasks related to the entrepreneurial process. Khedhaouria, et al. (2015) addressing the same issue, of practicality, propose that it is much easier to conceive a GSE measure and it is much easier to answer by those with no direct entrepreneurial experience (*e.g.*, nascent entrepreneurs). Rauch & Frese (2007) justify the merits of proposing a relationship between GSE and business creation and success, on the matching between the characteristic of high GSE individuals and some of the characteristics associated with successful entrepreneurs, such as: being confidence in a broad array of tasks, often unanticipated and often in a context of uncertainty; having perseverance and being challenge seeking; having personal initiative and optimism, regarding success; and actively search for information and taking a long term perspective.

Regarding studies on EI that have used both GSE and ESE, Dimov (2010) found that opportunity confidence related to venture emergence, while GSE did not. Nevertheless, GSE was found to be significantly related to the specific SE, opportunity confidence (subdimension of ESE). Liguori (2012) results indicate that GSE positively impacts both ESE and EOE and that ESE mediated the relationship between person inputs (including GSE) and both EOE and EI.

Liguori et al. (2018) using SCCT as a framework, explore how SE shapes EI, by trying to clarify the unique roles and importance of both ESE and GSE. For this, they propose that individuals with higher levels of GSE will report higher levels of both ESE and EO, than those possessing lower levels of GSE. Before, Liguori (2012), in his doctoral thesis, proposed to clarify the relationship between GSE and ESE by conceptualizing them as distinct contributors to the development of EI. However, when ESE is posited to be influenced by GSE (Chen et al., 2001) and empirically correlated ( $r = .410$ ; Liguori, 2012) and is placed in the EI model as a mediator of the GSE-EI relationship, this distinctiveness goal may be said not to be fully attained.

### ***Entrepreneurial Outcome Expectations - Motivators***

In general, SCCT models have mostly measured positive EOE (*e.g.*, Liguori, 2012; Pfeifer et al., 2016), although EO may also be negative (Lent & Brown, 2006). When EOE are positive and valuable, they can become reasons/motivations for EB. Some of these motivations (*e.g.*, need for achievement; need for autonomy – *cf.* Rauch & Frese, 2007) have long been proposed to differentiate entrepreneurs from other economic agents (*e.g.*, inventors, capitalists and small business owners: Schumpeter 1934; Carland et al., 1984), although results have not been especially predictive of EB (*cf.* Gartner, 1989).

This may be due to many different reasons that can lead to a lower impact on EI and on EB. For example: not all people expect the same outcomes from entrepreneurship and, thus, some people with equivalent motivations, may differ in considering EB as an option to satisfy their needs; and, some of these and other motivations (*e.g.*, need for affiliation and creativity) can also be compatible with organizational employment, that provides equal satisfaction of the underlying needs (*cf.* Kolvereid 1996).

Also, when differentiating entrepreneurs' motivations from those of non-entrepreneurs, one cannot forget that some end up creating their own business without this being their preference, while others, who are not yet entrepreneurs, may well end-up becoming. For example, in line with previous findings, Sevä et al. (2016) suggest that 'necessity' entrepreneurs are less creative and less motivated by the need for independence than other entrepreneurs.

Others have proposed that these different motivations could, rather be the basis of different entrepreneurial events (Politis 2005). For example, entrepreneurial motivations have been related with: successful new business creation (*e.g.*, Cassar, 2007)(Cassar, 2007)(Cassar, 2007)(Cassar, 2007)(Cassar, 2007)(Cassar, 2007)(Cassar, 2007)), type of business and workplace intended (*e.g.*, Kolvereid, 1992; Edelman et al., 2010; Carsrud & Brännback, 2011), entrepreneurial career choices and paths (*e.g.*, Politis, 2005; Barba-Sanchez & Atienza-Sahuquillo, 2011), individual and firm goals and firm's success (*e.g.*, Carsrud et al., 1989; Naffziger et al., 1994; Feldman & Bolino, 2000; Lee & Wong, 2004), work-, life- and family-satisfaction (*e.g.*, Feldman & Bolino, 2000; Sevä et al., 2016) and exit and failure (*e.g.*, DeTienne et al., 2008). Researched populations have also varied, from latent/aspiring/potential entrepreneurs, students (*e.g.*, Urban, 2007; Almobaireek & Manolova, 2013) or others (*e.g.*, Sevä et al., 2016), to current entrepreneurs/business owners (*e.g.*, Carsrud et al., 1989).

A related topic has been to link specific entrepreneurial motivations with special types of entrepreneurs which, then, are described as a source of specific entrepreneurial process events, for example: likely business goals, development/growth intentions and behaviors and success likelihood (*e.g.*, Bird, 1988; Birley & Westhead 1994; Krueger & Brazeal 1994). As an illustration, one can refer to Bird's (1988, p. 448) examples, such as: "‘opportunistic-entrepreneurs' become entrepreneurs in order to build an organization which they can lead. As it might be expected, opportunistic entrepreneurs develop larger and more complex organizations".

Another interesting line of research has to do with finding patterns of association between different motivations for the same activity. An association based on, one individual citing motivator 'x', being more likely to cite also 'y' and 'z', for example, which can then be better described as a motivational factor or profile (*e.g.*, Shane et al., 1991; Barba-Sanchez & Atienza-Sahuquillo, 2011; Giacomini et al., 2011). This can be also related to the possibility that some motivations may be only instrumental for achieving another final goal (Carsrud & Brännback

2011). Two examples may be found in Bird (1988, p. 447), who writes: “personal wealth and organizational finances are often more a means of keeping score than highly valued ends in themselves” and in Schumpeter's (1934, p. 91), writing: “there may be rational conduct even in the absence of rational motive”, written as the prelude to his argument, that there may be economic behavior even without economic motive.

Furthermore, personal differences (*e.g.*, age, gender, race, social economic status) and personal and cultural values (*e.g.*, individualism/collectivism) may influence the likelihood that certain motivations may be more readily cited than others, due to being more readily conscious or due to being perceived as more socially desirable or accepted (*e.g.*, Schumpeter, 1934; Urban, 2007; Belchior & Liñán, 2017). In fact, something that has long been proposed in the entrepreneurship literature, the same person may have varying motivational profiles through their lifetimes (*e.g.*, after gaining work experience or, even, becoming a parent) (*cf.* Schumpeter, 1934; Naffziger et al., 1994; Kolvereid, 1996; Carsrud & Brännback, 2011).

In sum, this is a relevant research focus in entrepreneurship literature, and has practical implications for those wanting to understand and promote entrepreneurship, since it is suggested to be of critical importance to study of entrepreneurial cognitions and their conversion into EB (Carsrud & Brännback 2011; Shane et al., 2003). Yet, despite the lower interest in the topic in recent past, when compared to the period that followed McClelland (1961) work, motivations' role is again being considered (Fayolle et al. 2014).

Motivation has been defined in several ways (*cf.* Shiraz et al., 2011, p. 271), for example: as “the psychological process that gives behavior purpose and direction (Kreitner, 1995); a tendency to behave in a purposive method to achieve specific, unmet desires (Buford, Bedeian, & Lindner, 1995); an inner force to gratify an unsatisfied need (Higgins, 1994); and the will to accomplish (Bedeian, 1993) (...) as the inner force that drives individuals to achieve personal and organizational goals”.

According to Shaver & Scott (1991, pp. 30-31), “of all the personological measures presumed to be associated with the creation of new ventures, need for achievement has the longest history. Remarkably, although the search for the personality characteristics of the successful entrepreneur "is now thought quixotic, achievement motivation remains perhaps the only personological variable whose association with new venture creation appears convincing”.

Nevertheless, the need for achievement is not the only motivation associated with new business creation. Before McClelland, Schumpeter (1934) had already made a quite colorful and insightful motivational profile of the entrepreneur: spiritual ambition, snobbery, the will to conquer, the impulse to fight, to prove oneself superior to others, to succeed for the sake, the joy of creating, of getting things done, or exercising one's energy and ingenuity.

More recently, Carsrud & Brännback (2011) state that, traditionally, the reasons for starting a new business have been considered to be economic, although it also has been acknowledged that other types of motives, being economic, are not based on the ultimate goal of maximizing economic gains (*e.g.*, lifestyle entrepreneurs). The author cites artists or craftsmen as intuitive examples.

Entrepreneurship research has been supportive of the idea that no single motive accounts for the reason to create one's own business venture. Different people are motivated by different types of motives to become entrepreneurs (*cf.* Shaver & Scott, 1991; Feldman & Bolino, 2000; Cassar, 2007). This is probably related to the fact that such a complex and diversified type of phenomena or process can be or mean different things, depending on the perspective one takes. As an example, someone may intend to climb because he likes climbing, climbing is the most efficient way of getting where he needs to be, he likes the challenge of climbing, etc. Yet, this is not to say that it is indifferent starting one's own business venture with motivation 'A' or 'B'. For example, if one is motivated to become an entrepreneur to balance professional and family life, it is unlikely that business growth intentions are as high as they are for someone motivated by a need for power.

Shane et al. (1991) and Birley & Westhead (1994), based on a wider international study and a related pilot study (surveying over 1,000 entrepreneurs from 11 countries), consider a total of 23 different reasons for establishing one's own business. As an example, Birley & Westhead's (1994, p. 11) top 5 reasons were: "To have considerable freedom to adapt my own approach to my work; To take advantage of an opportunity that appeared; To control my own time; It made sense at that time in my life; To give myself, my spouse, and children security.

Based on a Portuguese sample of University students, Raposo, Paço, & Ferreira (2008), find several different personal profiles, mixing both personal attributes and motivations, related with the propensity for start-up creation. Such profiles included the following motivators: 'commanding an organization and/or a team', 'prestige or status', 'obtain personal patrimony',

‘create something by itself’, ‘obtain personal independence’, ‘economic independence’, ‘possibility to practice own ideas’ and ‘schedule flexibility’.

An important division that may be made to distinguish studies on reasons/motivations for self-employment is based on the type of question made to describe and analyze those reasons, namely closed *versus* open-ended questions. In fact, some studies support their researched motivations on *ex-ante* literature (Shane et al. 1991; Birley & Westhead, 1994; Jayawarna et al., 2011), enabling researchers to find differences in the relative strength of already known reasons. While other studies are empirically driven and describe and analyze any cited motivation emerging from their respective data (*e.g.*, Kolvereid, 1996). The latter, enabling researchers to get a full view of the main reasons for entrepreneurship, for that specific population but, contrarily to the former, not being able to find, empirically, an association between these motivations which will likely coexist, simultaneously (*cf.* Birley & Westhead, 1994).

According to Kolvereid (1996), although several studies were published before on the reasons leading to self-employment, his was the first empirically based classification scheme of reasons for employment choice. About the choice of closed *versus* open-ended question, the author noted that the problem of adopting a limited set of categories defined *a priori* from the theory is that important reasons may be disregarded. An open-ended approach, rather, allows the researcher to capture the real points of views of others, without presetting these, through prior selection.

Regarding open-ended questions research, Kolvereid (1996) identified a few previous studies but found that these all investigated founders who had successfully become owner/managers of their business, noting that these are different from studies of career preferences and intentions, since self-employment may be reached without a new business having to be created (*e.g.*, purchase, inheritance, or marriage), creating a new business may not lead (or be intended to lead) to self-employment (*e.g.*, created for subsequent sale, to be managed part-time or managed by others) and studies of existing businesses cannot provide information regarding firms that have failed and business ventures that never became firms.

Additionally, Carter et al. (2003) suggest and Cassar (2007) confirms the existence of substantial recall bias, when career reasons of entrepreneurs are reported after the new venture is already operational. Namely, finding that the importance attributed to self-realization and

financial success becomes lower. Thus, recall bias may influence the likelihood of motivation citation and the importance attributed to specific motivators.

According to Kolvereid (1996, pp. 24-25), “one of the very few existing empirical studies on reasons for employment status choice was carried out by Brenner, Pringle, and Greenhaus (1991)”. However, their “results indicate several conflicting perceptions. Both groups were found to feel that their preferred career provides greater opportunity for continued development, to earn a higher income, and to work with people they admire and respect”. Contrarily, Kolvereid (1996), finds no significant conflict between the reasons citation frequency, across employment preferences (self-employment / organizational employment), The author concludes: “security, social environment, workload, avoid responsibility, and career are reasons usually given for preferring organizational employment; while economic opportunity, authority, autonomy, challenge, self-realization, and participate in the whole process are reasons usually given for preferring self-employment.

Given the large number of different motivators that have been cited as reasons for new business creation, some researchers (*e.g.*, Kolvereid 1996) have recognized the need to reduce this complexity to a manageable degree, by looking for linear associations between these motivations (*e.g.*, cluster, component and factor analysis) and grouping them into meaningful motivational factors (*e.g.*, Shane et al., 1991; Kolvereid, 1992; Birley & Westhead, 1994; Giacomini et al., 2011). These motivational factors can then be ordered in their prevalence in a population (or in subsets of this same population), across different populations/cultures, and be associated with relevant entrepreneurial outcomes. For example, Edelman et al. (2010) find race/minority differences in start-up motivations and growth intentions, and Giacomini et al. (2011) propose relevant cultural differences based on their findings related with national differences.

Relative to the possibility of grouping different motivations, Carsrud & Brännback (2011) note that motivation can be intrinsic or extrinsic, or a mix of both. With intrinsic motivation referring to a personal interest in the entrepreneurial activity and extrinsic motivation referring to external reward(s) that are expected to follow EB. They further add that, although most entrepreneurial research assumes that the entrepreneur is motivated by external rewards (*e.g.*, money, power, status, etc.), the reality is that some people get involved in entrepreneurial tasks as an end, in itself. Krueger & Brazeal (1994) had, also, already suggested the relevance of intrinsic interest in entrepreneurship research. These subdivisions have been found to, explicitly or implicitly,

be the basis of some of the proposed associations of individual motivators into, larger, motivational factors (*e.g.*, Kuratko et al., 1997; Lanero et al., 2015).

Table 2.01 (below) summarizes the findings for some of the most relevant studies conducting exploratory factor analysis to find motivational factors related with start-up behavior (Shane et al., 1991; Kolvereid, 1992; Birley & Westhead, 1994; Kuratko et al., 1997, Giacomini et al., 2011, and Stephan, Hart, & Drews, 2015). A more detailed and complete summary may be found in Delanoë-Gueguen & Liñán (2018). To extract motivational factors with dimension reduction techniques, several of these studies rely on the same set of 23 different start-up reasons, that emerged from a multi-country study from 1986 (*cf.* SARIE study; Kolvereid 1992), although in each study independent populations and samples were used.

Noteworthy, differences in career and entrepreneurial motivations have been found related to individuals' educational background (*e.g.*, Solesvik, 2013), entrepreneurs' industry of choice (*cf.* Roberts, 1989; Cassar 2007) and nationality and gender (*e.g.*, Shane et al., 1991; Kuratko et al., 1997; Almobaireek & Manolova, 2013). Kolvereid & Isaksen (2006) also report significant correlations between some demographic variables – *e.g.*, age, gender, education, parental background in entrepreneurship, and prior EB - and motivational factors. A more recent report analyzing articles published between 2008 and 2013, also, confirm this association, but, overall, empirical evidence appears to still be scarce (*cf.* Stephan, Hart, & Drews, 2015).

It follows that, given this diversity of reasons, “it seems reasonable to suggest that entrepreneurs with different kinds of career motivations can be expected to seek different types of entrepreneurial events” (Politis 2005, p. 413). More recently, the same conclusion is taken by Stephan, Hart, & Drews (2015).

Regarding the link between motivations and EI levels, Douglas & Shepherd (2002) found EI positively related with attitudes towards risk and independence and that, both the income and the work effort motivations, were not significant determinants of EI. Kolvereid & Isaksen (2006), report significant correlations between some of TPB constructs (*i.e.* PA, SN, PBC, EI and entry into self-employment) and for their proposed four motivational factors (*i.e.* autonomy, authority, economic opportunity and self-realization) and with (self-employment) EI and self-employment entry only the *authority* and *economic opportunity* factors were found significantly correlated (positively).

**Table 2.01: Findings summary for some of the most relevant studies exploring motivational factors for start-up behavior.**

Reference	Shane et al. (1991)	Kolvereid (1992)	Birley & Westhead (1994)	Kuratko et al. (1997)	Giacomin et al. (2011)	Stephan, et al. (2015)
	Secondary source	Secondary source	Secondary source	Secondary source	Secondary source	Secondary source
<b>Initial Motivators /Reasons</b>	(SARIE study – 23 reasons for start-up behavior)	(SARIE study – 23 reasons for start-up behavior)	(SARIE study – 23 reasons for start-up behavior)	16 different goal statements (from the literature), Applied to entrepreneurs' motivation to sustain business development efforts.	16 different motives for starting businesses (from the literature)	51 studies from (2008-2013)
<b>Sample</b>	597 entrepreneurs from New Zealand, UK and Norway	250 entrepreneurs from Norway	405 owner-managers from Great Britain	234 owners-managers from USA (Midwest)	2,093 university students from USA, China, India, Spain and Belgium	
Independence/Autonomy	Yes	Yes	Yes	Yes	Yes	Yes
Need for Approval, Status & Recognition	Yes	Yes	Yes			Yes
Achievement		Yes				
Achievement, Challenge & Learning						Yes
Pursuit of Profit and Social Status					Yes	
Perceived Instrumentality of Wealth			Yes			
Income Security & Financial Success						Yes
Welfare		Yes	Yes			
Opportunity		Yes				
Taxes		Yes				
Extrinsic Rewards				Yes		
Roles	Yes	Yes				
Follow Role Models			Yes			
Family Security				Yes		
Family & Roles						Yes
Community & Social Motivations						Yes
Need for Personal Development / Learning	Yes		Yes		Yes	
Intrinsic [ <i>i.e.</i> Internal] Rewards				Yes		
Creation					Yes	
Professional Dissatisfaction					Yes	Yes

Carter et al. (2003), although recognizing that reasons cited for getting into business are traditionally considered to be the basis of intentions, note that according to both TRA and TPB, salient beliefs concerning the activity in question determine the PA and not intentions, towards it. Therefore, they propose and test motivational factors towards self-employment as an antecedent of PA toward self-employment and not EI.

Lin & Si (2014) study Chinese peasants EI and find that ESE positively moderates the relationship between the need for power and entrepreneurial intention, *i.e.* the positive effect of the need for power on EI is stronger when associated with high ESE. Hui-Chen et al. (2014) integrate TPB EI model with motivation-opportunity-ability theory to try to improve the understanding of the processes of becoming an entrepreneur. They also propose a complete mediated model, where motivations (and opportunity and ability) appear as influencing EI through the determinants of TPB PA, SN, and PBC. Yet, it should be noted that their entrepreneurial motivations measure, may be said to be closer to an interest measure operationalization.

Motivational profiles also offer an interesting opportunity to test EI stability, given that some motivations may not be exclusive of an EB/career and, therefore, result more likely of being associated with lower stability EI. In this line of reasoning, Sheeran et al. (1999, p. 732) already found some relevant results, namely, “that intentions based on attitudes may offer better prediction of behavior than intentions based on PBC. That is, intentions based on the desirability of the behavior may have greater motivational impact than intentions based on the feasibility of the behavior”.

Research on the association between motivations and meaningful organizational outcomes, is also an interesting focus and some results (significant or not) can already be found, for example: firm success (Carsrud et al., 1989); revenue and employment growth aspirations (Kolvereid, 1992); firms’ subsequent size, growth and wealth creation (Birley & Westhead, 1994); success in creating one’s own business, growth preferences, intended and achieved employment growth, intended size of the venture and achieved growth (Cassar, 2007); and persistence and commitment escalation - related with the costs associated with delaying the failure decision DeTienne et al. (2008).

Regarding the construct’s operationalization, within SCCT research, the most common approach to assessing OE is based on Vroom’s (1964) expectancy-value model of work

motivation and asks related motivators importance and how likely it is that each will be satisfied if they were to take a particular action, however this two-step process (obtaining both valence and instrumentality) has often been reduced to a single step, by only measuring the latter, *i.e.* instrumentality (Lent & Brown 2006).

Within SCCT EI models, Segal et al. (2002) do measure EOE by combining instrumentality (*i.e.* what do you think is the probability of...) and valence (*i.e.* how important is it for you...), by asking about the following likely expected outcomes: ‘earning lots of money’, having ‘financial security’, ‘being independent’ and ‘satisfying need for achievement’, and calculating the product of the outcome valence level and the estimated probability level of attaining it.

Only using the instrumentality dimension of expectancy theory, one can find the following studies: Vanevenhoven & Liguori (2013) describing the EOE measurement in the international EEP; Lanero et al. (2015) which suggested a subdivision of the EOE measure into two different dimensions, an extrinsic and an intrinsic EOE; Farashah (2015), used the following single question: “Do you feel that greater independence, increase or maintain personal income, income or higher status, and respect, is an important motive for pursuing an entrepreneurial career?”.

Finally, a number of directions for future research on entrepreneurial motivations have been proposed by Carsrud & Brännback (2011, p. 19), based on identified gaps in the literature, for example: “How does motivation impact the decision not to create a venture?”; “Does Ach impact intentions directly?”; “How do motivations and goals for entrepreneurs change over time?”; “How does context impact entrepreneurial motivation?”; “How does Ach impact self-efficacy in entrepreneurs?”. Additionally, one of the most cited promises of entrepreneurial motivations appears to be the added knowledge regarding the intentions-behavior relationship (Carsrud & Brännback, 2011; Kuratko et al., 1997; Fayolle et al., 2014).

Considering that intentions levels can be high, even when temporally distant from behavior, and that for this behavior to actually happen these have to also be high immediately before it starts, EI stability may be key for explaining intention-behavior link. According to Cassar (2007), beside his own study, no extant research empirically investigates the stability in entrepreneurial-stated career reasons over time. To this respect, the author provided empirical support of an instability effect, caused by the event of new business emergence, on career reasons of entrepreneurs.

Current empirical evidence indicates a very small direct effect of EOE on EI (e.g., Lanero et al., 2015; Chen, 2013), suggesting that a greater explanatory power of EI may be gained by accommodating (the often-disregarded) valence component of expectancy theory and having cultural-specific motivations when measuring EOE.

Besides explicit motivations, a variety of other different EI antecedents have been empirically supported, so far (Pittaway & Cope, 2007). This literature review will now provide a brief review of some of the most prominent research regarding contextual supports and barriers and other personal variables that fit into the SCCT (Lent et al. 1994, 2000).

### **2.2.5 – Other Personal Inputs & Learning Experiences**

SCCT highlights the cognitive and behavioral determinants of career interest, choice, and performance, mainly due to its proponents focus on elaborating on the role of self-reflective and self-regulatory mechanisms in career development (Lent et al., 1994). However, they also propose a second layer of variables to the model to achieve a more comprehensive account of the career development process and clarifying some of the models' predictions, namely, personal inputs and career-relevant learning experiences and contextual influences (Lent et al., 1994). This section deals with the first two components and, the next, with contextual supports and barriers. As Gore & Leuwerke (2000, p. 238) summarize it, "interest development and choice behaviors are a function of life-long exposure to experiences, cognitive appraisal of those experiences, and the presence or absence of environmental obstacles".

Lent et al. (1994) describe the personal inputs and learning experiences impact on the other cognitive and behavioral variables in the SCCT model as serving as their precursors, moderators of their relationships or direct facilitators or deterrents. They then follow to discuss some of the SE and OE sources, such as: personal activity related experiences, which, depending on their success, may serve to lower or higher their levels and is thought to be the most influential source of efficacy information; observing similar others to succeed or fail in such activities (modeling), especially when no direct experience exists; Social persuasion may help individuals to attempt or sustain certain activities; and physiological state when performing (or thinking of performing) the behavior. The authors also note that the availability to some of these efficacy and outcomes information may be conditioned by individual characteristics, such as sex and race. Finally, they mention that these sources of information do not operate directly and have

to be processed through various cognitive screens, such as bias and personality, which affect the way reality is perceived, weighted, and incorporated into one's SE and OE judgments.

Thus, it is likely that it is not sufficient to pinpoint events, where an individual is exposed to a particular source of information, to conclude causal deterministic and constant effects on SE and OE judgments. The same experiential event may produce different levels of impact on the SCCT cognitive variables, depending on the particular individual. Accordingly, Politis (2005, p. 415) writes, "it is also argued that there is a need to reconsider the predominant static view on entrepreneurial learning, which presumes a direct link between a particular experience and the knowledge gained from this experience".

Regarding personality traits influence on career interest, choice and behavior, a clarification of cognitive mechanisms relative to their impact, is still needed here. For a more detailed account regarding personality traits usually proposed to be related to entrepreneurship, the reader may refer back, to section 2.1, from the present literature review. However, it should be mentioned that Rauch & Frese (2007), in their meta-analysis, find it useful to identify a direct rational link between the specific activity tasks and the characteristics of proposed personality traits, more specifically, they find traits that matched to entrepreneurial tasks are the most strongly related to EB. These authors, recognizing a literature gap, also propose for future research, that processes and conditions, that affect the link between personality traits and EB link, must be addressed and that personality descriptions have to include the underlying mediation processes (e.g., motivation, intentions, goals, and self-regulatory processes).

Well-fitting with SCCT, Rauch & Frese (2007) describe personality traits as distal dispositions of entrepreneurs and Jackson et al. (2012, p. 746) as "neurophysiological structures that cause relatively enduring, automatic patterns of thoughts, feelings, and behaviors that tend to manifest in certain ways under certain circumstances". The latter authors adding that these "do have explanatory and predictive powers, and moreover, traits and social cognitive variables, such as self-efficacy [GSE], can be meaningfully integrated". These authors express their concern regarding a troubling "view that personality traits reflect a 'behavioral fixedness' (Bandura, 2012: 26), where someone will behave in the same manner regardless of the situation". According to them, definitions of personality traits have never included such claim and commonly suggest expected cross-situation variations.

Rauch & Frese (2007) state that, regardless of the genetic component of many personality traits and a high test–retest stability across adult life, personality traits can change, inclusively due to success, which presupposes the possibility of reverse causality. That is, starting a business successfully may lead to changes in personality traits (*e.g.*, business success may increase entrepreneurs' GSE). Jackson et al. (2012, p. 750) conclude that “a promising avenue for future research is to examine how self-efficacy [GSE] can help us understand why broad personality traits demonstrate such impressive predictive validity for important life outcomes (Roberts et al., 2007). Conceptually, this can be thought of as a typical mediation model, with the causal pathway between broad-level traits and a specific outcome going through more narrow measures of self-efficacy”.

In entrepreneurship, researchers have employed several different variables related human capital, such as: formal education, training, employment experience, start-up experience, owner experience, parent's background, skills, knowledge, and others” Unger et al. (2011). Similarly, Katz (1992) proposes, as sources of past experience and self-employment information: family, education, peers, prior work, age, race, gender, ethnic, and geography. For an extensive list of references regarding some individual characteristics that have been found fruitful to analyze the entrepreneur's background, experience, and attitudes refer, for example, to Gartner (1985).

Rauch & Frese (2007) state that, the traits associated with entrepreneurship that were found to significantly correlate with EB (business creation and success) were: the need for achievement, GSE, innovativeness, stress tolerance, need for autonomy, and a proactive personality.

There is already, also, some research involving the effects of other personal inputs and learning experiences on the cognitive models of EI. For example, regarding TPB, some authors propose that other variables should impact EI, only through their more direct cognitive antecedents. For example, Liñán & Chen (2009) suggest that education and experience, entrepreneurial knowledge and personal data, requiring human capital and demographic information, should not affect intention directly, but rather through PA, SN, and PBC.

In terms of empirically tested SCCT EI models, not all included personal inputs and learning experiences variables (*e.g.*, Segal et al., 2002; Chen, 2013; Lanero et al., 2015; Vázquez et al., 2010), but a few did, for example: Liguori (2012) with gender, minority status, prior work experience, prior entrepreneurship experience, prior family business exposure and GSE; Farashah (2015), examined all the proposed ESE sources, namely: *personal mastery* (*i.e.*

business ownership experience, entrepreneurial job experience and past entrepreneurial experience), *vicarious learning* (i.e. exposure to role models), *social persuasion* (i.e. perception of entrepreneurial success stories in public media) and for *emotional state* (i.e. fear of failure); Pfeifer et al. (2016), studied *personal differences* (i.e. gender, minority, marital status, family wealth and residential area), *situational inputs* (relatable with learning experiences; i.e. family business exposure and own business exposure) and *educational inputs* (i.e. entrepreneurship major, being graduate or undergraduate and being a full or part-time student); and, finally, Austin & Nauta (2016) tested ‘number of entrepreneurial role models’, ‘intensity of role-model interaction’ and ‘same-sex role model’.

Given the overall entrepreneurship literature, and the regression results from studies using the SCCT model, next, empirical evidence will be identified relative to some of the most studied personal inputs and learning experiences variables, namely: age and gender, education, prior work experience, prior entrepreneurship experience and prior family business exposure.

### Age and Gender

Schlaegel & Koenig, (2014), who used meta-analytic data from 114,007 individuals (reported in 98 studies), present a systematic review of the literature and compare and integrate the two most popular theories in EI research. In their analysis of the literature on TPB (applied to EI) and SEE, they find that: being a male appears to have a direct positive effect on EI, and an indirect effect through desirability. In terms of feasibility, no significant difference was found between males and females, nevertheless, for males, its internal component ESE appears to be lower and its external component PBC appears to be higher. In relation to desirability, being male increases both the positive attitudes towards entrepreneurship and the motivation to perform the behavior. Despite its negative effect from subjective norms, Age appears to increase EI directly, and indirect through making individuals perceive themselves as more efficacious and by increasing entrepreneurship desirability for them.

Specifically on age, in Liñán & Rodríguez-Cohard's (2008) review of the literature, it is reported that University graduates from 25 to 34 years old are the segment of the population with the highest probability of becoming entrepreneurs and, according to Minola et al. (2016), the effect of age on EI and EB is, most likely, better described as a non-linear effect, which is moderated by cultural factors, as well.

In terms of gender-specific differences, some authors have proposed the following reasons for this stylized empirical finding: greater risk aversion, different expected family and social roles, direct discrimination and perceived financial constraints (Thompson & Kwong, 2016); different growth expectations and preferred industries, and local *versus* international scope of EI (Menzies, et al. 2006) and the influence of the gender stereotypes and lower ESE (Yang, 2013).

In the context of SCCT EI models, Liguori (2012) finds an insignificant correlation between gender and GSE, ESE and EOE. However, when the effects of other variables are controlled for (including GSE), being a man is found to have a significant negative effect on ESE, which exceeds, in magnitude, the direct effects of all other covariates in the model, except the GSE significant positive effect; however, gender is found an insignificant predictor of EOE. When EI is regressed on either ESE or EOE, gender is found to be negatively related with EI (p-value = .00), with an effect that exceeds, in magnitude, the direct effects of all other covariates in the model, except for the positive effect of ‘prior family business exposure’ (in the case of EI regressed on ESE).

Farashah (2015) using a dataset from the GEM survey including a total of 183,049 people, representing populations of 54 countries, found both age and gender to be related to ESE. Namely, a 10-year increase in age decreased the odds of having ESE by 10% and being a woman decreased those odds by 30%.

Pfeifer et al. (2016) find no significance, in a *t-test* comparing the mean ESE levels of males and females (66.91 and 67.67, respectively; in a 0 to 100 scale), but find a significant small difference regarding mean EI levels, with males having, on average, slightly higher EI than females (4.39 and 4.13, respectively; in a 1 to 7 scale). In a logistic regression model set to explain the event of an EI level higher than 4, the authors do not find gender a significant predictor of EI.

### Education

According to Sorgner & Fritsch (2017), human capital is one of the main drivers of the decision to start and run one’s own business, since it is supposed to lead to higher levels of entrepreneurial ability and, consequently, to a higher quality of new businesses, higher growth ambitions and better chances of survival. Moreover, Thompson & Kwong (2016) refer that

those with more formal education are found to show better opportunity recognition and broader networks, which may lead into greater entrepreneurial engagement and they do find that being graduated from a University has a significant impact on EI.

Entrepreneurship education has been, and it still is, one of the hot topics in entrepreneurship research (Kuckertz & Prochotta, 2018), for an overview on the scope of this research topic, the reader may refer to Pittaway & Cope's (2007) systematic literature review. Regarding its purpose and impact, Thompson & Kwong (2016) refer that, given the uncertain prospects and timing of starting a business, it is crucial to create an enduring interest. The authors further add that, enterprise education as a role in consolidating this interest by providing diverse, continuous and repetitive exposure until they are ready to engage in entrepreneurial activities. Finally, they state that this will also make individuals more willing to support others and, thereby, contributing to a more entrepreneurial society.

Yang (2013), with a sample of 1,300 college students in China, finds that entrepreneurship education significantly affects PBC and EI. Yet, Bae et al. (2014), in a meta-analysis of 73 studies (total of 37,285 individuals), found that the relationship between entrepreneurship education and EI has provided mixed results. They did find a significant small correlation between entrepreneurship education and EI, but, when pre-education EI are controlled for, the relationship between entrepreneurship education and post-education EI was not significant.

In a provocative take on the different effects of business and entrepreneurship education for EI, Bae et al. (2014, p. 220) - who found a significant difference between both effects in favor of entrepreneurship education - citing others, write: “an understanding of the entrepreneurship education – entrepreneurial intentions relationship requires an understanding of business education because it could be a more effective driver of entrepreneurial intentions. Entrepreneurship education is assumed to enhance an ‘awareness of entrepreneurship as an alternative career path to employment’ (Slavtchev, Laspita, & Patzelt 2012, p. 3), whereas business education assists students to work at established companies (Grey, 2002)”.

Specifically on the impact of business & economics education, Karhunen & Ledyeva (2010), based on the premise that business/economics students will have more business knowledge, than other students, and that this would lead to more capable professionals for an entrepreneurial career, find that these students do have higher entrepreneurial interest than other technical majors' students. Bae et al. (2014) find a positive but insignificant correlation

between having a business education and EI. However, business education benefits may only be apparent later on, such as, when striving for the successful continuation and completion of the start-up process and start-up management, as suggested by (Davidsson & Honig, 2003). Also, some authors find interaction effects between education and gender (*e.g.* Menzies, et al. 2006).

In the context of SCCT EI models, Pfeifer et al. (2016), find significant differences in: (A) the mean ESE levels (in a 0 to 100 scale) of entrepreneurship majors (68.22), other graduated students (who had been enrolled in, at least, two courses in entrepreneurship) (68.80) and undergraduates (who had not yet been enrolled in any of the entrepreneurship courses) (65.26); (B) significant differences in the mean EOE levels (in a 1 to 7 scale) of entrepreneurship majors (5.73), other graduated students (that had already received some entrepreneurship education) (5.92) and undergraduates (5.24); (C) significant differences in the mean EI levels (in a 1 to 7 scale) of entrepreneurship majors (4.93), other graduated students (4.21) and undergraduates (4.09). Finally, (D) in a logistic regression model set to explain an EI level superior to 4 (in a 1 to 7 scale), the authors find no significance in the relationship between ‘education level and major’ and EI.

Vázquez et al. (2010, p. 68), for a total sample of 1,156 students from University of León (Spain), found that first-year students presented higher average scores in the perceived motivation and training on entrepreneurship provide by the University (5.29 *versus* 3.74; on scale from 0 “strongly disagree” to 10 “strongly agree”) and higher preferences for self-employment (4.5 *versus* 3.85; on a scale ranging from 0 “minimum preference” to 10 “maximum preference”) than their last-year peers. The authors conclude that “the transit through University doesn’t foster the entrepreneurial culture in a proper way”.

### Work Experience

Work experience has been analyzed in greater detail when it considers the distinctive characteristics and merits of each career, some of which have been associated with entrepreneurship, for example: having worked for small or newly founded firm (*e.g.*, Keeble et al., 1992; Mathews & Moser, 1995; Mazzarol et al., 1999; Autio et al., 2001; Kautonen et al., 2010; Zapkau et al., 2015). Other authors have attempted, with a relative lack of success, to relate prior managerial experience with initial EB (*e.g.*, Bates, 1990; Stuart & Abetti, 1990;

Bird, 1993; Davidsson & Honig, 2003; Haber & Reichel, 2007; Baptista et al., 2014); Yet others, suggest that the relationship between the specific industry, where the individual has previously worked and the industry where he wants to create its new business, may influence the likelihood of business early survival (e.g. Mazzarol et al., 1999; Kautonen et al., 2010; Baptista et al., 2014).

On a less detailed approach (*i.e.* with a dichotomic categorization of the variable) results have also provided mixed support for the influence of work experience. Within the TPB framework, Liñán & Chen (2009), using a sample of 519 University students, found that prior work experience raised PBC only in the Spanish subsample but not on the Taiwanese. Entrialgo & Iglesias (2016), also found a significant positive relationship between prior work experience and both PBC and PA. Using a different model of EI, and with a small sample of 130 University students from Indonesia, Kristiansen & Indarti (2004) also find that the variable having prior work experience is related with higher ESE. However, the same was not found for a second subsample of 121 University students from Norway, from the same study, nor were the EI average levels any different. Fatoki (2014), finds similar results for a sample of 155 South-African University business students.

Specific to SCCT EI models, Liguori (2012) found a significant but small positive correlation between prior work experience (measured in years) and both GSE and ESE, and an insignificant correlation with EOE. Yet, when the effects of other variables are controlled for, prior work experience is found to have a significant positive effect on ESE. Prior work experience is also found to have a small but significant positive effect on EI.

### *Prior Entrepreneurial Experience*

Krueger (1993), testing SEE model, for a sample of 126 University business students, found perceived feasibility significantly associated with the breadth of prior exposure and perceived desirability significantly associated with the positiveness of the prior exposure.

Specific to SCCT EI models, Liguori (2012) finds an insignificant correlation between prior entrepreneurship experience and both GSE and EOE, and a small but significant positive correlation with ESE. Yet, when the effects of other variables are controlled for, prior entrepreneurship experience is not found significantly related with ESE nor with EOE, when

both are regressed on GSE. Finally, prior entrepreneurship experience is found to have a significant positive effect on EI, when regressed on ESE or EOE.

Pfeifer et al. (2016), find that having ‘own business exposure’ significantly associates with ESE mean levels, (70.24 for ‘Yes’ and 64.68 for ‘No’; in a 0 to 100 scale), with EOE levels (5.79 for ‘Yes’ and 5.54 for ‘No’; in a 1 to 7 scale) and, also significant for mean EI levels (4.32 for ‘Yes’ and 4.09 for ‘No’; in a 1 to 7 scale). Also, a significant correlation between ‘personal business exposure added to confidence’ and: ESE ( $r = .167$ ) and EI ( $r = .185$ ), but not with EOE ( $r = .054$ ). In a logistic regression model explaining an EI level superior to 4 (in a 1 to 7 scale), the authors find ‘personal business exposure added to confidence’ a significant predictor of EI.

Finally, Farashah (2015), reporting that all tested sources of ESE were found significantly related to ESE, indicated that experiencing entrepreneurship in the past and having a business have the strongest relationships with ESE and that these increase ESE by factors of 1.9 and 1.4, respectively.

#### *Family Entrepreneurial Background*

On the rationale behind proposing that family entrepreneurship experience may have an effect on EI and EB and its cognitive antecedents, Shaver & Scott (1991, pp. 33-34), citing others, write that “the parent provided a role model whose activities and behavior were emulated through a form of modeling (...) [and] information that is unavailable to children whose parents did not start or purchase a firm”. According to Carr & Sequeira (2007, p. 1090) “family experiences constitute a powerful socializing influence on the values, attitudes, and behaviors people adopt over the course of their lives. (...) results suggest significant direct and indirect effects of prior family business exposure on entrepreneurial intent, through the mediation variables of attitudes towards business ownership, perceived family support, and ESE”.

Empirically, Yang (2013) find that parents’ entrepreneurial experience was positively related to PA, SN, PBC and EI. Wang and Wong (2004) conducted a survey of 5,326 undergraduates in Singapore and reported that respondents whose families ran a business were more interested in entrepreneurship. In the Netherlands, De Wit and Van Winden (1989) found that self-employed fathers had a decisive impact on the choice to become self-employed”.

Within an SCCT framework, Liguori (2012) finds an insignificant correlation between prior family business exposure and GSE, ESE and EOE. However, when the effects of other variables are controlled for, prior family business exposure is found to have a significant positive effect on EOE - when EOE is regressed on GSE but a not significant effect on ESE. Prior family business exposure is also found to have a significant positive effect on EI, when EI is regressed on ESE and on EOE.

Farashah (2015) found that the effects of exposure to a role model were stronger than experiencing entrepreneurship as part of a regular job and investing in a new venture, increasing the odds of ESE by a factor of 1.1.

Pfeifer et al. (2016), find significant differences in the mean ESE levels related to 'family business exposure' status, between those answering 'Yes' and 'No' (69.26 and 65.86; in a 0 to 100 scale). The correlation between the variable 'family added confidence' and ESE levels ( $r = .115$ ) was also found significant. Significant differences were also found in the mean EI levels related differences in 'family business exposure' between those answering 'Yes' and 'No' (4.41 and 4.03; in a 1 to 7 scale). The correlation between the variable 'family added confidence' and EI levels ( $r = .077$ ) was also found significant. However, neither the *t-test*, for mean EOE levels differences, neither the correlation between the variable 'family added confidence' and EI were found significantly different from zero. In a logistic regression model set to explain an EI level superior to 4 (in a 1 to 7 scale), the authors find no relationship between 'family added to confidence' and EI.

Austin & Nauta (2016), find bivariate significant positive correlations between 'number of entrepreneurial role models' and EI ( $r = .23$ ) and 'intensity of role-model interaction' and EI ( $r = .32$ ) and significant negative correlations between 'same-sex role model' and EI ( $-.13$ ). Very similar results and equivalent significance was found when the correlate EI was substituted by its cognitive antecedent ESE. Austin & Nauta (2016) also tested the hypothesis of 'having a same-sex role model' being a moderator of the relations between the 'number of entrepreneurial role models' and EI and ESE and between 'intensity of role-model interaction' and EI. As they report, results did not provide empirical support for such a moderating effect, as predicted by Bandura (1986). Finally, they find that the indirect effects to EI, through ESE, for 'number of role models' and 'intensity of role-model interactions' were both significant, concluding that the data is consistent with the SCCT-based mediation hypothesis. It should be noted, though, that the direct path between 'intensity of role-model interactions' and EI does not become

insignificant when ESE effect on EI is controlled for. Therefore, a partial mediation might be a better description of this variable effect on EI.

### **2.2.6 - Contextual Support and Barriers**

Although SCCT has stimulated considerable research and practical activity, most of this work has focused on SCCT's cognitive-person variables alone, without considering important environmental variables that are proposed to influence the former. The study of these environmental variables and relationships is especially relevant in that it can present evidence of (1) how extra-person (*e.g.*, contextual) variables may enhance or constrain personal volition (already translated, in part, by the cognitive-person variables alone), and (2) how one can operate through the cognitive-person variables to enhance or constrain the influence of extra-person variables on personal agency. (Lent et al., 2000)

Lent & Brown (2006, p. 30) report that “to this point, not many domain-specific support or barrier measures have been developed to test SCCT’s choice hypotheses” adding that strong empirical support, regarding specific barriers, may prove to be particularly useful for barrier-coping or support-building counseling interventions. Yet, it is likely that different motivations may manifest themselves in different perceived supports and barriers and ways to take advantage or avoid them (*cf.* Krueger, 2009). Perceptions about barriers and supports are the basis of EI and nascent EB, while the real barriers and supports, and the confrontation between perceptions and reality, (if one takes the metaphysical objectivism approach – *cf.* Peikoff & Ward, 1993) might be what determines entrepreneurial success. According to Albert and Luzzo (1999) “even those barriers with no basis in reality can, and often do, have a direct impact on the career decision-making process of an individual”. Krueger & Brazeal (1994) propose that perceived barriers may actually be a key difference between potential entrepreneurs and individuals with high EI. Where individuals with well-developed and salient EI, are more likely to have investigated potential obstacles, and not be deterred by them, potential entrepreneurs (without salient intentions) are more likely have little information about possible obstacles.

In the entrepreneurship context, Kuckertz & Wagner (2010, p. 531) report that a broad set of contextual factors have already been proposed in the literature to influence EI. For example, Lüthje and Franke (2003) suggest the following set of contextual variables: *Barriers*, including ‘Banks do not readily give credit to start up companies’, ‘State laws (rules and regulations) are

adverse to running a company' and 'It is hard to find a business idea for a business that hasn't been realized before'; and *Supports*, including 'Entrepreneurs have a positive image with American society', 'Qualified consultant and service support for new companies is available' and 'The creative MIT atmosphere inspires to develop ideas for new businesses'. More recently, Belchior & Liñán (2017), theoretically discuss and propose individual and cultural values influence all the TPB antecedents of intentions, and their respective effects on EI. However, probably the most used variable, related with contextual support and barriers, has been SN from TPB. Although empirical support for this variable is not so strong, as for PA and PBC (*cf.* Belchior & Liñán, 2017), this construct is proposed to capture the influence of the social environment, in the form of perceived social pressure regarding an entrepreneurial career, and to, directly and indirectly, affect EI (Ajzen, 1991). For empirical evidence, on the cultural effects on SN and PBC, refer to Yang (2013).

In relation to this potential indirect effect, through other cognitive variables, Bandura (1999, p. 51) suggests that "perceived efficacy and social support operate bidirectionally in human adaptation and change. Supportive relationships, in turn, can enhance personal efficacy. Indeed, social support has beneficial effects only to the extent that it raises perceived coping efficacy".

Regarding SCCT, Lent et al. (2000) suggest that contextual supports and barriers represent the newest thrust of research on this choice model. Yet, here too, specificity is proposed to be of critical importance in the selection of contextual variables. To this regard, Lent & Brown (2006, p. 30) write that "although a number of different sociodemographic, family status, and global measures of the environment are sometimes used, they are typically too broad to offer much precision in predicting domain-specific criteria. For example, traditional social class indicators shed little light either on the specific career choice barriers that individuals face or on the unique supports and resources (*e.g.*, access to effective parenting, career role models, responsible peers) that may facilitate their career development despite economic hardships".

Regarding the question of how should perceived contextual supports and barriers be conceptualized in the SCCT model, Sheu et al. (2010) argue that it is reasonable to test a mediated (fully or partially) effect through EI cognitive antecedents, ESE and EOE. Empirical evidence of this mediation structure, in the EI, is still scarce, with both direct (*e.g.*, Luthje & Franke, 2003) and partially mediated or even fully mediated effects (Sheu et al., 2010) having been already reported.

Using an SCCT EI model, including contextual supports or barriers, one can find, for example, Chen (2013) and Pfeifer et al. (2016) studies. Chen (2013), finds that social influences positively impact information technology EI, without proposing any mediation hypothesis, and Pfeifer et al. (2016) find significant but small correlation between social norms (similar to SN) and ESE, EOE and EI, providing some empirical support for a mediated effect, indicating the importance of social norms as a direct antecedent of students' EI.

A final important consideration, regarding the analysis of contextual supports and barriers perceptions, has to do with the population of choice - as Krueger & Brazeal (1994) had already pointed out. To this regard, and specifically addressing college students samples, Sheu et al. (2010, p. 262) note that these “may be less likely to report choice-limiting barriers than do those who do not make it as far up the educational stream due, for example, to inadequate finances, access to a limited range of career role models, or lack of instrumental support with college applications. Greater study of objective features of the environment is also warranted, given that people may not always perceive the choice relevance of particular contextual factors. For example, early adolescents may not anticipate encountering barriers to their choice behavior because of their more limited knowledge of career requirements or workplace conditions”.

## **2.3 – Key Definitions, Theoretical Framework and Research Questions & Hypotheses**

From this literature review (*in* section 2.1.2), it becomes clear that EB is a phenomenon with relevant outcomes - at the individual, firm and societal levels - and that it has captured the attention of researchers, educators and policymakers, in particular, and, given its current popularity, of the general population as well.

Although EB can take many forms and be defined in many different ways (*in* section 2.1.1), this thesis focuses on new business creation. One of the most commonly studied EB, given the interest in better understanding the origins and development of for-profit organizations and their proposed outcomes.

However, since not everyone actually considers the possibility of venturing into their own business - and, therefore, some utility-, economic-, and social-enhancing innovation and development opportunities may be missed - there is a need to know more about individuals' entrepreneurial intention (EI), *i.e.* intentions to create one's own new business. Especially so, regarding college students. Those who, by age and education, are at the verge of making important career-related decisions that may lead them to choose (rather than get pushed into) an entrepreneurial career, (Scherer et al., 1989).

Taking the entrepreneurial career perspective on the phenomenon (*in* section 2.1.1), by using Social Cognitive Career Theory (SCCT: Lent et al., 1994) as a theoretical framework, this thesis highlights the cognitive and behavioral determinants of career choice, namely, entrepreneurial outcome expectations (EOE) and entrepreneurial self-efficacy beliefs (ESE), and how these relate with EI levels and subsequent EB, due to their interest for self-reflective and self-regulatory mechanisms of career choice. Still, it also explicitly acknowledges and incorporates variables related with other personal inputs & learning experiences and contextual influences, that are thought to relate with an entrepreneurial career choice and to further the understanding of entrepreneurial cognition.

## Specific Research Hypotheses and Research Questions

Given our professional interest in entrepreneurship education, as it is taught in business schools in Portugal, in this thesis the population of interest is that of higher education students in this country, with special emphasis on business and economics students. Therefore, the following research questions and hypotheses are all tested with a sample of that population, with data retrieved from the EEP Portugal research project.

In Chapter III the aim was to explain EI of Portuguese HEI students with SCCT. Considering the literature background (*in* section 2.2.3) on: (1) SCCT (Lent et al., 1994, 2000) and the recent suggestions for its incorporation into entrepreneurship research, which is still scarce (*cf.* Liguori, et al., 2018) (*e.g.*, Segal et al., 2002; Zhao et al., 2005; Vázquez et al., 2010; Lent et al., 2010; Liguori, 2012; Chen, 2013; Lanero et al., 2015; Pfeifer et al., 2016; Austin & Nauta, 2016); (2) its proposed greater theoretical soundness and completeness, when compared with other cognitive and noncognitive models, to explain goals that may not be completely under one's volitional control and require long-term commitment to major courses of action (*cf.* Lucas & Cooper, 2012; Liguori, et al., 2018); and, (3) the cognitive mediation mechanism, proposed to capture all perceived personal and environmental factors and translate them into purposeful behaviors (*cf.* SCCT: Lent et al., 1994; TPB: Ajzen, 1991; and SEE: Shapero & Sokol, 1982), but which has received, so far, mixed empirical support (*e.g.*, Zhao et al., 2005; Lent et al., 2010; Liguori, 2012; Chen, 2013; Pfeifer et al., 2016; Austin & Nauta, 2016). Addressing these empirical research gaps, the following hypotheses will be tested:

- H3.1**– A SCCT model can significantly explain EI.
- H3.2**- A SCCT model outperforms a model comprised of noncognitive demographic independent variables, explaining EI.
- H3.3**– In an SCCT model, all the effects on EI from noncognitive demographic variables, are fully mediated by ESE and EOE.
- H3.4** – In an SCCT model, the effect on EI from distal social support (measured as normative beliefs; NB), is fully mediated by ESE and EOE.

Noncognitive variables: Age, Gender, Entrepreneurial Family Background, Graduate Student, Business Student, Entrepreneurship Education Exposure, Work Experience, and Entrepreneurial Experience.

In Chapter IV the goal was to try to improve the measurement of self-efficacy beliefs in the SCCT model. Self-efficacy beliefs (SE) are defined as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses” (Bandura 1986, p. 391). The debate about the utility and theoretical soundness of using a general measure of self-efficacy (GSE) rather than an activity specific SE measure is an on-going one (*cf.* Chen et al., 2001; Bandura, 2012; Jackson et al., 2012). Generalized measures of self-efficacy have been empirically inferior to specific SE, in predicting behavior in particular activity domains (Chen et al., 2001), considered more stable (although susceptible to change) and proposed to capture the tendency to view oneself as capable of meeting task demands in a broad array of contexts (Eden & Aviram, 1993; Agarwal et al., 2000; Chen et al., 2001; Poon et al., 2006; Liguori, 2012; Jackson et al., 2012). These are also not proposed as a substitute for specific SE but, rather, its useful supplement for predicting generalized or novel performances (Chen et al., 2001; Jackson et al., 2012). For entrepreneurship research, Rauch & Frese (2007) propose GSE usefulness given that entrepreneurs must be confident in their capabilities to perform various (and often unanticipated) tasks, in uncertain situations, and this construct is associated with perseverance in the face of obstacles, personal initiative, higher hopes for success, long-term perspectives and active search for information, leading to a better knowledge.

In entrepreneurship research, Schmutzler et al. (2018) state that, empirical research strongly supports the relationship between EI and either GSE or ESE, although the disagreements about which one is the best construct to be used in entrepreneurial research remains. Recently, in two different meta-analyses, both the ESE and GSE were also related with firm performance, with no significant differences in effect sizes (Miao et al., 2017 and Rauch & Frese, 2007). However, very few have used both (*e.g.*, Dimov, 2010; Liguori, 2012). Advocates for the use of GSE in entrepreneurship argue that since entrepreneurs must possess diverse skill sets in multiple and diverse domains, it is not practical to generate a complete list of all related tasks and it may not be easily answered, by those with no direct entrepreneurial experience (Liguori et al., 2018; Markman et al., 2002; Khedhaouria et al., 2015).

Regarding studies on EI, that have used both GSE and ESE, Dimov (2010) found venture emergence related with a subdimension of ESE (opportunity confidence) but not with GSE, despite both self-efficacy measures being significantly related. Liguori (2012), seeking clarification of the GSE and ESE relationship and trying to conceptualize them as distinct

contributors to EI, in an SCCT model, found that GSE positively impacts both ESE and EOE and that its effects on EOE and EI are mediated by ESE. Leading Liguori et al. (2018) to propose that individuals with higher levels of GSE will report higher levels of ESE and EOE, than those who do not.

However, when ESE is associated with GSE (Chen et al., 2001; Liguori, 2012) and is placed in the EI model as a mediator of the GSE-EI relationship, this distinctiveness goal (regarding the various types of self-efficacy effects on EI) may be said not to be fully attained. Addressing Liguori (2012) findings, on the mediation of the GSE-EOE and the GSE-EI relationships by ESE, these may be said to be compatible with two different interpretations: (1) the full distinct effect of GSE (on EOE and EI) can be resumed to its impact on ESE – meaning that GSE would not provide additional value in predicting EOE or EI; and (2) since it is likely that ESE is associated with the respondent's broader GSE levels, an ESE measure muddles the potential distinct impact of both types of self-efficacy perceptions, specific SE and GSE, on EOE and EI. Thus, in this thesis, a new measure/operationalization is proposed, entrepreneurial specific self-efficacy (ESSE). One that can substitute ESE measures, by extracting from these the influence of perceptions of generalized self-efficacy (*i.e.* GSE) and that may finally clarify the distinctive roles of believing to be particularly efficacious on EB and believing to be generally efficacious overall, for any activity. To provide the first empirical evidence regarding the ESSE measure in an SCCT EI model, the following hypotheses will be tested:

- H4.1.1** – GSE item values are more stable, over time, than ESE items values.
- H4.1.2** – GSE has greater relative stability, over time, than ESE does.
- H4.1.3** – GSE has greater absolute stability, over time, than ESE does.
- H4.2** – In an SCCT EI model, ESE is more significantly associated with EI, than GSE.
- H4.3** – A SCCT EI model, including EOE and both GSE and ESSE can significantly explain the EI.

In Chapter V the objective was to find the underlying motivators for self-reported EI. Motivation has been defined as an inner force to gratify an unsatisfied need (Higgins, 1994). The role of motivations, despite attracting a lower interest in recent past, is again being considered (Fayolle et al., 2014). Since the seminal work of Schumpeter (1934), entrepreneurship research to date has been supportive of the idea that no single motive accounts

for the reason to create one's own business venture. Different people are motivated by different types of motives to become entrepreneurs (*cf.* Shaver & Scott, 1991; Feldman & Bolino, 2000; Cassar, 2007). This is probably related to the fact that such a complex and diversified type of phenomena or process can be or mean different things depending on the particular perspective one takes. These different motivations, for starting a business, can also lead to different entrepreneurial events (Politis, 2005; Stephan, Hart, & Drews, 2015), such as: successful business emergence, type of business and workplace intended, entrepreneurial career choices and paths, individual and firm goals and firm's success, work-, life- and family-satisfaction, and exit and failure (*cf.* section 2.2.4). Together, these events have been used to define the different career paths of special types of entrepreneurs (*e.g.*, Bird, 1988; Birley & Westhead 1994; Krueger & Brazeal 1994).

Several different authors have provided extensive ordered lists, regarding the motivations to start one's own business (*e.g.*, Birley & Westhead 1994; Kolvereid, 1996). This, as lead some to recognize the need to reduce the associated complexity, by grouping them into meaningful motivational factors (*e.g.*, Shane et al., 1991; Kolvereid, 1992; Birley & Westhead, 1994; Kolvereid, 1996; Giacomini et al., 2011). Proposed associations of particular motives, into motivational factors, have often been based according to being considered motivational drives or incentives, internal or external and/or intrinsic or extrinsic (*cf.* Carsrud & Brännback, 2011; Shaver et al., 2001). One line of research that has the potential to provide impactful knowledge, for entrepreneurship educators, but which is still scarce is that of how does the prevalence/importance, associated with each of these motivational factors, change according to the demographic characteristics of the population/sample (*e.g.*, gender: Shane et al., 1991, Kuratko et al., 1997 and Carter et al., 2003; age, education, family business background and prior EB: Kolvereid & Isaksen, 2006). Also, research on personal differences (which can change with time and meaningful personal events) and cultural values (that may change across regions) may influence the likelihood that certain motivations may be more readily cited, to support behavioral intentions, than others. This, due to being more readily conscious, or due to being perceived as more socially desirable or acceptable. Regardless, this provides an argument in support of a need for more exploratory research on the reasons/motivations behind EI, for specific populations (and its segments) and for specific cultural settings (*e.g.*, nations and regions).

Moreover, research on the temporal stability of these motivational factors' importance, for each individual, is also lacking, and this is relevant since this motivational factor have been

associated with future events. The exception being the empirical support for an instability effect, found related to the event of new business emergence (Cassar, 2007). Also, given that some of these reasons may also be perceived as compatible with organizational employment, some of these may have, more or less, impact on EI (*cf.* Brenner et al., 1991; Kolvereid, 1996). However, there is a shortage of empirical research regarding the association between certain motivational factors and EI.

Finally, according to Carsrud & Brännback (2011), motivation can also be described as intrinsic and/or extrinsic and, although most entrepreneurial research assumes motivation by external rewards (*e.g.*, money, power, status), a personal interest in the entrepreneurial task itself (*i.e.* intrinsic motivation) is often the reason behind entrepreneurial action. A few others (*e.g.*, Krueger & Brazeal, 1994; Kuratko et al., 1997; Lanero et al., 2015) have also highlighted the potential for new research on the importance and impact of differencing between intrinsic and extrinsic motivations, for entrepreneurship relevant outcomes.

Aiming to add new insight to this literature, the following research questions will be explored:

- Q5.1** – What are the most frequently cited motivators as a justification of present EI, by Portuguese HEI students?
- Q5.2** – Which motivators for entrepreneurship are more likely associated with the highest EI levels?
- Q5.3** – Can emerging entrepreneurship motivators be meaningfully associated into a reduced set of distinct motivational factors?
- Q5.4** – Which entrepreneurship motivational factors emerge and how do these relate with EI?
- Q5.5** - How stable are entrepreneurship motivators, and resulting motivational factors, across time, in an intra-individual analysis?
- Q5.6** - Are some motivational factors more stable than others?

As well as the following hypotheses, more directly related to the SCCT EI model:

- H5.1** – In an SCCT model, EI explained variance is improved when the EOE measure is based on motivators extracted from the studied population.

**H5.2** – In an SCCT EI model, an entrepreneurship intrinsic EOE measure is significantly related to EI.

**H5.3** – In an SCCT EI model, an entrepreneurship extrinsic EOE measure is significantly related to EI.

Finally, in Chapter VI the aim was to describe EI stability and to try to improve the predictability of entrepreneurial behavior, through SCCT. Behavior is governed either by intentions or by automatic processes (Sommer, 2011) and “people do what they intend to do and do not do what they do not intend” (Sheeran 2002, p. 1). Despite behavior being often unconscious and unintended, the creation of a new business is neither, frequently requiring, extended searching, planning and marshaling of resources (*cf.* Mcgee et al., 2009). From Social Psychology, a meta-analysis of TPB found that intentions only explained 27%, on average, of the variance in behavior (Armitage & Conner, 2001). Given that these results also revealed considerable variability, Kautonen et al. (2015) suggest the need for entrepreneurship specific empirical evidence to validate intention as a meaningful determinant of start-up behavior.

Regarding EB in particular, a meta-analysis, with 98 studies by Schlaegel & Koenig (2014) found that the variance explained by EI is estimated at 37%. Yet, Adam & Fayolle (2016) suggest that intentions-behavior link is not systematic and intention models do not explain the processes by which intentions are translated into action, leaving, therefore a gap in the literature. Reporting a much lower explanatory power, Liñán & Rodriguez-Cohard (2015) found EI estimated only 12.8% and Delanoë-Gueguen & Liñán (2018) reported 29,9%. They do point out an important interfering factor, which relates to sample size and the duration of the longitudinal analysis time-frame. These methodological issues may condition the interpretation of current findings to answers regarding short-term EB.

Regarding this issue, the study of EI stability may be found to have a particular merit, one that is not inferior to the research of the actual EI-behavior link, since if no behavior was actually performed during a predetermined time-frame but EI remained high during the period, there is a case for claiming that those may still become entrepreneurs in a more distant future. In fact, actual goal or behavior achievement may present a considerable delay to the formation of its respective intentions (Shook et al., 2003) and high levels of EI may be reported by individuals with a wide range of career decision making maturity (Hirschi, 2013). The degree of intention formation (*i.e.* intention intensity, high *versus* low level intentions) and EI stability, over time,

are considered the main factors for the validity and interest of EI cognitive models to predict EB (*cf.* Heuer et al., 2009; Liñán & Rodríguez-Cohard, 2008). In fact, Sheeran et al. (1999, p. 724), in relation to a different type of goal, find that “intention stability moderated the intention-behavior relation such that stable intentions were more likely to be enacted than unstable intentions”.

Although an intentional state may be associated with an advanced status of career decision making (Hirschi, 2013) - *i.e.* more likely to be self-congruent, realistic, and sustained and motivated by high choice commitment (Holland, 1997; Sampson et al., 1999) - the possibility that EI do change, is real and it is based, for example, on the access to new information or encountering unforeseen obstacles to action (*e.g.*, Sheeran et al., 1999; Liñán & Rodríguez-Cohard, 2008). However, regarding new business creation, “very few efforts have yet been made to analyze the temporal progression of intention” (Liñán & Rodríguez-Cohard 2015, p. 78) and future research, on this subject, has been called for already by many (*e.g.*, Heuer et al., 2009; Liñán & Fayolle, 2015; Walter & Heinrichs, 2015).

Empirically, Matthews & Moser (1996, p. 33) found a decrease in the number of individuals expressing a strong interest in small business ownership and Liñán & Rodríguez-Cohard (2008), report TPB constructs stability for the general sample, although, with a small correlation score of .14, between EI in T1 and T2. In fact, later (Liñán & Rodríguez-Cohard, 2015), with approximately the same sample, but a different methodology, find that EI in T2 is not explained to a great extent by EI in T1, in a linear SEM model, when TPB cognitive EI antecedents are included as covariates. Stability measurement appears to be no small issue, here, since reported correlations of EI(T1) and EI(T2), for basically the same sample, can vary between .14 and .623 depending on if one measures within-individual correlations of EI items or EI construct averages.

Providing some support for the interest of studying the impact of different motivational factors associated with entrepreneurship and EI stability Sheeran & Conner (2017, pp. 3-4) note that “factors that form the basis of intention appear to strengthen intention-behavior relations precisely because these factors increase the temporal stability of intentions”. However, research on the determinants of stability itself are clearly lacking, with very few notable exceptions (*e.g.*, Hirschi, 2013) and none of which identified as related to the importance of motivational factors for start-up behavior. The possibility that such an effect exists is particularly expectable when considering motivational factors that are more intrinsically related with the entrepreneurial

activity - a motivation that cannot be, later, easily 'transposed' as a justification for choosing organizational employment. Aiming to add new insight to this literature, the following research hypotheses will be explored and tested:

**H6.1.1** – The EI measurement scale has a stable item-structure, over a 5-year timeframe.

**H6.1.2** – The relationship between individual EI values within a sample remains stable over a 5-year timeframe (relative stability).

**H6.1.3** – EI are stable, by not significantly changing their values over a 5-year period (absolute stability).

**H6.1.3a)** – At the group level.

**H6.1.3b)** – At the individual level.

**H6.2** – EI are more stable for intrinsically motivated individuals than they are for those extrinsically motivated, over a 5-year timeframe:

**H6.2.1** – Since intrinsically motivated individuals display greater relative stability of EI, across time.

**H6.2.2** – Since intrinsically motivated individuals display greater absolute stability of EI, across time.

**H6.3** - In an SCCT model, EI significantly predicts future EB, within a five-year period.

**H6.4** – ESSE and GSE are both significant predictors of future EB, within a five-year period.

**H6.5** - Having EI based on intrinsic motivators is a significant predictor of future EB, within a five-year period.

## **Chapter III**

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**Explaining EI of Portuguese HEI Students with SCCT**

## **Chapter III: Explaining Entrepreneurial Intentions of Portuguese Higher Education Institutions Students with Social Cognitive Career Theory**

This thesis is related to the general research question of ‘*why do some people become entrepreneurs while others do not?*’. More specifically, its empirical sections are centered around the cognitive processes that lead students enrolled in higher education institutions (HEI) in Portugal, to have different levels of entrepreneurial intentions (EI) and different likelihoods of engaging in future entrepreneurial behavior (EB).

Using social cognitive career theory (SCCT) as the theoretical framework, this first empirical chapter overall goal is to evaluate the SCCT EI model fit and explanatory power and to identify potential opportunities for model improvement.

### **3.1 - Data, Measures and Methods**

#### **3.1.1 - Data**

From the 3<sup>rd</sup> October 2010 to 7<sup>th</sup> July 2011, a primary data collection was conducted, within the *Entrepreneurship Education Project*, an international research project coordinated by Prof. Doan Winkel<sup>3</sup> and Prof. Jeff Vanevenhoven<sup>4</sup>. This research project goal was to contribute to the knowledge on entrepreneurship education around the world and collected data from HEI students of more than 70 countries and 400 universities (*cf.* Vanevenhoven & Liguori, 2013). From this larger international project, EEP Portugal was created with the purpose of providing information about entrepreneurship education in Portugal and their undergraduate students, focusing primarily on business schools (or equivalent HEI) in Portugal.

Accordingly, the EEP Portugal research group focused on inviting entrepreneurship courses’ students, from HEI with business and entrepreneurship programs where these courses were lectured. As many Portuguese HEI had a considerable proportion of their entrepreneurship programs and classes dedicated, exclusively, to postgraduate programs, both undergraduate and graduate students were invited to participate in the EEP Portugal web-survey. For convenience,

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<sup>3</sup> At the time, Assistant Professor of Entrepreneurship at Illinois State University, College of Business.

<sup>4</sup> At the time, Assistant Professor of Management - University of Wisconsin – Whitewater.

the EEP Portugal research group focused, mainly, on the HEI students where its members were affiliated. Although other HEI were also contacted, through other entrepreneurship scholars from the group's professional network, the success was very limited. The majority of students participating in our survey sample were from: Universidade de Lisboa: ISEG (35.75%), IST (1.99%); ISCTE, Instituto Universitário de Lisboa (13.75%); Instituto Politécnico de Leiria: ESTG (6.88%), ESAD.CR (1.30%), ESTM.P (1.22%); Instituto Politécnico do Porto, ESTGF (7.87%); Universidade da Beira Interior (7.18%); Universidade do Minho (6.95%); Universidade de Trás-os-Montes e Alto Douro (6.88%); Instituto Politécnico de Santarém, ESG (3.82%); and Instituto Politécnico de Setúbal, ESCE (1.60%).

Although this web-survey was not restricted to business & economics HEI – as other students could be useful as a control group - it follows, without surprise, that respondents' most predominant academic course enrolment can be categorized as Business programs (*i.e.* including all programs related with general management and the management or creation of private companies) with 459 students (36.20%) enrolled in this type of programs. This category is followed by a, broader and more inclusive, category designated by Business & Economics Related Programs (*i.e.* including all HEI programs typically taught in Business and Economics schools/departments, but not already included in the former category) with an enrollment of 377 students (29.73%). Finally, a residual category consisting of all other programs is identifiable - which accounts for a very diversified set of students, with very different academic curricula – comprising the enrollment of 432 students (34.07%). For some more detail on which programs designations were assigned to each category, refer to Appendix A.

Benefiting from having the coordination of the EEP group in Portugal, it was possible, not only to translate<sup>5</sup> the first wave (2010-2011) of the international survey (from English to Portuguese) and to assist in its implementation in a web-survey format (in *LimeSurvey* internet service), but also to add some new questions to its standardized international version, specially related with this thesis objectives.

This international project was originally designed as a longitudinal research and, as such, subsequently three more survey waves were produced in the context of EEP Portugal. In the first EEP follow-up survey (Fup1: 2011-2012), the *EEP Portugal Group* worked together with

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<sup>5</sup> Back translation was assured by Professor Vitor Braga, an Associate Professor from Instituto Politécnico do Porto – ESTGF and Professor Doan Winkel (Assistant Professor of Entrepreneurship at Illinois State University, College of Business). Following request, our translation was shared with Endeavor Brazil, to facilitate the participation of Brazilian Universities in the *Entrepreneurship Education Project*.

Professor Doan Winkel to produce its standard international version/content. Due to the lack of participation in this follow-up version, the directors of this international project discontinued the production of new international follow-up versions of the survey. However, later, in the academic years of 2013-2014 and 2015-2016, with permission from the international project direction, we created a third and fourth (final) survey waves (for which we are fully responsible). Refer to Appendix B to see the complete versions of all four EEP Portugal survey waves.

Regarding EEP Portugal first wave (1stW) survey, from our request to entrepreneurship teachers of Portuguese HEI to disseminate our survey, in their institutions - using *LimeSurvey* or a printed version to be distributed in class and answered onsite - we have registered a total of 2,304 independent (*i.e.* without duplicates) accesses by login (via *LimeSurvey* link – this was the case for a large majority) or by having a printed version hand over. This value compares with the total population of 403,445 individuals who were enrolled in HEI in Portugal, in the academic year of 2010-2011, and 6,770,936 individuals estimated to reside in Portugal and old enough to be enrolled in a HEI<sup>6</sup>.

Because EEP promoted its survey internationally by allowing students to enter a raffle - for a prize worth \$100 USD (via certificate gifts) – it was decided that the data should be scanned for respondents who might have made multiple survey submissions, as an opportunity of improving their winning odds. By checking for duplicated names, school number id, and email addresses, 26 individuals were identified as having submitted more than one survey. For all these cases, their most complete submission was kept and all the others were eliminated. According to the respondents' self-reports, out of the 2,304 survey accesses only 1,309 submissions were accepted for our first sample, since these were the only submissions where respondents identified themselves as students currently enrolled in a Portuguese HEI.

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<sup>6</sup> Source: Inquérito ao Registo de Alunos Inscritos e Diplomados do Ensino Superior, MEC e Estimativas Anuais da População Residente, Instituto Nacional de Estatística (<http://www.dgeec.mec.pt/np4/18/>).

### *Survey Method*

According to McKenzie et al. (2007), who presented a summary of the findings from studies analyzing prevailing methodologies in entrepreneurship research, the administration of questionnaires to samples of the population is the dominant method of data collection amongst entrepreneurship researchers.

This thesis data can be said to be mainly derived from a secondary data source, the Portuguese data from international *Entrepreneurship Education Project*, although, as already referred, this data also incorporates questions that were specifically created for this thesis.

### **3.1.2 – Measures**

For the measurement of SCCT constructs we followed the EEP international survey measurement scales (*cf.* Vanevenhoven & Liguori, 2013), by translating its text to Portuguese (with a translation and back translation method). It was also found useful to follow Lent & Brown's (2006) guidelines for SCCT constructs conceptualization and assessment. Factorial structures were determined using an Exploratory Factor Analysis (EFA) with factors extracted based on maximum likelihood estimation method (ML) with an oblique rotation (Direct Oblimin) and extraction based on Eigenvalues greater than 1 – the default method for a confirmatory factor analysis (CFA) using AMOS software and the same method used by Mcgee et al. (2009).

To estimate the constructs' internal reliability, for all the latent variables measurement in the SCCT model, composite reliabilities (C.R.) were used – reported in more detail in section 3.2.1 - and the traditional Cronbach's alpha coefficients (Cronbach, 1951; Cronbach & Meehl, 1955), which are disclosed below, for comparison purposes with other research.

### *SCCT Core Constructs*

EI were initially measured using a modified version of Thompson's (2009) scale, using a 6-item scale - deleting 4 distracter items, and adding an extra intermediate level to the response scale - making this a 7-point Likert-type scale (from 1 = very untrue, to 7 = very true). After inverting the answers to items 1, 3 and 4 (which were presented in the negative form), the EI construct

scale presents an unifactorial internal structure with its only factor explaining 36.92% of the 6-item variance.

In terms of reliability, Cronbach resulted in a .769 alpha, which is much lower than the .84-.89 alpha reported by Thompson (2009), which by many is still an acceptable value but might be evidence of a less than perfect operationalization of this construct. This formulation may be said to go beyond mere intentions and already entering the nascent behavior domain<sup>7</sup>. Besides the possible conceptual looseness of this construct measurement, one can speculate that this difference might be due, also, to the different sample sizes (106 *versus* 1,221 students), a larger proportion of undergraduates (36% *versus* 70.8%), cultural differences between the students from an International University, in East Asia, and students from HEI from Portugal, and/or other demographic characteristics. Later, when performing the CFA for the measurement model of SEM, convergent validity for the EI construct, is found to be lower than the normal threshold, which, together with the theoretical looseness (regarding the scale's face validity), lead to the decision of measuring EI with only three items (*i.e.* EI01, EI04 and EI06). This resulted in a lower but still acceptable .713 alpha, but with an improved convergent validity and with the single factor explaining 45,94% of these items variability. For more details refer to section 3.2.1.

Entrepreneurial Self-Efficacy (ESE), was measured using a modified version of Mcgee et al. (2009, p. 978) scale, using a 20-item Likert-type scale, from 0 to 100 (in which 0 = absolutely no confidence in your ability, 50 = moderately certain you can successfully complete the activity, and 100 = completely confident in your ability). The original item 10 – *i.e.* [q3.22] “Clearly and concisely explain verbally/in writing my business idea in everyday terms” - was subdivided into Item 10 and Item 11 - to be able to differentiate verbal and writing perceived capabilities. And the original scale also differs in that it was created to be answered in a 5-point scale (from 1 = very little confident, to 5 = very much confident) rather than a [0;100] interval.

For ESE, the same internal factorial structure of 5 ESE subconstructs was not confirmed, as originally reported in Mcgee et al. (2009). Based on the extraction criterium of eigenvalues greater than 1, only 3 factors are found - explaining, cumulatively, 54.03% of the 20-Items total variance. Given the lack of theoretical support for this empirically driven internal structure and the fact that eigenvalues for a fourth and a fifth factor were fairly close to 1 (.983 and .855,

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<sup>7</sup> For example, Thompson's (2009) item "saving money to start a business" is used by Thompson (2009) as criteria for identification of nascent entrepreneurs.

respectively), a decision was made to keep the same 5 factors internal structure as Mcgee et al. (2009). This 5-factor structure explains, cumulatively, 60.06% of the 20-items total variance, but there are some differences to report in terms of ESE items per factor, namely:

ESE [item 6] “*Estimate the amount of start-up funds and working capital necessary to start my business*” has a higher correlation with the *ESE for Implementing Finance* factor than it has with the *ESE for Planning* factor, as proposed by Mcgee et al. (2009). Although not disagreeing with the fact that this item can be related with planning capabilities, for a sample where the majority of respondents are undergraduates perhaps the main determinant of self-efficacy beliefs, here, is the knowledge (or lack of it) of the technical details necessary to calculate working capital or, at least, presumably more than foresight capabilities. Nevertheless, although initially this ESE [item 6] was included as an observation of the *ESE for Implementing Finance* factor, following SPSS suggestion, this [item 6] ended up being discarded from the model for improved internal reliability.

ESE [item 4] “*Estimate customer demand for a new product or service*” which, in this sample, fits better within the *ESE for Searching activities* factor, rather than within the *ESE factor for Planning activities* - as proposed by Mcgee et al. (2009). It appears as perfectly understandable to interpret this item, in this way. If one does not think of this question as the capability of precisely defining service/product demand (*i.e.* planning capabilities), but, rather, as the capability to search for a good business idea by estimating its general attractiveness for potential clients (*i.e.* searching/screening capabilities). As such, ESE [item 4] was included as an observation of the *ESE for Searching activities* factor, instead.

As both these changes affect the same construct – *i.e.* *ESE for Planning activities* – it is important to see if its meaning remains the same. Apparently, it does, although it now presents a narrower scope. After removing the ESE [item 4] and ESE [item 6], it is now better defined as a construct measuring the capability of “Planning Market Positioning”, in terms of value proposition and price.

Following this slightly different ESE internal factorial structure and testing the internal reliability of each ESE subconstruct it was found that: *ESE for Searching activities* construct, with a 4-item subscale, results in a .820 alpha (.759, if the 4<sup>th</sup> item is not included - as originally proposed), which is slightly less than the .84 alpha, originally reported, but still above the .80 alpha cutoff for acceptability (*cf.* Lance, Butts, & Michels, 2006); *ESE for Planning activities*

construct with the reduced 2-item subscale, results in a .785 alpha (.78, if the 1<sup>st</sup> original item was included), which is less than .84 originally reported; *ESE for Marshaling activities* construct, with a 4-item subscale, resulted in a .794 alpha, which is just short of the .80 originally reported for the smaller 3-item subscale; *ESE for Implementing People activities*, a 6-item subscale, results in a .887 alpha, which is close to the .91 originally reported; *ESE for Implementing Financial activities*, a 4-item subscale, results in a .889 alpha, which is better than the .84 originally reported (*cf.* original results in Mcgee et al., 2009). Following SPSS suggestion for alpha increase, the ESE [item 6] was removed from this factor, resulting in a final construct with the same 3-item as Mcgee et al. (2009) and a final result of a .897 alpha. If measuring ESE as one factor structure, for model parsimony, the 20-item factor would explain 38.53% of the items variability and present a good reliability level, with a Cronbach alpha of .924.

Entrepreneurial Outcome Expectations (EOE) were initially measured based on Krueger's (2000) 4-item scale offering the possibility of an open ended answer, where the respondents could add any other relevant expected outcome. These items were to be answered using a 7-point Likert-type scale (from 1 = not at all expected, to 7 = very much expected). The EOE construct scale presents an unifactorial internal structure with its only factor explaining 46.58% of the 4-item variance.

Regarding construct reliability, the 4-item EOE construct scale resulted in a .762 Cronbach alpha which, as for the EI scale, might be said to be acceptable but far from ideal and may be evidence of a construct trying to capture too much - as the EOE may be so different from one individual to another. Our first formulation for construct measurement included an extra item designated by "time management gains", but, following SPSS suggestion, it was removed, because it would result in lower construct reliability (Cronbach alpha of .733) and because it did not belong to the construct original measure, as it is in the international version of the EEP survey. As with EI, later, when performing the CFA for the measurement model of SEM, it was found a lower than threshold convergent validity for the EOE construct which together with the specificity of our, mostly young adult, population, led us to measure EOE with only three items. This resulted in a lower but still acceptable Cronbach's alpha of .726, but with an improved convergent validity. For more details refer to section 3.2.2.

According to Vanevenhoven & Liguori (2013), the full dataset of the international *Entrepreneurship Education Project* (n = 18,000) reported slightly better Cronbach alphas of: .82 for EI, .80 for EOE and .92 for ESE constructs.

### *Demographic Variables and Contextual Social Support*

To benefit from the more overarching SCCT framework and studying the effects of other personal characteristics (related with entrepreneurship relevant education and experience) and perceived contextual social support, regarding EI and behavior, the following variables (commonly associated with entrepreneurship) were also included: Normative Beliefs (NB: *i.e.* the opinion, regarding EB, of those who might have an influence on the respondents career related behaviors), Graduate Student (*i.e.* the academic level qualification is graduate student or undergraduate), Business Student (*i.e.* the academic scientific domain of the students course is management/business or not), Entrepreneurship Education Exposure (*i.e.* exposed, or not, to lectures on the subject), Gender (*i.e.* male or female), Age (in years), Prior Entrepreneurial Experience (*i.e.* ever created, or not, a new business), Entrepreneurial Family Background (*i.e.* did parents/tutors, grandparents or siblings, ever created, or not, a new business), and Work Experience (at least 5 years) (*i.e.* exposed, or not, to at least five years of work experience – part-time or full-time). With the exception of NB and Work Experience, all other variables, have been extensively used and operationalized as they are in this thesis (*e.g.* Zhao et al., 2005; Vázquez et al., 2010; Lent et al., 2010; Liguori, 2012; Chen, 2013; Lanero et al., 2015; Pfeifer et al., 2016; Austin & Nauta, 2016).

Regarding work experience, a small explanation is due, given its less traditional measurement. Previous research on the relationship between work experience and EI, have used different operationalizations of the former variable - with the dominant forms being a binary yes/no answer to a question similar to ‘*Do you have any previous work/employment experience?*’ (*e.g.*, Fatoki, 2014) or a continuous variable, measured in years (*e.g.*, Liguori, 2012; Baptista et al., 2014). Here, categorizing individuals as experienced workers, only when they have worked for 5 years or more, bears some consequences, in terms of the construct interpretation and its effects. Although still measuring human capital, being a binary variable, it cannot be said to represent a linear relationship between working time and its covariates, like others have analyzed. It is now a categorization/qualification that distinguishes experienced workers from those who cannot yet be said to be experienced. Triggered by the need to avoid multicollinearity

between Age and Work Experience and its consequences, such as, the reduced stability of predictors estimates across different model specifications and sample coverage (*cf.* Farrar & Glauber, 1967), the 5 year threshold was considered as an interesting and relevant criterion for the operationalization of the variable Work Experience.

This is believed to increase intra-group homogeneity and inter-group distinctiveness, due to three main reasons: (1) as it signals significant experience/knowledge for a skilled worker, which, has been suggested to empower entrepreneurs to better recognize and exploit opportunities (Baptista et al., 2014) and may also be related with a significant social network; (2) as it its a timeframe in which most people would be able to find a good enough job/career, matching their professional interests and competences, so that leaving this job or career path represents meaningful opportunity-costs, related with stability (tenure) on the job and/or professional status; (3) and, also, because after the first 5 years of experience the benefits of extra experience on individual returns is thought decline sharply, on average (*cf.* Dustmann & Meghir, 2005), which could mean that, after this initial period, individuals with greater wealth ambitions might start to be confronted with the limits of the potential economic returns to an organizational employee.

Also, regarding Normative Beliefs (NB), some extra information should be provided. These were measured with a variation of Kolvereid's (1996) 7-point scale, using a somewhat more detailed inventory of 6 items, rather than the original 3 items scale, with likely socially meaningful groups for the individual - namely: parents/tutors, grandparents, siblings, other family members, close friends, and acquaintances. Students were asked to identify their perception of each of these groups' opinion, regarding their choice of pursuing with the creation of a new business project (Scale: 1 = Strongly negative; 2= Negative; 3= Lightly negative; 4= not positive nor negative; 5= Lightly positive; 6= Positive; to 7= Strongly positive; and NA = Not Applicable / Don't know).

Due to the high number of missing values in the NB construct items (some of which, because they are not applicable to the respondents – *e.g.* “siblings” and “significant other”), this construct measurement was done by using an index/composite variable. This NB index represents the average opinion of those for which the respondent disclosed information (based on his/her own perceptions). This proxy has some limitations but considering that only 309 respondents disclosed a perceived opinion for all 6 social groups, and the possibility that the lack of disclosure might be evidence that the missing groups' opinions are negligible, this

solution was posited to be adequate, resulting in a much larger set of 1,205 respondents with NB index scores.

The NB construct derives from the theory of planned behavior (TPB), but here it has been operationalized without multiplying its value by the value of the variable ‘Motivation to Comply’ - as it has been commonly done, in the application of TPB to EI. Here, Belchior & Liñán (2017) suggestion was followed, given their critic to the likely circular logic involved in trying to predict someone’s intentions by asking them indirectly what their intentions are.

### **3.1.3 - Descriptive Statistics**

Using the initial sample of 1,309 students, from the EEP Portugal 1stW survey, Table 3.01 presents the descriptive statistics for all variables included in the SCCT EI model<sup>8</sup>, including means, standard deviations and Spearman’s<sup>9</sup> rank order bivariate correlations, between all non-missing cases.

The mean values of this thesis’s model cognitive variables items were: EI (6-item avg., 1-7) = 4.31; ESE (20-item avg., 0-100) = 68.17; EOE (4-item avg., 1-7) = 5.77; GSE (10-item avg., 1-5) = 3.79. According to Vanevenhoven & Liguori (2013), these values compare with the following values from the international *Entrepreneurship Education Project* (n = 14,396): EI (6-item avg., 1-7) = 4.33; ESE (20-item avg., 0-100) = 68.83; EOE (4-item avg., 1-7) = 5.6; GSE (10-item avg., 1-5) = 3.91. These are similar results, although the Portuguese sample displays slightly higher EOE and slightly lower GSE.

Exploring gender differences across the model’s cognitive variables - based on a T-test for mean differences for independent samples (bootstrap, 2.000 samples):

Notation: [males mean (*SD*) versus females mean (*SD*)]

- Significant differences were found for EI [4.59(1.23) vs 4.24(1.17)], ESE [69.54(13.93) vs 67.83(13.54)] and GSE [3.87(.44) vs 3.75(.45)]; and,

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<sup>8</sup> Including General Self-efficacy (GSE) which will enter the SCCT model later, in Chapter IV.

<sup>9</sup> Which is more appropriate than the Pearson’s correlation coefficient for nonparametric data, which is the case of this study’s variables.

- No significant differences were found for EOE [5.80(.78) vs 5.79(.75)] and NB [5.54(.89) vs 5.59(.94)].

ESE differences appear to relate, mainly, to significant differences in ESE for searching and planning activities, and maybe also to marshaling and implementing finance activities – although not significantly - but most probably not to ESE implementing people activities, which are, on average, higher for women – although, only significant at a higher threshold of p-value < .10. Refer to Appendix C, for more detail on these exploratory results from the mean difference tests.

Results from correlation analysis, including all SCCT cognitive variables and their antecedents, are all coherent with the Chapter's II (section 2.3) hypotheses. The only unexpected insignificant correlation found was between Entrepreneurship Education Exposure and all other variables in the model. With EI, ESE and EOE, being all positively correlated – though with ESE having a much higher correlation coefficient ( $\rho = .409$ ) with EI than GSE ( $\rho = .295$ ) and EOE ( $\rho = .152$ ) – and with ESE and EOE both being positively correlated ( $\rho = .207$ ). Again, these values compare with the following Pearson bi-variate correlations<sup>10</sup> values from the international *Entrepreneurship Education Project* (n = 14,396) of EI with ESE (r = .44), with GSE (r = .26) and with EOE (r = .28) – the latter being, by far, the largest difference encountered (*cf.* Vanevenhoven & Liguori, 2013).

Still in relation to the cognitive constructs of the model, but outside the thesis's confirmatory analysis, there was an expected positive correlation between all subdimensions of ESE, with ESE, EOE and EI. All correlation reported above, for this sample, are significant at the highest threshold of p-value < .001).

Regarding the Contextual Social Support and variables signaling entrepreneurship relevant Learning Experiences, as expected, it can be observed that for HEI students:

- Having prior entrepreneurial experience is positively correlated with EI ( $\rho=.259$ ), and the antecedent: ESE ( $\rho=.156$ ).
- Normative Beliefs (NB) are positively correlated with EI ( $\rho=.182$ ), and its two antecedents: ESE ( $\rho=.239$ ) and EOE ( $\rho=.161$ ).

<sup>10</sup> Which, contrary to this thesis's analysis, does not account for the nonnormality of the data.

- Gender (male) is positively correlated with EI ( $\rho=.161$ ) ( $p$ -value < .001), and the antecedent: ESE ( $\rho=.072$ ).
- Age is positively correlated with EI ( $\rho=.144$ ), and the antecedent: ESE ( $\rho=.097$ ).
- Having a work experience of, at least, 5 years is positively correlated with EI ( $\rho=.138$ ), and the antecedent: ESE ( $\rho=.137$ ).
- Having Family with Entrepreneurial Background is positively correlated with EI ( $\rho=.130$ ) ( $p$ -value < .001), and its two antecedents: ESE ( $\rho=.070$ ) and EOE ( $\rho=.059$ ).
- Academic graduation is positively correlated with EI ( $\rho=.055$ ).
- Being enrolled in a business course is positively correlated with ESE ( $\rho=.067$ ).

On the other hand, contrary to expectations, no (or opposite) significant correlation was found for the following variables, at the minimum significance threshold (*i.e.*  $p$ -value < .05):

- Having prior entrepreneurial experience is not significantly correlated with EOE ( $\rho=.018$ ).
- Gender (male) is not significantly correlated with EOE ( $\rho=.018$ ).
- Having a work experience of, at least, 5 years is not significantly correlated with EOE ( $\rho=-.023$ ).
- Age is negatively correlated with EOE ( $\rho=-.058$ ).
- Academic graduation is neither significantly correlated with ESE ( $\rho=.021$ ), nor with EOE ( $\rho=-.019$ ).
- Being enrolled in a business course is neither significantly correlated with EI ( $\rho=.043$ ), nor with its antecedent: EOE ( $\rho=.014$ ).
- Having had entrepreneurship education exposure is neither significantly correlated with EI ( $\rho=.032$ ), nor with its two antecedents: ESE ( $\rho=-.029$ ) and EOE ( $\rho=.010$ ).

A final methodological note, regarding this correlation matrix, is due, to disclose that the average item value for each construct<sup>11</sup> was used, rather than the saved results from the factor analyses – which is equivalent to having all items loadings equal for each factor on a CFA. The reason why this was done is twofold: first, it becomes more informative - given that the composite variables means will not be zero and can be directly compared with their response scales range – and, second, this result will be less redundant when compared with those from the CFA – presented in the results section.

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<sup>11</sup> Here, no restriction was made to the minimum number of self-reported items, nor was there any imputation method used to fill in existing missing values.

**Table 3.01:** Mean, standard deviation and sample size per variable in the SEM base model, and Spearman rank order Correlations between SCCT core cognitive constructs and other distal and proximal contextual variables (with pairwise exclusion of missing values).

SEM base model Variables Sample: 1st Wave EEP Portugal survey	Descriptive Statistics			Spearman's rho (correlation)																	
	Mean	(sd)	n	1.	2.	3.	4.	5.	6.	7.	8.	9.	10a.	10.1.	10.2.	10.3.	10.4.	10.5.	10b.	11.	12.
<b>Contextual Variables - Proximal and Distal</b>																					
1. Gender (Male, Y/N)	42,08%	(0,49)	1307	1																	
2. Age (Years)	24,21	(6,78)	1232	,092**	1																
3. Family with entrepreneurship experience (Y/N)	58,00%	(0,49)	1243	,007	,036	1															
4. Normative Beliefs (NB index: 6-item avg, 1-7)	5,56	(0,91)	1205	-,043	-,077**	,052	1														
5. Education Level (Graduated Student, Y/N)	29,20%	(0,45)	1250	-,011	,445***	,021	-,012	1													
6. Engaged in Business Education Course (Y/N)	47,49%	(0,50)	1114	-,034	-,093**	-,002	,005	-,185***	1												
7. Entrepreneurship Education exposure (Y/N)	46,43%	(0,50)	1122	,002	,046	-,015	,010	-,048	,133***	1											
8. Work experience (5 years or more, Y/N)	30,49%	(0,46)	1197	,029	,655***	,080**	-,058	,172***	-,075*	-,043	1										
9. Entrepreneurship experience (Y/N)	14,31%	(0,35)	1300	,084**	,263***	,132***	,016	,082**	-,010	,020	,250***	1									
<b>SCCT EI Direct Antecedents</b>																					
10a. Entrep. Self-Efficacy (ESE: 20-Item avg. 1-100)	68,17	(13,90)	1258	,072*	,097***	,070*	,239***	,021	,067*	-,029	,137***	,156***	1								
10.1. ESE Searching (4-Item avg. 1-100)	66,04	(17,11)	1258	,184***	,099***	,086**	,220***	,063*	-,012	-,031	,085**	,171***	,706***	1							
10.2. ESE Planning (2-Item avg. 1-100)	60,48	(19,55)	1256	,096***	,076**	,044	,147***	,005	,113***	,002	,101***	,134***	,764***	,456***	1						
10.3. ESE Marshaling (4-Item avg. 1-100)	66,77	(17,28)	1256	,056*	,039	,059*	,189***	,030	,033	-,003	,082**	,150***	,807***	,601***	,563***	1					
10.4. ESE Implementing People (6-item avg. 1-100)	74,38	(15,97)	1256	-,045	,136***	,053	,210***	,048	-,025	-,042	,171***	,120***	,803***	,451***	,471***	,562***	1				
10.5. ESE Implementing Financial (4-item avg. 1-100)	66,98	(21,70)	1255	,046	,082**	,048	,124***	-,029	,150***	-,022	,125***	,072*	,704***	,294***	,620***	,399***	,504***	1			
10b. General Self-Efficacy (GSE: 10-Item avg. 1-5)	3,79	(0,45)	1247	,120***	,185***	,078**	,186***	,088**	-,099**	-,011	,197***	,146***	,479***	,409***	,308***	,411***	,435***	,259***	1		
11. Entrep. Outcome Expectations (EOE: 4-item avg. 1-5)	5,77	(0,79)	1245	,018	-,058*	,059*	,161***	-,019	,014	,010	-,023	,018	,207***	,153***	,115***	,181***	,210***	,115***	,221***	1	
<b>SCCT Dependent Variable</b>																					
12. Entrepreneurial Intentions (EI: 6-item avg. 1-7)	4,31	(1,25)	1291	,161***	,144***	,130***	,182***	,055*	,043	,032	,138***	,259***	,409***	,405***	,327***	,361***	,270***	,247***	,295***	,152***	1

EEP Portugal 1st wave survey academic year of 2010-2011, from 03-Oct-2010 to 08-Jul-2011.  
Correlations, n = [1.020; 1.307]. \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

### **3.1.4 - Response rates and nonrespondents**

#### *Participation Rate*

Response rates of web-surveys can be comparable to mail surveys, for populations in which each member has internet access, but they provide greater flexibility and lower costs and time savings (*cf.* Cook, Heath, & Thompson, 2000; Kaplowitz, Hadlock, & Levine, 2004) and they also reduce the chance of nonsystematic errors, when computing the data into the informatic databases.

Given the EEP Portugal invitation process (described above), response rate cannot be calculated with precision. Namely, it is not possible to be sure if the HEI students, of a particular educational program, received an invitation to participate in the 1stW EEP Portugal survey, or not. According to Cook, et al. (2000, p. 825), this problem appears to be common in web-based surveys.

Nevertheless, it is relevant to provide information about it, to infer about the potential for this study results generalization (Blair & Zinkhan, 2006). According to Kehoe & Pitkow (1996) in a context of less than perfect random sampling, oversampling may add more credibility to the study, since it is less likely that large segments of the population are systematically excluded. However, it is completely different that everyone from one HEI course as responded or if only 1 out of 1,000 accepted to respond, per education program.

In EEP Portugal database, participation rates, by program, ranged widely from 0.5% to 63.64% and, as per Appendix D, it is possible to extrapolate that, on average, study participants are representative of, at least, 8.94% to 11.62% of the students in their respective HEI programs.

#### *Nonrespondents*

There is a considerable proportion of students who did not participate in the EEP Portugal survey, but how do they differ from the students in this thesis sample? And, consequently, how much does the 1stW EEP Portugal survey sample differ from the population?

The literature on nonresponse bias is extensive but usually not much is reported (*cf.* Werner, et al. 2007) and therefore known. According to Armstrong & Overton (1977), three different methods can be used to estimate nonresponse bias, namely, (1) comparison with known values

for the population, (2) subjective estimates, and (3) extrapolation methods. As per Appendix E, the following results can be reported:

(1) Comparing EEP Portugal sample with known values for the population:

- Has a greater proportion of women than the Portuguese HEI students' population, that although not large (4.85%) is still statistically significant;
- Severely underrepresents the private HEI students (0.84% *versus* 22.16%, in the population);
- Underrepresents Polytechnic students in favor of University students (25.13% *versus* 38.34% in the population);
- Especially, overrepresented are also Management/Business students (35.06% *versus* 6.65% of the population) and Economics students (11.46% *versus* 2.29% of the population). Also overrepresented, but smaller in number, are other Management subdisciplines, such as, Human Resources, Marketing and Advertising and Finance & Accountancy. All other scientific areas are clearly underrepresented in this sample.

(2) Subjective estimates for the respondents/nonrespondents differences

- It is hypothesized that students with lower EI levels and lower EOE, may all be underrepresented in the 1stW EEP Portugal sample.

(3) Extrapolation methods: Early & late and complete & incomplete submissions respondents

- It is not expected that the relationships between SCCT cognitive constructs in the population are different than those found in the EEP Portugal sample, but there may be an overrepresentation of students with (slightly) higher EI, although the same cannot be said for its direct antecedents, ESE and EOE.

### **3.1.5 – Methods**

Testing a parsimonious version of a SCCT model (Lent et al., 1994) requires one to test, at least, the following relationships: (1) the effects on career intentions from its main direct cognitive antecedents: career specific interests, self-efficacy beliefs and career outcome

expectations and, (2) the effect of specific self-efficacy beliefs as an antecedent of career outcome expectations. For the test of a more comprehensive SCCT model one has to further test: (3) the effects of other personal inputs (related with learning experiences) and (4) the effects of contextual supports and barriers on career intentions – all of which are proposed to operate through the mediation of cognitive antecedents (*cf.* Lent et al., 1994, 2010; Lent & Brown, 2006).

Unfortunately, in the EEP Portugal 1stW survey (as well as its international multi-country version) there is no specific scale to measure the interest in an entrepreneurial career, therefore, in this thesis, only an even more parsimonious version of the SCCT career choice model can be tested – something that, not being optimal, has been done before, successfully (*e.g.* Segal et al., 2002; Liguori, 2012; Farashah, 2015; *cf.* Sheu et al. 2010, p. 257, Table 1). The likely consequence of such absence is that the size of the direct effects of ESE and EOE on EI should be greater than with a complete model – given that interests are thought to partially mediate the positive effect of ESE and EOE on EI.

### *Structural Equations Model Method*

Model testing is usually described as having two components, the measurement of the variables and the test of the relationships between variables (*cf.* Schwab, 2005). Structural equation modeling (SEM) is an analytical approach that combines these two components and considers them simultaneously (Williams et al., 2009). SEM is considered the appropriate method to test the thesis EI models, because: (1) it takes a confirmatory approach to the data analysis, which enables hypothesis testing; (2) it provides explicit estimates of measurement error for independent variables; and (3) it enables the incorporation of both observed and unobserved variables (*i.e.* latent constructs - indirectly measured by other observable variables) (*cf.* Schumacker & Lomax, 2004; Byrne, 2013). SEM has been extensively used in entrepreneurship research (*e.g.* Baum & Locke, 2004; Mcgee et al., 2009; Guerrero & Urbano, 2014) and in testing SCCT (*e.g.*, Özyürek, 2005; Wang, 2013; Wright et al., 2014). According to Weston & Gore (2006) the following six steps are needed to conduct model testing with SEM:

Model Specification - In this thesis, the *Baseline EI model* specification follows SCCT as it applies to entrepreneurship, where EI has two main direct cognitive antecedents, ESE and EOE, through which relevant learning experiences and other distal contextual variables operate to

influence EI. And a more *comprehensive SCCT EI model*, testing the full cognitive mediation hypothesis, will also be tested. The choice of demographic and contextual variables was based on their relevance in the entrepreneurship literature.

Model identification - All tested models were parsimonious enough to be over-identified and above Hoelter's (1983) 'Critical *N*' threshold of 200, indicating a satisfactory fit ( $p$ -value  $<.01$ ).

Data preparation and screening - In this research the number of estimated parameters varied from the simplest *Demographics EI model*, to the intermediate *Baseline EI model* and to the most complex, the *comprehensive EI model* (with direct and multiple mediation effects) requiring, 61, 87 and 168 distinct parameters to be estimated, respectively. According to Weston & Gore (2006) there is no consensus on the issue of sample size and, this may vary or not with the complexity of the model (*cf.* Jackson 2001, 2003). Kline (1998) suggested a sufficient sample to be between 10 to 20 participants per estimated parameter, Jackson (2001, 2003) find no justification for the relationship between these two variables and Weston & Gore (2006) recommend a minimum sample size of 200 for any SEM.

Starting from a validated sample of 1,309 HEI students, only 835 students are part of this chapter sample, since only these had complete<sup>12</sup> information on all the variables in the models. About data normality, all model variables were found nonnormal, by definition or according to Kolmogorov-Smirnov (K-S) test, with Lilliefors correction and Shapiro-Wilk. Furthermore, variables present a significant departure from multivariate normality distribution, regarding multivariate kurtosis (*i.e.*  $c.r. > 10$ ). Nevertheless, this can be accommodated by recent estimation methods (*cf.* Micceri, 1989). Outliers are not considered to be problematic, given the limiting bounds implicit in used measurement scales and the single option of binary variables. Regarding multicollinearity, only Age and Work Experience, with a Pearson correlation of  $r=.893$  were found problematic (*cf.* Weston & Gore, 2006; Yoo et al., 2014). To tackle this, the original values from the variable Work Experience (years) were redefined to a binary variable of Work Experience of at least five years (1=Yes or 0=No). With this change, the Pearson correlation becomes an acceptable  $r=.700$ <sup>13</sup>. Regarding the potential for common method bias, several precautions were taken with the questionnaire, including: reverse scoring of items, variation in wording of items, different scaling anchors for the key variables and variables were

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<sup>12</sup> Since the EEP Portugal had three more follow-up surveys, some of the demographic data, missing in the first wave survey, was possible to complete with later self-reports (*e.g.*, age). This procedure was not extended/applied to cognitive variables, since, for these, only present levels were considered valid.

<sup>13</sup> Spearman's  $\rho = 65,54\%$  (based on rank order analysis for nonparametric data).

measured with validated scales. Empirically, the Harman's single factor test also suggests common method bias may be limited since the EFA resulted in a 6-factor solution, with the first factor accounting for only 26.56% of the total variance. Taken together, this suggests a low risk of common method bias (*cf.* Collewaert, 2012).

Estimation phase - Since the sample does not comply with the multivariate normality assumption, required for maximum likelihood estimation method (ML), the bootstrapping estimation method (Efron 1979, 1982; Efron & Tibshirani, 1994) was adopted. This consists in "establishing an empirical sampling distribution associated with a statistic of interest by repeatedly sampling from the original 'parent' sample data" and it is considered a good option, for dealing with this problem (Nevitt & Hancock 2001, p. 355). Regarding bootstrapped requirements, Satorra & Bentler (1988) conclude that more than 250 samples does not improve the quality of the standard error estimator and that bootstrap methods should not be used for samples smaller than  $n=100$ . Finally, Anderson & Gerbing's (1988) recommended two-step approach was followed, where, first, the CFA is tested - the model that specifies the relations between the observed measures (items) and the hypothesized underlying constructs (latent factors) – and, second, the confirmatory causal relations of the constructs are tested, as posited by SCCT.

Evaluation of model fit - Following Mueller & Hancock (2008) best practice recommendations, the following fit indices are reported: Chi-square (df, p-value) and Standardized RMR as absolute fit indices; RMSEA with CI90 (x;y), is reported as a parsimonious indice; PCFI, NFI and CFI as incremental indices; Regarding cutoff criteria for model fit indices, considerable controversy exists, yet, Weston & Gore (2006) report that empirical research suggests fit indices will display borderline acceptability within the following ranges  $CFI \subset [.90;.95]$ ,  $RMSEA \subset [.06;.10]$ , and  $SRMR \subset [.08;.10]$ , with worst values being unacceptable and better values acceptable.

When comparing variance explained by two competing (independent) models, the squared multiple correlations and their respective confidence intervals at 95% (CI95%) will be analyzed. CI95% are estimated by bootstrap method (two-tailed) with a bias-corrected percentile. (*cf.* Efron & Tibshirani, 1986; Azen & Sass, 2008)

Model modification - Following Mueller & Hancock (2008) concerns, relative to empirically driven modifications, only those modifications that were reasonable, theoretically, were

introduced/accepted. Empirically, these were identified, based on Wald statistics and Lagrange multiplier statistics (*i.e.* AMOS software ‘modification indices’).

## **3.2 - Results**

### **3.2.1 - Confirmatory Factor Analysis**

After identifying all survey questions that are the basis of the latent constructs’ measurement, in Table 3.02, a CFA is performed to confirm that the proposed measurement model fits the data and that the constructs are correlated with each other, as predicted.

#### *Exploratory Factor Analysis*

Before the CFA model was tested, an EFA was performed to provide some evidence on constructs discriminant validity and on measurement model fit.

Regarding the discriminant validity, from this first EFA (ML estimation<sup>14</sup> with Direct Oblimin Rotation<sup>15</sup>), only 6 factors provided an eigen value greater than 1, which compares to the 7 expected from the literature (*cf.* Table 3.02). Since no theoretical support could be found, for this factorial structure, and given that the next potential factor displayed an eigen value close to 1 (*i.e.* .930), a second EFA was performed fixing to 7 the number of factors to be extracted.

About the measurement model fit, this second EFA resulted in a few communalities being below the recommended threshold of .40 (Costello & Osborne, 2005), namely: EI items, EI02 (0.27), EI03 (.26) and EI05 (.24) and the EOE item, EOE04 (.30). Thus, a third and final EFA was conducted without the problematic items, measuring ESE with 19 items and EI and EOE with 3 items, each. The seven factors account for 57.34% of the total variance explained, with 6% of nonredundant residuals with absolute values > .05. Adequacy results are: KMO=.908 and Bartlett's Test of Sphericity(*df*)=10,003.248(300) (p-value <.001).

Still regarding the discriminant validity and measurement model fit, no relevant crossloadings were identified among factor items, other than the ESE07 already excluded (section 3.1.2), and

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<sup>14</sup> As the default method in AMOS software CFA and better suited to compare with the literature.

<sup>15</sup> A nonorthogonal rotation technique that allows emerging factors to correlate with each other.

the factor correlation matrix presents a highest absolute value of inter-construct correlation of -.588. On convergent validity, in SPSS pattern matrix displays all loadings are equal or above .50, except for borderline acceptable cases of ESE11 and ESE15 (both with .49). Refer to Appendix F, to see the EFA standard SPSS outputs.

### *Confirmatory Factor Analysis*

In the initial CFA all items measuring EI, EOE and ESE constructs have been included, except for ESE07 (for the reasons already explained in section 3.1.2). Also, a second order ESE reflective construct (ESE[2nd]) was created, which is proposed to capture the common variance between all the ESE subconstructs and greatly improves the model's parsimonious.

Although this first CFA may be interpreted as having borderline acceptable fit, under the joint criteria of:  $SRMR \leq .09$  and  $RMSEA \leq .06$  (*cf.* Mueller & Hancock 2008), some empirically derived insights were implemented, to further improve the data-model fit. For that, AMOS software modification indices (MI) were considered and four modifications were found acceptable, namely, treating the covariance between the following variables' error terms as free parameters: (1) ESE for implementing people activities items 12 and 13; (2) ESE for planning activities and of ESE for implementing financials activities; and (3) ESE first order constructs of ESE implementing people and ESE implementing financials. For detail on the rationale supporting this modifications, refer to Appendix G.

removal improved convergent validity and it may improve the theoretical soundness of the EI construct and the EOE construct adjustment for a population of HEI students.

With greater detail, it was found that: (1) this model had a lower than threshold convergent validity (*i.e.* average variance extracted (AVE) $<.50$ ; Hair et al., 2011), with EI AVE=.35 and with EOE AVE=.43; and (2) some EI items might be measuring more than just intentions and, rather, already measuring initial nascent behavior<sup>16</sup>; (3) reading books about implementing a new business project, in the internet era, might not be the most common step towards new business creation, or be an especially representative behavior of EI<sup>17</sup> ;

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<sup>16</sup> *e.g.*, [EI02] "I am saving money to start a new business project" and [EI05] "I spend time learning how to create a new business project".

<sup>17</sup> *e.g.*, [EI03] "I don't read books on how to implement a new business project."

**Table 3.02:** Description of the models constructs measures: observed variables (items).

Construct / Observable variable	Response Range
<p><b>Entrepreneurial Intentions (EI)</b> Thinking about you, how true are the following statements:</p> <p><b>EI01</b> I never seek for opportunities to create a new business  <b>EI02</b> I am saving money to start a new business project.  <b>EI03</b> I don't read books on how to implement a new business project.  <b>EI04</b> I don't have any plans to start my own business Project.  <b>EI05</b> I spend time learning how to create a new business project.  <b>EI06</b> I am willing to create a new business Project in the future.</p>	<p><b>Scale</b> 1 = Totally false. 2 = false. 3 = false to a certain extent 4 = nor false nor true. 5 = true to a certain extent. 6= true. 7= totally true.</p>
<p><b>Entrepreneurial Self-Efficacy Beliefs (ESE)</b> Indicate the level of confidence you have on your present capacity of carrying each of these activities:</p> <p><b>ESSE for Searching activities</b>  <b>ESE01</b> To generate, on your own, a new idea for a product or service.  <b>ESE02</b> To participate in a brainstorming with others to generate a new idea for a product or service.  <b>ESE03</b> To identify the necessity for a new product or service.  <b>ESE04</b> To conceive a product or service that satisfies the necessities or needs of a customer.</p> <p><b>ESE for Planning activities</b>  <b>ESE05</b> To calculate the future customers' demand level for a new product or service  <b>ESE06</b> To determine a competitive price for a new product or service.  <b>ESE07</b> To estimate the necessary initial investment and cash flow to start a new business project.</p> <p><b>ESE for Marshaling activities</b>  <b>ESE08</b> To conceive an efficient marketing campaign/advertisement for a new product or service.  <b>ESE09</b> To make other believe and to identify themselves with your vision and plans for a new business project.  <b>ESE10</b> To create a network (i.e. to establish contacts and exchange information with others).  <b>ESE11</b> To explain, in a clear, concise and easy manner, both verbally or written, your ideas about a new business project.</p> <p><b>ESE for Implementing People activities</b>  <b>ESE12</b> To supervise employees.  <b>ESE13</b> To recruit and hire employees.  <b>ESE14</b> To assign tasks and responsibilities to employees in your new business project.  <b>ESE15</b> To efficiently manage everyday problems and crisis.  <b>ESE16</b> To inspire, encourage and motivate your employees  <b>ESE17</b> To provide your employees with training.</p> <p><b>ESE for Implementing Finance activities</b>  <b>ESE18</b> To organize and maintain financial registries of your new business project  <b>ESE19</b> To manage the financial assets of your new business project  <b>ESE20</b> To read and interpret the financial statements.</p>	<p><b>Scale</b> 0 to 100</p>
<p><b>Entrepreneurial Outcome Expectations (EOE)</b> How far would you expect to achieve the following results with the implementation of a new business project?</p> <p><b>EOE01</b> Financial gains (personal wealth, personal income increase, etc).  <b>EOE02</b> Independence /Autonomy (personal freedom, being your own boss, etc.)  Personal gains (public recognition, personal development, proving that I can do things, etc.)  <b>EOE03</b> Familiar security (ensuring the future of your family members; starting a business that could be passed on to the next generation, etc.)  <b>EOE04</b></p>	<p><b>Scale</b> 1= Nothing. 2= Very little. 3= Little. 4= Don't know. 5= Moderately . 6= Highly. 7= Very much.</p>
<p><b>Normative beliefs (NBindex)</b> Identify other people's opinion regarding your choice of pursuing with the creation of a</p> <p><b>SN01</b> Your parents or tutors  <b>SN02</b> Your husband/wife or any other significant relationship  <b>SN03</b> Your siblings.  <b>SN04</b> Other family members.  <b>SN05</b> Your closest friends.  <b>SN06</b> Your acquaintances</p>	<p><b>Scale</b> 1 = Strongly negative 2= Negative 3= Lightly negative 4= not positive nor negative 5= Lightly positive 6= Positive 7= Strongly positive NA = Not Applicable / Don't know</p>

and (4) there is one EOE item which is probably not suited for a sample where the average age is 24 years old, and 90% of the sample is younger than 35 years old<sup>18</sup>.

Despite all standardized factor loadings, between items and their own constructs, being significant ( $p$ -value  $<.001$ ), some items were removed from the measurement model, since their Figure 3.01 (below) presents the final CFA measurement model, after both MI adjustments and items reductions, and model fit, which can be generally described as good (*cf.* Mueller & Hancock 2008). Although, EI and EOE are still below the threshold of  $AVE >.50$  (Hair et al., 2011), the new results display constructs with a borderline acceptable convergent validity of ESE  $AVE =.56$ , EI  $AVE =.46$  and EOE  $AVE=.48$ . The discriminant validity, regarding the square roots of the average extracted variances, was also found to exceeded the correlations among the constructs, which ranged from .233 to .539 (Fornell & Larcker, 1981b). Resulting composite reliabilities (c.r.) for all constructs ranged from  $c.r.=.72$  to  $c.r.=.86$  which is above the threshold (*i.e.*  $>.70$ ; Hair, et al., 2011).

Finally, in terms of the relative importance of each item, for each construct: for EI, all included items (EI01, EI04 and EI06) appear to be equivalently relevant, with std. loadings ranging between .67 and .70; for EOE, the item related with expectations of independence and autonomy is found to reflect slightly more this construct (std. loading of .76) than financial and personal gains (std. loadings of .66 and .64, respectively); for the ESE[2nd], marshaling activities are those which reflect more the average individual ESE (std. loading of .92), on a second level of relevance, Searching, Planning and Implementing People activities (std. loadings of .81, .74 and .73) and, clearly less reflective of ESE, is Implementing Financials activities (std. loading of .48).

### **3.2.2 - Structural Model**

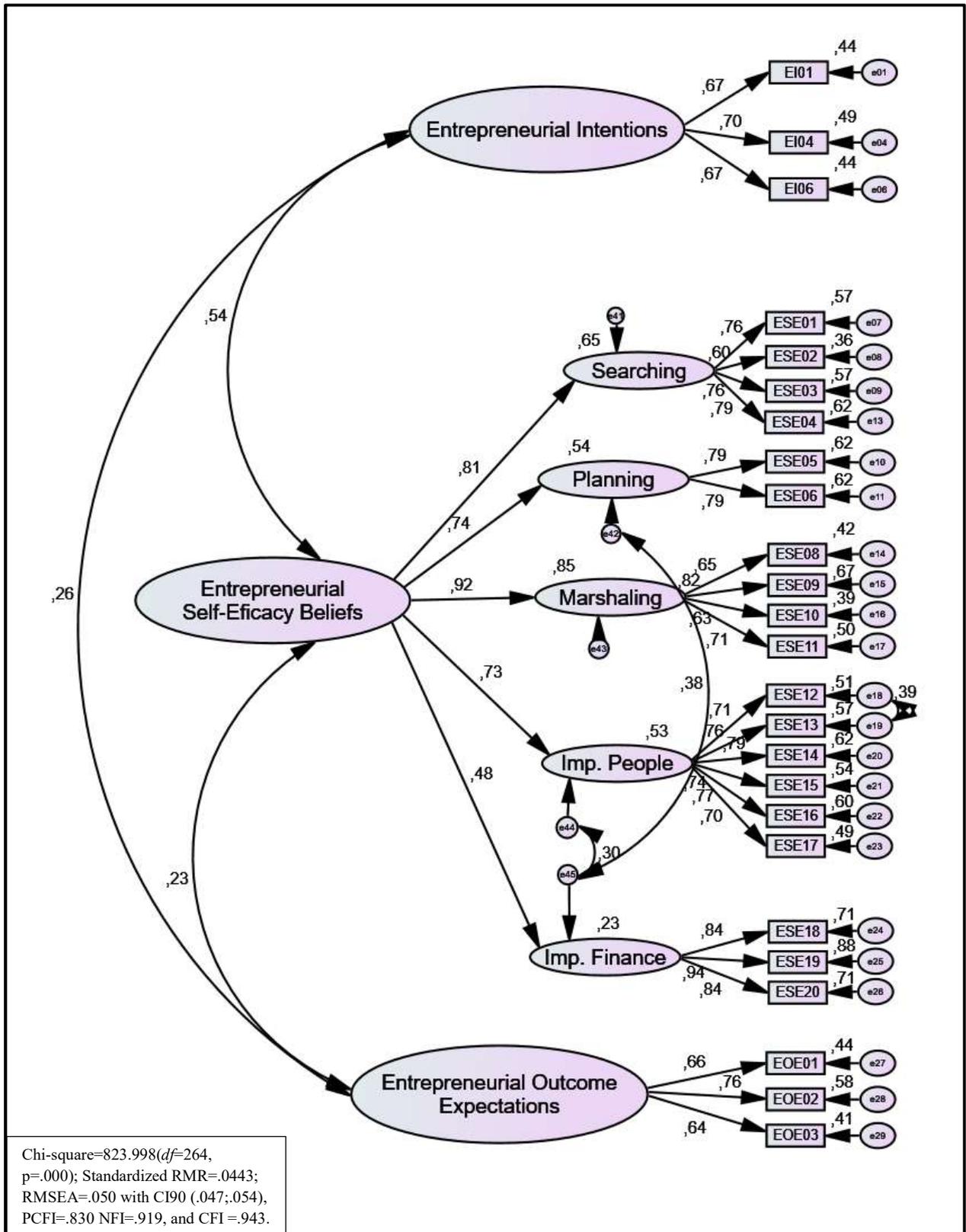
#### *Confirmatory Analysis of SCCT with a Baseline EI Model*

The confirmatory analysis for the structural part of the SCCT model, started with a test of research hypothesis H3.1, using a more parsimonious version of the SCCT model, where only

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<sup>18</sup> *e.g.*, [EOE04] “Familiar security (ensuring the future of your family members; starting a business that could be passed on to the next generation, etc.)”.

Figure 3.01: Results from the final SCCT CFA measurement model.



EI, ESE and EOE are included - hereinafter referred to as *Baseline SCCT EI model* or, simply as baseline model. As it can be seen from Figure 3.02 (below), the baseline model provides a meaningful prediction of EI's total variability, with 31,0% (p-value=.002; 95% CI [23,0%-39,2%]) of its variance explained by ESE and EOE, in a sample of 835 students and is found to have an acceptable model fit (cf. Mueller & Hancock 2008).

All the regression weights are significantly different from zero (p-values<.001; .002 for EOE-EI) and, thus, as predict by SCCT, ESE and EOE are found to have direct positive effects on EI - although with ESE being considerably more influential than EOE (std. loadings of .506 *versus* .143, respectively) - and ESE is found to have a direct positive effect on EOE (std. loading of .233) - although it can only explain 5,4% of the construct's total variance.

In sum, hypothesis H3.1, stating that a SCCT model can significantly explain EI, is found empirically supported by the 1stW EEP Portugal survey data.

#### *Baseline SCCT EI Model versus Demographics Model*

Figure 3.03 (below) presents the results from a competing model of EI, hereinafter, designated solely as *Demographics EI model*, comprised of the following noncognitive variables: Age (years), Gender (male), Entrepreneurial Family Background (yes/no), Graduate Student (yes/no), Business Student (yes/no), Entrepreneurship Education Exposure (yes/no), Work Experience (at least 5 years) and Entrepreneurial Experience (yes/no)<sup>19</sup>.

Results show that the *Demographics EI model* provides a very small explanatory power of EI, as it explains only 9.1% of its total variability, but, overall, found to have acceptable model fit (cf. Mueller & Hancock 2008), as estimated by bootstrap ML method (2,000 samples).

Evaluating the significance of each demographic variable, as an antecedent of EI, based on their std. loadings: only Gender (male) with a .173 (p-value <.001), Entrepreneurial Family Background with a .128 (p-value =.002) and Prior Entrepreneurial Experience, with a .170 (p-value < .001) are found positively related with EI, as predicted. Being enrolled in a Business Course is borderline nonsignificant, with a std. loading .074 (p-value =.068).

<sup>19</sup> NB beliefs is not included, since it depends on the individual's perceptions and, therefore it is considered a cognitive variable.

Figure 3.02: Results from the *Baseline SCCT EI model*.

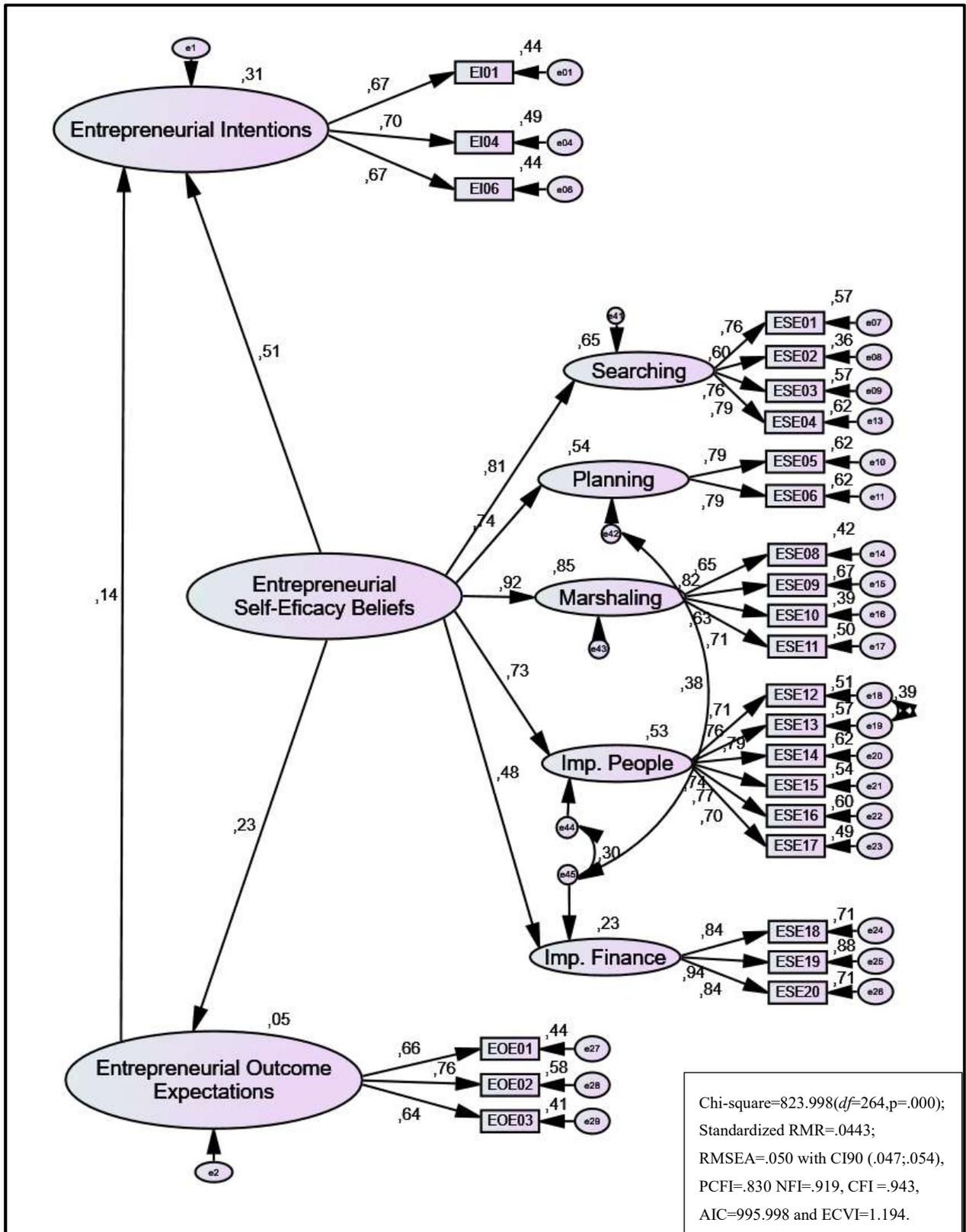
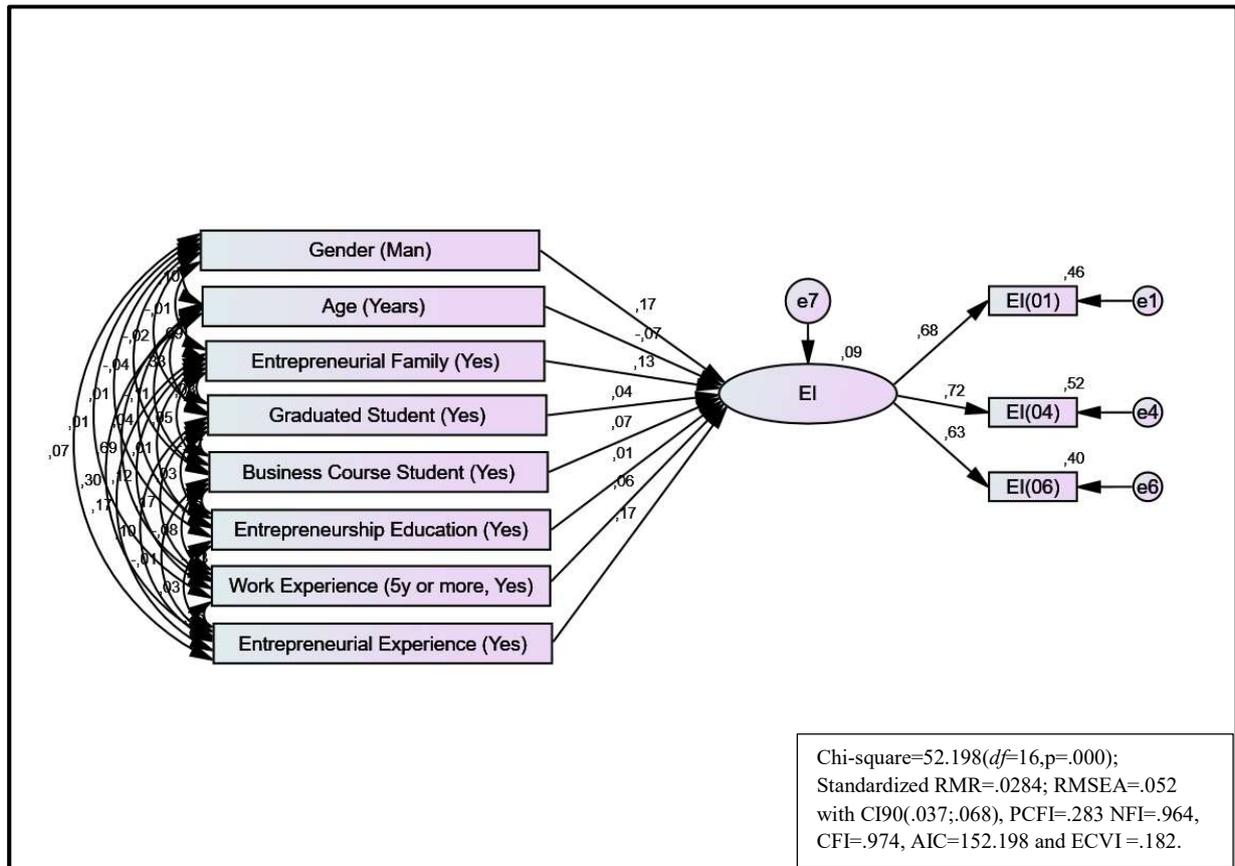


Figure 3.03: Results from the *Demographics EI model*.



Therefore, hypothesis H3.2 is supported by this sample, since the *Baseline SCCT EI model* explains considerably more EI variance than the *Demographics EI Model* variables (31.0% versus 9.3%). Nevertheless, it must be pointed out that, the *Demographics model* is a considerably more parsimonious model.

To confirm that ESE, EOE significance is robust, to the eventual direct effects of noncognitive demographic variables on EI, a variation of *Baseline model* was tested. Result show that the inclusion of all these demographic variables to the *Baseline Model* - as direct determinants of EI - only improves EI total variance explained by 4,8% (to a total of 35,8%). Moreover, only Gender (std. loading of .142), Entrepreneurial Family Background (std. loading of .102) and Prior Entrepreneurial Experience (std. loading of .100) rival the direct effect of the least influential cognitive variable of the SCCT model, the EOE (std. loading of .133). Regarding ESE, a change of one standard deviation is more than three times more influential than any other variable in this variation of the *Baseline model* (cf. std. loading of .477 - direct effect size

only). These results may also be seen as coherent with the SCCT proposed relevance of the cognitive mediation mechanisms, which will now be tested in greater detail.

### *The Cognitive Mediation of Personal Inputs and Contextual Effects*

Knowing *a priori* that, at best, it is possible to provide evidence in favor of the total effect between exogenous variables and EI being largely accounted by the indirect effects, through cognitive mediation (*cf.* Rucker et al., 2011), and considering Baron & Kenny's (1986) and Shrout & Bolger (2002) recommendations on the mediation analysis process, empirical evidence is provided related to:

- (1) the significance of the relationship between exogenous variables – *i.e.* demographic variables and normative beliefs – and the proposed cognitive mediators, ESE and EOE;
- (2) the significance of the indirect effect(s) between exogenous variables and EI;
- (3) the significance of the direct effect between exogenous variables and EI, when the mediating effect is controlled for;
- (4) the proportion of the total effect, between exogenous variables and EI, that is accounted for by the indirect effect(s)

Accordingly, it can be reported that, in this sample, only partial support was found for the relationship between demographic variables and each of the proposed cognitive mediators, as demographic variables only explain 4.3% ( $p\text{-value}=.030$ ) of ESE and 1.9% ( $p\text{-value}=.228$ ) of EOE total variances and most effects were found to be statistically insignificant. Of all tested relationships, only the following were found statistically significant: Prior Entrepreneurial Experience was positively related with ESE (std. loading of .143;  $p\text{-value}=.001$ ); and Age, negatively (-.141;  $p\text{-value}=.022$ ), and Work Experience (5y at least) (.111;  $p\text{-value}=.044$ ), positively, related with EOE. The effect of Family with Entrepreneurial Background on EOE resulted in a borderline insignificant effect (.079;  $p\text{-value}=.052$ ).

Building on these results, and on a new and more *comprehensive SCCT EI model* (detailed in Appendix H), where all independent variables (demographic and NB) have causal paths to EI, directly and indirectly (through ESE and EOE), the following results can be reported:

- (1) From the previous confirmatory analysis, with demographics variables as direct antecedents of ESE and EOE, it follows that the educational variables Graduate Student, Business Student and Entrepreneurship Education Exposure lack significant relationships with either cognitive mediators (*i.e.*  $p\text{-value} > .05$ ). These results are robust even when concurrent effects from other cognitive variables are controlled for, in this more comprehensive model (see Table 3.03, below, and Appendix H).

All other variables that had displayed significant direct effects, in the previous analysis, Prior Entrepreneurial Experience for ESE and Age (negative) and work experience for EOE, still hold significant results within the *comprehensive SCCT EI model*. Noteworthy, Gender and Entrepreneurial Family Background, in this last model, are found borderline insignificant for ESE ( $p\text{-value} = .065$ ) and EOE ( $p\text{-value} = .063$ ), respectively, and NB is found significantly related with both ESE ( $-.263$ ;  $p\text{-value} = .001$ ) and EOE ( $-.126$ ;  $p\text{-value} = .004$ ).

- (2) Only ESE, NB and Prior Entrepreneurial Experience were found to have significant indirect (mediated) effects<sup>20</sup> ( $p\text{-value} < .05$ ) on EI, through ESE or EOE (as mediators). Gender was found to have a borderline insignificant indirect effect ( $p\text{-value} = .060$ ) Please refer to the third column “Indirect Effects” of Table 3.04 (below), for complete results.
- (3) Only ESE, NB, Gender, Prior Entrepreneurial Experience and Entrepreneurial Family Background display significant direct effects when indirect effects are controlled for. EOE also, but no mediation is proposed for this effect on EI. Refer to the second column “Direct Effects” of Table 3.04 (below), for complete results.
- (4) Considering only those variables where results from both (2) and (3) are significant - at a more forgiving threshold of  $p\text{-value} < .10$  (to include borderline nonsignificant cases) – it can be reported that the [indirect effects] / [total effects] ratio for ESE, NB, Gender and Prior Entrepreneurial Experience, in relation to EI, were 5.7%, 53.2%, 20.1% and 37.9%, respectively. Refer to the third column of the “Indirect Effects” section of Table 3.04 (below), for complete results.

In sum, it was found that: (1) being exposed to entrepreneurship education, being a business student, being a graduate student and having family with entrepreneurial background do not

<sup>20</sup> Significance tested with bootstrap approximation obtained by constructing two-sided bias-corrected confidence intervals confidence intervals (2,000 samples).

have a statistically significant effect (*i.e.* p-values >.05) on the proposed mediators, ESE and EOE; (2) all the variables displaying significant indirect effects on EI, namely: ESE, NB and Prior Entrepreneurial Experience have, simultaneously, (3) significant direct effects on EI, and, moreover, (4) the indirect/total effects ratio does not support full (or even dominant) mediation, since at most (in the NB case) it accounts for, approximately, only half (53.2%) of the total effect on EI.

Therefore, empirically, no support is found for both hypotheses H3.3 and H3.4, of full mediation, through EI cognitive antecedents' ESE and EOE, of the effects of entrepreneurship relevant learning experience variables (*i.e.* gender, age, family entrepreneurial background, educational, work experience and prior entrepreneurial experience) and distal social support (measured as NB) on EI. These results are more compatible with a partial mediation hypothesis, which in the case of the social support variable (NB), given the effects size, the total effect is almost equally divided between direct and indirect effects, with ESE being its most relevant mediator.

**Table 3.03:** Analysis of each EI determinant most likely cognitive mediator.

Determinants of EI direct cognitive antecedents	ESE		EOE		Obs.
	std. Total Effects	Two-Tailed Significance (BC)	std. Total Effects	Two-Tailed Significance (BC)	Sig. (p < .05) Dependent Variable
Normative Beliefs (Index)	.263	.001	.126	.004	[ ESE ] / EOE
Prior Entrepreneurial Experience (Yes)	.133	.001	.014	.758	[ ESE ]
Gender(Male)	.070	.065	.029	.442	[ ESE ]
Entrepreneurial Self-Efficacy Beliefs (ESE)	-	-	.216	.001	EOE
Age(years)	.063	.216	-.134	.027	EOE
Work Experience (5y)	.033	.480	.119	.029	EOE
Family Entrepreneurial Experience (Yes)	.029	.438	.075	.063	
Graduate Student (Yes)	.030	.451	.066	.106	
Entrepreneurship Education Exposure (Yes)	-.008	.826	-.014	.728	
Business Student (Yes)	.044	.249	.010	.785	

Note: SCCT cognitive variables are highlighted with grey.

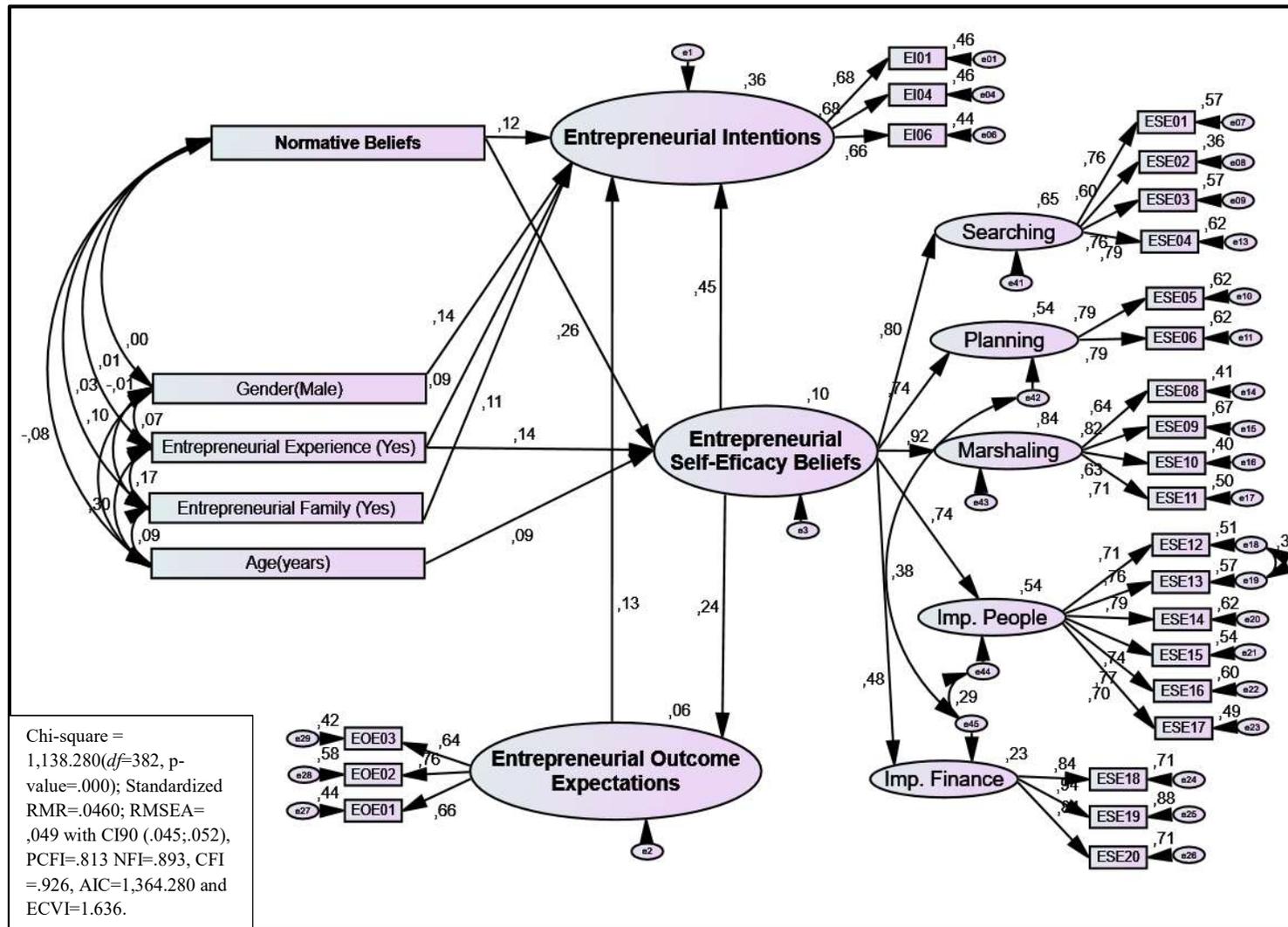
**Table 3.04:** EI determinants’ total, direct and indirect effects.

EI determinants: Total, direct & indirect effects	Total Effects		Direct Effects		Std. Indirect Effects			Obs.
	Std. Regression Weights	Two-Tailed Sig. (BC)	Std. Regression Weights	Two-Tailed Sig. (BC)	Std. Regression Weights	Two-Tailed Sig. (BC)	Proportion (%) of total effects	Most relevant mediator
Entrepreneurial Self-Efficacy Beliefs [ ESE ]	.475	.001	.448	.001	.027	.007	5.7%	[ BOE ]
Normative Beliefs (Index)	.252	.001	.119	.007	.134	.001	53.2%	[ ESE ]
Gender(Male)	.179	.001	.144	.001	.036	.060	20.1%	[ ESE ]
Prior Entrepreneurial Experience (Yes)	.161	.001	.100	.011	.061	.001	37.9%	[ ESE ]
Family Entrepreneurial Experience (Yes)	.120	.002	.098	.014	.023	.196		
Entrepreneurial Outcome Expectation [ EOE ]	.126	.010	.126	.010				
Business Student (Yes)	.079	.064	.058	.156	.021	.267		
Work Experience (5y)	.081	.168	.051	.361	.030	.206		
Age(years)	-.064	.339	-.076	.139	.011	.682		
Graduate Student (Yes)	.038	.397	.016	.667	.022	.270		
Entrepreneurship Education Exposure (Yes)	.016	.727	.022	.593	-.005	.781		

Note: SCCT cognitive variables are highlighted with grey.

Finally, to provide a visual summary of the findings, a more parsimonious version of the comprehensive EI model is presented in Figure 3.04 (below), which was reached by stepwise backward elimination (Efroymson, 1966; Hocking, 1976) until all structural paths were significant (p-value of <.05). This model visually describes all significant structural paths between the model covariates, for the sample, and explains 35.6% of EI’s total variance. Just short of the 37.3% provided by the more *comprehensive SCCT EI model* (in Appendix H). This last EI model, estimated with bootstrap ML method (2,000 samples), displays an acceptable overall fit (*cf.* Mueller & Hancock 2008).

**Figure 3.04:** Results from the EI model based on SCCT, including only cognitive and demographic determinants displaying significant causal paths (p-value < .05), for a sample of 835 HEI students. Estimation with bootstrap ML (2,000samples).



### 3.2.3 – Results Summary

**Table 3.05:** Summary of Chapter’s III research hypotheses results.

Chapter III Research Hypotheses	Results
<b>H3.1</b> – An SCCT model can significantly explain EI.	Supported
<b>H3.2</b> – An SCCT model outperforms a model comprised of noncognitive demographic independent variables, explaining EI.	Supported
<b>H3.3</b> – In an SCCT model, all the effects on EI from noncognitive demographic variables, are fully mediated by ESE and EOE.	Not Supported
<b>H3.4</b> – In an SCCT model, the effect on EI from distal social support (measured as normative beliefs; NB), is fully mediated by ESE and EOE.	Not Supported

### 3.3 –Results Discussion

Being a much less common cognitive framework in entrepreneurship research (*cf.* Farashah, 2015; Zhao et al., 2005), comparing with TPB and EEM (*cf.* Schlaegel & Koenig, 2014), SCCT has been proposed to offer a more comprehensive view of the joint effects of personal and environmental factors, on the cognitive determinants of career-related interests, intentions and behaviors (*cf.* E. Liguori, 2012).

Being involved in, and coordinating, the application of the international *Entrepreneurship Education Project*, for Portuguese higher education institution (HEI) students (EEP Portugal) - which has SCCT as its theoretical framework - created an opportunity to make a contribution: (1) by enabling the test of the SCCT applicability to different careers and populations - considered essential for its establishment outside its original literature (*cf.* Lent et al., 1994) - in this case, to entrepreneurship, to college students populations, and to the Portuguese context; and, (2) by addressing the calls for more integration of other disciplines contributions (*cf.*

Ireland & Webb, 2007) and for careful application of all models imported from other areas of research (Kenworthy & McMullan, 2012).

With the resulting dataset, from the EEP Portugal, a SCCT EI model could be tested, for a sample of 835 Portuguese HEI students, who participated in its first wave (1stW) survey, during the academic year of 2010/11. Participation rates in the EEP Portugal 1<sup>st</sup> wave survey (1stW) varied greatly ranging, at least, from .5% to 63.64%, depending on the HEI program considered.

Since this poses some concern regarding the potential for results generalization, a nonrespondents analysis was conducted. Comparing with the population of Portuguese HEI students, in this 1stW survey, almost only public HEI were surveyed and a considerably greater proportion of Universities (when compared with Polytechnics) and Business or Business and Economics related programs and a slightly greater proportion of women, can be found as significant differences. Nevertheless, given that public Universities, at the time of this survey accounted for almost four fifths of the Portuguese HEI population, the fact that, given the large sample size, many Polytechnic students were still surveyed and that this study controls for the effects of type of program and gender, these differences are posited not to lead to biased results.

Trying to confirm the subjective estimate that students for which entrepreneurship would be a more salient topic and, thus, would be more likely to participate on the 1stW survey and extrapolating from an early *versus* late and complete *versus* incomplete submissions analyses, no empirical support was found to expect that people with higher EI, EOE or ESE are more likely to have accessed and began responding to this survey. However, it appears that having higher EI increases the probability of surviving survey completion. Possibly, because the survey was created and structured without a special consideration given to how relevant it would be for someone with low EI. Again, this is not a cause for especial concern given that EI present considerable variability across this large sample. Yet, a recommendation for EI researchers might be appropriate, namely, that to be more successful in having complete submissions from lower EI individuals, survey designs should have a special routing mechanism to make it more enjoyable (or less boring), for these and for those who are undecided about their EI.

When analyzing the descriptive statistics of the 1stW survey, mean levels of the cognitive variables from the SCCT EI model are comparable with those from its international counterpart the EEP full dataset (*cf.* Vanevenhoven & Liguori, 2013). In terms of SCCT EI constructs correlations, the most significant difference can be found in the difference between EOE-EI

correlations, with the Portuguese data displaying a much smaller correlation between these constructs ( $\rho = .152$  versus  $r = .28$ ), despite the Portuguese reporting slightly higher EOE values, and the insignificant correlation was between Entrepreneurship Education Exposure and all other variables in the model

Regarding the EOE-EI relationship, this may indicate that the EOE construct operationalization should not be readily applied to the Portuguese context of HEI students, and rather, be adapted with measurement items that are more consciously related with entrepreneurship outcomes. About the unexpected insignificant correlation, between Entrepreneurship Education Exposure and EI, given that raising EI of students is not the only possible or desirable outcome of this type of programs, this may not be a very meaningful result. A better understanding of the behavior and associated career, more entrepreneurship competent students and a better match between perceptions and reality (for both capabilities and outcomes), are probably more desirable results for such programs.

Based on the CFA results, it is relevant to note that Thompson's (2009) 6-item EI scale (modified) was found to have a much lower reliability than originally reported and a much lower convergent validity than proposed threshold. This, together with a loose implicit definition which appears to venture, already, into nascent behavior (as chosen construct measurement items imply), led to a reduction from a 6-item to a 3-item EI measure, which is deemed more acceptable, since this reduction addresses and improves all these shortcomings. Based on the 4-item scale of Krueger (2000) EOE was also found lacking an acceptable convergent validity and appropriate fit regarding the likely motivations of a population of, mainly, young adults. Improving these shortcomings was possible by removing the item related with 'familiar security'.

In line with Bird (2015), this findings suggest that future research should try to improve EI constructs measurement aiming for a greater discriminant validity rather than a better link with subsequent behavior. Regarding EOE, this measure should probably be adapted to incorporate motivations and expectations from the studied population and/or to avoid a construct which muddles most types of entrepreneurship related outcomes into a single construct, specially so when traditionally SCCT models have discarded the valence component of the expectancy-value model (*cf.* Lent & Brown, 2006) and/or perhaps subdividing it into different types of EOE subconstructs (*e.g.* Lanero et al., 2015).

Finally, it was found that McGee et al. (2009) ESE 19-scale (here adapted to 20 items) is useful to measure ESE of Portuguese HEI students and results from this sample appear to support a similar order/ hierarchy for the relevance of each of the five proposed ESE subdimensions, as reflecting an overall ESE. Namely, McGee et al. (2009) find that the most correlated ESE activities with attitudes towards venturing are: first, marshaling; in a second level, searching, planning and implementing people and; the least correlated being implementing financials. This is the same order that this research finds for the level of ESE (second order) reflectiveness on each of ESE subdimensions.

For a sample of nascent entrepreneurs from Angola, a high ESE regarding marshaling activities has also been found to be the most relevant core condition, and ESE for implementing financials the most peripheric condition, to all ESE profiles related with the highest EI levels (Crespo, Belchior & Costa, 2018). Thus, empirical evidence is mounting in support of marshaling being the most critically important ESE activity for EI and financial ESE the least. The latter result, maybe due to the lack of importance attributed to these tasks for overall venture success, or because students think these tasks can be outsourced within the business venturing team or outside through the help of friends or specialized professionals.

About the relationship between gender and average constructs levels (identified in section 3.1), the most relevant difference found was the mean value of EI, which is higher for men than it is for women (4.59 *versus* 4.24, in a 1 to 7 scale).

This adds evidence to an already stylized fact in the literature which is that women tend to have, on average, slightly lower EI than men (*e.g.*, Liguori, 2012; Schlaegel & Koenig 2014; Thompson & Kwong, 2016; Pfeifer et al., 2016). One aspect that should deserve more research in the future is the difference between men and women in their intentions translation to actual new business creation, since the differences found in actual total early-stage entrepreneurial activity (TEA) in Portugal, were quite more striking (9,3% among men and 6.2% among women) according to *GEM PORTUGAL 2013 | 2004-2013* (its last complete report available for Portugal).

GSE and ESE were also found lower in women. The GSE result is in line with what was reported by Scholz et al. (2002), which states that in some countries men display a slightly higher GSE than women, and contrary to what was found by Liguori (2012) which does not find significant correlation between both variables.

Concerning the ESE result, this is an empirical finding for which there is, also, mixed results in the literature (*e.g.*, Scherer et al. 1990; Wilson et al. 2007; Yang 2013; Schlaegel & Koenig 2014; Farashah, 2015; Pfeifer et al. 2016) and, although some find these differences related with the type of measure used (*e.g.*, ESE *versus* PBC; Schlaegel & Koenig 2014), within the same typology, the specific entrepreneurial activities actually measured may also influence ESE self-reported levels for each gender. In fact, in this thesis results, it appears that perceived capabilities regarding searching and planning activities are probably the main cause for women's lower ESE (since marshaling and implementing finance are not significantly different and implementing people was actually found higher for women than for men). These results should be considered exploratory in nature, given the lack of other supporting empirical evidence in the literature, however, if confirmed, this could mean that programs designed to equate women's entrepreneurship capabilities (and capabilities perceptions) with those of men should probably focus on the searching and planning ESE subdimensions.

Another interesting perspective, that can clarify such relationship, is based on Liguori's (2012) results. This author, although finding an insignificant correlation between gender and both GSE and ESE, reports that when the effects of other variables are controlled for (*e.g.*, GSE), being a woman relates negatively and significantly with ESE. This result raises a concern relatively to the proposed Gender-ESE relationship. Namely, the possibility that, because GSE and ESE are correlated (Liguori, 2012), ESE effects attributed to gender may have a dual origin and potentially opposing effects: (1) A part of gender effects on ESE may be indirect, through GSE, and (2) another part may be a direct effect, through entrepreneurship specific self-efficacy beliefs. This concern/question should be answered in future research, given that, for example, interventions directed to raise GSE and ESE may differ in preferred methods and potential results.

Regarding NB and EOE, these were not found to differ across gender. The NB result is in line with Schlaegel & Koenig (2014) findings but different than those, from a smaller and culturally different (China) study, from Yang (2013). Both using TPB, a different theoretical framework, to test the relationship between gender and subjective norms. With respect to the EOE results, Schlaegel & Koenig (2014) find borderline significance in support of women having slightly less positive attitudes towards entrepreneurship (in TPB models) and lower desirability (in SEE models). Therefore, apparently these gender differences, regarding NB and EOE, may exist or not depending on the specific populations studied. There may be some contexts (*i.e.* cultural) where women tend to perceive less positive social support from family and friends for EB and

less positive outcomes from entrepreneurship. In the case of EOE, specifically, since different motivations may underlie the intention and creation of a new business (*cf.* Shane et al., 1991), for some populations it could be advisable to use gender specific EOE items or control for its moderating effect. Comparing with a study also using SCCT, this result on EOE is in line with Liguori's (2012) findings.

Into the confirmatory research of this thesis and testing its hypothesis H3.1, with a parsimonious version of SCCT, as Segal et al. (2002) - the *baseline SCCT EI model*, including ESE and EOE as the only determinants of students EI – evidence was found in support of such model, given that: (1) it provided an acceptable fit to the sample and, (2) all the regression weights (std. loadings) from ESE (.506) and EOE (.143) to EI and from ESE to EOE (.233), were found statistically significant ( $p$ -value < .01).

Furthermore, testing hypothesis H3.2, it was found that this *baseline model* provided a moderate explanatory power of EI, with 31.0% of its total variance explained, which compares to the 9.1% from an EI model including a group of noncognitive demographic explanatory variables, believed to be related with EB. This *Demographics EI model* included: Age, Gender, Entrepreneurial Family Background, Graduate Student, Business Student and Entrepreneurship Education Exposure, Prior Entrepreneurial Experience and Work Experience; as independent variables predicting EI, the dependent variable (latent construct).

Additionally, the inclusion of all these demographic variables to the *baseline model*, as control variables (direct effects on EI, only), improves EI total variance explained by only 5.8% (to a total of 35.8%). In this variation of the *Baseline SCCT EI model*, only Gender (std. loading of .142), Entrepreneurial Family Background (std. loading of .102) and Prior Entrepreneurial Experience (std. loading of .100) were found significant and with effect sizes comparable to that of EOE (std. loading of .133), while a change of one standard deviation by ESE is more than three times more influential than any other variable in the model (*cf.* std. loading of .477 - direct effect size only).

Overall, these results confirm existing evidence from previous comparable research – *i.e.* using SCCT to explain EI of college students – confirming model fit, explanatory power was close to the known range of 33% to 53%, of EI total variance explained, and the statistical significance of the relationships proposed between ESE, EOE and EI - despite the great diversity found relatively to construct measurement and model completeness. Regarding effects sizes, this thesis results are, approximately, within the following ranges from the literature, namely:

structural paths between ESE-EI ranging from .35 to .67, between EOE-EI, from not significant to .51 and between ESE-EOE, from .25 to .39, although, in this latter case, slightly below range (*cf.* Segal et al., 2002; Vázquez et al., 2010; Liguori, 2012; Chen, 2013; Lanero et al., 2015; Pfeifer et al., 2016; Austin & Nauta, 2016).

The empirical evidence regarding the application of SCCT to EI is still in its infancy when compared with TPB and EEM, however, thus far, and based in this thesis results and those of comparable research, it appears that SCCT, in its most parsimonious form is an equivalent model to that of TPB and SEE in explaining EI. That is, contrarily to what Segal et al. (2002) proposed, it is not found to be superior to these, at least, in such a simplified format.

Moreover, EOE appears to be the weak link of the theory's application to EI - as evidenced from the low std. loading from EOE to EI (.143), and from the inconsistent loadings reported in the comparable literature (*e.g.* Segal et al. 2002; Lanero et al., 2015). Therefore, most likely it is relevant to (1) further explore EOE measurement, as there might be a need for better adjustment of the EOE scale items to address the specificities of the studied populations, and (2) EOE relationship with EI, since entrepreneurial outcome expectations and motivations can be multiple (*e.g.* Shane et al., 1991; Birley & Westhead, 1994; Kolvereid, 1996).

Considering that the existence of cognitive mechanisms that process/interpret the personal and environmental contexts before these influence behavior, is both theoretically sound (*cf.* SCCT: Lent et al., 1994; TPB: Ajzen, 1991; and EEM: Shapero & Sokol, 1982) and useful, since these are more easily changeable through purposeful interventions (Armitage et al., 2002), the general hypothesis of EI cognitive mediation through ESE and EOE was tested. Hypothesis H3.3, directed to test the mediation on the relationship between demographic variables (associated with entrepreneurship relevant learning experiences) and EI, and hypothesis H3.4 focused on testing the mediation effect on the relationship between perceived distal social support and EI (Lent et al., 1994, 2000) – the former measured by normative beliefs (NB).

Overall, empirical support was not found for hypotheses H3.3 and H3.4. The cognitive mediation, through ESE and EOE, of the demographic variables and distal social support effects on EI only appears, at best, to be partial - *i.e.* with simultaneous, direct and indirect effects. Educational variables (Graduate Student, Business Student and Entrepreneurship Education Exposure), Age and Work Experience were found not significantly related with EI in multivariate models, when other factors are controlled for. Family Entrepreneurial Experience was not found to produce a significant indirect effect on EI. Finally, NB, Prior Entrepreneurial

Experience and Gender effects on EI have been found to be only partially mediated through ESE (*i.e.* only mediating 53.2%, 37.9% and 20.1% of their total effects on EI, respectively). However, as already stated above, adding direct effects on EI from demographic variables adds a very small extra variance explained on EI, which means that SCCT models are probably best used without considering these other variables direct effects.

In relation to the addition of NB, as a measure of distal social support, results are unclear, whether including it is beneficial or not, since this variable direct effect on EI turns out significant, and with an effect size similar to that of EOE and to that reported by Schlaegel & Koenig (2014) for TPB's Social Norms. Yet, the variance explained of EI remains approximately unchanged. This lack of full mediation by ESE and EOE can be interpreted as an indication of either a poorly measured ESE and/or EOE or the existence of other cognitive variables that should have been considered in the model (*cf.* Ajzen, 1991).

In sum, if a full mediated SCCT model is to be proposed, this research findings suggests that: ESE is the most important cognitive mediator in the SCCT model and, especially so, for the positive effects of distal social support, prior entrepreneurial experience and gender on EI; and EOE, being a less meaningful cognitive mediator, is, however, most likely to mediate the positive effects of ESE (partially), work experience and family entrepreneurial experience, and the negative effect of age, on EI.

Liguori (2012) also found prior entrepreneurial experience and gender to be related with ESE, but gender in the opposite direction, and work experience and family entrepreneurial experience related with EOE, but work experience in the opposite direction. As already suggested above (regarding gender differences) these differences could relate with the fact that a general measure of self-efficacy (GSE) was used as a covariate for both ESE and EOE models. This, again, raises the important question related with the potential impact, on mediation effects significance, of distinguishing both the activity specific and generalized self-efficacy in an EI model.

A special reference should be made, also, relative to the lack of significant relationships between educational variables and both cognitive EI mediators ESE and EOE. This can be said to be unexpected, since academic exposure to Business and Entrepreneurship programs and courses are thought to improve related capabilities and awareness of related outcomes (*cf.* Karhunen & Ledyeva, 2010; Thompson & Kwong, 2016; Sorgner & Fritsch, 2017).

These results are in line with those of Bae et al. (2014), who find a positive but insignificant correlation between having a business education and EI and find mixed results regarding the effects of entrepreneurship education on EI. Yet, these are contrary to Yang's (2013) who finds that entrepreneurship education significantly affects PBC and EI and Thompson & Kwong (2016) who find that being graduated from a University has a significant impact on EI. Before dismissing their positive effects on students' cognitions, it is probably warranted to first propose an improvement on the measurement of both cognitive mediators, with particular emphasis on self-efficacy beliefs, since its relationship with education is the most evident.

### *Conclusion*

In sum, in this third chapter, we find SCCT a useful framework to explain the EI of Portuguese HEI students. As predicted by the theory, both ESE and EOE are found to be significantly related with EI and ESE is also a significant predictor of EOE. Moreover, this cognitive model is found to be considerably better predicting EI than an alternative model comprised of demographic variables, only. However, given the small size of the EOE-EI relationship and the fact that ESE and EOE could not be found to fully mediate the effects of other noncognitive variables on EI, we think that there is still potential for improving the adaptation of SCCT to explain and predict EI. Given these and other results in the literature, in the next empirical chapters new operationalizations of ESE (Chapter IV) and EOE (Chapter V) will be explored and tested, with the objective of contributing to further the knowledge on the determinants of EI and EB (Chapter VI).

# **Chapter IV**

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## **General and Specific Self-Efficacy Beliefs and EI**

## **Chapter IV: General and Specific Self-Efficacy Beliefs and Entrepreneurial Intentions**

Following the literature review on entrepreneurial intentions (EI) and entrepreneurship related self-efficacy beliefs, this chapter has the main goal of contributing to the ongoing debate relative to which type of self-efficacy measure is the most appropriate cognitive antecedent to be included into EI models (*cf.* Chen et al., 2001; Bandura, 2012; Jackson et al., 2012; Schmutzler et al., 2018). This goal will be pursued by testing different operationalizations of self-efficacy (SE), in terms of stability over time and in terms of their significance for the social cognitive career theory (SCCT) EI model, including one based on the proposition that general self-efficacy beliefs (GSE), can be a useful supplement for activity specific self-efficacy beliefs (SSE) in predicting generalized or novel performances intentions (*cf.* Chen et al., 2001; Jackson et al., 2012).

First, based on the premise that a stable cognitive construct will be less relevant for educational and public policy interventions than one which is more dynamic, GSE is proposed to be more stable than entrepreneurial self-efficacy beliefs (ESE), as it is proposed in the literature (*cf.* Eden & Aviram, 1993; Agarwal et al., 2000; Chen et al., 2001; Poon et al., 2006; Liguori, 2012; Jackson et al., 2012). For time-windows from one to five years, and with students from Portuguese higher education institutions (HEI), results do not suggest a stable and, thus, less relevant GSE construct, for entrepreneurship research. GSE appears to be more sensitive to change than it was initially thought, since its changing pace rivals that of the overall ESE.

Second, based on the proposed superiority of specific SE over GSE for predicting future behavior in particular activity domains, from Chen's et al. (2001) 'specificity matching' argument, ESE is hypothesized to be a better predictor of EI than GSE. This hypothesis was tested, by using the same parsimonious version of the SCCT EI model, used in Chapter III, but with GSE substituting ESE in the model. Results are in line with the SE literature but are still relevant for entrepreneurship research, given that, contrarily to other areas of research, supporting empirical research is still scarce for such proposition (*e.g.* Liguori, 2012) and large scale studies, based on meta-analysis, unexpectedly report no significant differences in effect sizes (Miao et al., 2017 and Rauch & Frese, 2007).

Finally, a new measure of specific SE, entrepreneurship specific self-efficacy beliefs (ESSE), is proposed as one that can be coupled together with GSE in a SCCT EI model. This has the

potential to improve the understanding of the direct effects of both SE constructs (*i.e.* specific SE and GSE) on EI. A GSE & ESSE model has also the potential to clarify the specific SE and GSE mediation roles, in translating other personal and contextual factors into EI, and to better understand and design educational programs and methods for improving entrepreneurial intentions and behavior, through related self-efficacy beliefs. This model was tested and both GSE and ESSE were found to be significant predictors of EOE and EI, in a SCCT EI model with acceptable fit and explained variance. Moreover, the new operationalization may be found relevant for any other activity domain or behavior where debate may exist regarding the use of a GSE or a specific SE measure.

## **4.1 – Data, Measures and Methods**

### **4.1.1 – Data**

This chapter's sample originates from the 1stW survey (n=835) from 2010-2011 and, for hypotheses H4.1.1 and H4.1.2, also from its Fup3 and Fup1 survey from 2015-2016, and from 2011-2012, respectively. The sample size hypotheses H4.1.1 and H4.1.2 testing - which required complete responses for the same measures in two distinct moments, five and one year(s) apart - were reduced to 175 and 82 students, for GSE, and 140 and 65 students, for ESE, respectively. To avoid repetition, and since the 1stW survey database was already used in Chapter III, the reader may refer to its section 3.1.1 and the Appendix B of this thesis, for more detail on this data main variables.

Contrary to the 1stW survey data, where no reason was found to suggest outliers, when matching intra-individual scores, for a same construct, from two different points in time, it is possible and desirable to perform an outlier analysis. Especially when the sample size is small and more prone to be influenced by extreme cases. In such context, twenty outliers were identified using Tukey's (1977) rule, using the inter-quartile range (IQR). All cases with scores lower than the first quartile minus 1.5 x IQR, or higher than the third quartile plus 1.5 x IQR, were removed given that they were not considered trustworthy.

### 4.1.2 – Measures

As it can be confirmed in greater detail in Chapter III, entrepreneurial intentions (EI) are measured using a modified version of Thompson's (2009) scale, entrepreneurial self-efficacy (ESE), using a modified version of McGee's et al. (2009) scale and entrepreneurial outcome expectations (EOE) were based on the 4-item scale inspired by Krueger (2000). Introduced in this chapter's models, general self-efficacy (GSE) was measured using Schwarzer & Jerusalem's (1995) 10-item Likert-type scale (see Table 4.01), with possible answers ranging from 1 to 5 (indicating the extent to which one agrees with certain statements, from 1= highly disagrees to 5= highly agrees).

**Table 4.01:** Description of GSE constructs measures: observed variables (items).

Construct / Observable variable	Response Range
<p><b>General Self-Efficacy Beliefs (GSE)</b> Please indicate the extent to which you agree in what relates each of the following</p> <p><b>GSE01</b> You can always sort out difficult problems if you put enough effort.</p> <p><b>GSE02</b> If you face contrasting positions you can always find the means to achieve what you want.</p> <p><b>GSE03</b> It is easy to keep faithful to your objectives and achieve them.</p> <p><b>GSE04</b> You are confident that you can deal with unexpected events in an efficient manner.</p> <p><b>GSE05</b> Due to your competences and capabilities, you know that you can handle with unexpected situations.</p> <p><b>GSE06</b> You can solve most of the problems if you put the necessary effort.</p> <p><b>GSE07</b> When facing difficult situations, you remain calm because your can trust on your ability to manage every situation.</p> <p><b>GSE08</b> When facing a problem you can, usually, find various solutions.</p> <p><b>GSE09</b> If you are in trouble, you can, usually, think on a solution.</p> <p><b>GSE10</b> Usually you can handle anything that you have to face.</p>	<p style="text-align: center;"><b>Scale</b></p> <p>1= Highly disagree. 2= disagree. 3= does not agree or disagree. 4= agree. 5= Highly agree.</p>

For the test of hypothesis H4.3 a new variable will be introduced, the entrepreneurial specific self-efficacy measure (ESSE). This variable should be interpreted as the portion of ESE variability which does not correlate with GSE and, therefore, it's the ESE additional variability that is exclusively related with entrepreneurial activities. This is a continuous variable that is computed from the reported values of both ESE and GSE measures and does not require further inquire on respondents. The computation of ESSE was performed as follows: (1) Both ESE and GSE items were factor analyzed (ML estimation with direct oblimin rotation with one factor solution forced, to each construct); (2) both ESE and GSE factors scores were saved as variables (regression method); (3) A simple linear regression was performed where ESE factor scores, as

a dependent variable, are regressed on GSE factor, the only independent variable; finally, (4) ESSE is the resulting error/residual term, from this regression, and thus, the standardized regression residuals were saved and labeled accordingly.

An alternative calculation is also suggested, named ESSEproxy, given that different levels of methodological sophistication may be at the disposal of researchers and the fact that the least sophisticated calculation may be more intuitive to understand the underlying logic of the variable. The computation of ESSEproxy was performed as follows: (1) For each individual, the average constructs' items value was computed, for both ESE and GSE; (2) each GSE average value (which was based on a 1 to 5, Likert-type scale) was transformed into an equivalent average, as if the variable was originally measured in a 0 to 100 scale (equivalent with ESE scale), by multiplying the resulting average value by 25 and then subtracting to this result the value of 25; (3) ESSEproxy is then, the simple subtraction of ESE average value minus the GSE average value, for each individual. Resulting values were saved and labeled accordingly. Results from both ESSE and ESSEproxy will be presented and compared.

### **4.1.3 – Descriptive Statistics**

From the students participating in the 1stW survey, there are those who also participated in the Fup3 survey, a sub sample that is important to test hypothesis H4.1.1. Regarding this subgroup, their GSE mean level and variance, at the 1stW survey, were not found significantly different from the GSE mean value and variance of those who did not participate (3.825 *versus* 3.806, respectively), however, those who did participate also in the Fup3 survey display a slightly but significantly higher ESE mean level (72.215 *versus* 68.073, respectively) and a significantly lower variance than those who did not, using an independent samples t-test (bootstrapping with 2,000 samples) and Levene's test (for equality of variances) methods, respectively. Relative to hypotheses H4.2 and H4.3, the relevant sample is that resulting from the 1stW survey (the same as in Chapter III analysis). Table 4.02 (below) presents the descriptive statistics for all variables included in the new SCCT EI models, including means, standard deviations, range and Spearman's<sup>21</sup> rank order bivariate correlations, between all non-missing cases.

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<sup>21</sup> Which is more appropriate than the Pearson's correlation coefficient for nonparametric data, which is the case of this study's variables.

#### 4.1.4 – Nonrespondents by Follow-Up Survey Drop-Out

As already referred in Chapter III and analyzed and discussed in Appendix E the existence of nonrespondents can be a problem for empirical research and, in longitudinal research this is specially common, due to attrition from follow-up survey drop-out (*cf.* Jelčić, et al., 2009). After approximately five years since the 1stW EEP Portugal survey (2010-2011), with 1,309 valid submissions, only 321 students (24,52%) have registered in the Fup3, the third follow-up survey (2015-2016).

Evidence from longitudinal studies in EI research reflects a wide range of response rates relative to follow-up survey(s) attrition. Liñán & Rodríguez-Cohard (2008) reported a 33.04% response rate in a 3-year time frame, and cite other examples ranging from 35.3% over 18-month period (*cf.* Audet, 2004) to 55.3% over a 5-month period and in the context of in-class administered questionnaires (*cf.* Souitaris et al., 2007). More recently, both using 18-month longitudinal surveys: Goethner, et al., (2012) found a 41.3% response rate, studying Scientists' transition to academic entrepreneurship, and Kautonen, et al. (2015b) reported response rates of 58% and 70%, from two samples of the adult population in Austria and Finland, respectively. Given the longer time-frame of the present research, this survival rate appears in line with what could be expected.

According to the literature, researchers should propose some plausible hypotheses about the causes for nonresponse (*i.e.* the missingness mechanism), if possible, providing supporting evidence and proceeding accordingly. Namely, researchers should be able to frame their data: as *missing completely at random* (MCAR) - *i.e.* the probability of data being missing does not depend on any missing or observed values; as *missing at random* (MAR) – *i.e.* given the observed data, data are missing independently of unobserved data, or in other words, the reason why data is missing is related to observable variables (which can be controlled for); or, as *missing not at random* (NMAR) – a situation which demands additional complexity for unbiased statistical inference (*cf.* Rubin, 1976; Little & Rubin, 2002; Hogan, et al., 2004).

Heitjan & Basu (1996, p. 207) state that “missing at random (MAR) and missing completely at random (MCAR) are ignorability conditions—when they hold, they guarantee that certain kinds of inferences may be made without recourse to complicated missing-data modeling”. Thus, effects of subject attrition “must be assessed in individual studies so researchers can either rule

**Table 4.02:** Mean, Standard Deviation and Range per Variable in the SEM model, and Spearman rank order Correlations between SCCT core cognitive constructs and ESSE and other distal and proximal contextual variables.

SEM model Variables	Descriptive Statistics			Spearman's rho (correlation)																
	Mean	(sd)	Range [min-max]	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.1.	10.2.	11.1.	11.2.	12.1.	12.2.	13.	14.
<b>Contextual Variables - Proximal and Distal</b>																				
1. Gender (Male, Y/N)	0,43	(0,49)	[0;1]	1																
2. Age (Years)	23,86	(6,55)	[17;55]	,101**	1															
3. Family with entrepreneurship experience (Y/N)	0,58	(0,49)	[0;1]	-0,007	0,061	1														
4. Normative Beliefs (NB index: 6-item avg. 1-7)	5,58	(0,92)	[1;7]	-0,011	-,088*	0,037	1													
5. Education Level (Graduated Student, Y/N)	0,27	(0,44)	[0;1]	-0,018	,445***	0,027	-0,012	1												
6. Engaged in Business Education Course (Y/N)	0,47	(0,50)	[0;1]	-0,044	-,106**	0,047	0,012	-,170***	1											
7. Entrepreneurship Education exposure (Y/N)	0,48	(0,50)	[0;1]	0,014	,081*	0,008	-0,001	-0,031	,157***	1										
8. Work experience (5 years or more, Y/N)	0,28	(0,45)	[0;1]	0,011	,635***	,117***	-,099**	,168***	-,083*	-0,027	1									
9. Entrepreneurship experience (Y/N)	0,16	(0,36)	[0;1]	0,065	,252***	,168***	-0,002	,098**	-0,008	0,033	,260***	1								
<b>SCCT EI Direct Antecedents</b>																				
10.1. Entrep. Self-Efficacy (ESE: 20-Item avg. 1-100)	68,77	(13,37)	[7,7;99,5]	0,061	,073*	,088*	,247***	0,025	0,057	-0,008	,102**	,155***	1							
10.2. ESE(single factor solution)	0,00	(0,96)	[-4,41;2,16]	0,051	,080*	,081*	,246***	0,024	0,046	-0,011	,110**	,155***	,995***	1						
11.1. General Self-Efficacy (GSE: 10-Item avg. Rescaled to 0-1)	70,24	(11,11)	[15;100]	,125***	,182***	,096**	,185***	,074*	-,126***	0,006	,198***	,116**	,451***	,460**	1					
11.2. GSE(single factor solution)	0,00	(0,93)	[-4,41;2,38]	,143***	,194***	,092**	,184***	,078*	-,134***	0,008	,214***	,119**	,453***	,461**	,984***	1				
12.1. ESSEproxy	-1,47	(13,19)	[-65;36]	-0,044	-0,062	0,005	,090**	-0,027	,153***	-0,006	-0,060	0,050	,590***	,578***	-,385***	-,372***	1			
12.2. ESSE	0,00	(1,00)	[-5,11;2,52]	-0,017	0,003	0,044	,191***	-0,009	,116**	-0,008	0,021	,115**	,873***	,874***	0,033	0,027	,878***	1		
13. Entrep. Outcome Expectations (EOE: 4-item avg. 1-7)	5,83	(0,73)	[2,75;7]	0,035	-0,043	0,062	,158***	0,000	0,014	0,008	0,001	0,008	,206***	,213***	,232***	,223***	0,006	,137***	1	
<b>SCCT Dependent Variable</b>																				
14. Entrepreneurial Intentions (EI: 6-item avg. 1-7)	4,41	(1,21)	[1;7]	,154***	,133***	,137***	,183***	,083*	0,042	0,049	,112**	,220**	,398***	,383***	,296***	,302***	,155***	,287***	,167***	1

EEP Portugal 1st wave survey academic year of 2010-2011, from 03-Oct-2010 to 08-Jul-2011.

Correlations, n = 835. \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

out subject attrition as a possible source of bias or more accurately interpret their findings when attrition has introduced bias” (Goodman & Blum, 1996, p. 628).

Heitjan & Basu (1996, p. 207) state that “missing at random (MAR) and missing completely at random (MCAR) are ignorability conditions—when they hold, they guarantee that certain kinds of inferences may be made without recourse to complicated missing-data modeling”. Thus, effects of subject attrition “must be assessed in individual studies so researchers can either rule out subject attrition as a possible source of bias or more accurately interpret their findings when attrition has introduced bias” (Goodman & Blum, 1996, p. 628).

Therefore, besides exploring the possibility of self-selection bias effects based on all other variables in this thesis, a confirmatory approach is also taken, testing both a general hypothesis of random-sampling - based on Goodman & Blum (1996) suggested methodology - and four other more specific hypotheses regarding EI and EOE, presented in Appendix I - based on the literature related with the effect of salience and interest (*e.g.*, Sheehan & McMillan, 1999; Cook et al., 2000) and the assumption that EI and EOE (as a measure of indirect interest) are good indicators of the salience and the attitudes towards entrepreneurship (EEP Portugal survey’s theme) for students. Given the analysis and results presented in Appendix I, no empirical support was found to suspect that results may be biased by follow-up surveys drop-out.

#### **4.1.5 – Methods**

The EI stability literature, which is here followed as a reference, has used different methods, for example: measuring the within-participants Pearson correlation between construct items employed at two different time-points (*e.g.*, Sheeran, Orbell, & Trafimow, 1999; Liñán & Rodríguez-Cohard, 2008; and Chen et al., 2001, specifically addressing GSE stability), correlation coefficients among construct averages (*i.e.* simple items averages without transformation) at two different time-points (*e.g.*, Schuerger, Zarrella, & Hotz, 1989; Souitaris, Zerbinati, & Al-Laham, 2007; Liñán & Rodríguez-Cohard, 2008), and linear regression models assessing if a construct measured in a certain point in time can be significantly explained by the same construct at an earlier date (*e.g.*, Liñán & Rodríguez-Cohard, 2015). Although, other, more recent methods, have also been used elsewhere, such as latent-change or latent- or growth-curve modeling (*e.g.*, Duncan & Duncan, 2009; McArdle, 2009; Curran, Obeidat, & Losardo, 2010).

In this chapter, to allow a direct comparison with the literature (Chen et al., 2001; Souitaris, Zerbinati, & Al-Laham, 2007; Liñán & Rodríguez-Cohard, 2008; Liñán & Rodríguez-Cohard, 2015), and to test the general hypothesis that GSE is a more stable construct than ESE (H4.1), the following methods are used targeting different types of stability<sup>22</sup>:

In hypothesis H4.1.1, stating that GSE construct items will remain more stable across time than ESE items, a within-participant Pearson correlation was performed, between constructs' items at T0 and T5;

For hypothesis H4.1.2, stating that the GSE construct will remain more stable across time than ESE, in a relative stability test, two different methods were performed: (1) a within-participant Pearson correlation, between each construct items average, for T0 and T5; and (2) a linear regression model, using structural equations modeling (SEM), to test if the constructs' real values remain stable across time. This last method takes into account measurement errors and, therefore, is considered a better model. The first is conducted for comparison reasons and it may provide readers with a more intuitive result.

And for hypothesis H4.1.3, stating that GSE construct will remain more stable across time than ESE, in an absolute stability test, an intra-participant construct items average difference was calculated between T5 and T0. This method not only provides an alternative measure of stability but, in the case of some degree of instability, it also provides a measure of the size and direction of such deviation/evolution.

Regarding hypothesis H4.2 - which states that in a SCCT EI model, ESE is more significantly associated with EI, than GSE – the same methodology was used, as in Chapter's III, to test the *baseline SCCT EI model*, with the only difference being that the self-efficacy variable is no longer ESE, but rather GSE – here also named the *SCCT EI model with GSE*. Since these are nonnested models, and therefore no significance test can be conducted (Kline, 2015), empirical evidence will be suggested based on the models differences regarding EI squared multiple correlations (*i.e.* EI explained variance), standardized loadings and fit indices – all these can then be directly compared with those obtained from Chapter's III model.

Finally, to provide empirical evidence on hypothesis H4.3, SEM is again used to test the fit and explanatory power of a *baseline SCCT EI model*, with both GSE and ESSE as the self-efficacy

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<sup>22</sup> Refer to Appendix M, for an in-depth explanation of each type of stability analysis.

measures (see model in Figure 4.03) – here, also referred to, as the *SCCT EI model with GSE & ESSE*. This is a modified version of hypothesis's H4.2 model, where only ESSE is added, to GSE and EOE, a new cognitive antecedent of EI. These results are then compared and discussed in relation with previously tested models.

## **4.2 - Results**

### **4.2.1 – Exploring and Testing GSE and ESE Constructs Items Stability**

From the items-construct correlation analysis, three important results (presented, below, in Table 4.03) appear to be relevant. First, the fact that, although all correlations are found to be significantly different from zero, these are only associated at a small to moderate degree. Second, that GSE items from T0 and T5 display an average correlation of .25, while those of ESE from T0 and T5 present a greater stability with an average correlation of .35. Third, there appears to be relevant differences regarding items-construct stability across the five ESE subdimensions, with 'searching' and 'implementing people' activities being those where stability was lower and with the latter clearly less stable than GSE. Therefore, hypothesis 4.1.1 was found to lack empirical support, but, due to these variations across ESE subdimensions it is best stated as having received mixed support.

Concerning the relative stability, results from the two methods tested were the following:

- (1) The constructs' items average correlations, identified in Table 4.04 (below), were found significant ( $p$ -values  $<.001$ ), regardless of the timeframe considered (from 1 to 5 years). With this method, GSE does result slightly more stable than ESE, with the former correlated to a strong degree and the latter correlated to a moderate degree. Lastly, both correlations decrease across time, when one compares their short terms (1 year) with their middle term (4 and 5 years) stabilities.
- (2) In the SEM analysis, where GSE(T5) and ESE(T5) are only predicted by GSE(T0) and ESE(T0) (see figures 4.01 and 4.02, below), both measures had some degree of stability, but, GSE(T5) was better explained by GSE(T0), than ESE(T5) was explained by ESE(T0) - as it may be confirmed in the std. loadings between these constructs and their estimated variance explained (.57 and .42, respectively). Again, providing empirical evidence that

the former has a greater relative stability than the latter and, thus, supporting hypothesis H4.1.2.

Finally, in relation to constructs' absolute stability, across the 5-year period, results from the differences between each construct items average, presented in Table 4.05 (below), show that GSE was found to be more likely different than zero than ESE, with the average value of  $GSE(T5) - GSE(T0)$  being .16 (which is equivalent to 3.28, if in a similar scale to that of ESE, from 0-100), which is significant at a p-value  $<.001$ , and  $ESE(T5) - ESE(T0)$  being -1.48 and only significant at a lower at a p-value  $<.05$ . This result cannot be said to support hypothesis H4.1.3.

Yet, this does not hold when the mean  $GSE(T5-T0)$  differences are compared with each ESE subdimension individually. Namely, only in the case of planning and implementing people activities can the same conclusion be taken. On the contrary, for searching, but specially for marshaling and implementing financials, GSE is clearly more stable (*i.e.* its items average changes less) than these ESE subdimensions. Therefore, and once again due to this later and more detailed results, it is best to state that mixed support was found for H4.1.3.

Regarding this more detailed analysis, another result that appears worth mentioning is the direction/evolution found for these self-efficacy values. At an aggregated level, self-reported values of GSE have increased for the entire EEP Portugal sample, while those of ESE remained more stable or even tend to decrease. Yet, when ESE is analyzed at its subdimension level, it was found that students reported lower ESE levels for all subdimensions, with the exception of ESE of implementing financials, where the opposite trend was identified and ESE for planning, where no significant difference was found. The reader should note that, this then becomes an offsetting result when this hypothesis is analyzed using ESE only at its more aggregated level.

Also, it is interesting to note the descriptive analysis of the constructs' mean values, contained in the same Table 4.05. On average, HE students perceive themselves particularly capable of implementing people related entrepreneurial activities, with this ESE variable mean value being the highest and achieving the lowest std. deviation and the greatest minimum value (77.27, 14.08 and 36.67, respectively). Planning activities appear to be where HE students feel the least capable with the lowest average mean and minimum value, although, together with implementing financials, it is one of the ESE subdimensions mean values that has greater variability (std. deviation of 18.39).

## 4.2.2 – Comparing GSE and ESE as Antecedents of EI in a SCCT Model

### *Confirmatory Factor Analysis*

Prior to the confirmatory factor analysis (CFA), and to explore the GSE factorial structure, an exploratory factor analysis (EFA – a ML estimation<sup>23</sup> with Direct Oblimin Rotation) was first performed. Based on the extraction criterium of eigenvalues greater than 1, two factors emerged - explaining, cumulatively, 40.30% of the 10-item total variance. However, given the lack of theoretical support for this empirically driven internal structure and the fact that the eigenvalue for the second factor is fairly close to 1 (1.046), a decision was made to force GSE as a unidimensional construct as Schwarzer & Jerusalem (1995) first suggested. This single-factor structure only explains 35.29% of the 10-item total variance.

To provide some evidence of the GSE constructs discriminant validity regarding ESE and general model fit. The EFA resulted into the expected six factor solution – five factors relative to each ESE subdimensions and a one-factor solution for GSE (as theoretically proposed). Relatively to the final EFA adequacy, results are: a KMO=.916 and Bartlett's Test of Sphericity( $df$ )= 11,488.83(406) significance lower than .001; GSE items 4, 5 and 9 communalities (from extraction) were above the recommended threshold of .40 (Costello & Osborne, 2005), with items 7, 8 and 10 close to threshold (.36, .39, .39) and items 1,2,3 and 6 below.

As in Chapter III, model testing followed Anderson & Gerbing's (1988) recommended two-step approach and, given previous results, multivariate normality was not assumed, with estimations performed using a Bootstrap ML estimation (10.000 samples).

Given the CFA results, for the GSE measurement model (where also ESE is included - measured as in Chapter III – for the purpose discriminant validity analysis, as it is the conceptually closest construct used in this study), for all 835 students, the first three items and the sixth have resulted in std. loadings under the .50 threshold and, as such, were removed from the construct measurement for subsequent analyses.

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<sup>23</sup> As the default method in AMOS CFA and better suited to compare with the literature.

**Table 4.03:** GSE and ESE constructs item-structure stability over a 5-year period (Pearson correlation).

Within-participants correlations between construct items in T0 and T5	mean	min	máx	std. deviation	n
Items values stability for GSE (Correl: T0,T5)	0,25***	-0,67	1,00	0,37	152
Items values stability for ESE (Correl: T0,T5)	0,35***	-0,65	0,89	0,29	158
- Items values stability for ESE for Searching Activities (Correl: T0,T5)	0,23***	-0,65	0,89	0,58	137
- Items values stability for ESE for Planning Activities (Correl: T0,T5)	0,35**	-1,00	1,00	0,94	71
- Items values stability for ESE for Marshaling Activities (Correl: T0,T5)	0,33***	-1,00	1,00	0,57	147
- Items values stability for ESE for Implementing People Activities (Correl: T0,T5)	0,17***	-0,99	0,97	0,49	138
- Items values stability for ESE for Implementing Financials Activities (Correl: T0,T5)	0,34***	-1,00	1,00	0,68	89

Based on EEP Portugal 1st wave survey (T0: 2010-2011) and its 3rd follow-up survey (T5: 2015-2016).

Statistical significance tested using a one sample t-test (bootstrap 1,000 samples): \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

**Table 4.04:** GSE(10-item avg) and ESE(20-item avg) relative stability, within a 5-year period: Pearson correlations between repeated measures, of both constructs, for one-, four- and five-year periods.

Pearson Correlations	T0	T1	T5
GSE(10 items avg) T0	1 (175)		
GSE(10 items avg) T1	,708*** (82)	1 (82)	
GSE(10 items avg) T5	,656*** (175)	,638*** (82)	1 (175)
ESE(20 items avg) T0	1 (140)		
ESE(20 items avg) T1	,564*** (65)	1 (65)	
ESE(20 items avg) T5	,536*** (140)	,549*** (65)	1 (140)

\*\*\*. Correlation is significant at the 0.001 level (2-tailed).

Sample size between parentheses (n)

No data was collected in T3, for either GSE or ESSE

Following AMOS modification indices (MI), error terms of items 8 and 9 are set to freely correlate, on the grounds of both being particularly related with creativity perceptions.

As evidence of discriminant validity, no relevant crossloadings were identified, as analyzed by the SPSS pattern matrix<sup>24</sup>, and the factor correlation matrix presents a highest absolute value of inter-construct correlation of .582.

Also, a second order ESE reflective construct (ESE[2nd]) was created, which is proposed to capture the common variance between all the ESE subconstructs and greatly improves the model's parsimonious. Model fit indices confirm a good fit (*cf.* Mueller & Hancock 2008).

<sup>24</sup> With minor loadings (< .300) excluded, for readiness of interpretation, as Liargovas & Skandalis (2012) who cites Kline (1998).

**Table 4.05:** GSE and ESE absolute stability, over 5-year period: Constructs' items initial means and mean differences.

Within-participants constructs' means (T0) and mean differences (T5-T0)	mean	min	máx	std. deviation	n
General Self-Efficacy (GSE) T0 (scale 1 to 5)	3.83	2.70	5.00	0.45	178
- GSE T0 (transposed to a scale 0-100)	70.78	42.50	100.00	11.37	178
Entrepreneurial Self-Efficacy (ESE) T0 (scale 0-100)	71.98	34.00	96.50	11.00	144
- ESE for Searching Activities (T0) (scale 0-100)	70.30	25.00	100.00	14.79	154
- ESE for Planning Activities (T0) (scale 0-100)	63.89	0.00	100.00	18.39	159
- ESE for Marshaling Activities (T0) (scale 0-100)	71.76	20.00	100.00	16.09	159
- ESE for Implementing People Activities (T0) (scale 0-100)	77.27	36.67	100.00	14.08	156
- ESE for Implementing Financials Activities (T0) (scale 0-100)	69.27	0.00	100.00	18.49	156
GSE (T5) - GSE (T0)	0.16***	-1.00	1.30	0.43	178
- GSE (T5 - T0) (transposed to a scale 0-100)	3.28***	-20.00	26.00	8.59	178
ESE (T5) - ESE (T0)	-1.48*	-29.45	22.00	10.88	144
- ESE for Searching Activities (T5) - (T0)	-3.34**	-40.00	30.00	14.42	154
- ESE for Planning Activities (T5) - (T0)	-1.18	-45.00	40.00	17.03	159
- ESE for Marshaling Activities (T5) - (T0)	-4.15**	-63.33	50.00	19.14	159
- ESE for Implementing People Activities (T5) - (T0)	-2.98**	-35.00	30.83	13.32	156
- ESE for Implementing Financials Activities (T5) - (T0)	5.33**	-41.67	48.33	17.46	156

Based on EEP Portugal 1st wave survey (T0: 2010-2011) and its 3rd follow-up survey (T5: 2015-2016).

Statistical significance tested using a one sample t-test (bootstrap 1,000 samples): \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

**Figure 4.01:** Results from the GSE relative stability analysis, from T0 to T5, with a SEM model (n=175).

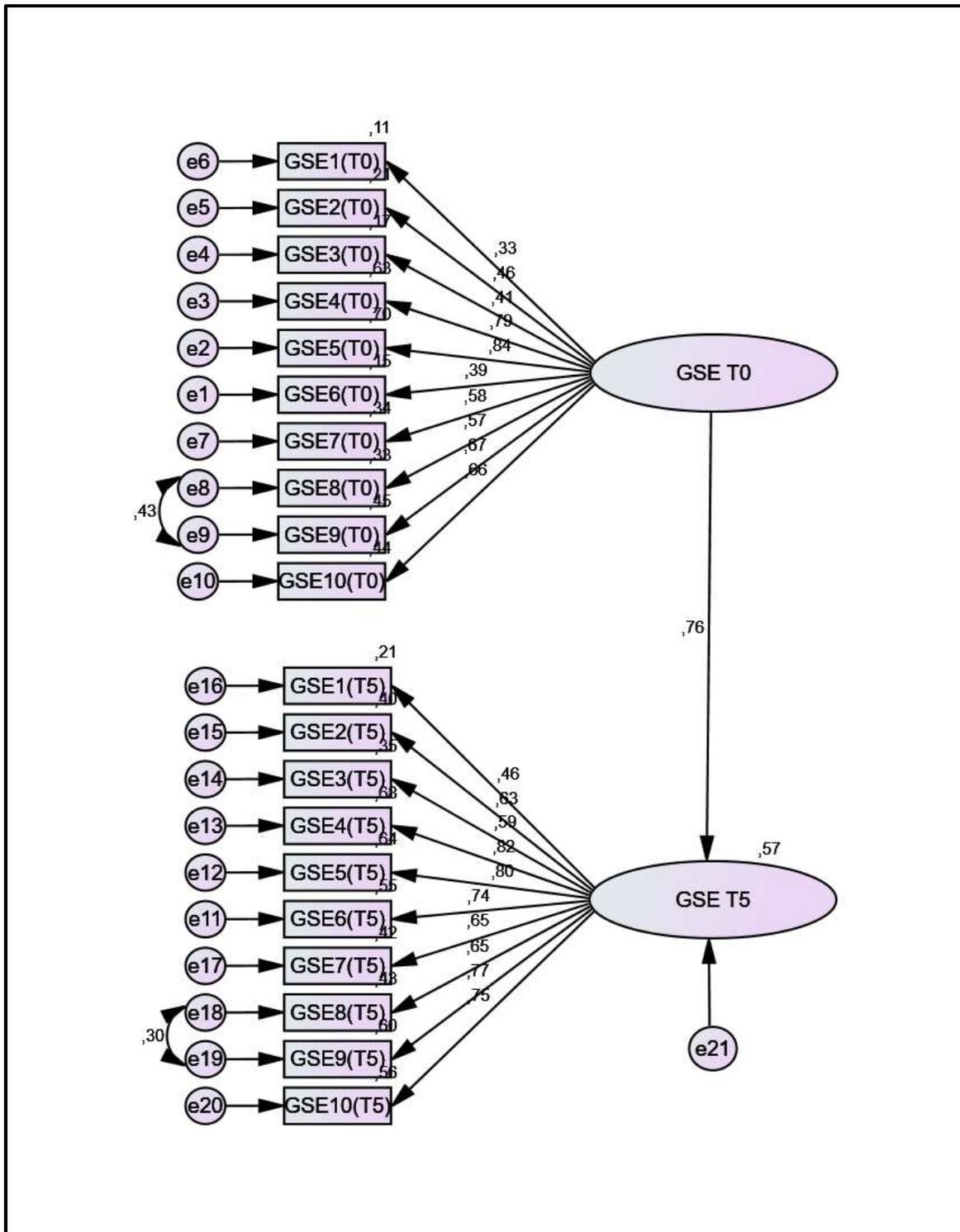
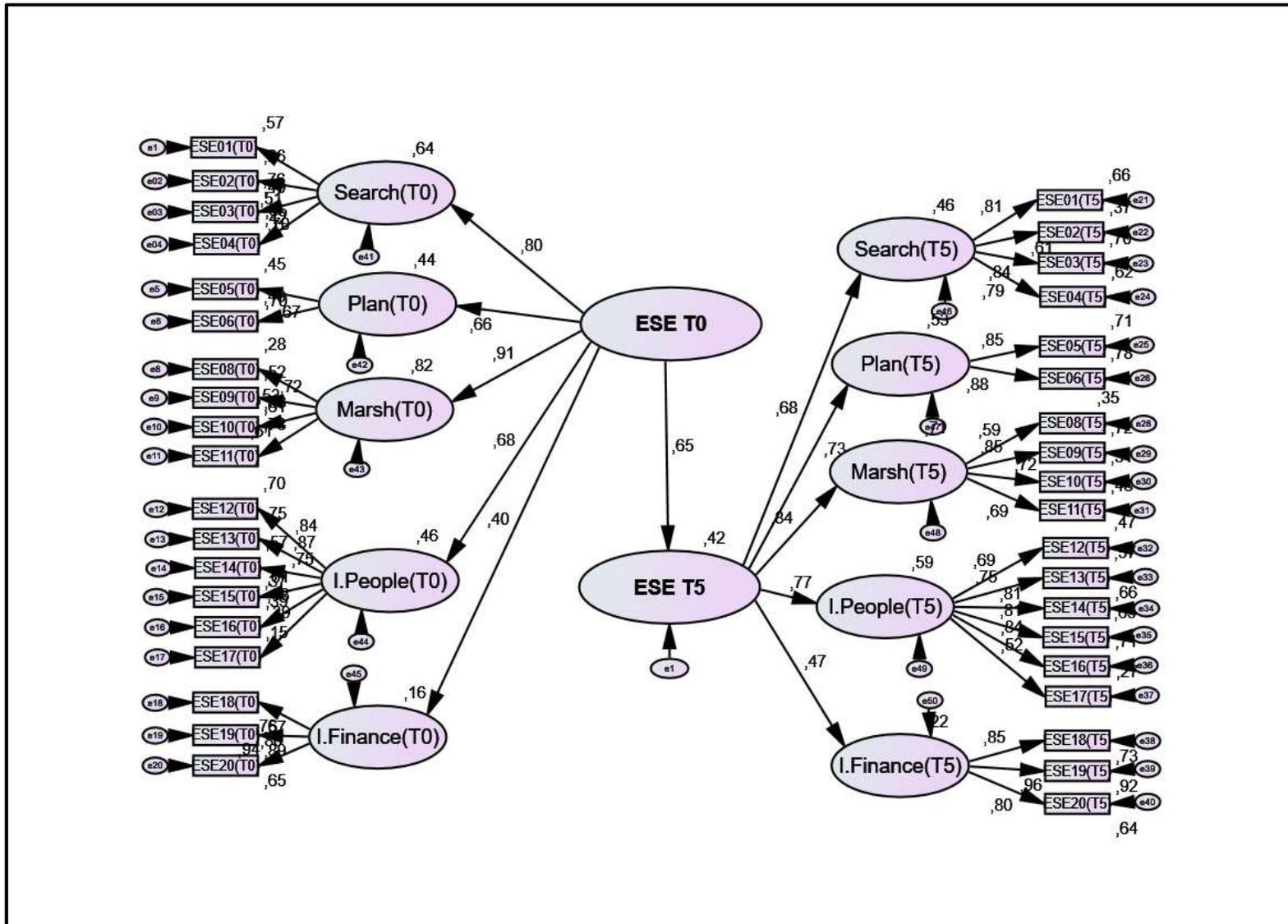
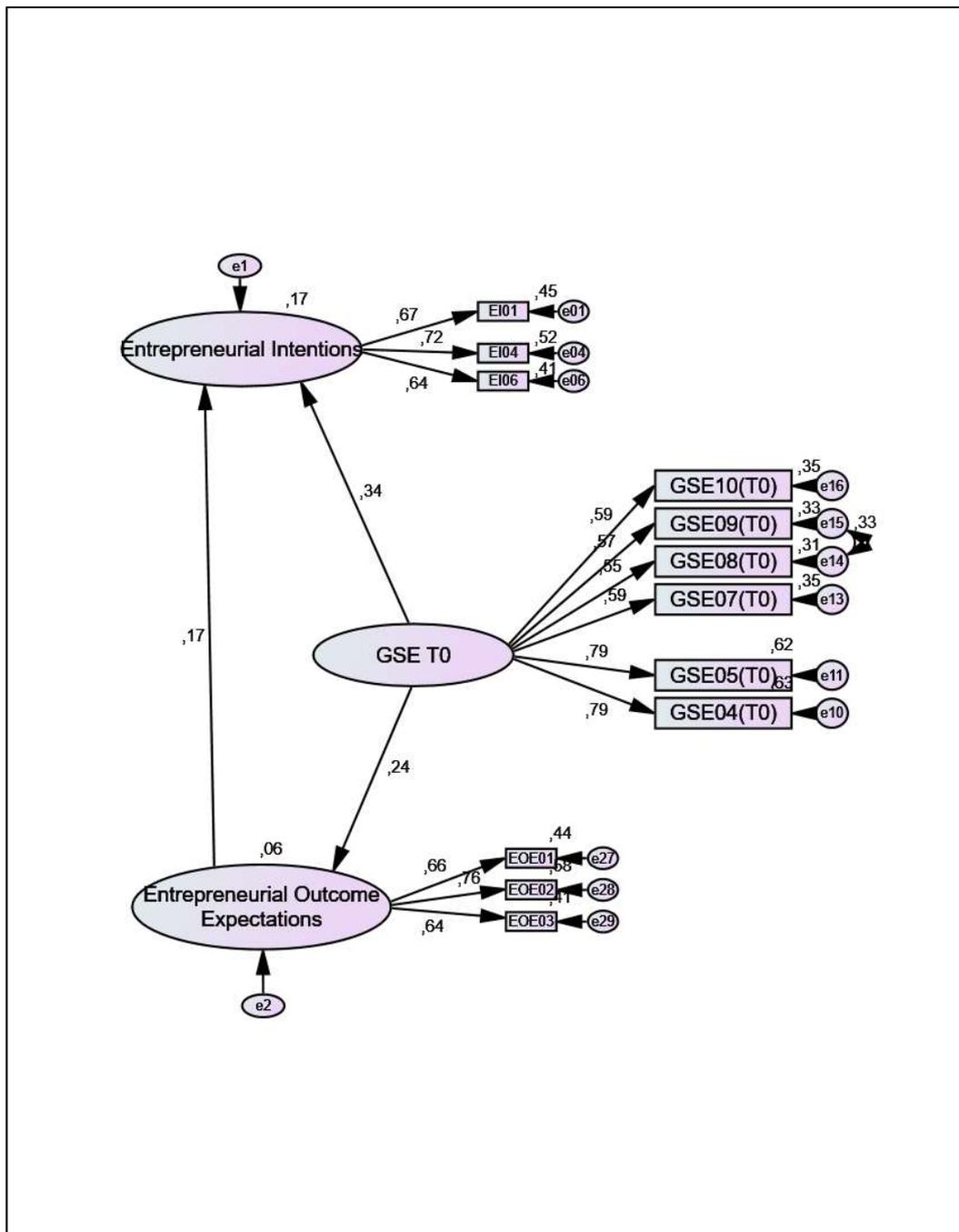


Figure 4.02: Results from the ESE relative stability analysis, from T0 to T5, with a SEM model (n=140).



Although all std. factor loadings between items and their own constructs (GSE and ESE) were significant (p-value <.001), the ESE model specification resulted in a slightly lower than threshold convergent validity - measured by average variance extracted (AVE)>.50 (Hair et al., 2011) - for GSE AVE=.433 and for ESE marshaling AVE=.494 and acceptable for all other ESE subdimension with AVE ranging [.532 (searching);.768 (financials)].

Figure 4.03: Results from the baseline SCCT EI model with GSE(T0) (n=835).



Composite reliabilities (C.R.) for all constructs ranged from C.R=.767 to C.R=.908 which is above the .70 threshold (Hair, et al., 2011). Although AVE values are not ideal, when analyzed in combination with C.R.>.60 it can be accepted (Fornell & Larcker, 1981; Huang, et al., 2013) and, thus, did not justify deviating further from how GSE was measured in previous studies.

Regarding the discriminant validity, only with ESE searching and ESE marshaling did AVE resulted in a slightly lower value than MSV and the square root of the AVE for ESE searching (.729) was slightly less than the absolute value of the correlations with ESE marshaling (.731) and the square root of the AVE for ESE marshaling (.703) is less than the absolute value of the correlations with ESE searching (.731). Nevertheless, given their magnitude and the fact that these constructs are expected to correlate, being subdimensions of a second order ESE construct, these results were not thought to require a different measurement model.

### *Structural Model*

The structural paths of the *baseline SCCT EI model with GSE* - a new version of Chapter's III *baseline model* (displayed in figure 3.02) where GSE substitutes ESE - can be found in Figure 4.03 (below). Estimated with bootstrap ML method (2,000 samples), the overall model fit is found acceptable and all relationships remain significant as proposed by SCCT. However, and confirming hypothesis H4.2, when ESE is substituted by GSE: (1) EI variance explained drops to almost half the value of the *baseline model*, from 31.0% to 17.0% - with an associated a two-tailed significance 95% confidence interval (CI 95%) [10.2% - 24.1%]; and (2) EI is less sensitive to the variation of GSE, than it is to variations of ESE, based on the std. loadings from the ESE-EI and the GSE-EI relationships, of .506 and .336, respectively – the latter value with a CI 95% [.244; .430]. Table 4.06 (below) provides a summary of the main differences between the two models and their model fit.

### **4.2.3 – A SCCT EI model including both GSE and ESSE**

Results from a SCCT EI model, where both GSE and ESSE are included, are represented in Figure 4.04 (below) and indicate an acceptable fit (*cf.* Mueller & Hancock 2008). In it, 27,0% of EI variation is explained and all relationships are found to be statistically significant at p-value lower than .001, except in the following two cases, where significances are slightly less

**Table 4.06:** Results from two competing SCCT EI models, differing on their conceptualization of the self-efficacy beliefs construct (GSE versus ESE).

Results from Hypothesis H4.2 testing and fit indexes comparison	SCCT EI Baseline model with ESE	SCCT EI Baseline model with GSE
EI(variance explained)	31,0%	17.0%
EOE(variance explained)	5.4%	5,6%
SE- EI Std. loading(p-value)	ESE-EI = .506(p<.001)	GSE-EI = .336(p<.001)
EOE-EI Std. loading(p-value)	.143(p=.002)	.171(p=.002)
SE-EOE Std. loading(p-value)	ESE-EOE.233(p<.001)	GSE-EOE.237(p<.001)
Chi-square(df;p-value)	823.998(264,p=.000)	139.625(50,p=000)
Standardized RMR	.0443	.0350
RMSEA(CI90)	.050(.047;.054)	.046(.037;.056)
PCFI	.830	.733
NFI	.919	.951
CFI	.943	.968
AIC	995.998	219.625
ECVI	1.194	.263

robust: ESSE => EOE (p-value=.005) and EOE => EI (p-value=.003). When analyzing the model’s std. loadings, it can be observed that GSE does not have inferior size effects (.35) on EI and on EOE (.24) to those of ESSE on EI (.31) and EOE (.11), on the contrary.

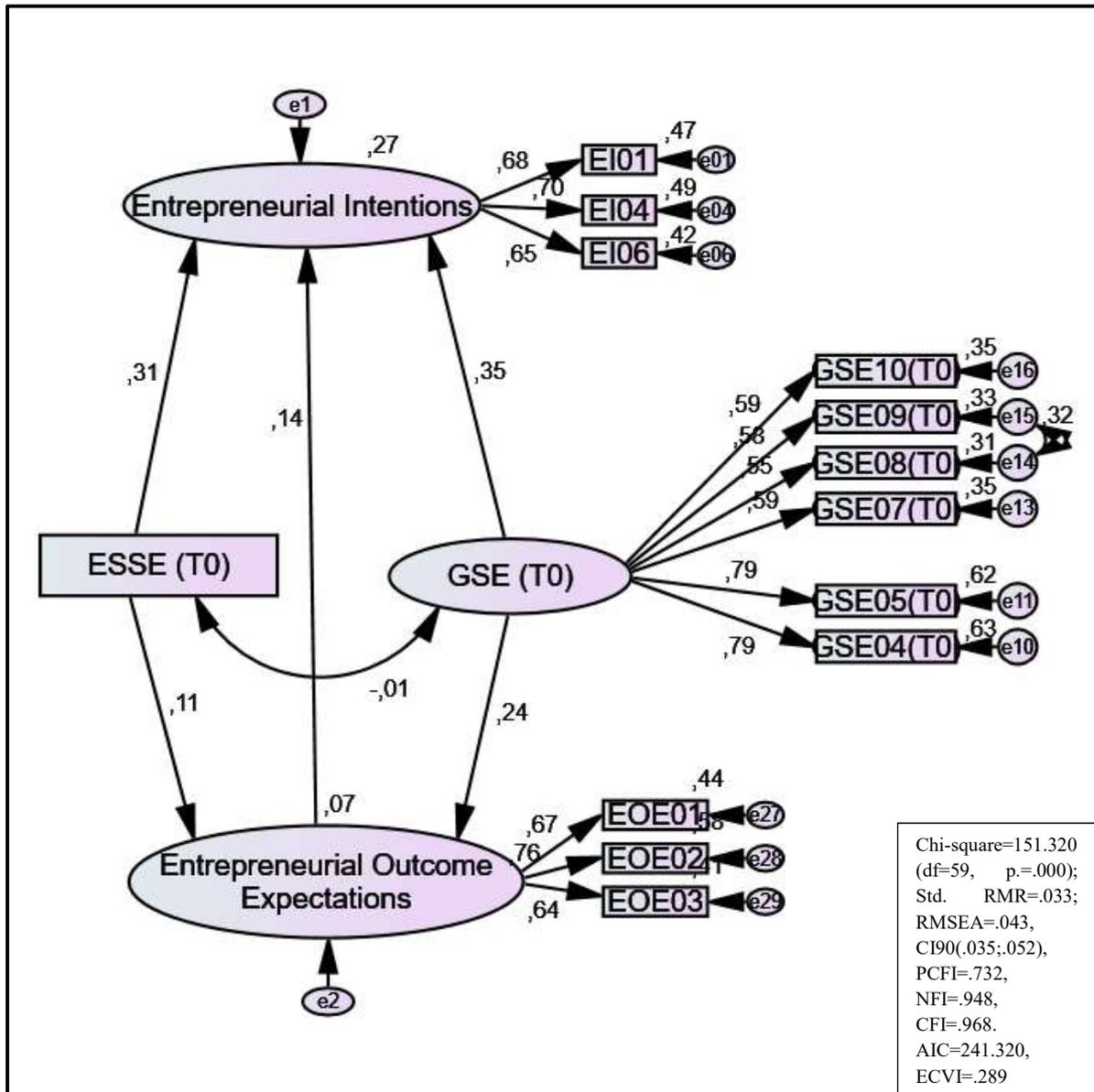
All these results provide supporting evidence for hypothesis H4.3 and, as such, for the interest of decomposing ESE into its two components, GSE and ESSE, given that it is a feasible conceptualization that provides potential for new knowledge regarding the operations of self-efficacy in entrepreneurship.

If ESSE is substituted by ESSEproxy, in same model, approximately the same results could be reported with only one markedly different, that regarding a negative correlation (-.39) between ESSEproxy and GSE - in the ESSE model such correlation is approximately zero (-.009). The former result means that the value of the ESSEproxy is greater when GSE is smaller or, given ESSE rationale, more intuitively, when GSE is greater the ESSEproxy is smaller. One way to circumvent this undesirable correlation is to force an uncorrelated relationship between the variable ESSEproxy and GSE (*i.e.* by losing the double pointed arrow, between both variables on the AMOS model sketch). With this latter model EI variance explained reaches its highest value, among all tested baseline SCCT EI models, of 36.1%

Exploring this model's results, a little further, by comparing them with those from previously tested models, it is observed that a *SCCT EI model with GSE & ESSE* is:

- (1) Clearly better in predicting EI than a *SCCT EI model with GSE*, as it may be confirmed when comparing EI explained variance in Figure 4.04 with that in Figure 4.03 (27.0% versus 17.0%), respectively. This is also the case in a model where only ESSE (or ESSEproxy) would be included (and not GSE), since, in the latter model, EI explained variance would also drop to 15.8% (10.1% with the ESSEproxy);
- (2) Slightly less predictive of EI (27.0% versus 31.0%), than Chapter's III *baseline SCCT EI model* (Figure 3.02) with ESE. Though, this greater simplicity comes at the cost of not being able to distinguish the roles of GSE and ESSE in the formation of both EOE and EI. For example, while the effect of the specific SE measure of the *baseline model*, the ESE, on EI was found to be .51, in the present Chapter, the effect of the specific SE measure of the *SCCT EI model with GSE & ESSE*, the ESSE, was found to be .31. This means that a change of the same std. magnitude in specific SE, would result in predicting a greater EI change within the former than in the latter model;
- (3) More precise, in disclosing the real effects of each variable on EI, than a model that includes both GSE and ESE, due to multicollinearity (given that both variables are correlated - Spearman's  $\rho = .479$ ; see Table 3.01). For example, in such a model and despite having GSE as an extra variable, EI variance explained is similar to that resulting from a model with only ESE (and EOE) (31.9% versus 31.0%, respectively) and, thus, also only slightly higher than the GSE & ESSE model (with 27.0%). The effect of both ESE and GSE on EOE appear to be

Figure 4.04: Results from the SCCT EI model with GSE(T0) and ESSE(T0) (n=835).



appear to be quite different and with GSE clearly more influential (.24 versus .11, respectively). Furthermore, the effects of both ESE and GSE on EI appear to be also confounded, when compared with the GSE & ESSE model. In the former specific SE appears has having a much greater direct effect on EI than GSE (ESE with .45 versus GSE with .12), while, in the latter, both variables appear to be equivalently influential, if not GSE slightly more influential (ESSE with .31 versus GSE with .35).

Finally, exploring ESE decomposition and its possible research implications, on the empirical evidence regarding the relationship between demographic variables and specific SE, Table 4.02

correlations were compared when ESE (the traditional specific SE measure) is substituted by ESSE (the newly proposed specific SE measure). With this modification, it is possible to observe (Table 4.02), that being enrolled in a business course, while not being found significantly correlated with ESE (p-value  $>.05$ ) it is, in fact, positive and significantly correlated with ESSE (p-value  $<.001$ ) and, on the contrary, significantly correlating with ESE, work experience of at least 5 years (p-value  $<.01$ ), being older and having family with entrepreneurship experience (both with p-values  $<.05$ ) are not found also significantly correlated with ESSE. Moreover, most likely, these only correlate with ESE, because of their correlations with GSE (p-values  $<.001$ ,  $<.001$  and  $<.01$ , respectively).

### 4.2.4 – Results Summary

**Table 4.07:** Summary of Chapter’s IV research hypotheses results.

Chapter IV Research Hypotheses	Results
<p><b>H4.1</b> – GSE is more stable, over time, than it is ESE.</p> <p><b>H4.1.1</b> – GSE item values are more stable, over time, than ESE items values.</p> <p><b>H4.1.2</b> – GSE has greater relative stability, over time, than ESE does.</p> <p><b>H4.1.3</b> – GSE has greater absolute stability, over time, than ESE does.</p>	<p>Mixed Support</p> <p>Supported</p> <p>Mixed Support</p>
<p><b>H4.2</b> - In an SCCT EI model, ESE is more significantly associated with EI, than GSE.</p>	<p>Supported</p>
<p><b>H4.3</b> – A SCCT EI model, including EOE and both GSE and ESSE can significantly explain the EI.</p>	<p>Supported</p>

### 4.3 – Results Discussion

The GSE construct has been proposed as a trait-like construct and testing its stability is crucial (Chen et al., 2001), to assess the likelihood that every-day experiences, contextual changes and educational interventions may lead to meaningful changes to the construct’s levels. As such, in this chapter, as a general hypothesis (H4.1) and in a within-participant analysis, GSE was proposed to be a more stable construct than ESE. Empirical results, however, have not confirmed this and may, at best, be said to provide a mixed support to such proposition.

As different perspectives can be taken regarding this stability question, the general hypothesis of a more stable GSE than ESE has been approached through three different perspectives: construct’s item-structure stability, relative stability and absolute stability.

Regarding construct's item-structure stability (hypothesis H4.1.1), items values for both constructs were found to significantly correlate, at a small to moderate degree, meaning that items inter-relationships are somewhat preserved/stable, as time goes by. Yet, contrary to what was hypothesized, GSE items displayed a smaller average correlation than those of ESE (.25 *versus* .35), for a five-year period. However, it must be pointed out that, in a more detailed analysis, not all ESE subdimension revealed equivalent items-construct stability with some clearly more stable than others. This empirical finding may be used, in the future, as a justification for proposing that this test should be performed contrasting GSE with specific subdimensions of ESE, rather than with ESE, as a unidimensional construct, since the latter may include conflicting and offsetting sub effects that make a net global effect harder to predict. Comparing with the literature, GSE results are below those reported by Chen et al. (2001) and by Scholz, Doña, Sud, & Schwarzer (2002), which ranged from .47 to .75, although for smaller timeframes and regarding different populations.

About GSE and ESE relative stability (hypothesis H4.1.2), the constructs' potential to predict its own future levels while discounting any changes affecting the sample as an all, two different methods were employed and resulted in the same verdict. As hypothesized, GSE was, in fact, found to be more stable than ESE. The first method correlated both constructs items averages for three different periods (1, 4 and 5 years), with all results favoring GSE as the measure that provides the highest inter-period correlations. The second method used SEM - which accounts for measurement error and, thus, is based on the real constructs' values - and also found GSE better explained by previous self-reported levels, five years before, than ESE in an equivalent test.

Finally, concerning the absolute stability of constructs' items average (hypothesis H4.1.3), which also has the potential to provide information regarding a general effect/change direction, unexpectedly, GSE was found to be less stable than ESE (2<sup>nd</sup> order construct). If scales were equivalent (*i.e.* from 0-100), the average value of the difference between GSE(T5) and GSE(T0) would be a positive 3.28 (p-value <.001), which compares with a puzzling negative -1.48 (p-value <.05), from the difference between ESE(T5) and ESE(T0).

Assuming that experience and knowledge will build up, as time goes by, ESE decrease may perhaps be justified by students' overestimation of their entrepreneurial capabilities. Given this unexpected result, of GSE's being less stable than ESE - since  $|3.28| > |-1.48|$  - and the puzzling negative change/evolution of ESE, the construct's subdimensions were, again, investigated, to

find some clarification. Such clarification was, in fact, achieved, has in year five, with the exception of planning activities, all ESE subdimensions had deviated as much as, or even more than, GSE had. Although, five years later, students did tend to report lower ESE levels, on most entrepreneurial activities, there was a large offsetting result (in terms of overall stability) coming from the positive evolution of ESE of implementing financials activities.

Although these results, relative to ESE subdimensions, are exploratory in nature, and, therefore, should be confirmed by future research, in theory, a possible justification, for students overestimating their searching, marshaling and implementing people capabilities but not implementing financials capabilities, is that: searching, marshaling and people skills have already been performed, to some extent, in other social interaction contexts, during their lives, while with implementing financials - being more intuitively acknowledged as a technical subject - individuals will most likely know if they are qualified or not and, thus, making it a capability less likely biased by overestimation. Yet, because it is perceived as more technical, once you gain the expertise, it is less likely that you find lacking the required qualifications – at least in a less financially complex new business venture.

If, in the future, this proposition is confirmed, this can be found useful for entrepreneurship educators, namely, suggesting that students may benefit from being sooner confronted with the true difficulties of mastering the searching, marshaling and implementing people entrepreneurial activities. Signaling them the real difficulties of some activities and incentivizing them to improve lacking competencies to desirable and realistic levels, to improve their chances of business success. Also, regarding possible educational interventions related with financials competencies, educators may assume that these will tend to result in positive and sustained gains in ESE for implementing financials activities. However, when taken together with previous results from Chapter III - where ESE implementing financials was found to be the least related ESE subdimension with the overall ESE (2<sup>nd</sup> order construct) and with EI - perhaps finance should not be the key topic for raising HEI students EI and where the greatest potential exists to better adjust capabilities perceptions with real capabilities.

In sum, although within a relative stability perspective GSE would be considered more stable than ESE, as predicted and coherent with previous results in the literature (*e.g.* Poon et al., 2006; Liguori, 2012; Jackson et al. 2012), the fact that the results from the two other perspectives do not concur, makes it evident that construct stability should not just be discussed in general. Also, it became apparent that analyzing ESE subdimensions may be a relevant future

stream of research regarding constructs stability and the potential for meaningful entrepreneurship education interventions.

Nevertheless, and as the most relevant take away for this thesis argument, even with this greater relative stability of GSE, one should be aware that the difference was small and that GSE could only be partially explained (approximately in half) by previously reported GSE levels, five years before. This is evidence that also GSE changes and that, at least for HEI students' samples, researchers should not assume this greater relative stability as something equal to a constant GSE. GSE appears to be sufficiently unstable, and to have sufficient unexplained variance, to be proposed as a legitimate construct for entrepreneurship longitudinal research and educational interventions - as Eden & Aviram, 1993 and Agarwal et al., 2000 found.

With the objective of testing Chen's et al. (2001) "specificity matching" argument for the entrepreneurship literature, for which there is no clear empirical evidence yet (*cf.* Schmutzler et al., 2018) and none using SCCT, hypothesis H4.2 stated that in a SCCT EI model, ESE is more significantly associated with EI, than GSE. This is important for researchers to choose the best predictor of EI and, possibly, to better estimate subsequent future behavior. Results do confirm the "specificity matching" argument, when ESE is used as a specific SE measure, finding it a better predictor of EI and, therefore, supporting its use over a GSE, as a better construct to measure of HE students EI self-efficacy beliefs.

Nevertheless, results are also coherent with those from Rauch & Frese (2007), who find GSE to have a positive relationship with entrepreneurial behavior (EB) and success. Like in Liguori (2012), our results also support that GSE positively impacts EOE. It must be pointed out that although the parsimonious argument does favor GSE (GSE 10 items *versus* ESE 19 items), as Khedhaouria, et al (2015) already pointed out, the increased variance explained may be said to justify the extra dimension of the self-efficacy instrument.

Regarding studies using both GSE and ESE, Dimov (2010, p. 1137) found venture emergence related with a subdimension of ESE (opportunity confidence) but not with GSE, which is incoherent with this thesis results, that find GSE related with EI. Liguori (2012), seeking clarification for the distinct contribution of GSE and ESE to EI, finds a ESE mediating effect for the GSE-EOE and GSE-EI relationships. Leading Liguori et al. (2018) to propose that individuals with higher levels of GSE will report higher levels of ESE and EOE, than those who do not. However, when ESE is associated with GSE (Chen et al., 2001; Liguori, 2012) and is

placed in the EI model as a mediator, this distinctiveness goal may not be fully attained. In light of this thesis results, Liguori (2012) findings are probably not a result of GSE not providing additional value to predict EOE or EI, but, rather, due to the ESE measure muddling of the distinct impact of both types of self-efficacy perceptions, specific SE and GSE, on EOE and EI.

Despite the ESE *versus* GSE (H4.2) result, which is particularly relevant for increasing EI model's predictability, it is also important to understand the cognitive mechanisms behind EI. Specially for those who want to influence EI, such as educators and policymakers. Thus, the importance of hypothesis H4.3, that stated that a *SCCT EI model with GSE & ESSE* (and EOE) can significantly explain the EI. This hypothesis was found empirically supported, given the *GSE & ESSE* model acceptable fit, the significant explanatory power of EI (squared multiple correlations = 27.0%) and the fact that SEM's structural paths were all found significant (p-value<.01) and with the expected positive signs.

In comparison with previously tested models, although this new *GSE & ESSE model* presents a slightly lower explanatory power than the *baseline model* (from Chapter III, that resulted in a squared multiple correlations = 31.0%), it is still considerably higher than that from the *baseline model with GSE* as the self-efficacy measure (in the present chapter, with a squared multiple correlations = 17.0%). Thus, providing evidence that, not only is ESSE a statistically significant antecedent of EI, it also adds considerable EI explained variance, in a *SCCT EI model with GSE*, as the self-efficacy measure.

Although, the least parsimonious, of all models tested here (since both ESE and GSE have to be known), the *GSE & ESSE model* was found to successfully decompose ESE effects into two different, statistically significant and theoretically relevant components, specific SE and GSE. Given the present section results, while it may not be efficient to use this more complex model for the sole purpose of predicting EI, it does appear to be effective in clarifying the cognitive mechanisms behind the known effects of ESE on EOE and EI.

With this last model results, and if one considers ESSE to be the proper measure of entrepreneurship specific SE - rather than ESE, given that this blends both specific SE and GSE into a single construct - then, the opposite conclusions should be taken, regarding Chen's et al. (2001) "specificity matching" argument. That is, GSE appears as influential (if not more influential) for EI and for EOE, than specific SE. In other words, this finding supports the proposition that perceptions of being especially capable of performing entrepreneurial activities

may, at best, be as relevant as the perceiving oneself as generally capable of performing any tasks and activities. These empirical results are in line with Jackson et al. (2012) and contrary to Bandura (2012), as they provide support for the special interest of studying GSE in entrepreneurship and, probably in any other activity domain where the number and the diversity of tasks parallel those of entrepreneurship. They also challenge the supporting empirical evidence for the ‘specificity matching’ principles (*cf.* Chen et al., 2001).

Beyond this new empirical evidence, and trying to add to the existing rationale in support of GSE (*e.g.* Chen et al., 2001 and Jackson et al., 2012), an argument may be created based on Bandura's (2012, p. 17) statement that “activity domains, of course, vary widely in breadth and complexity, so the scope of the self-efficacy assessment and the types of self-efficacy that are relevant will depend on the sphere of activity”.

Agreeing with this statement, GSE could at least be conceived as an abstraction, representing the overall SE related with an activity domain encompassing all possible tasks<sup>25</sup>, *i.e.* an activity where specific SE  $\approx$  GSE. Given that entrepreneurship is a broad and complex activity domain, specific SE beliefs related with entrepreneurship should, on average, be closer to GSE beliefs than other more narrow/specific activity domains. Just as in statistics, according to the central limit theorem, it is expected that if a random sample size grows, there is an increased likelihood that the variable's average in the sample is closer to its average in the population. Therefore, at least as an abstraction and as an approximation to all entrepreneurship related SE, GSE appears to be useful in such context.

This conclusion, together with that regarding ESE and GSE construct stability (from section 4.2.1), may result in practical implications that go beyond those related with better understanding the cognitive process behind EI. This knowledge may lead to new goals for entrepreneurship education, directed towards GSE development, and different approaches and methods to achieve it. Also, when valuing entrepreneurship relevant learning (education & experience) and its impact on self-efficacy, measuring both GSE and ESSE may provide a better methodological option, than only measuring ESE (where both components are undistinguishable). In fact, when looking into the correlations between demographic variables and specific SE, in greater detail, it is possible to identify that being enrolled in a business course is not found significantly correlated with ESE and, yet, it is positive and significantly

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<sup>25</sup> Those, conceivable according to one's own experience and knowledge.

correlated with ESSE, as it would be expected from a specific SE related with entrepreneurship. On the contrary, significantly correlating with ESE, work experience, age and having family with entrepreneurship experience are not found significantly correlated with ESSE, and the former result is, apparently, only due to the fact that these variables significantly correlate with GSE. Thus, depending on the choice of ESE or ESSE, as the relevant specific SE measure for entrepreneurship, important implications may follow regarding the empirical support found for the association between entrepreneurship relevant learning experiences and its specific SE.

### *Conclusion*

Overall, sufficient empirical support was found, of GSE dynamism (throughout time) and influence (on EI and EOE), to call for more research on this construct, just as it has been given to ESE, within EI cognitive models. Furthermore, as it has been shown here, the use of an ESSE measure appears to be justified and appears as a promising new measure to better understand the effects of entrepreneurship relevant learning experiences on students' entrepreneurial cognitions and the real effect of the specific SE on EI. From this implications it is justified to propose both GSE and ESSE as significant predictors of future EB (tested in Chapter VI) and also propose that the methodology behind ESSE can be useful in any other context, beside entrepreneurship, where GSE is posited to be directly related with behavior and where current measures of specific SE are found to be highly correlated with GSE.

Summarizing some of these implications, the ESSE and GSE framework may be proposed to open new avenues for future research, such as:

- To understand how the lack of knowledge about a specific activity domain, may influence ESSE levels. Given the above rationale, the following may be proposed: the more is known about a specific activity domain and one's own personal capabilities to succeed in it, the more likely it is that specific SE may be different from GSE and *vice versa*. Yet, recognizing that this relationship may be moderated by other constructs, such as uncertainty avoidance and ambiguity tolerance. This proposition may be particularly relevant in entrepreneurship research, since considerable differences in entrepreneurship knowledge and experience are, actually, often present in its research samples.

- To signal specific person-situation contexts for which specific SE may be particularly influential for individuals' intentions development and future behavior. Namely, when ESSE values are particularly high/low, specific SE is expected to be more influential of intentions levels and predictive of future behavior - than when ESSE is closer to zero, which means specific SE is, approximately, indistinguishable from GSE - since this indicates individuals perceive themselves particularly effective or ineffective acting on such activity domain. As a parallel, if perceiving oneself more efficacious for entrepreneurship than peers (*e.g.* "I think I am better at this than others!"; leading to higher ESE) is commonly found to be meaningful for intentions and behavior, it is also conceivable that perceiving entrepreneurship as the activity domain where oneself is most efficacious (*e.g.* "This is the type of thing where I am best at!"; leading to a higher ESSE) may also be specially meaningful for both EI and EB.
  
- To identify the entrepreneurial activities that have on average the highest or lowest ESSE values. This may be relevant, for example, to conceive special purpose educational interventions to raise ESE subdimensions levels, via GSE and/or ESSE, since this may shed light on the likelihood of effectiveness attributed to each educational content and method.
  
- To assess the robustness of entrepreneurship specific SE antecedents and outcomes, that being found significant using ESE, may not be using ESSE, due to such relationship(s) being solely justified by an existing relationship with GSE. The methodology here proposed is suggested to offer the appropriate framework to test the real relationships between these antecedents and outcomes of both entrepreneurship specific SE and GSE.
  
- Finally, it also provides the appropriate method to test (or retest) the empirical primacy of specific SE over GSE, in predicting intentions and behavior for other activity domains (Chen et al., 2001). Any domain where specific SE measures are thought to be considerably dependent on GSE are probably good research domains for such endeavor.

# **Chapter V**

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## **Entrepreneurship Outcome Expectations and EI**

## Chapter V: Entrepreneurship Outcome Expectations and Entrepreneurial Intentions

### *Acknowledgments*

A similar version of this chapter was first presented at the ESU 2018, a conference and doctoral program on “*New Trends in European Research*”, held between the 9th and the 16th of September 2018, in Łódź, Poland. I would like to thank Assistant Professor Roisin Lyons, from Dublin City University, Ph.D Kare Moberg, senior researcher at the Danish Foundation for Entrepreneurship, and Vera Haataja, Ph.D student from Aalto University School of Business, for their valuable suggestions on how to improve this chapter to its current and final version.

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Comparing Chapter’s III results, regarding the correlation between entrepreneurial outcome expectations (EOE) and entrepreneurial intentions (EI), with those from the international entrepreneurship education project (EEP: Vanevenhoven & Liguori, 2013), the Portuguese sample displays about only half the positive correlation found in the larger sample of the international EEP. The EOE measure was also found lacking an acceptable convergent validity and the item related with ‘familiar security’ had to be dropped for it to meet desirable psychometric requirements. Also, from Chapter’s III *baseline social cognitive career theory (SCCT) EI model* (in Figure 3.02), the effect size for the EOE-EI relationship is significant but very small, when compared with that from the entrepreneurial self-efficacy beliefs (ESE)-EI relationship. Although coherent with *ex ante* entrepreneurship literature, these effect sizes are also much smaller from those reported from the Career Choice literature, in general. Finally, it seems counterintuitive that individuals would mostly intend to choose to create a new business venture just because they can. Many activities are within our reach to perform and, yet, we only choose a few to actually do, since we do not have sufficient motivation to do all the others. In sum, EOE has been the weak link of the theory’s application to EI, and Chapter’s III results add to existing empirical evidence supporting this claim. Thus, it is relevant to further explore this construct measurement, adjusting it to the specific populations at hand, and to propose new formulations for its relationship with EI.

Based on the discussion presented in Chapter III, where a less effective operationalization of the EOE construct is proposed as a potential cause for the frequently low effect sizes between

EOE and EI in the literature, the present chapter tries to address these issues with an in-depth study of Portuguese higher education institutions (HEI) students' EOE.

First, searching for the motivations that may inform the EOE measurement, by providing an answer to the research questions Q5.1: *What are the most frequently cited motivators as a justification of present EI, by Portuguese HEI students?*; and analyzing how these associate with the EI levels, by answering research questions Q5.2: *Which motivators for entrepreneurship are more likely associated with the highest EI levels?*

Second, to manage the resulting complexity from the long list of cited motivators, these are later grouped together into a smaller group, called motivational factors, that will serve as the basis for a newly proposed measure of EOE. These motivational factors are also explored in terms of their relationship with students EI levels and their stability over time. The goal being to provide answers to this second group of research questions: *Can emerging entrepreneurship motivators be meaningfully associated into a reduced set of distinct motivational factors?* (Q5.3); *Which entrepreneurship motivational factors emerge and how do these relate with EI?* (Q5.4); *How stable are entrepreneurship motivators, and resulting motivational factors, across time, in an intra-individual analysis?* (Q5.5); *Are some motivational factors more stable than others?* (Q5.6)

Finally, proposing that the resulting answers bear interest for the adaptation of the SCCT to entrepreneurship, the following research hypotheses are also tested: *In a SCCT model, EI explained variance is improved when the EOE measure is based on motivators extracted from the studied population* (H5.1); *In a SCCT EI model, an entrepreneurship intrinsic EOE measure is significantly related with EI* (H5.2) and; *In a SCCT EI model, an entrepreneurship extrinsic EOE measure is significantly related with EI* (H5.3).

## **5.1 – Data, Measures and Methods**

### **5.1.1 Data & Measures**

Again, based on the EEP Portugal dataset, for this chapter's research, its datasets from the academic years of 2010-2011 (its first data collection), 2011-2012 and 2015-2016 (its first and third, follow-up surveys, respectively) are of especial relevance. Refer to Appendix B for greater detail on all EEP Portugal survey waves.

Considering the EEP Portugal first wave (1stW) survey with the purpose of developing a new EOE measure, from a total of 851 valid justifications for students' own EI levels, 659 (*i.e.* 77.44%) contained, at least, one motivator<sup>26</sup>. Tracking only these latter students, the first follow-up (Fup1) survey registered 90 valid answers, while the third follow-up (Fup3) survey registered 155 valid answers. Regardless of the specific survey wave considered, all answers came from students that have participated in its 1stW survey, yet, only 48 students are the same in Fup1 and Fup3 datasets. For a summary of these participants demographic characteristics and EI levels, see Table 5.01 (below).

Regarding possible bias, due follow-up survey attrition, according to the results from independent samples T-tests (1000 samples bootstrapping; sig. < .05), mean differences suggest that participants in the Fup1 survey and participants of the Fup3 surveys are more likely to have previously reported (in the 1stW survey) to be graduate (sig. .013 and .006, respectively) and non-business (sig. .018 and .017, respectively) students, than those who did not participate. Also, regarding Fup3 survey participants, alone, these are also more likely to have previously reported entrepreneurship education exposure (sig. .003) and prior entrepreneurial experience (sig. .002). Thus, differences in EI levels, age, gender, work experience and family entrepreneurial experience are not significantly different for those who have agreed to participate in the EEP Portugal follow-up surveys.

For this chapter's hypotheses testing, relative to the value of the new EOE measurement for the SCCT EI model, a bigger sample<sup>27</sup> from the EEP Portugal Fup3 survey was used, registering a validated sample of 226 students.

In the first part of this chapter a new measure of EOE is developed and, therefore, its complete description can only be obtained referring to the results section (*i.e.* section 5.2). In the context of the SCCT EI model test, EI are measured using a modified version of Thompson's (2009) scale a and ESE, using a modified version of Mcgee's et al. (2009) scale. Further information on these measures can be found in section 3.1.2, since these were also used in the *baseline SCCT EI model* from Chapter III.

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<sup>26</sup> The rest of the justifications could be better categorized as barriers, that students cited to justify lower than desirable (by themselves or in the eyes of others) EI levels.

<sup>27</sup> For this purpose, and contrary to what was done for the EOE measure development stage, students who had not reported a motivator (as their EI justification) in the 1stW survey, were not excluded from the analysis.

**Table 5.01:** Descriptive statistics for the samples used in the EOE measure development.

Descriptive Statistics of EEP Portugal survey participants															
	All 1stW participants					1stFup participants					3rdFup participants				
	N	Min	Max	Mean	Std. Dev.	N	Min	Max	Mean	Std. Dev.	N	Min	Max	Mean	Std. Dev.
1stW Entrepreneurial Intentions (EI)	659	2	7	5.97	1.08	90	3	7	6.16	1.02	155	2	7	5.97	1.10
Age(Years)	642	17	52	23.60	6.04	88	17	51	24.53	6.46	153	17	51	24.16	6.46
Gender(Man)	659	0	1	0.44	0.50	90	0	1	0.49	0.50	155	0	1	0.46	0.50
Graduated Student (Yes/No)	646	0	1	0.25	0.43	90	0	1	0.37	0.48	153	0	1	0.34	0.48
Business Student (Yes/No)	594	0	1	0.50	0.50	90	0	1	0.39	0.49	144	0	1	0.42	0.49
Prior Entrepreneurship Education (Yes/No)	608	0	1	0.51	0.50	88	0	1	0.60	0.49	149	0	1	0.62	0.49
Work Experience (Years)	635	0	36	4.65	5.96	90	0	31	5.41	6.30	153	0	32	4.88	6.20
Prior Entrepreneurial Experience	659	0	1	0.17	0.37	90	0	1	0.22	0.42	155	0	1	0.26	0.44
Family Entrepreneurial Experience	640	0	1	0.60	0.49	88	0	1	0.66	0.48	147	0	1	0.61	0.49

Note: All data was retrieved from the EEP Portugal first wave (1stW) survey.

An important division that may be made to distinguish studies on reasons/motivations for self-employment or new business creation is based on the type of question made, to described and analyze those reasons, namely, closed *versus* open-ended questions. Some studies support their findings on ex-ante literature (Shane et al. 1991; Birley & Westhead, 1994; Jayawarna et al., 2011), enabling researchers to find differences in the relative strength of already known reasons, while other studies are empirically driven and describe and analyze any cited motivation emerging from their respective data (e.g., Kolvereid, 1996). The latter, enabling researchers to get a full view of the main reasons for entrepreneurship, for that specific population but, contrarily to the former, not enabling the researcher to find a possible empirically association between these motivations, which will likely exist, given that they have been proposed not to be mutually exclusive (cf. Birley & Westhead, 1994). Here, it is possible to benefit from both perspectives since, while data from the EEP Portugal 1stW and its Fup1 surveys provide content from the open-ended question of ‘why’ (do you report such EI level?) the Fup3 survey provides data from the closed question of ‘how important’ (is each of the following motivators to justify your current EI level?).

## 5.1.2 Methods

### *Exploratory Content Analysis*

Coherent with the best practices for content analysis categorization (e.g. Bardin, 2009), a first coder<sup>28</sup> started by analyzing a subsample of 189 cases, to define a preliminary set of emerging categories and writing their classification criteria (i.e. definitions) and, as Kolvereid (1996), aiming for distinctiveness and comprehensiveness in the categorization process. To be as complete as possible, in terms of the full range of motivators, that could possibly be cited across the EI spectrum, from those with the lowest to those with the highest EI levels, this subsample resulted from compiling 27<sup>29</sup> randomly selected cases from each of the seven different EI levels groups – each corresponding to one EI level from the Likert-type scale measuring EI.

Using the full sample of students (#851, from the EEP 1<sup>st</sup> Wave survey), who have reported both their EI level (i.e. a single item asking about the respondents agreement level, from 1 to 7, regarding the statement: ‘I am willing to create a new business project in the future’; based on the item that appears to have greater face validity from Thompson's 2009, scale) and its justification (the answer to the open-ended question of ‘why?’) and, with the newly created list of motivators/categories and their preliminary codification criteria, both the first and a second coder<sup>30</sup> classified all the students’ EI justifications, independently. All divergencies were easily resolved, mostly, by fine tuning the written criteria, associated with existent categories, or by creating new ones that had not emerged in the first subsample.

To address the inter-rater reliability of the final classification, a third coder<sup>31</sup> was asked to perform the same classification, with the same classification scheme, categorizing a random sample of, approximately, 10% of the total number of cases analyzed (a total of #115 justifications - #102 from the 1stW survey and #13 from the Fup1 survey). The inter-rater agreement rate<sup>32</sup> found, between the original classification (resulting from the first and the second coder consensus) and the last (by the third coder), was 99.45% and a Cohen's Kappa of

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<sup>28</sup> The PhD Candidate.

<sup>29</sup> 27 was the complete number of cases of students reporting an EI level of 2 (in a Likert-type scale of 1 - 7), the EI level with the lowest representation in the EEP Portugal 1stW survey sample.

<sup>30</sup> An acknowledgement is due to Research Assistant Raquel Dos Reis Amado for all her hard work and dedication to this task. Raquel is from a non-economic academic field, which may add to the robustness of the written criteria interpretation, for those not versed in Economics.

<sup>31</sup> An acknowledgement is due to my supervisor, Professor Virginia Trigo.

<sup>32</sup> Computing all possible cases, namely: scoring agreement in (yes/yes) and (no/no) cases; and scoring disagreement in (yes/no) and (no/yes) cases.

95.78% (which takes into consideration the possibility of the agreement by chance)<sup>33</sup>. The final categories & definitions may be found in Appendix J and were found to provide a very high inter-rater reliability - examples extracted from the sample may also be found in Appendix K.

### *Exploratory Factor Analysis*

To reduce the complexity of the resulting list of 18 different motivators, emerging from the previous analysis, an exploratory factor analysis (EFA) was conducted using an Oblimin Rotation (considered a better method when correlation between factors is expected; Conway & Huffcutt, 2003) on the data from the Fup3 survey. In this survey, five years later, using a different method - by listing all 18 motivators that had emerged from the previous study, and asking students to value each of these in terms of their importance for their current EI level - these answers allowed us to perform the EFA, to group motivators together according to the resulting intra-person correlations.

### *Stability Analysis: Motivational Factors Across Time and Demographic Characteristics*

A longitudinal research analysis was also conducted to find if the specific entrepreneurial motivators, or their overarching entrepreneurial motivational factors, would be again cited again later, as those that were more salient in justifying their EI levels.

First, only using data from the EEP Portugal 1stW and Fup1 surveys, that used the same exact questions, for a one-year longitudinal analysis and, later, a second stability analysis was conducted, using data from three different survey waves from the EEP Portugal (*i.e.* 1stW, Fup1 and Fup3), for both a 1-year and a 5-year time-window. The latter, measuring stability based, not on the repetition of exactly the same motivators, but rather, on the salience of the same motivational factors, as determined in the previous analysis.

To test motivational factors' stability, *i.e.* the hypothesis that the salience of a specific motivational factor for an individual's EI, is influenced by his demographic characteristics, several demographic variables - commonly proposed as relevant for entrepreneurial behavior (EB) - were used, namely: Age (years), Gender (male), Graduate Student (yes/no), Business

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<sup>33</sup> It should, however, be noted that the existence of a special purpose category designated as 'ambiguous motivator', that was identified in 6.57% of the sample, is relevant to interpret this result.

Student (yes/no), Entrepreneurship Education Exposure (yes/no, *i.e.* did the student ever attended and entrepreneurship class or course), Work Experience (years), Entrepreneurial Experience (yes/no; *i.e.* did the student ever created its own new business venture) and Family Entrepreneurial Experience (yes/no; *i.e.* did the student's parents/tutors, siblings or grandparents ever created their own new business ventures). The method used for this analysis was the logistic binary regression, which was considered appropriate given the fact that the dependent variable to be predicted is binary – *i.e.* the salience, or not, of a particularly motivational factor.

#### *Testing SCCT EI Model with a Different EOE Measurement*

Regarding hypotheses H5.1, H5.2 and H5.3 – related with the improvement of SCCT EI model explanatory power due to the introduction of a new EOE measure - the same methodology was used, as in Chapter's III, to test the *baseline model*. Here, the only difference being that the EOE measure is now replaced by two new measures that decompose EOE effects on its two sub components, Intrinsic EOE and Extrinsic EOE.

As in Chapter IV, since these are nonnested models, which implies that no significance test can be conducted (Kline, 2015), empirical evidence will depend on the models differences regarding EI squared multiple correlations (*i.e.* EI explained variance), standardized (std.) loadings and fit indices – as these can all be directly compared with those obtained from Chapter's III *baseline model*.

## 5.2 – Results

### 5.2.1 – Exploratory Content Analysis

After a preliminary exploratory content analysis, of a random subsample of 189 cases which included 27 cases/justifications for each of the seven EI levels (from 1-7), and from which 18 different motivators could be identified, a confirmatory content analysis was performed based on 659 Portuguese HEI students.

These 18 independent motivators varied in their prevalence across the sample and with varying average EI levels associated. As the reader may confirm, from Table 5.02 (below), citation frequency and associated average EI levels are not an equivalent ordering criterion, resulting in different rankings, nor is their meaning the same. Regarding citation frequency, the top five motivators were: first ‘to have a particular job’ (17.30%), second ‘to create or to be creative’ (16.24%), third to achieve ‘personal realization’ (15.93%), fourth ‘to gain property (to own a business)’ (14.26%) and fifth ‘to change society in a meaningful way’ (11.38%); The five motivators associated with higher average EI levels – *i.e.* those most likely associated with actual future behavior (*i.e.* new business creation) - were: first 'to have power' (6.39), second ‘to be independent’ (6.38), in third place were 'to be successful' (6.32) and to 'experience the entrepreneurial process' (6.32) and fifth for 'personal realization' (6.29).

Additionally, the standard deviation and minimum and maximum EI levels, associated with certain motivators, also provides evidence of how compatible each motivator is with the different EI levels. For example, while the motivators ‘to have power’ and ‘to be successful’ were exclusively cited by those with positive EI levels (*i.e.* EI levels above ‘4’, the scale’s middle point), the motivators ‘to have a particular job’, ‘to have a job’, ‘to gain property (to own a business)’ and ‘personal interest’ could be found cited among students with negative EI (*i.e.* below ‘4’).

### 5.2.2 – Motivational Factors

After a first result (extraction), where the number of factors was contingent on eigenvalues being greater than one (commonly a default criterium), an initial three-factor structure was found. Yet, this could not be readily justified, and the first factor was considered too inclusive (with 12 different motivators), a four- and a five-factor solution were also tested.

**Table 5.02:** Results from an exploratory content analysis to the motivators cited as justification for EI levels, by students (n=851) enrolled in Portuguese higher education institutions in the academic year of 2010-2011.

Cited motivators as justification for EI level	Average EI level (scale: '1' lowest to '7' highest) of students					Citation frequency, among those choosing to cite at least one motivator	
	Citing this Motivator	StDev	Min	Max	Not citing this Motivator	(%)	Ranking
To have power	6.39	0.75	5	7	5.46	(5.77%)	12
To be independent	6.38	0.85	4	7	5.46	(5.92%)	11
To be successful	6.32	0.81	5	7	5.47	(5.16%)	13
Experience the entrepreneurial process	6.32	0.81	4	7	5.43	(9.86%)	6
Personal realization	6.29	0.79	4	7	5.39	(15.93%)	3
To work for myself	6.23	0.90	4	7	5.47	(4.55%)	15
To create or be creative	6.18	0.91	4	7	5.40	(16.24%)	2
To be acknowledged	6.18	0.95	4	7	5.49	(2.58%)	19
To make a difference	6.15	0.93	4	7	5.48	(3.03%)	18
To have a particular job	6.15	1.02	2	7	5.40	(17.30%)	1
For self-development	6.14	0.85	4	7	5.48	(4.25%)	16
To change society in a meaningful way	6.12	0.91	4	7	5.44	(11.38%)	5
To be challenged	6.10	0.94	4	7	5.48	(4.70%)	14
To fulfil society's current needs	6.10	1.00	4	7	5.45	(9.56%)	7
To gain property (to own a business)	6.09	1.02	3	7	5.43	(14.26%)	4
To gain financial wealth	6.05	0.91	4	7	5.46	(9.41%)	8
To have a job	5.86	1.20	3	7	5.49	(3.19%)	17
Personal interest	4.91	1.08	2	7	5.53	(6.83%)	10
Ambiguous motivator	5.28	1.45	2	7	5.52	(8.65%)	9
<b>Sub-sample of students who cited at least one motivator (n=659)</b>	<b>5.97</b>	<b>1.08</b>	<b>2</b>	<b>7</b>	<b>3.89</b>	<b>(77.44%)</b>	
<b>Full Sample of Students (n=851)</b>	<b>5.50</b>	<b>1.51</b>	<b>1</b>	<b>7</b>	<b>N.A.</b>	<b>(100.00%)</b>	

**Table 5.03:** Exploratory factor analysis to the motivators' relevance for EI.

EFA Pattern Matrix Output	Motivational Factors				
	1	2	3	4	5
Experience the entrepreneurial process	0.833				
To be challenged	0.733				
To work for myself	0.622				
For self-development	0.536				
To gain property (to own a business)	0.491				
To change society in a meaningful way		0.859			
To fulfill society's current needs		0.666			
To make a difference		0.561			
To create or be creative		0.326		0.322	
To have power			0.656		
To be successful			0.548		
To be acknowledged			0.416		
To gain financial wealth			0.409	0.304	
Personal realization				0.714	
To have a particular job				0.630	
To be independent					0.722
To have a job					0.354
Initial Eigenvalues	7.87	1.42	1.11	0.95	0.80
Factor Variance Explained*	44.03%	6.22%	4.08%	2.84%	2.46%
Cumulative Variance Explained	44.03%	50.25%	54.33%	57.16%	59.62%
Scale Reliability (Cronbach's alpha)	0.877	0.820	0.789	0.769	N.A.

**Notes**

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization (converged in 10 iterations)

Coefficients under .300, were suppressed from this output, for greater clarity and under .400 not included in the scale reliability test.

\* From Extraction Sums of Squared Loadings

Of these, the five-factor solution offered the most intuitive (*i.e.* more readily justifiable) and inclusive motivational factors structure, with the two new factors with eigenvalues of .770 and .752, respectively. This later EFA resulted in a Kaiser-Meyer-Olkin measure of sampling adequacy of .916 and a Bartlett's Test of Sphericity of 1,927.65 (*df*: 91; sig = .000), all providing

evidence of the factor analysis relevance to describe the data. Extraction sums of squared loadings indicate a cumulative variance explained of 63.16%, by this five-factor solution, which is in line with the literature.

As it may be confirmed in Table 5.03, the five motivational factors resulting from the EFA loaded mainly on the following motivators: Factor 1, named *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* - ‘Experience the entrepreneurial process’, ‘To be challenged’, ‘To work for myself’, ‘For self-development’ and ‘To gain property (to own a business)’; Factor 2, named *Meaningful Social Contribution* - ‘To change society in a meaningful way’, ‘To fulfil society’s current needs’ and ‘To make a difference’; Factor 3, named *Power & Status*, - ‘To have power’, ‘To be successful’ and ‘To be acknowledged’; Factor 4, named *Particular Occupational Interest* - ‘To have a particular job’ and ‘Personal realization’; and, finally, Factor 5, named as its only loaded motivator *To be Independent*.

**Table 5.04:** Correlation between students’ motivational factors scores and their EI.

Correlations Between Motivational Factors and EI							
	F1	F2	F3	F4	F5	EI(1)	EI(avg)
(F1) The Entrepreneurial & Ownership Experience	1	,588***	,647***	,712***	,630***	,589***	,571***
(F2) Meaningful Social Contribution		1	,448***	,485***	,304***	,427***	,400***
(F3) Power & Status			1	,469***	,495***	,365***	,322***
(F4) Particular Occupational Interest				1	,611***	,563***	,465***
(F5) To be Independent					1	,380***	,307***
EI(1) Entrepreneurial Intentions (single item, t5)						1	,768***
EI(avg) Entrepreneurial Intentions (six items avg., t5)							1

\*\*\* Correlation is significant at the 0.001 level (2-tailed).  
 Pearson Correlations, n=[263;283]

Analyzing their relationship with EI levels, Table 5.04 displays the Pearson correlations between these five motivational factors and the EI of all Fup3 survey respondents<sup>34</sup>. As it may be confirmed, results point to the superior relationship between (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* and EI and, slightly less, the relationship between

<sup>34</sup> Here, without excluding those who had not suggested a motivator as the justification for their EI, in the EEP Portugal 1stW survey and providing two measures of EI - a single item measure and a 6-item measure using the simple average of a modified version of Thompson's (2009) scale.

(F4) *Particular Occupational Interest* and EI. Among the three remaining motivational factors, (F2) *Meaningful Social Contribution*, curiously enough, was found slightly more correlated with EI than the more classic motives of achieving (F3) *Power & Status* or (F5) *To be Independent*.

Given its typical association with lower levels of EI, and its less precise causal relationship with underlying needs and wants, ‘personal interest’ was considered a pre-intentions state – which is coherent with SCCT (Lent, Brown, & Hackett, 1994) – and, therefore, excluded *a priori* from the EFA. *A posteriori*, the following motivators were found to be less well represented by these factors: ‘to create or be creative’ and ‘to gain financial wealth’, due to being cross loaded (on factor 2 and 4 and on factors 3 and 4, respectively); and ‘to have a job’, due to its small sized factor loading on the fifth factor (.354), *to be Independent*.

### 5.2.3 – Motivational Factors Stability Across Time and Demographic Characteristics

Given the very small number of students which have agreed to participate on the EEP Portugal Fup1 survey, the results summarized on Table 5.05 should be read with special caution. One year after the 1stW survey, specific motivators matching/recitation is considerably variable, with 7, out of the 17 motivators initially investigated (personal interest excluded, by the reasons stated earlier), having a 0% of recitation, while the remaining motivators varied between 15% (to have a particular job) to 100% (for self-development). Overall only 19.20%, of all 125 previously cited motivators, by participants of the Fup1 survey (motivations from one year early, in the 1stW survey), were later again cited as those justifying their most current EI levels.

Analyzing stability at the level of the motivational factors, it can be found that, for the 1-year time-window, the matching rate, between old and new (most relevant) motivational factors, approximately doubles, from 19.20% to 40.80%. Stability differences, measured in terms of matching rates (*i.e.* observed matching frequency / potential matching frequency), are clearly different across the motivational factors, namely: (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* being the most stable with a matching in 57.14% of the cases (16 out of 28), followed by (F2) *Meaningful Social Contribution* with 44.74% (17 out of 38), (F4) *Particular Occupational Interest* with 37.50% (12 out of 32), and *ex aequo* both

**Table 5.05:** Results from the longitudinal analysis of EI motivator preeminence: Motivators recitation frequency and percentage and motivational factors relevance, 1 year later.

Motivators cited as a justification for self-reported EI level	Citation frequency in the 1stW survey	Motivator recitation, 1 year later		Motivational factor recitation, 1 year later		
		Frequency	%	Mot. Factor	Frequency	%
For self-development	3	3	100.00%	MF1	3	100.00%
To be challenged	4	2	50.00%	MF1	2	50.00%
To change society in a meaningful way	8	3	37.50%	MF2	4	50.00%
Personal realization	12	4	33.33%	MF4	4	33.33%
To fulfil society's current needs	14	4	28.57%	MF2	9	64.29%
To work for myself	4	1	25.00%	MF1	3	75.00%
To make a difference	4	1	25.00%	MF2	2	50.00%
To create or be creative	12	2	16.67%	MF2	2	16.67%
To be independent	6	1	16.67%	MF5	1	16.67%
To have a particular job	20	3	15.00%	MF4	8	40.00%
Experience the entrepreneurial process	11	0	0.00%	MF1	6	54.55%
To be successful	8	0	0.00%	MF3	0	0.00%
To gain financial wealth	6	0	0.00%	MF3	3	50.00%
To gain property (to own a business)	6	0	0.00%	MF1	2	33.33%
To have a job	3	0	0.00%	MF5	1	33.33%
To have power	2	0	0.00%	MF3	0	0.00%
To be acknowledged	2	0	0.00%	MF3	1	50.00%
<b>Total number of motivators cited &amp; recitations (1 years later)</b>	<b>125</b>	<b>24</b>			<b>51</b>	
<b>Recitation percentage of the initially cited motivators</b>		<b>19.20%</b>			<b>40.80%</b>	

**Note:** Results based on a sample of #107 students, who participated in both the EEP Portugal 1st wave survey and its first follow-up survey (1 year later), and which add justified their EI levels citing motivators

(F3) *Power & Status* with 22.22% (4 out of 18) and (F5) *To be Independent* with 22.22% (2 out of 9).

With close to double the number of potential matching motivators (223 initial motivators, *versus* 125 from those participating in Fup1 survey), Table 5.06 summarizes the main findings of the 5-year longitudinal analysis, based on the Fup3 survey data. Here, it is found that on average 39.01% of the cited motivational factors, during the 1stW survey, were again cited as the most important motivational factors, 5 years later. A value that is approximately twice the value that was previously found for a much shorter period (19.20%, within 1 year) but it must be noted that the new method, where all motivators are presented is probably more prone for stability than a more loose, open-ended question format.

In line with what could be expected, individual motivators initially cited were, 5-years later, on average, valued with a high score of 5.50 and all the motivators belonging to that same (most relevant) motivational factor were scored with 5.47, which compares with an average score of 5.32 for all motivators in general (in a scale from 1 to 7). Similarly, to what had been suggested for the 1-year longitudinal research, with a wider time-window of 5 years and despite the different methodology, motivational factors were not all equal, in terms of their stability over time.

Results also show that the motivators from the same motivational factors have, on average, different relevance scores depending on the specific factor in question. Namely, the motivational factors that kept the highest relevance (measured as the simple average relevance attributed to all motivators within that factor) were: (F4) *Particular Occupational Interest* with 6.29 (from 29 cases), (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* with 5.58 (from 17 cases), (F3) *Power & Status* with 5.19 (from 9 cases), (F5) *To be Independent* with 4.92 (from 9) and (F2) *Meaningful Social Contribution* with 4.52 (from 19).

Again, F1 and F4 suggesting high stability of initial relevance and F3 and F5 suggesting low stability of initial relevance. Contrary to the first analysis, F2 goes from being considered the second most stable motivational factor in the short-term to be the factor that displayed the lowest relevance scores after this longer 5-year time-window.

Results from the logistic binary regressions, testing the explanatory power of several demographic independent variables in predicting the most salient motivational factor (dependent variable) for each student, generally provided a low model fit and it was found to

**Table 5.06:** Results from the longitudinal analysis of EI motivators preeminence: Motivators and Motivational factors relevance 5 years later.

Motivators cited as a justification for self-reported EI level	Citation frequency in the 1stW survey	Cases where motivator is still the most relevant for the individual, 5 years later		Average relevance of the same motivator (on a scale from 1 to 7) attributed 5 years later	Average relevance attributed to all motivators belonging to the same motivational factor (on a scale from 1 to 7) attributed 5 years later	Average relevance attributed to all motivators (on a scale from 1 to 7) 5 years later
		Frequency	%			
Personal realization	17	12	70.59%	6.35	6.50	5.72
To be independent	13	9	69.23%	5.77	4.92	5.09
To have a particular job	30	17	56.67%	6.17	6.13	5.25
To be successful	11	6	54.55%	6.18	5.20	5.28
To be challenged	8	4	50.00%	5.88	5.58	5.33
To create or be creative	25	10	40.00%	5.88	5.52	5.41
To be acknowledged	3	1	33.33%	5.67	6.17	6.00
To change society in a meaningful way	19	6	31.58%	5.37	5.24	5.15
To gain property (to own a business)	16	5	31.25%	5.44	5.80	5.49
To fulfil society's current needs	20	6	30.00%	4.95	5.24	5.15
For self-development	10	3	30.00%	5.50	5.16	5.28
To work for myself	7	2	28.57%	5.57	5.57	5.33
To make a difference	4	1	25.00%	6.00	6.13	5.82
Experience the entrepreneurial process	16	3	18.75%	5.44	5.63	5.43
To have power	8	1	12.50%	3.88	4.41	4.80
To gain financial wealth	10	1	10.00%	5.60	4.93	5.15
To have a job	6	0	0.00%	3.83	4.83	4.85
<b>Total number of motivators cited &amp; recitations (5 years later)</b>	<b>223</b>	<b>87</b>		<b>5.50</b>	<b>5.47</b>	<b>5.32</b>
<b>Recitation percentage of the initially cited motivators</b>		<b>39.01%</b>				

**Note:** Results based on a sample of #155 students, who participated in both the EEP Portugal 1st wave survey and its 3rd follow-up survey (5 years later), and which add justified their initial EI level citing a motivator

explain less than 5% of the dependent variables outcomes (measured by Cox & Snell *r-squared* and Nagelkerke *r-squared*). Therefore, in sum, the event of a particular motivational factor being salient does not appear to be explained by students' demographic characteristics. At least in a sizable/meaningful way. Refer to Appendix L for all the detail on the logistic binary regressions results.

#### **5.2.4 – Testing SCCT EI Model with a Different EOE Measurement**

##### *Confirmatory Factor Analysis*

As in Chapters III and IV, model testing followed the recommended two-step approach (Anderson & Gerbing's, 1988) and multivariate normality was not assumed, with estimations performed using a Bootstrap ML estimation (2,000 samples). Three different CFA were performed allowing for free correlation between EI, ESE[2nd], the EOE measure(s).

In the new models EI and ESE[2nd] were measured as before, in Chapter III, to improve comparability across models. This, most likely implied that model fit will be reduced given that, on one hand, previously empirically derived modifications (performed based on AMOS modification indices) will be less perfect when applied to a different sample and, on the other hand, no new modifications were performed to accommodate the specificity of this new sample. Also, sample size may be the cause for differences on resulting fit indices values between models (Molwus, Erdogan, & Ogunlana, 2013). Therefore, model fit comparison was not a particular focus of analysis and hypothesis testing.

Contrary to the other variables in the model, the EOE construct was, here, measured differently, including three different formulations, namely:

- (1) Measuring it with a formulation conceptually closer to the original EOE measure – including, in a single measure, all the motivators(items) that are thought to influence individuals EI – but where these items are based on the motivators reported by Portuguese HEI students, rather than assuming them to be universal. Thus, a new and single, population-specific, EOE (17 items) measure;

- (2) Measuring EOE by decomposing it into two independent constructs, Intrinsic EOE and Extrinsic EOE, which are reflected in the corresponding motivators, previously extracted from the same sample. In the case of Extrinsic EOE, this is a second order construct that reflects on four Extrinsic EOE sub-dimensions - as previously found, in Chapter III: *Meaningful Social Contribution, Power & Status, Particular Occupational Interest and To be Independent*. In sum, two new, population-specific, EOE measures: Intrinsic & Extrinsic (5 items & 4 factors and 11 items);
- (3) Finally, measuring EOE only with Intrinsic EOE, measured as in the previous formulation. Thus, a new and single, population-specific, Intrinsic EOE measure (5 items).

Addressing EOE measure reliability and convergent validity, Cronbach's alpha, composite reliability (C.R.) and average variance extracted (AVE) are now reported, relative to all its three formulations, for the new SCCT EI model: (1) EOE (17 items) .918, .922 and 0.417 (2) Intrinsic EOE .866, .870 and .573 and Extrinsic EOE .768, .879 and .646 and (3) Intrinsic EOE .866, .869 and .572. Only the first formulation, of EOE measurement, appears problematic in terms of convergent validity and all other specifications resulted acceptable (alpha > .70, Cronbach & Meehl, 1955; AVE > .50, Hair et al., 2011 and C.R. > .70, Hair, et al., 2011). Also, all std. factor loadings, between items and their own constructs, were significant (p-value < .001) and above the .50 threshold.

Regarding the discriminant validity, in the second formulation of EOE measurement, Intrinsic EOE and Extrinsic EOE resulted in AVE being less than their MSV and, also, the square root of their AVE is less than the correlation value with another factor. All this, indicating that when all extrinsic motivators are combined into a second order factor, the resulting factor is also, mostly, an Intrinsic EOE measure. The factor commonly reflected in all extrinsic motivators is that these are entrepreneurship related (*i.e.* entrepreneurship intrinsic). Thus, unsurprisingly, a .928 correlation was found between Intrinsic EOE and Extrinsic EOE. Due to these results and argument, in the structural model, Intrinsic EOE and Extrinsic EOE will be forced to be uncorrelated, extracting from the second order Extrinsic EOE all that is already accounted for in the Intrinsic EOE measure. This solves the discriminant validity problem of the second EOE formulation.

### *Structural Model*

As stated above, three different formulations, of the EOE measure, were tested for the new SCCT EI model, to find which model better fitted/explained this data and, also, as a robustness check for the test of this chapter hypotheses. Results from all three models are displayed in Table 5.07 and, as it can be confirmed, model fit indices are overwhelmingly favorable to the third formulation of EOE and therefore only this formulation will be discussed in more detail. Depicted in Figure 5.01, this third formulation, has EOE measured only by entrepreneurship intrinsic motivators (*i.e.* ‘Experience the entrepreneurial process’, ‘To be challenged’, ‘To work for myself’, ‘For self-development’ and ‘To gain property (to own a business)’).

All the structural paths, from this new SCCT EI model with the intrinsic EOE measure, were found statistically significant and coherent with SCCT propositions. Estimated with bootstrap ML method (2,000 samples), as a general assessment, the overall model fit may be said borderline acceptable (*cf.* Hooper, Coughlan, & Mullen, 2008), although less so than Chapter’s III model.

In this new model, EI variance is explained (measured by squared multiple correlations) sharply increases from 31.0%, from Chapter’s III model, to 53.9% ( $p$ -value = 001) from the new model, for which a 95% confidence interval (CI95%) can be provided<sup>35</sup> with lower and higher bounds of 32.5% and 71,3%, respectively. This sharp increase of variance explained is robust across all three formulations of the EOE measure, without meaningful variation of EI variance explained [52.6% - 53.9%]. These results provide empirical evidence in support of hypothesis H5.1, which states that, in a SCCT model, EI explained variance is improved when the EOE measure is based on motivators extracted from the studied population.

To confirm that this increase in EI variance explained is in fact due to the new EOE measure, rather than due to an increase on the ESE-EI effect, Chapter’s III and Chapter’s V models were compared:

- (1) In the contexts of the *baseline SCCT EI model* (Figure 3.02 and Figure 5.01 and Table 5.07) where the EOE importance, as a direct antecedent of EI, was found to evolved from a std. loading of .143 to .465 while ESE drops from .506 to a .388 std. loading; and

<sup>35</sup> Two tailed significance bootstrap confidence 95%, interval bias-corrected percentile method. Bootstrap ML method with 2,000 samples.

- (2) In an ESE-EI model (without an EOE measure), where EI variance explained was found to change from 28,9% to 35,9% and where the ESE-EI relationship went from a .538 to a .599 std. loading. Thus, only a 7% improvement on EI variance explained (*i.e.* from 28.9% to 35.9%) can be attributed to a better adjusted ESE, out of the total 22,9% improvement (*i.e.* 53.9% - 31.0%, as reported above).

In sum, results from these control tests appear to confirm the new EOE measure as the main cause for the observed improvement of EI variance explained in the model.

Regarding EOE's variance explained, it must also be noted that, it has also greatly improved. From 5.4% of the original EOE measure, in Chapter's III model, to 22.8% of the new Intrinsic EOE measure, from this chapter's model. Meaning that ESE appears to be a more relevant antecedent of EOE than previously suggested in Chapter III.

Regarding hypotheses H5.2 and H5.3, empirical evidence is supportive of the former, but mixed results appear relative to the latter. The Intrinsic EOE-EI effect was .465 ( $p = .000$ ) and a CI95% can be provided<sup>36</sup> with lower and higher bounds of .223 and .675, respectively. This effect is still significant even when tested in a model that also includes Extrinsic EOE as an antecedent of EI ( $p = .007$ ; *i.e.* the second formulation for EOE measurement). Comparing these results with the .143 ( $p = .002$ ) EOE-EI effect found in Chapter's III model, it should be also noted that this previously reported value lays outside the referred bounds for the CI95%. As such, empirical evidence was found in support of hypothesis H5.2, which states that in a SCCT EI model, an entrepreneurship intrinsic EOE measure is significantly related with EI.

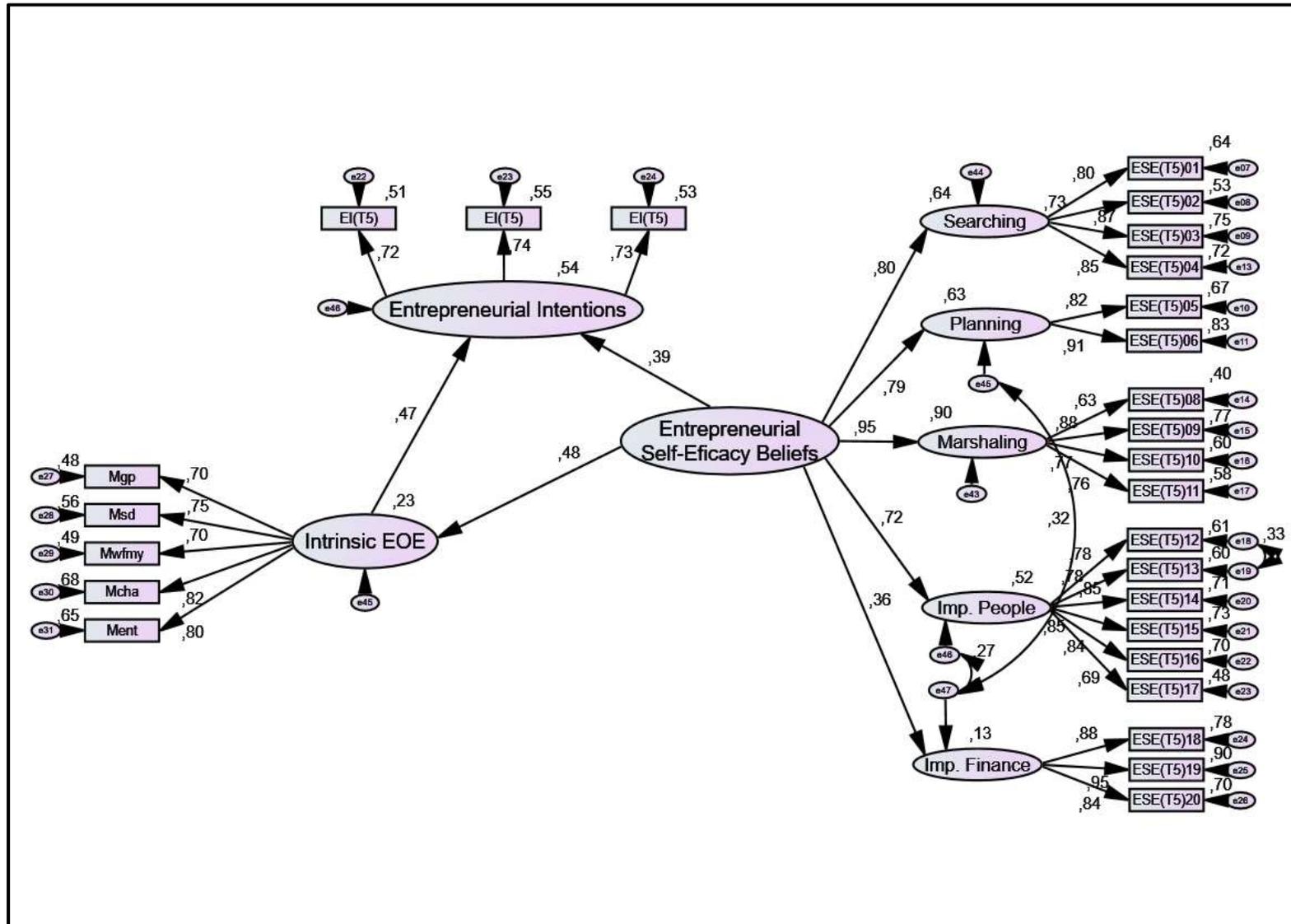
The Extrinsic EOE-EI effect was only .049 ( $p = .558$ ) in a model that forces this variable to be uncorrelated with intrinsic EOE. However, when this relationship is tested in a model where only extrinsic motivators are considered to measure EOE (*i.e.* excluding Intrinsic EOE), the Extrinsic EOE-EI effect becomes significant at .388 ( $p = .006$ ) with a CI95% from .118 to .620. These conflicting results provide mixed empirical support to hypothesis H5.3, which states that in a SCCT EI model, an entrepreneurship extrinsic EOE measure is significantly related with EI. Since if this model also includes Intrinsic EOE, an Extrinsic EOE measure is not significant and appears to add no value to the model, yet, if only Extrinsic EOE are included, the variable is significantly related with EI and with considerable size effect.

<sup>36</sup> Two tailed significance bootstrap confidence 95%, interval bias-corrected percentile method. Bootstrap ML method with 2,000 samples.

**Table 5.07:** Results from four competing SCCT EI models, differing on their conceptualization of the entrepreneurship outcome expectations (EOE) construct.

Results from Hypotheses testing and fit indexes comparison	Different formulation for the EOE measure in the context of a SCCT EI model			
	Original, EOE (3 items) measure (1stW survey; n=835)	<u>New and single</u> , population-specific, EOE (17 items) measure (3rd F-up survey; n=226)	<u>Two new</u> , population-specific, <u>EOE measures</u> : Intrinsic & Extrinsic (5 items & 4 factors and 11 items) (3rd F-up survey; n=226)	<u>New and single</u> , population-specific, Intrinsic EOE measure (5 items) (3rd F-up survey; n=226)
EI(variance explained)	<b>31,0%</b>	<b>52.6%</b>	<b>53.3%</b>	<b>53.9%</b>
EOE (variance explained)	5.4%	22.3%	30.1% & .27.6%	22.8%
ESE– EI Std. loading(p-value)	.506(p<.001)	.404(p<.001)	.397(p<.001)	.388(p<.001)
<b>EOE-EI Std. loading(p-value)</b>	<b>.143(p=.002)</b>	<b>.441(p&lt;.001)</b>	<b>.405(p&lt;.001) &amp; .049(p=.558)</b>	<b>.465(p&lt;.001)</b>
ESE-EOE Std. loading(p-value)	.233(p<.001)	.472(p<.001)	.548(p<.001) & .526(p<.001)	.478(p<.001)
Chi-square(df, p-value)	824.00(264, p=.000)	1,551.54(691; p= .000)	1,440.71(648; p=.000)	667.893(313; p= .000)
Standardized RMR	.0443	.0686	.1029	.0574
RMSEA(CI90)	.050(.047;.054)	.074(.069;.079)	.074(.069;.079)	.071(.064;.078)
PCFI	.830	.789	.787	.814
NFI	.919	.755	.764	.848
CFI	.943	.846	.853	.912
AIC / ECVI	995.998 / 1.194	1,729.536 / 7.687	1,626.706 / 7.230	797.893 / 3.546

Figure 5.01: Results from the SCCT EI model with new, population-specific, Intrinsic EOE (5 items) measure (T0) (n=226).



### 5.2.5 – Results Summary

**Table 5.08:** Summary for Chapter’s V research questions and hypotheses results.

<b>Chapter V - Research Questions and Hypotheses</b>	<b>Results</b>
<p><b>Q5.1-</b> What are the most frequently cited motivators as a justification of present EI, by Portuguese HEI students?</p>	<p><u>Top five motivators</u></p> <ol style="list-style-type: none"> <li>1. ‘to have a particular job’</li> <li>2. ‘to create or to be creative’</li> <li>3. ‘personal realization’</li> <li>4. ‘to gain property’</li> <li>5. ‘to change society’</li> </ol>
<p><b>Q5.2-</b> Which motivators for entrepreneurship are more likely associated with the highest EI levels?</p>	<p><u>Top five motivators</u></p> <ol style="list-style-type: none"> <li>1. 'to have power'</li> <li>2. 'to be independent'</li> <li>3. 'to be successful'</li> <li>4. 'the entrepreneurial process'</li> <li>5. 'personal realization'</li> </ol>
<p><b>Q5.3-</b> Can emerging entrepreneurship motivators be meaningfully associated into a reduced set of distinct motivational factors?</p>	<p>A five-factor solution provides a cumulative variance explained of 63.16%</p>
<p><b>Q5.4-</b> Which entrepreneurship motivational factors emerge and how do these relate with EI?</p>	<p><u>In decrescent order (avg. EI level)</u></p> <ol style="list-style-type: none"> <li>1. (F4) Particular Occupational Interest</li> <li>2. (F1) Intrinsic Motivation</li> <li>3. (F3) Power &amp; Status</li> <li>4. (F5) To be Independent</li> <li>5. (F2) Meaningful Social Contribution</li> </ol>

<p><b>Q5.5-</b> How stable are entrepreneurship motivators, and resulting motivational factors, across time, in an intra-individual analysis?</p>	<p><u>Individual motivators</u> were found, on average, not to be very stable.</p> <p><u>Motivational factors</u> appear to be, on average, more stable than individual factors.</p>
<p><b>Q5.6-</b> Are some motivational factors more stable than others?</p>	<p><u>In decrescent order (stability)</u></p> <ol style="list-style-type: none"> <li>1. (F1) Intrinsic Motivation</li> <li>2. (F2) Meaningful Social Contribution</li> <li>3. (F4) Particular Occupational Interest</li> <li>4. (F3) Power &amp; Status</li> <li>4. (F5) To be Independent</li> </ol>
<p><b>H5.1</b> – In an SCCT model, EI explained variance is improved when the EOE measure is based on motivators extracted from the studied population.</p>	<p>Supported</p>
<p><b>H5.2</b> - In an SCCT EI model, an entrepreneurship intrinsic EOE measure is significantly related with EI.</p>	<p>Supported</p>
<p><b>H5.3</b> – In an SCCT EI model, an entrepreneurship extrinsic EOE measure is significantly related with EI.</p>	<p>Mixed Support</p>

### 5.3 – Results Discussion

#### *Exploratory Content Analysis*

This chapter started by analyzing the EI justifications presented by 851 students, from Portuguese higher education institutions, included in the EEP Portugal 1stW survey sample

(2010-2011). In line with the literature, a very diversified set of eighteen motivators has emerged (*e.g.*, Shane et al., 1991; Birley & Westhead, 1994; Kolvereid, 1996).

Ordered by citation frequency, from the most cited to the least cited, the following motivators were found: 'To have a particular job', 'To create or be creative', 'Personal realization', 'To gain property (to own a business)', 'To change society in a meaningful way', 'Experience the entrepreneurial process', 'To fulfil society's current needs', 'To gain financial wealth', 'Personal interest', 'To be independent', 'To have power', 'To be successful', 'To be challenged', 'To work for myself', 'For self-development', 'To have a job', 'To make a difference' and, 'To be acknowledged'.

Compared with Shane et al. (1991), approximately, half (11 out of 23) of its categories are similar to those listed here (above). Yet, the following categories cannot be intuitively included in Shane's et al. (1991) categorization: 'To have power', 'Personal realization', 'To have a job', 'To have a particular job', 'To gain property' and due to 'Personal interest'. And, the following reasons could not readily be found included in the present categorization: 'To take advantage of an opportunity that appeared', 'To control my own time', 'It made sense at that time in my life', 'To give myself, my spouse, and children security', 'To have greater flexibility for my personal and family life', 'To contribute to the welfare of my relatives', 'To have access to indirect benefits such as tax exemptions', 'To increase the status and prestige of my family', 'To contribute to the welfare of people with the same background as me', 'As a vehicle to reduce the burden of taxes I face', 'To follow the example of the person that I admire' and 'To continue a family tradition'.

These differences could be due to: The type of population inquired, namely, the fact that Shane's et al. (1991) categorization was based on those who were already, at the time, small business owners, and their stated reasons for having established their own business in the past; The fact that these were most likely older individuals, with other personal motivations and priorities, than to acquire power over others and new possessions, such as those related with family (*e.g.*, economic survival and time management); And, also, to the specific economic incentives valued by these older subjects, such as those related with tax benefits - which are probably rare concerns among those who still do not possess considerable financial incomes and who hurry more about being able to work in something they would like, or just to be able to find a job.

Compared with Kolvereid (1996) results, again, most categories fit those found in that study. Yet, in the present study ‘work load’ and ‘career reasons’ did not emerge as motivators for self-employment and six out of the eighteen categories here found, may be said to fail to match Kolvereid's (1996), without meaningful nuances being ignored, namely: ‘To gain property (to own a business)’, ‘To change society in a meaningful way’, ‘To fulfil society’s current needs’, ‘To be successful’, ‘To be acknowledged’ and ‘To make a difference’.

These absences may be due to many different reasons, for example, this content analysis results are based in a much bigger sample (94 *versus* 851) and one where all motivators could be cited (rather than only the most important). These make it less likely that some motivators may be left unnoticed or be fitted into other, less related, categories. It could also be related with differences in the population, such as, being this sample also inclusive of younger students (*i.e.* undergraduates) these may be more likely to be seeking (and valuing) having their own first material possessions, to believe it is in their power to change the world and to seek recognition from others, than older individuals. An explanation, for the altruism related motivators, only emerging in the Portuguese sample, could be a cultural one, since, according to Hofstede<sup>37</sup> rating, for Norway *Individualism* is a cultural dimension with greater importance than it is for Portugal (69 *versus* 27, respectively).

Also, worth mentioning is the different importance that comparable motivators/reasons assume in both samples, according to their citation frequency, for example: ‘Autonomy’ and ‘Challenge’ related motivators were not as frequently cited and are not as prominent, when compared with other motivators, as they are in Kolvereid’s study; In opposition, ‘Self-realization’ (and to create) and to ‘Participate in the whole process’ are more important in this sample and ‘economic opportunity’ can be said to have an equivalent, intermediate importance, in the motivators/reasons ranking for both samples.

Again, this may relate with the shortage of younger people, such as undergraduates, in Kolvereid’s sample. It is likely that younger students have not yet fully experienced the shortcomings of having a job with very low autonomy and independence and are also, probably, more likely to be fascinated by the process of creating a new business than older, and more experienced, individuals.

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<sup>37</sup> Source: <https://www.hofstede-insights.com/product/compare-countries/> (accessed in 20-July-2018).

These comparisons with the literature point to the interest of performing more open-ended analyses to the motivations/reasons behind the EI of specific populations. This may help uncover some cultural and institutional nuances of how entrepreneurship is perceived and to help understand the impact that some demographic and cultural factors may have on entrepreneurial motivations and their relative prevalence across samples.

Yet, another interesting perspective on this topic is that of relating specific motivators with the highest levels of EI, given that this can be considered as an indication of higher likelihood of future new business creation. In this study, the top 5 motivators, with the highest average EI levels, were: first 'to have power' (6.39), second 'to be independent' (6.38), third 'to be successful' (6.32) and 'experience the entrepreneurial process' (6.32), fifth for 'personal realization' (6.29). On the contrary, the bottom 5 motivators, with the lowest average EI levels, were: last 'personal interest' (4.91) followed by 'to have a job' (5.86), 'to gain financial wealth' (6.05), 'to gain property (to own a business)' (6.09), and 'to fulfil society's current needs' (6.10). Also, being ambiguous when justifying the underlying motivations is associated with lower than average EI levels (5.28 vs 5.50). This latter perspective also provides a relevant picture of which outcomes are thought, by Portuguese HEI students, as more entrepreneurship specific and those which are more compatible with other careers, as organizational employees.

### *Motivational Factors*

Aiming at reducing the complexity emerging from the previous analysis, where a total of 18 motivators were found, through an EFA performed with data from a subsequent survey (5 years later) with a confirmatory design, it was found that these could be meaningfully associated and grouped into five distinct motivational factors, explaining 63.16% of the motivators' relevance variability. These were: (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience*, (F2) *Meaningful Social Contribution*, (F3) *Power & Status*, (F4) *Particular Occupational Interest* and (F5) *To be Independent*.

When compared with other studies, that have also conducted EFA, these are especially different regarding two motivational factors, namely, the *Meaningful Social Contribution* and the *Particular Occupational Interest* factors and the absence of factors such as *Family Security* (e.g., Kuratko et al., 1997), *Professional Dissatisfaction* (e.g., Giacomini et al., 2011) and *Taxes reduction/management* (e.g., Kolvereid, 1992; Birley & Westhead, 1994).

The justifications for these differences are proposed to be basically the same as those already put forward, when the related motivators were not found to coexist across different studies. However, additionally, motivational factors also differ from other factor analyses in that some motivators are better associated with other different motivators.

For example, no empirical justification was found to associate together, into a same motivational factor, motivators based on the physical nature of their underlying rewards (tangible *versus* intangible) such as Kuratko et al. (1997). Yet, empirical evidence is found in support that the distinction between entrepreneurship intrinsic and other types of extrinsic motivations is relevant to aggregate different motivators, meaning that people who usually value one intrinsic motivator, on average, they also value other intrinsic motivators too. Regarding the extrinsic motivators, this sample suggests that these are better aggregated subdivided into four different motivational factors: *Meaningful Social Contribution, Power & Status, Particular Occupational Interest* and *To be Independent*.

While this specific subdivision/grouping of extrinsic motivators may appear to be against more common associations and to ignore some more popular constructs, such as need for achievement, and those related with wealth & income creation (e.g., Kuratko et al. 1997), one should not forget that these associations can only be really meaningful if they can be also observed empirically. According to the literature, need for achievement is most likely important for EB, and results do not contradict this, these only suggest that the achievements, for which students think new business creation may be of instrumental value, vary. Therefore, it is not only the intensity of the need/motivation, but also the achievement nature, that varies and that the latter may also result in different likelihoods, typologies and outcomes of future EB.

Regarding cross loadings, *i.e.* motivators than did not fit clearly into a single motivational factor, this could be related with the existence of intermediate outcomes/motivators that may serve more than one basic need/final motivation.

For example, 'To gain financial wealth' was found to cross load into both *Power & Status* and *Particular Occupational Interest* factors (.409 and .304, respectively), this may be an indication that students may cite it as relevant because they see it as an instrument to achieve power and status (*cf.* Giacomini et al. 2011) and, simultaneously, as a way of measuring and proving personal realization/success (something that Schumpeter 1934, had already recognized).

Another example, 'To create' also cross loaded with both *Meaningful Social Contribution* and *Particular Occupational Interest* motivational factors (.326 and .322, respectively), meaning that the link between the motivation to create may or may not be related with a need to be creative (*i.e.* the process), as it was already previously referred, it may also be related to the perception of entrepreneurship as a privilege vehicle to achieve a desirable social contribution or impact (*i.e.* create an output). The interpretation of this cross loading may help to better understand Giacomini et al. (2011) motivational factor, *Creation*, which includes quite dissimilar motivators: 'creating something of my own' and 'creating jobs'. Arguably, this is not correctly named, since the emphasis is not on the creation (process), but on its outcome(s).

Regarding the relationships between these five motivational factors and the students EI, findings suggest a superior relationship between the intrinsic motivation (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* and EI. This should probably be expected, since when one greatly values a specific, and idiosyncratic, activity this cannot be fully achieved by any other type of activity. Therefore adding to the literature that suggests the importance of intrinsic motivations in entrepreneurship research (*e.g.*, Krueger & Brazeal 1994, Carsrud & Brännback 2011, Lanero et al. 2015). Moreover, the fact that the relationship between (F4) *Particular Occupational Interest* and EI is the second greatest of all five may have a similar explanation. That is, despite the particular occupational interest not being intrinsic in nature (*e.g.*, the sole desire of creating new businesses), if the respondent does not perceive the possibility of its preferred occupation to be available (or attainable) by working for others, this activity could also be *de facto* entrepreneurship intrinsic, since it cannot be achieved by other means.

The fact that (F2) *Meaningful Social Contribution*, was found slightly more correlated with EI than the more classic motives of achieving (F3) *Power & Status* and (F5) *To be Independent* may be said compatible with several different hypotheses.

For example, it may be that students view entrepreneurship as a more appropriate means to transform their work into desired valuable social impact, than through organizational employment. It could also be that achieving power & status may be equally conceivable through entrepreneurship and a successful career in a big or growing existing business.

The lack of salience of independence is more puzzling, since is often one of the most relevant motivators/factors cited (*e.g.*, Kolvereid, 1992; Birley & Westhead, 1994; Kuratko et al., 1997;

Giacomin et al., 2011). Independence, here, was often related with students' financial independence and emancipation from their families, more than with workplace independence/autonomy. Although, autonomy and independence are two concepts usually labeled together (e.g., Giacomin et al., 2011) results suggest that for college students this distinction should be important, as many are likely to desire financial independence from their families, while fewer will place great value on being autonomous at work, since they will likely lack considerable work experience.

This proposition is coherent with the fact that being motivated to create one's own business just to have a job, here, loads higher with *To be Independent* factor than with any other motivational factor. Thus, many students may expect to achieve their financial independence by finding a good job in an already existing business rather than this being an intrinsic characteristic of new business creation and ownership.

#### *Motivational Factors Stability Across Time and Demographic Characteristics*

Given the results on the stability of specific motivators, it appears that using these lower levels of analysis for long-term longitudinal research, such as predicting distant EB and its outcomes, may not be productive. If these results are confirmed by future research, these motivators will most likely change during this period. Motivational factors, and especially those more intrinsic (in nature or by context), such as (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* and (F4) *Particular Occupational Interest*, on the contrary, appear to be more stable and to have greater potential for future research on entrepreneurial motivations.

The inconsistent results attributed to the motivational factor (F2), *Meaningful Social Contribution*, and its clear lack of stability in the longer time-frame of 5 years, appear to be coherent with previous conclusions. *i.e.* That this may be the type of motivation that is specific of a certain age group and of a particular perspective belonging to those who stand on the verge of their future careers/work-life.

Finally, commenting and discussing the results from the logistic binary regressions, the tested demographic variables of age, gender, graduate student, business student, entrepreneurship education exposure, work experience, entrepreneurial experience and family entrepreneurial experience, appear to be incapable of any meaningful/sizable prediction of the salience of

motivational factors for EI, for this sample. These and other educational and experiential related variables should be tested in the future, to confirm or dispute these conclusions.

### *SCCT EI Model with a Population-specific EOE Measurement*

Building on the previous results, this chapter's analysis proceeded to test a new alternative EOE measurement, thought to have the potential of improving Chapter's III *baseline SCCT EI model*. This new EOE measurement, and contrary to the original one, would be based on a scale based on the ECA results, that had previously identified which motivators would be cited as a justification for current EI levels, presented to the same individuals five years later. Thus, a population-specific measurement that would be expected to increase EI variance explained *via* the expected increase in the size effect of the EOE-EI relationship - one which would present EOE as an equivalent cognitive antecedent of EI, as ESE, in terms of effect size.

From three different EOE measurement formulations tested, all population-specific, one was clearly better in terms of model fit and parsimonious and with no loss in explanatory power, namely, EOE based only on the entrepreneurship intrinsic motivation factor (items: 'Experience the entrepreneurial process', 'To be challenged', 'To work for myself', 'For self-development' and 'To gain property (to own a business)', here only described as Intrinsic EOE. Although other motivators did explain EI, when Intrinsic EOE was also included in the model, Extrinsic EOE loses its significance.

As hypothesized, in a SCCT model, EI variance explained sharply increased, from 31.0% (Chapter's III model) to 53.9% (Chapter's V model), when a general EOE measure was substituted by a population-specific EOE measure. This increase in variance explained is robust across all three different formulations of the EOE measure. However, using only an entrepreneurship intrinsic EOE measure (equivalent to the first factor extracted from the previous EFA) clearly results in a better model than do the other formulations, based on all model fit indices.

Furthermore, this increase in the model's explanatory power is not due to the distinction from intrinsic and extrinsic, since the first formulation of EOE tested also integrates in a unidimensional construct with both extrinsic and intrinsic motivators/items. Leading to the conclusion that, that was not the root cause of the measure's lowest performance in the model.

Also, given that these models could only be tested five years apart, and from samples with different sizes, the question of whether this improvement was due to a growing importance of the ESE-EI effect, during this period, had to be controlled for. Analyzing this possibility, testing both the SCCT EI models and an ESE-EI only model, it was found that this model improvement was, in fact, mostly due to an increase in the importance of the EOE-EI effect and not of the ESE-EI effect. Given that EOE's variance explained also increased, ESE appears to be a more relevant cognitive antecedent of EOE than previously suggested in Chapter III.

Finally, as hypothesized, the entrepreneurship Intrinsic EOE-EI effect was found significant, with a std. loading of .465, which remains significant even when Extrinsic EOE-EI effect is controlled for. These results is in line with Segal et al. (2002) who found a std. loading of .506, between EOE and EI, but not with Lanero et al. (2015) and Chen (2013).

More importantly, this result compares with a lower .143 std. loading, found in Chapter's III model, for the same EOE-EI effect. Also, although the Extrinsic EOE-EI effect is significant in a model where this is the only EOE related measure, in a model that includes the intrinsic EOE-EI effect, and forces both to be independent, the Extrinsic EOE-EI effect stops contributing to the models' explanatory power and can no longer be considered significant. Therefore, empirical support for the proposition can only be proposed within a limited context.

From all these results, it appears legitimate to propose that in some of the past applications of SCCT to EI, the lack of significance and small size effects between EOE and EI (*e.g.*, Lanero et al., 2015; Chen, 2013) may be related with a poor fit between the specific entrepreneurship motivators of the populations and the way EOE is being measured. Thus, researchers should first investigate and generate the appropriate measures, before proceeding to test SCCT models and make inferences from their results. Also, our analysis provides supporting empirical evidence that EOE is, in fact, as important as ESE for EI formation. A conclusion that would be more likely disputed, before these results, given previous findings in the literature. Finally, it is worth mentioning that this analysis also contributes to the literature gap relative to the lack of evidence regarding the special relevance of entrepreneurship intrinsic motivators, in the context of SCCT (and other EI models as well).

However, and building on the previous argument, entrepreneurship intrinsic motivators may vary across social and economic contexts, therefore also these measures should emerge from

the specific populations to be studied. Apparently, the one here proposed fits well for Portuguese HEI students, but future tests are needed to confirm it as such.

Regarding the relevance of intrinsic EOE and the lack of added value of an extrinsic EOE for predicting EI, a word of caution is due, in terms of potential generalization. These results are internally valid for this sample and proposed to be externally valid for this specific population of Portuguese HEI students, although confirmation depends on replication by future research. For example, the thrill and the learning of the process itself may be greater for younger individuals – here, most students were still young (avg. 30,51 years old, in this last survey) – and, also, given that the majority were business or business related students, this may raise the likelihood that the process is valuable in itself, rather than just seen as an instrument. Another, more generally applicable possibility could be that, perhaps the entrepreneurial process is simply not considered as an instrument, to achieve other personal goals, if no intrinsic interest/motivation in the process itself exists also.

### *Conclusion*

In sum, motivations behind EI are multiple and diverse, some of these may be grouped into smaller groups of motivational factors. These overarching factors are more stable, through time, and, therefore, more likely to be useful for future longitudinal research, with entrepreneurship intrinsic motivational factors being those less likely to change, through time. Demographic variables appear to play a small role in determining the prevalence of specific motivational factors in a population. Finally, the use of an EOE measure based on motivators extracted from the studied population was found to improve, considerably, the EI explained variance, in a SCCT model. This last result can be achieved by simply measuring the importance of the intrinsic motivators, since adding measures based on extrinsic motivators was not found to increase the explained variance of EI. Hopefully, in the future, more research will be produced to confirm and expand these findings, which, if locally adapted, may become meaningful for educators and policymakers, who which to support and promote new business creation in their communities.

# **Chapter VI**

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## **EI Stability and Predicting EB with SCCT**

## **Chapter VI: Entrepreneurial Intentions Stability and Predicting Entrepreneurial Behavior with Social Cognitive Career Theory**

New business creation is not an automatic process and, as such, must be preceded by a conscious intention directed to that goal. Yet, within entrepreneurship literature, in particular, Schlaegel & Koenig (2014) found that only 37% of entrepreneurial behavior (EB) could be explained by entrepreneurial intentions (EI) and Liñán & Rodriguez-Cohard (2015) have reported an even lower percentage of only 12.8%.

Given the, still, scarce empirical evidence on the EI – EB link, the low effect sizes and their considerable variability and the low explained variance of EB models, Kautonen et al. (2015) and Adam & Fayolle (2016), among others, suggest the need for more entrepreneurship specific empirical evidence, to validate EI as a meaningful determinant of start-up behavior.

Addressing this gap in the literature, in this last empirical chapter, the following general hypotheses are analyzed and tested, for a 5-year time frame: First, focusing on the construct stability, over time, the hypothesis that EI are stable (H6.1) and the hypothesis that EI are more stable for intrinsically motivated individuals, than they are for those extrinsically motivated (H6.2). Second, the hypothesis that a social cognitive career theory (SCCT) EI model significantly predicts future EB (H6.3); And finally, based on Chapters' IV and V findings regarding the operationalization of SCCT's constructs, the hypotheses that in a modified version of SCCT EI model, both entrepreneurial specific self-efficacy beliefs (ESSE) and general self-efficacy (GSE), are significant predictors of future EB (H6.4) and that having EI based on intrinsic motivators is associated with an increased likelihood of future EB (H6.5).

### **6.1 – Data, Measures and Methods**

#### **6.1.1 – Data**

Again, based on the EEP Portugal dataset, for this particular chapter, all survey waves were relevant for testing hypotheses H6.1, but for remaining hypotheses H6.2, H6.3 and H6.4, datasets from 2010-2011 (1stW: its first data collection) and 2015-2016 (Fup3: its third follow-

up survey) are especially relevant. Refer to Appendix B for detail on all EEP Portugal survey waves.

From the validated initial sample of 1,309 Portuguese higher education students (HEI), from EEP Portugal's 1stW survey (here, also designated as T0), this chapter's final sample only includes 223 students (17.04%). Comparing with similar studies, this is still better than the 7.08% achieved in a comparable 5-year longitudinal study of Delanoë-Gueguen & Liñán (2018), and within the expected range when considering other studies with smaller time-frames (e.g., Kolvereid & Isaksen, 2006, with 28.34% for 19 months; and Kautonen, van Gelderen, & Tornikoski 2013, with 11.79% for 3 years).

This reduced sample includes only those who have submitted complete reports on all the meaningful constructs for this analysis, *i.e.* EI, ESE, EOE and GSE scales (as measured in Chapter III) and the question "Have you ever created a new business? (Yes/No)" and, if answering 'Yes', also "When (date) was the last time you created a new business?" both from the third follow-up (Fup3) survey (here, also designated as T5). For a summary of these participants demographic characteristics and EI levels, see Table 6.01 (below).

### **6.1.2 – Measures**

In this chapter, most constructs used are measured as previously, namely, EI, entrepreneurial self-efficacy beliefs (ESE) and EOE, as in Chapter III, and ESSE and GSE as in Chapter IV. The exceptions are Intrinsic Motivation and EB, with the latter measured in two alternative ways.

Taking advantage of Chapter's V insights, Intrinsic Motivation (a binary variable) identifies students who justified their EI levels in the 1stW survey, with a motivator belonging to the *Intrinsic Motivation* factor – *i.e.* related with *The Entrepreneurial & Ownership Experience*.

In greater detail: it takes the value '1' for students that have cited one, or several, of the following motivators: 'Experience the entrepreneurial process', 'To be challenged', 'To work for myself', 'For self-development' and 'To gain property (to own a business)'; and '0' if citing an extrinsic motivator.

**Table 6.01:** Descriptive statistics for both initial and final samples used in Chapter VI.

Descriptive Statistics of EEP Portugal survey participants										
	All 1stW participants					3rdFup participants				
	N	Min	Max	Mean	Std. Dev.	N	Min	Max	Mean	Std. Dev.
1stW Entrepreneurial Intentions (EI)	1,291	1	7	4.31	1.25	223	1	7	4.48	1.22
Age(Years)	1,232	17	58	24.21	6.78	222	17	51	24.64	6.53
Gender(Man)	1,307	0	1	0.42	0.49	223	0	1	0.47	0.50
Graduated Student (Yes/No)	1,250	0	1	0.29	0.45	221	0	1	0.40	0.49
Business Student (Yes/No)	1,114	0	1	0.47	0.50	204	0	1	0.41	0.49
Prior Entrepreneurship Education (Yes/No)	1,122	0	1	0.46	0.50	209	0	1	0.56	0.50
Work Experience (Years)	1,213	0	51	5.01	6.63	222	0	32	4.81	5.79
Prior Entrepreneurial Experience	149	1	1	1.00	0.00	44	1	1	1.00	0.00
Family Entrepreneurial Experience	1,243	0	1	0.58	0.49	214	0	1	0.58	0.49

**Note:** All data was retrieved from the EEP Portugal first wave (1stW) survey.

For EB (also, a binary variable) two alternative measures were used, expressing two different levels/definitions. One, more conservative, identifies those who have already succeeded in creating their own new business, and is designated by ‘New Business Created’. The other, inclusive of both early stage entrepreneurship and new business creators, also includes those who have started at least one nascent activity, believed to represent a concrete step towards, later, new business creation, and is designated as ‘Nascent Behavior’. Other authors have also used similar research designs to increase the robustness of their findings (*e.g.*, Kautonen et al., 2015).

The 3rdF-up EEP Portugal survey, providing a list of 16 entrepreneurial nascent activities, based on Carter, Gartner, & Reynolds (1996), for items 1 to 11, and Mcgee, Peterson, Mueller, & Sequeira (2009), for items 12 to 16, asked participants if they had completed any of the following nascent activities: (1) Bought facilities / equipment; (2) Rented facilities / equipment; (3) Looked for facilities; (4) Invested own money; (5) Asked for funding; (6) Got financial support; (7) Developed models; (8) Devoted fulltime to business; (9) Applied for license / patent; (10) Formed a legal entity; (11) Hired employees; (12) Attended a ‘start your own business’ seminar or conference; (13) Wrote a business plan or participated in seminars that focus on writing a business plan; (14) Put together a start-up team; (15) Saved money to invest in the business; and (16) Developed a product or service.

Although in the literature, some authors (*e.g.*, McGee et al., 2009), have used a validation criterium of ‘at least two activities’, to identify a nascent entrepreneur, here, to be more confident of real nascent behavior, three activities were excluded from the previous list, for the belief that these did not meet the same standard, as the rest, in assuring the identification of dedicated/purposely EB. Namely, the following activities were considered ineligible: (7) ‘Developed models’, (12) ‘Attended a ‘start your own business’ seminar or conference’ and (13) ‘Wrote a business plan or participated in seminars that focus on writing a business plan’. To compensate this reduced domain of eligible activities, it was considered sufficient that only one of all other nascent activities was completed, for someone to be identified as having behaved entrepreneurially.

### **6.1.3 – Nonrespondents by Follow-Up Survey Drop-Out**

Regarding possible bias due to follow-up survey attrition, and based on independent samples T-tests for mean differences (2,000 samples bootstrapping; sig. <.05), results suggest that those participating in the Fup3 survey differed, from those not participating, on the following characteristics<sup>38</sup>: slightly higher EI (6-item avg.) (4.48 *versus* 4.28; p-value =.029; 1 to 7 scale); slightly higher GSE(10-item avg.), (3.85 *versus* 3.78; p-value =.036; 1-5 scale); being a graduate student (39.8% *versus* 26.9%; p-value =.000); a nonbusiness student (41.2% *versus* 48.9%; p-value =.045); having already been exposed to entrepreneurship education (56.0% *versus* 44.2%; p-value =.002); and, the greatest relative difference, having prior entrepreneurial experience (20.0% *versus* 10.0%; p-value =.000). On the contrary, the following variables were not found to statistically differ, when comparing both subsamples: EOE (4-item avg.), ESE (20-item avg.), Age (years), Gender and Work Experience (years).

Interpreting these results, although statistically significant differences can be found, between those who have participated in the 3<sup>rd</sup>F-up survey and those who did not, these are either relatively small (when compared with the respective scales’ ranges) or they do not appear to jeopardize the general perception of the sample’s demographic characteristics and diversity, as identified in the initial 1stW survey sample. Thus, these differences were not considered as potential sources of bias nor likely to compromise this analysis interpretation.

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<sup>38</sup> T-test results using 1stW survey data.

#### 4.1.4 – Methods

##### *EI Stability Analysis: Longitudinal Research in a 5-Year Period*

The still scarce entrepreneurship literature that has studied EI stability has used different methods (e.g., Schuerger, Zarrella, & Hotz, 1989; Sheeran, Orbell, & Trafimow, 1999; Souitaris, Zerbinati, & Al-Laham, 2007; Liñán & Rodríguez-Cohard, 2008; Liñán & Rodríguez-Cohard, 2015). As in Chapter IV, to provide a broader overview of what can be included under the concept of construct stability, and to allow a direct comparison with the EI literature, the general hypothesis (H6.1), that states that EI are stable over a 5-year period, was tested using multiple methods and five different periods, ranging from 1 to 5 years – given that all EEP Portugal data collections (*i.e.* T0, T1, T3, T5) included data on EI. The reader may refer to Appendix M, for a more in-depth explanation of these methods and respective stability perspectives.

In hypothesis H6.1.1, stating that the EI measurement scale provides a stable item-structure, over a 5-year time frame, a within-participant Pearson correlation between EI items (Liñán & Rodríguez-Cohard, 2008), from different periods, was performed. Empirical evidence of item-structure stability will be proposed in the case of finding significant correlation coefficients. A description of the stability/correlation degree and its evolution (as a function of time frame length) will also be reported.

For hypothesis H6.1.2, proposing that, within a same group of individuals, individual EI construct levels are stable over a 5-year time-frame (relative stability), two different methods were used: (1) a within-participant Pearson correlation between EI (6-item) averages (Liñán & Rodríguez-Cohard, 2015) from different periods; and (2) a linear regression structural equations model (SEM), where previous EI (measured as a latent construct) are tested as a predictor of future EI values (Liñán & Rodríguez-Cohard, 2015). This last method considers measurement errors and, therefore, is considered a better model. The first is conducted for comparison reasons and it may provide readers with a more intuitive result. In both cases, empirical evidence of EI relative stability will be proposed if associations (correlations and direct effects, respectively) are found significant and a description of the stability degree and its evolution will also be reported, namely: correlation coefficients and std. loadings size and EI explained variance, respectively.

And for hypotheses H6.1.3 a) and b), referring that EI construct levels are stable, by not significantly changing their values over a 5-year period (absolute stability), two different levels of analysis were performed:

- a) At the group level (*i.e.* describing the all sample, globally), the same procedure is taken, with the exception that differences are taken with their real values (positive/negative if EI have increased/decreased) a method already used in the literature (Liñán & Rodriguez-Cohard, 2015). For both methods, a one sample T-test was conducted to provide evidence of statistical significance and the magnitude of mean changes are provided for better description of the findings.
  
- b) At the individual level, after all EI items averages were computed, a new method was introduced, where within-participant EI changes are calculated, for all periods, and their absolute values (*i.e.* differences in modulus  $|x|$ ) tested for statistical significance, with a one sample T-test, and described in their average magnitude;

Stability analysis ends with a test of the general hypothesis (H6.2), stating that EI are more stable for intrinsically motivated individuals, than they are for those extrinsically motivated, over a 5-year time frame. With this general aim and reducing the scope of the previous stability analysis<sup>39</sup>, only two hypotheses are tested: Hypothesis H6.2.1, which compares the relative stability of EI items averages between both groups, using Pearson correlations and Fisher's r-to-z transformation method (Fisher, 1921)<sup>40</sup> to test for the statistical significance of potential differences. Hypothesis H6.2.2, compares the absolute stability of EI values for both groups, by testing if their mean absolute changes (*i.e.*  $|EI \text{ items avg change}|$ ) are significantly different, using an independent samples t-test for mean difference (bootstrapping with 2,000 samples), and Levene's test (for equality of variances). Both hypotheses were tested and described in their size, for five different time periods, ranging from 1 to 5 years.

#### *Testing a SCCT EI Model to Predict Entrepreneurial Behavior*

The test of the EI - EB link was conducted, again, using SCCT as the theoretical framework and SEM as method. Constructs were measured as in Chapter's III baseline model and structural

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<sup>39</sup> Due to lack of theoretical reasoning to support the remaining hypothesis and due to sample size limitations.

<sup>40</sup> With  $Z = (Z_1 - Z_2) / SEZD$ ; where  $Z_i = .5 [ \ln(1+r_i) - \ln(1-r_i) ]$  and  $SEZD = \sqrt{1 / (n_1-3) + 1 / (n_2-3)}$ .

paths are identical to those in that model, except that all cognitive constructs (*i.e.* EI, ESE and EOE) were now also proposed to directly influence EB (*i.e.* the likelihood of having reported ‘Nascent Behavior’ or ‘New Business Created’). This modification from Chapter’s III baseline model is in accordance with SCCT, in its proposed model for career action/behavior (*cf.* Figure 2.03 – in Chapter II). For more detail on the method’s justification, measurement, structure and estimation, the reader may refer to Chapter’s III, section 3.1.5.

Hypothesis 6.3, stating that, in a SCCT model EI significantly predict future EB, within a five-year period, is proposed empirically supported if this model is found to have an acceptable model fit and if the relationship between EI and EB is found positive and significant.

#### *Alternative Formulations to SCCT EI Model of EB*

Hypotheses H6.4 and H6.5, test similar models to that of hypothesis H6.3, with the same estimation method, but offering alternative formulations to the measurement of self-efficacy (SE) and outcome expectations (OE), respectively, based on the findings from Chapters IV and V.

In the case of hypothesis H6.4, and given the relationship between its small sample size and the small number of estimated parameters, it was necessary to use all 10 items for GSE measurement, to reach an acceptable Chi-square test for the overall model significance. This change is based on the suggestion that increasing the number of indicators per factor can compensate for a small sample, while still preserving statistical power (Wolf, Harrington, Clark, & Miller, 2013). In this particular case, this is not expected to result in any meaningful difference, to the construct interpretation, contrary to what would happen if items excluded were from EI or EOE.

Hypotheses H6.4 proposes that in a modified version of SCCT EI model, both ESSE and GSE, are significant predictors of future EB, within a five-year period. This test differs from the one tested for hypothesis H6.3, in that the ESE construct is decomposed and replaced by its two components, GSE and ESSE, while maintaining all proposed relationships between the model’s constructs. Sections 4.2 and 4.3, from Chapter IV, provide the reader the necessary information regarding the rational and operationalization of this decomposition. Here, the hypothesis will

be proposed as empirically supported if, in a SEM with acceptable model fit, both the ESSE - EB and the GSE - EB relationships (std. loadings) are found statistically significant.

Hypotheses H6.5 is tested by introducing a new binary variable, conceptually related with EOE that identifies individuals who have justified their EI with entrepreneurship intrinsic motivation (1= Yes; 0=No). This variable will present structural paths to EI and to EB. While the effect on EI is already expected, given the relationship found between the entrepreneurship intrinsic motivational factor and students EI levels, in Chapter V, the relationship with EB is yet to be tested. The underlying assumption regarding the latter effect is that, having an intrinsic motivation would add information to predict EB, beyond that offered by EI, ESE and EOE. This hypothesis will be argued as empirically supported if, in a SEM with acceptable model fit, the intrinsic motivation - EB relationship (std. loading) is found statistically significant.

## **6.2 – Results**

### **6.2.1 – EI Stability: Longitudinal Analysis Over a 5-Year Timeframe**

Testing EI stability across time (general hypothesis H6.1), began with a focus on the construct's item-structure. Results show that the correlations for all five possible time frames, from one to five years, were all significantly different from zero ( $p$ -values  $< .001$ ), thus providing empirical support for the hypothesis H6.1.1. Correlations ranged between a maximum of .47, for a 1-year period, and a minimum of .34, for a 5-year period. In sum, EI constructs items can be said to be moderately stable across a 5-year period with a tendency to decrease through time, as expected. Complete results can be found in Table 6.02 (below).

After this first analysis, a within-participant Pearson correlation between EI 6-item averages was conducted across all the different survey waves, testing if this proxy for EI construct levels remains stable across time. Results are presented in Table 6.03 (below) and are also supportive of an EI 6-item average being a stable proxy, given the significant positive correlations ( $p$ -value  $< .001$ ). For each time interval, correlations ranged between a maximum of .653, for a one-year period (the smallest period)<sup>41</sup>, and a minimum of .454, for a five-year period (the largest period). Thus, EI (6-item avg.) construct stability may be said strong to moderate, across a five-year

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<sup>41</sup> As in the previous analysis, correlation for a two-year period has considered data from both T1-T3 and T3-T5 correlations. Here resulting in a weighted average of .648.

period, with a clear tendency to decrease through time. The same conclusion may be taken from the SEM analysis (see Figure 6.01), where the relationship between the EI(T0) and EI(T5) is found significant ( $p$ -value  $< .001$ ,  $n=216$ ) and of considerable size, with a std. loading .641. Also relevant is the EI(T5) explained variance of 41%, with EI(T0) as single predictor. Without introducing any empirically driven modifications, model fit acceptability was considered borderline. This model was also applied to the remaining time frames, of 1, 2, 3 and 4 years, and figures from these models may be seen in Appendix N. In sum, hypothesis 6.1.2 was found empirically supported by the results of two different methods.

Regarding the absolute stability of EI values, at the group level, within-participant EI is mostly found not to significantly change, through time, during a 5-year time window, as it can be confirmed in Table 6.04 (below). Yet, an exception is found for the 4-year period, where a small mean negative change is identified ( $-.29$ ;  $p$ -value  $< .05$ ). Overall, H6.1.3a) is considered supported by empirical evidence by this analysis.

On the absolute stability of EI values, at the individual level - where absolute values of within-participant EI differences are tested for statistical significance – as it can be confirmed in Table 6.05 (below), the mean magnitude of the change (positive and negative) ranged from .797 (1y period;  $n=212$ ) to 1.125 (5y period;  $n=283$ ). All significantly different from zero ( $p$ -value  $< .001$ ), in one sample T-tests, and clearly increasing with the analyzed time window length. As such, H6.1.3b) is found not supported by this analysis. For full detail on absolute stability of all within-individuals EI changes, Appendix O displays five different scatter plots, each representing changes registered in each yearly period, from one to five years.

About a potential moderation effect, related with the motivational basis of reported EI being of intrinsic or only extrinsic in nature, against expectations: (1) it was found that entrepreneurship intrinsic motivations are not associated with the relative stability of students EI, across time. As it may be confirmed in Table 6.06 (below), correlations between within-individuals EI (6-item) averages are almost always not significantly different, and, moreover, most differences found are slightly higher for extrinsically motivated students, including the only significant result (for a 1-year time window). These results are not meaningfully changed, when one is stricter in categorizing intrinsic motivated students, by excluding those who have also mentioned an extrinsic motivator(s). Therefore, hypothesis 6.2.1 was found not to have empirical support; (2) it was also found that intrinsically motivated individuals, display equivalent absolute stability of EI as those exclusively extrinsically motivated. Results can be

seen in Table 6.07 (below) and, with the exception of one result - where intrinsic motivated students in T5 appear have significant lower EI values than those reported in T3, when compared with extrinsically motivated students – all EI (6-item) averages differences and absolute changes were found insignificantly different across both groups. Therefore, hypothesis 6.2.2 was also found, not to have empirical support.

### 6.2.2 – Testing the EI – EB Link for a 5-year period

As a preliminary note, within the 5 year span of this longitudinal research, out of the 223 students from the EEP sample of Portuguese HEI - for which there was information regarding the variables of interest – only 29 students (13.00%), 12 women and 17 men, had created their own new business venture and, and another 34 (15.25%), 17 women and 17 men, had, at least, engaged in one nascent entrepreneurial activity. Thus, totaling 63 (28.25%), the number of students engaging, at least, in nascent entrepreneurial activities, with the purpose of starting their own new business in the future.

Within this data, the hypothesis of an EI - EB relationship, within a SCCT model, was found to have only partial empirical support, since the relationship between EI and EB was only found significant in the case where EB is measured by, its most inclusive proxy, 'Nascent Behavior'.

When measuring EB as 'New Business Created', the tested SCCT model (see Figure 6.02), resulted in an EI explained variance of 5,0% (p-value = .018)<sup>42</sup> and in insignificant relationships between EB and all its proposed cognitive antecedents, *i.e.* ESE, EOE and EI. The EI - EB link, with an insignificant std. loading of .11 (p-value = .304). Model fit can be described as borderline acceptable (*cf.* Mueller & Hancock, 2008).

Measuring EB as 'Nascent Behavior', in the same model (see figure 6.03), resulted in an EI explained variance of 15,1% (p-value =.005) and in a now significant relationship between EI and EB, with a std. loading of .354 (p-value =.003). ESE and EOE, also proposed as direct cognitive antecedents of career action/behavior, by SCCT, were still found insignificantly

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<sup>42</sup> Two tailed significance bootstrap confidence 95%, interval bias-corrected percentile method. Bootstrap ML method with 2,000 samples.

**Table 6.02:** EI construct item-structure stability, for five different yearly periods, over a 5-year time frame: EI Items' Pearson correlations.

<b>Within-participants correlations between construct items for five different periods, from 1 to 5 years</b>	<b>mean</b>	<b>min</b>	<b>máx</b>	<b>std. deviation</b>	<b>n</b>
Items values stability for EI for a 1-year period	0.47***	-0.95	1.00	0.39	205
Items values stability for EI for a 2-year period	0.42***	-0.71	1.00	0.43	191
- Between school years 2011/2012 (T1) and 2013/2014 (T3)	0.44***	-0.69	0.97	0.42	86
- Between school years 2013/2014 (T3) and 2015/2016 (T5)	0.41***	-0.71	1.00	0.44	105
Items values stability for EI for a 3-year period	0.42***	-0.65	1.00	0.39	156
Items values stability for EI for a 4-year period	0.47***	-0.87	1.00	0.37	103
Items values stability for EI for a 5-year period	0.34***	-0.94	1.00	0.45	262

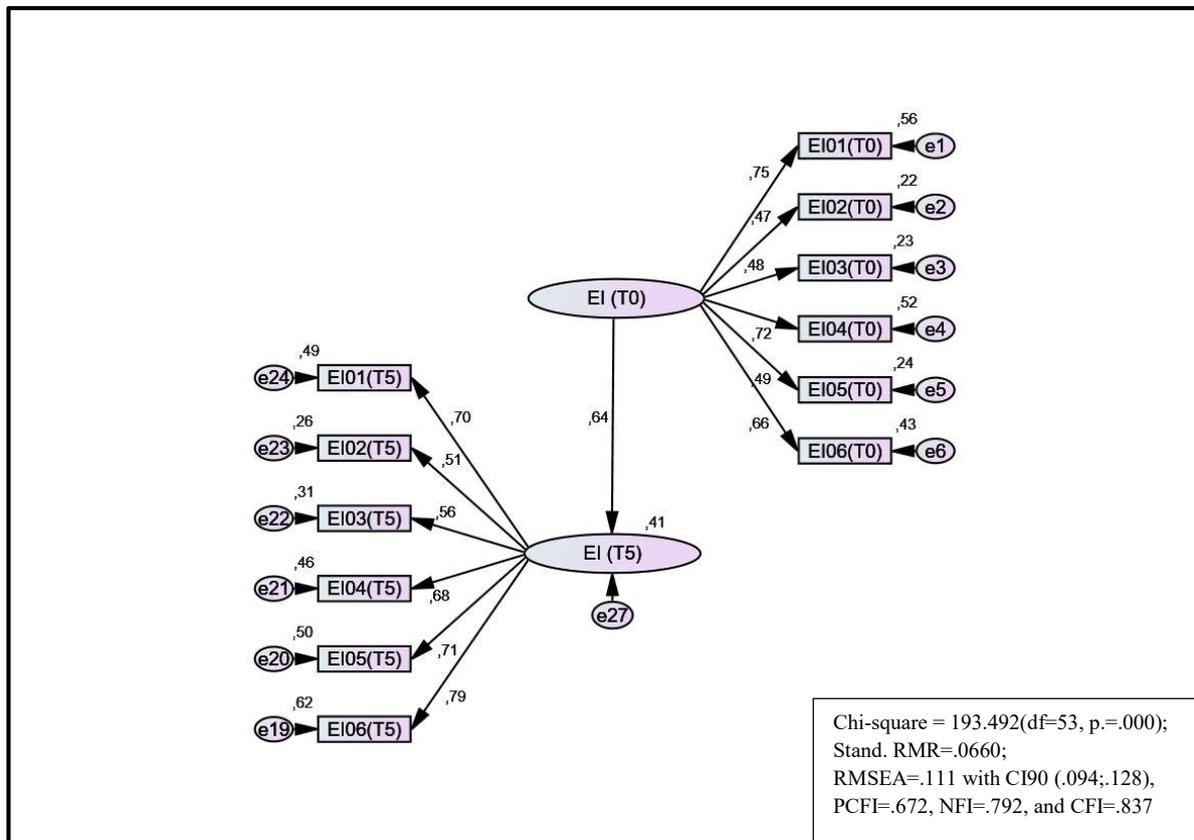
Statistical significance tested using a one sample t-test (bootstrap 1,000 samples): \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

**Table 6.03:** Within-participant EI (6-item average) stability, from 1 to 5 years: Pearson correlations.

Pearson Correlations	T0	T1	T3	T5
EI(6 items avg) T0	1 (1291)			
EI(6 items avg) T1	,653*** (212)	1		
EI(6 items avg) T3	,615*** (164)	,622*** (91)	1 (164)	
EI(6 items avg) T5	,454*** (283)	,584*** (110)	,669*** (111)	1 (285)

\*\*\*. Correlation is significant at the 0.001 level (2-tailed).  
Sample size between parentheses (n)

**Figure 6.01:** Results from the EI stability analysis, from T0 to T5, with a SEM model (n=216).



**Table 6.04:** EI absolute stability, at the group/sample level (with offsetting effects), over 5-year period: Constructs' items initial mean and mean differences.

<b>Within-participants EI means and EI mean differences (1 to 5 years stability)</b>	<b>mean</b>	<b>min</b>	<b>máx</b>	<b>std. deviation</b>	<b>n</b>
Entrepreneurial Intentions (EI 6-item) T0 (scale 1-7)	4.31	1.00	7.00	1.25	1291
Entrepreneurial Intentions (EI 6-item) T1 (scale 1-7)	4.52	1.00	7.00	1.28	212
Entrepreneurial Intentions (EI 6-item) T3 (scale 1-7)	4.36	1.00	7.00	1.36	164
Entrepreneurial Intentions (EI 6-item) T5 (scale 1-7)	4.34	1.00	7.00	1.40	285
<b>1-Year Stability</b>					
EI (T1) - EI (T0)	0.07	-3.50	2.67	1.04	212
<b>2-Year Stability</b>					
EI (T3) - EI (T1)	-0.20	-3.67	2.33	1.19	91
EI (T5) - EI (T3)	-0.14	-3.17	2.67	1.11	111
<b>3-Year Stability</b>					
EI (T3) - EI (T0)	0.02	-3.17	3.00	1.16	164
<b>4-Year Stability</b>					
EI (T5) - EI (T1)	-0.29*	-4.17	2.67	1.27	110
<b>5-Year Stability</b>					
EI (T5) - EI (T0)	-0.10	-3.50	4.33	1.40	283

Statistical significance tested using a one sample t-test (bootstrap 1,000 samples): \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

Note: Since EI means (first section of this table) were calculated using all reported data, at each survey wave, and mean differences (last section of this table) were calculated only using responses from those conjointly participating in two survey waves, mean differences cannot be calculated by simply using the mean values reported here.

**Table 6.05:** Within-participant EI (6-item average) absolute stability, at the individual level (without offsetting effects), over 5-year period: EI mean absolute differences.

One-Sample Test (mean of absolute change = 0)									
EI change (time window)	n	Mean Difference	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	95% Confidence Interval of the	
								Lower	Upper
1-Year Abs change (T0 to T1)	212	0.797	0.676	0.04642	17.159	211	0.000	0.7050	0.8881
2-Year Abs change (T1 to T3)	91	0.943	0.747	0.07828	12.045	90	0.000	0.7873	1.0984
2-Year Abs change (T3 to T5)	111	0.853	0.712	0.06760	12.611	110	0.000	0.7186	0.9865
3-Year Abs change (T0 to T3)	164	0.900	0.730	0.05698	15.793	163	0.000	0.7873	1.0123
4-Year Abs change (T1 to T5)	110	1.004	0.819	0.07809	12.859	109	0.000	0.8495	1.1590
5-Year Abs change (T0 to T5)	283	1.125	0.834	0.04960	22.682	282	0.000	1.0273	1.2226

Statistical significance tested using a one sample t-test (bootstrap 1,000 samples): \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

**Table 6.06:** Comparing within-participant EI (6-item average) stability, from 1 to 5 years, for extrinsic and intrinsic motivated EI: Pearson correlations between the four EI reports (T0, T1, T3 and T5) and significance test with Fisher’s r-to-z transformation.

Pearson correlations for EI items avg. (Extrinsic versus Intrinsic motivated EI)	T0		z	T1		z	T3		z	T5	
EI(6 items avg) T0	1 (395)	1 (212)									
EI(6 items avg) T1	.631*** (109)	.227 (43)	2.76**	1 (109)	1 (43)						
EI(6 items avg) T3	.545*** (86)	.506** (36)	.26	.539*** (52)	.609** (19)	-.36	1 (86)	1 (36)			
EI(6 items avg) T5	.421*** (101)	.204 (53)	1.39	.507*** (57)	.411* (25)	.48	.665*** (59)	.520** (28)	.94	1 (101)	1 (53)

Statistical significances of z-values calculated with Fisher's r-to-z transformation: \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)  
Sample size between parentheses (n)

**Table 6.07:** Comparing within-participant EI absolute stability, at both the individual and the group level, over 5-year period, for extrinsic and intrinsic motivated EI: EI (6 items) mean differences and mean absolute changes.

Independent Samples Test for within-individual EI (6-item) mean differences, and mean absolute changes, for five yearly periods from 1 to 5 years													
Absolute Stability Analysis (Period and change type)	N		Levene's Test for Equality of Variances		t-test for Equality of Means			EI (6-item)Mean		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Intrinsic Mot.	Extrinsic Mot.	F	Sig.	t	df	Sig. (2-tailed)	Intrinsic Mot.	Extrinsic Mot.			Lower	Upper
1-Year EI mean differences (T0 to T1)	43	109	2.19	0.141	-0.36	150	0.716	0.025	0.093	-0.068	0.186	-0.436	0.300
2-Year EI mean differences (T1 to T3)	19	52	2.41	0.125	1.33	69	0.189	-0.018	-0.433	0.416	0.314	-0.210	1.041
2-Year EI mean differences (T3 to T5)	28	59	0.29	0.593	-2.34	85	0.021*	-0.490	0.094	<b>-0.584*</b>	0.249	-1.080	-0.088
3-Year EI mean differences (T0 to T3)	36	86	0.12	0.727	1.07	120	0.285	0.069	-0.177	0.246	0.229	-0.208	0.700
4-Year EI mean differences (T1 to T5)	25	57	0.00	0.969	0.27	80	0.788	-0.360	-0.445	0.085	0.315	-0.542	0.712
5-Year EI mean differences (T0 to T5)	53	101	0.00	0.952	-0.34	152	0.734	-0.275	-0.198	-0.076	0.225	-0.520	0.367
1-Year EI mean Abs change (T0 to T1)	43	109	5.19	0.024*	1.28	58.9	0.205	0.913	0.734	0.180	0.140	-0.101	0.460
2-Year EI mean Abs change (T1 to T3)	19	52	4.15	0.045*	-1.79	49.2	0.080	0.702	1.010	-0.309	0.172	-0.655	0.038
2-Year EI mean Abs change (T3 to T5)	28	59	0.51	0.477	0.58	85	0.561	0.914	0.817	0.097	0.167	-0.234	0.429
3-Year EI mean Abs change (T0 to T3)	36	86	1.68	0.198	-0.27	120	0.786	0.856	0.897	-0.040	0.149	-0.335	0.254
4-Year EI mean Abs change (T1 to T5)	25	57	1.04	0.310	-0.33	80	0.741	1.027	1.094	-0.067	0.204	-0.473	0.338
5-Year EI mean Abs change (T0 to T5)	53	101	0.16	0.687	0.15	152	0.878	1.105	1.085	0.020	0.131	-0.239	0.280

related with EB. However, ESE was found to have a significant indirect effect on EB (in this formulation of the measure), through EI, with a std. loading of .174 (p-value =.002). Model fit can also be described as borderline acceptable (*cf.* Mueller & Hancock, 2008).

### 6.2.3 – Alternative formulations of a SCCT model of EB

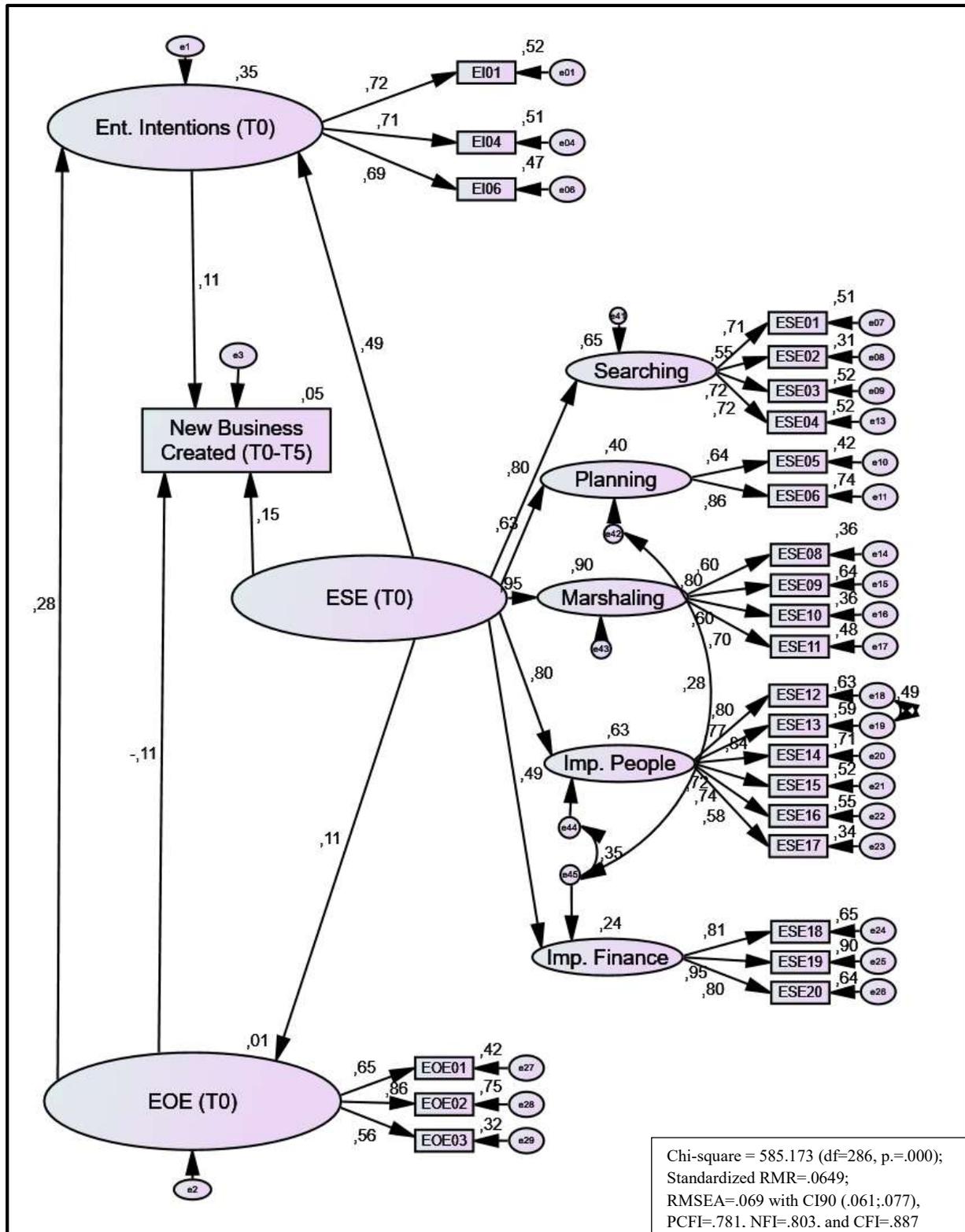
#### *A SCCT model of EB with ESSE and GSE*

Testing the hypothesis that ESSE and GSE are both significant predictors of future EB, within a five-year period (H6.4), represented in Figure 6.04, ‘New Business Created’ was found only explained in 7.0% (p-value =.031) of its variance by this modified version of the SCCT model of EB. Regarding the variables of interest, only GSE(T0) resulted in a significant positive std. loading, .193 (p-value =.008), since ESSE(T0) displayed a std. loading of .075 (p-value =.268). Neither EI(T0) nor EOE(T0) were also found to have significant relationships with new business creation. With this reduced sample (n=222), where no missing values exist, EI variance explained was 31.4% (p-value =.006), with the following relationships being all statistically significant: ESSE(T0) - EI(T0) .325 (p-value =.002) EOE - EI(T0) .273 (p-value =.003) and GSE(T0) - EI(T0) .305 (p-value =.002). Finally, model fit can be considered acceptable (*cf.* Mueller & Hancock, 2008).

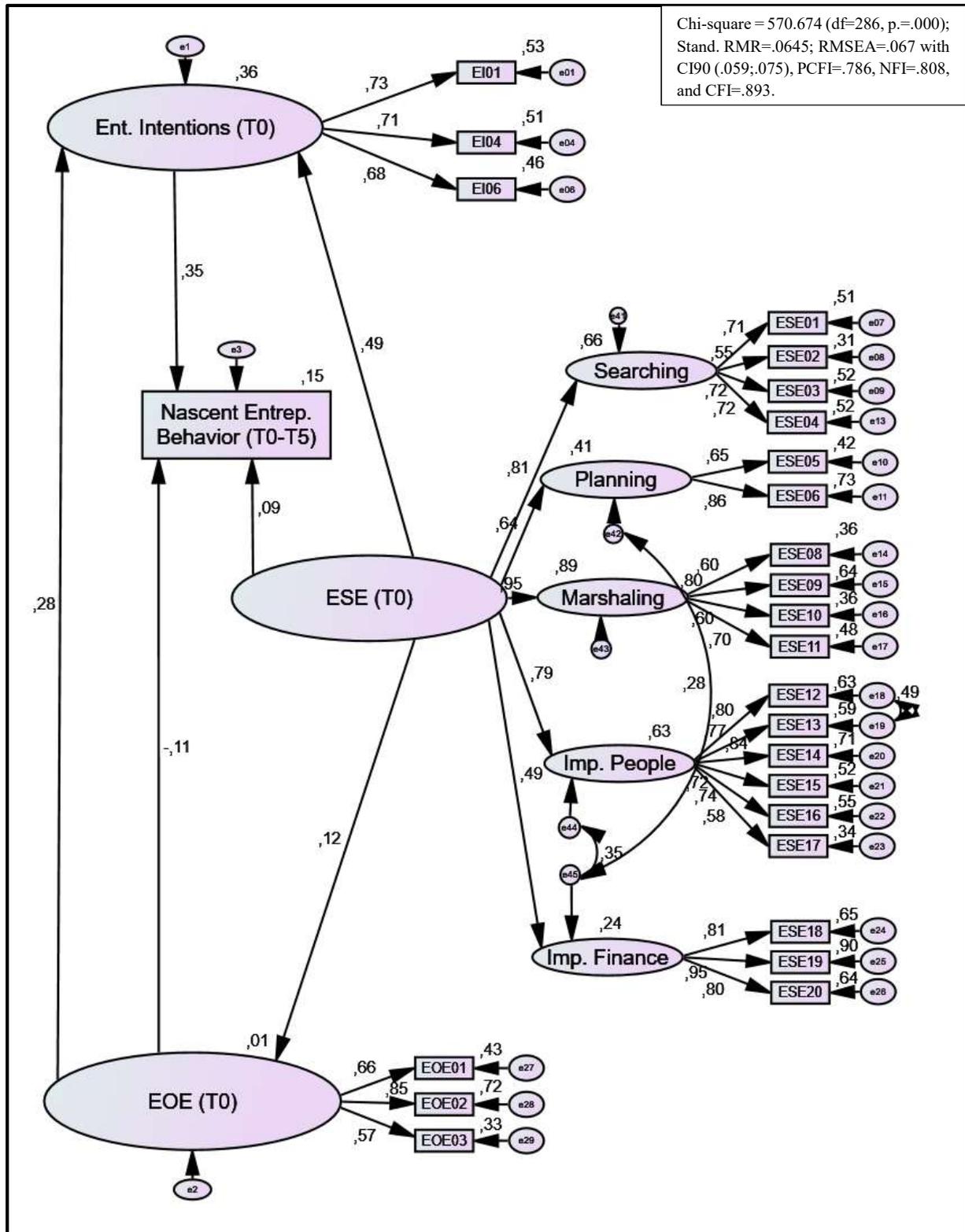
When this same hypothesis is tested with EB measured as ‘Nascent Behavior’, represented in Figure 6.05, the variance explained improves significantly from 7,0% to 15.8% (p-value =.002), given that the latter value lays outside the former’s 95% CI<sup>43</sup>. On the variables of interest, neither GSE(T0) nor ESSE(T0) resulted in a significant std. loading, with .087 (p-value =.316) and .032 (p-value =.634), respectively. However, while EOE remains insignificant when predicting nascent activity, rather than successful nascent activity, EI(T0) becomes the most significant predictor of this particular type of EB, with a positive std. loading of .374 (p-value =.000). As the previous model, also this one can be considered to have an acceptable model fit (*cf.* Mueller & Hancock, 2008). Given these results, hypothesis H6.4 receives only partial (minimal) empirical support from the present analysis of the EEP Portugal dataset, since only GSE was found significantly associated with EB, and only when measuring actual new business creation.

<sup>43</sup> Bootstrap ML, with interval bias-corrected percentile method and 2,000 samples.

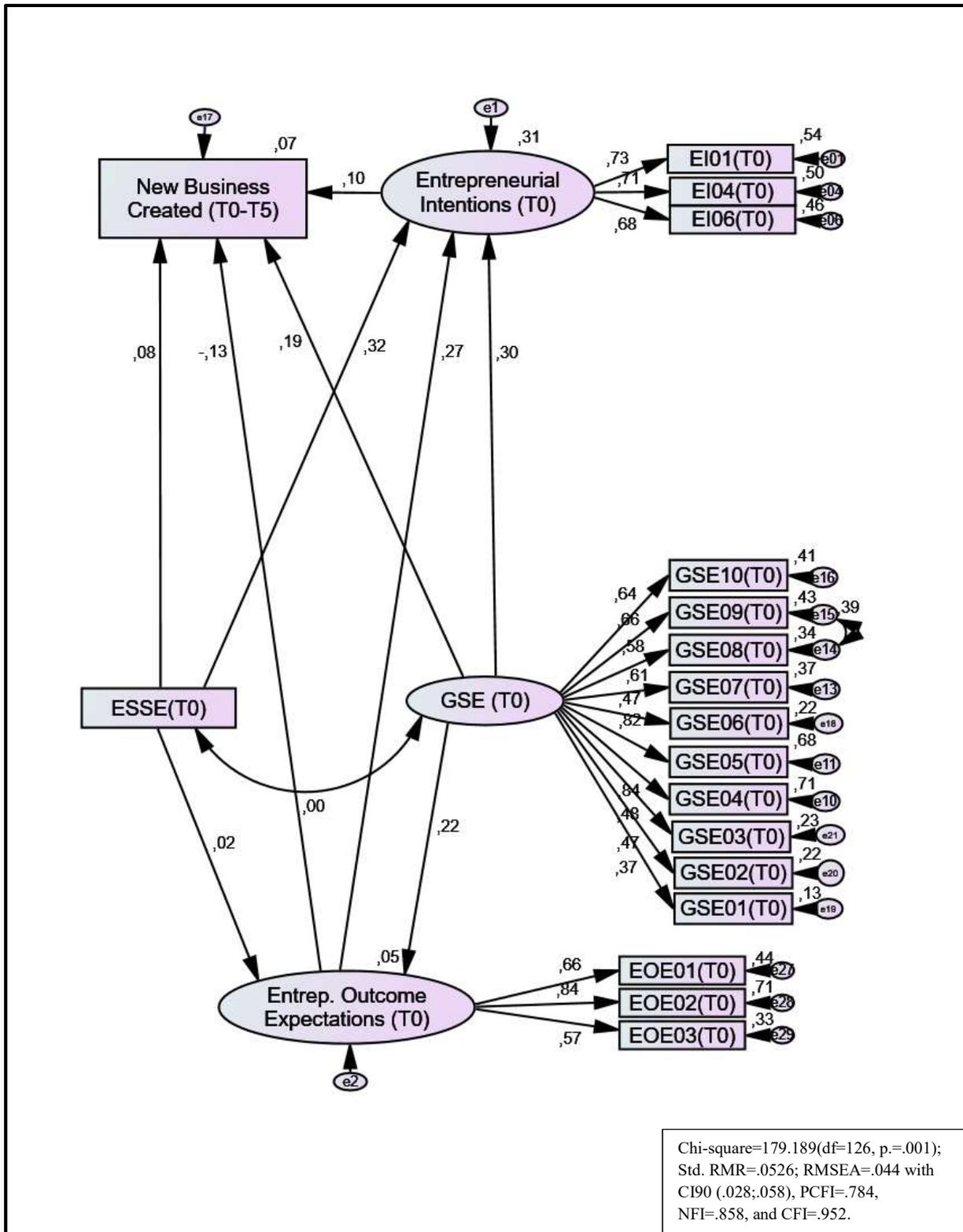
Figure 6.02: Results from the application of a SCCT EI model to predict new business creation, within a 5-year period (n=223).



**Figure 6.03:** Results from the application of a SCCT EI model to predict nascent behavior directed toward future new business creation, within a 5-year period (n=223).



**Figure 6.04:** Results from the application of a SCCT EI model to predict new business creation, within a 5-year period, where ESE is substituted by ESSE and GSE (n=222).



*A SCCT model of EB distinguishing those with Intrinsic Motivations*

Proposing that having EI based on intrinsic motivators is a significant predictor of future EB, within a five-year period, hypothesis H6.5, represented in Figure 6.06, did not find empirical support in the EEP Portugal dataset. When predicting ‘New Business Created’, the tested SCCT model of EB can only explain 5.7% (p-value =.027) of this the dependent variable’s variance. The effect of having reported EI based on entrepreneurship intrinsic motivation on the likelihood of actually creating a new business, in the following 5 years, was found not to be significantly different from zero (p-value =.420). In fact, none of its other proposed cognitive antecedents, EI, ESE, EOE was also found significantly related with the variable “New Business Created” (p-values =.151, .362, .171, respectively). In this model, with a very reduced sample (n=139; following a listwise deletion of missing cases), EI could only be found significantly related with ESE, with a std. loading of .395 (p-value =.013) and resulting in a total explained variance of 27.3% (p-value =.010). This model can be proposed to have a borderline acceptable model fit (*cf.* Mueller & Hancock, 2008).

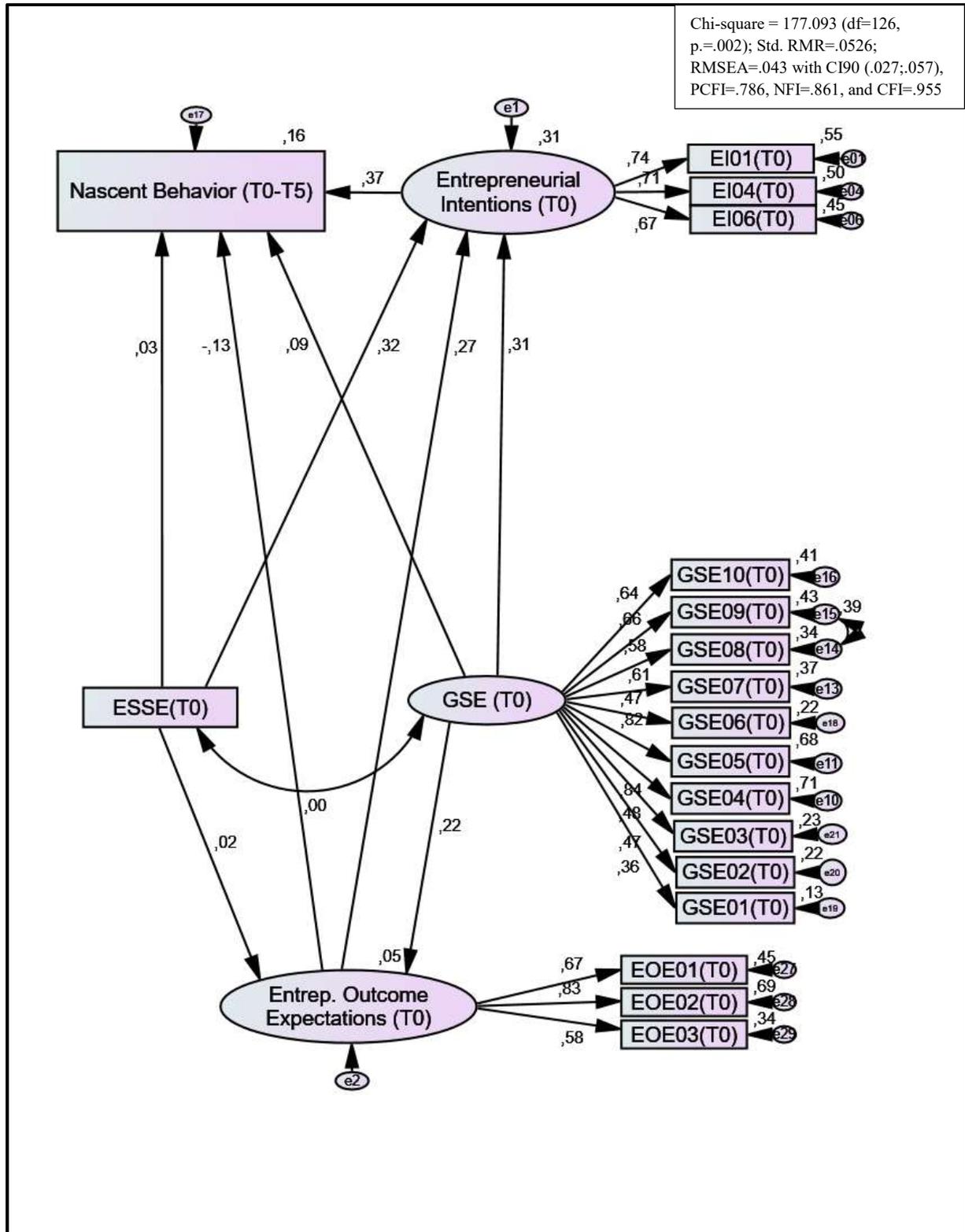
Finally, testing hypothesis H6.5 with EB measured, differently, as ‘Nascent Behavior’, as represented in Figure 6.07 (below), as in the test of hypothesis H6.4, the variance explained improves significantly from 5.7% to 15.8% (p-value =.014), which lays outside the 95% CI<sup>44</sup> for the former value estimate. Yet, the variable of interest, intrinsic motivation, is still insignificantly related with EB and only EI(T0) appears as a relevant predictor of ‘Nascent Behavior’, with a std. loading of .364 (p-value =.009). This model’s fit to the data is comparable to the previous model.

In sum, with these results, hypothesis H6.5 receives no empirical support, from the present analysis of the EEP Portugal dataset, since in none its two proposed operationalizations, is EB found significantly associated with having EI based on entrepreneurship intrinsic motivations.

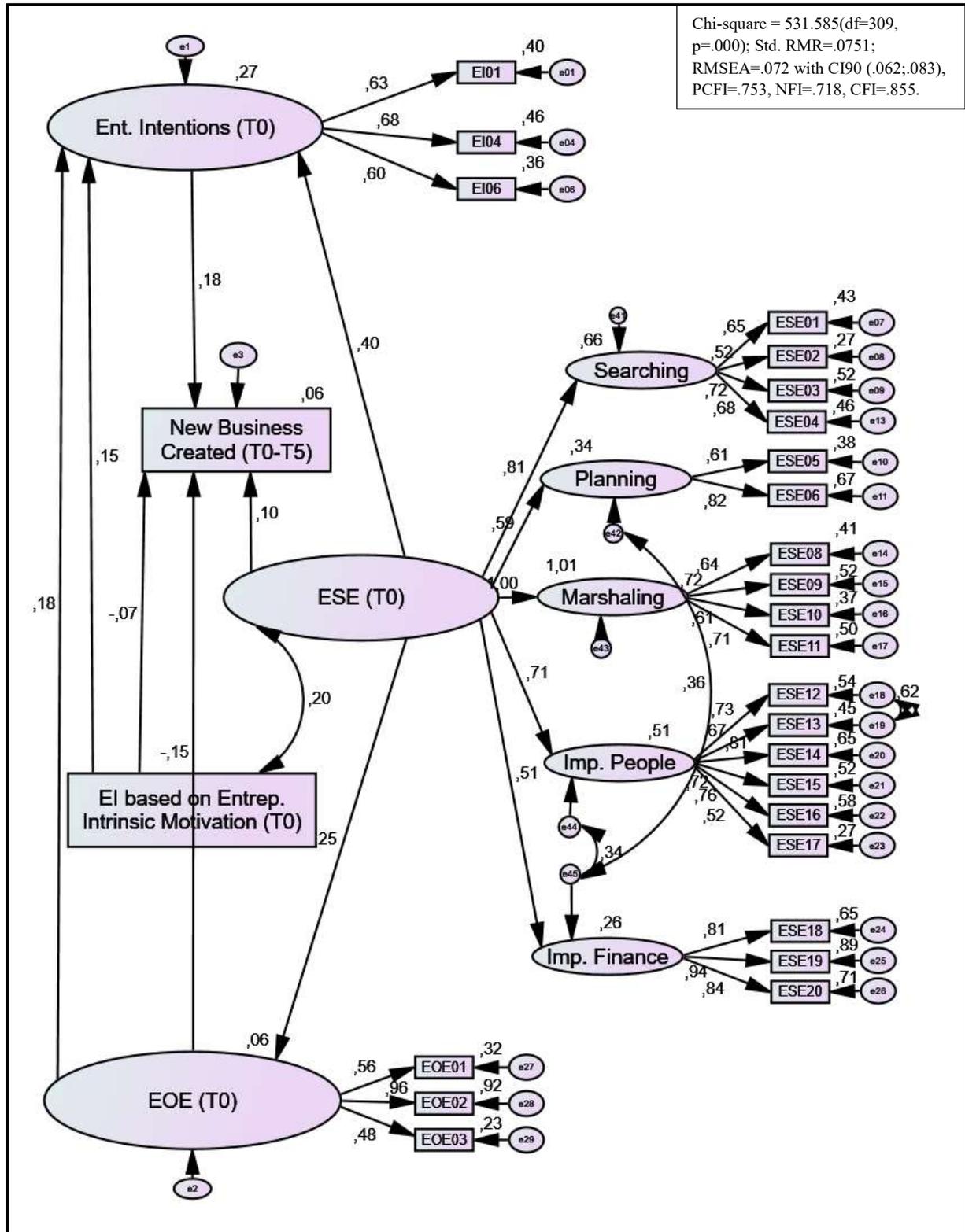
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<sup>44</sup> Bootstrap ML, with interval bias-corrected percentile method and 2,000 samples.

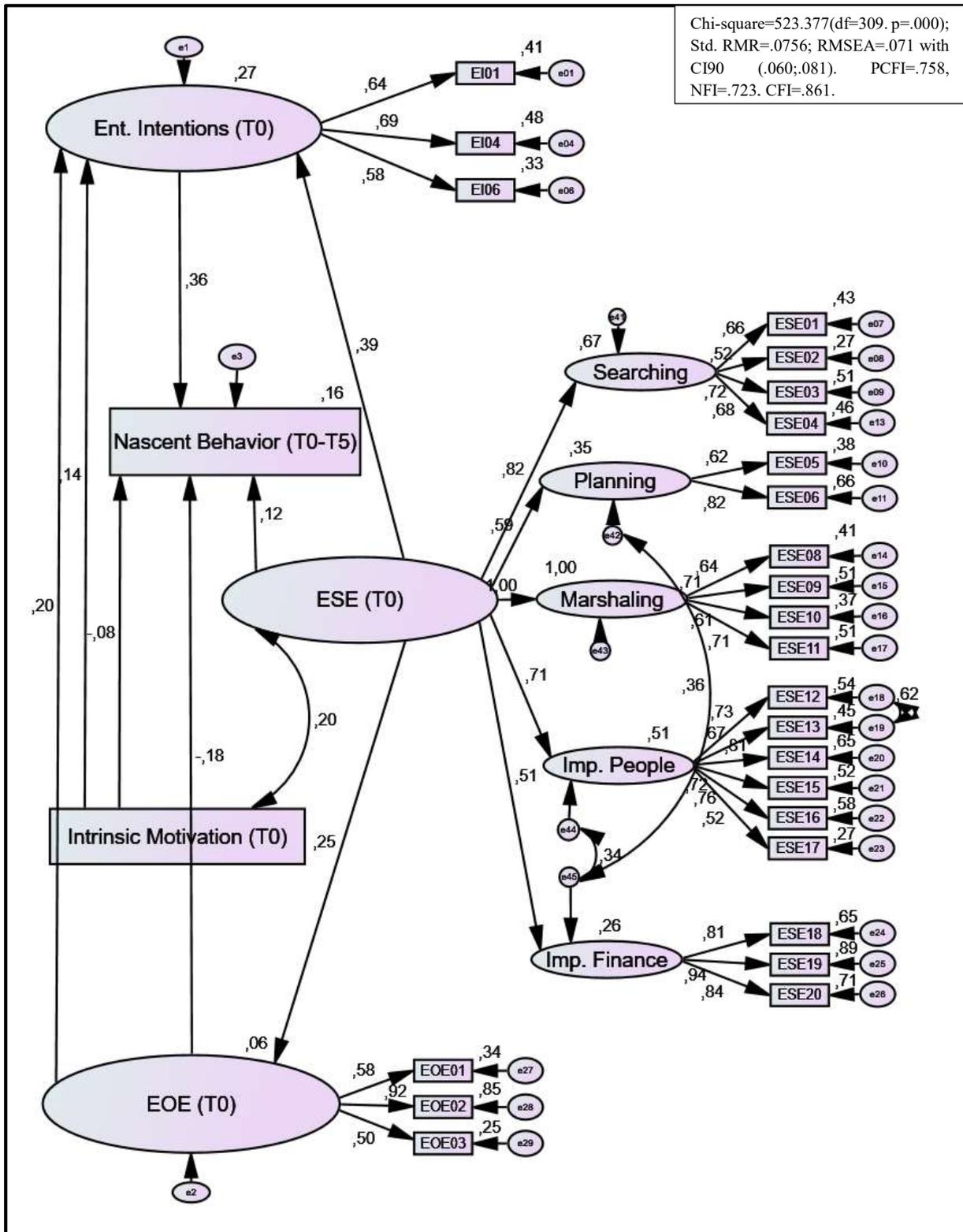
**Figure 6.05:** Results from the application of a SCCT EI model to predict nascent behavior directed toward future new business creation, within a 5-year period, where ESE is substituted by ESSE and GSE (n=222).



**Figure 6.06:** Results from the application of a SCCT EI model to predict new business creation, within a 5-year period, where EI based on entrepreneurship intrinsic motivations are identified and set as an EI and a new business creation predictor (n=139).



**Figure 6.07:** Results from the application of a SCCT EI model to predict nascent behavior directed toward future new business creation, within a 5-year period, where EI based on entrepreneurship intrinsic motivations are identified and set as an EI and a new business creation predictor (n=139).



6.2.4 – Results Summary

Table 6.08: Summary of Chapter’s VI research hypotheses results.

Chapter VI - Research Hypotheses	Results
<p><b>H6.1</b> – EI are stable, over a 5-year time frame.</p> <p><b>H6.1.1</b> – The EI measurement scale has a stable item-structure, over a 5-year time frame.</p> <p><b>H6.1.2</b> – The relationship between individual EI values, within a sample, remains stable over a 5-year timeframe (relative stability).</p> <p><b>H6.1.3</b> – EI are stable, by not significantly changing their values over a 5-year period (absolute stability).</p> <p><b>H6.1.3a)</b> – At the group level.</p> <p><b>H6.1.3b)</b> – At the individual level.</p>	<p>Supported</p> <p>Supported</p> <p>Supported</p> <p>Not Supported</p>
<p><b>H6.2</b> – EI are more stable for intrinsically motivated individuals than they are for those extrinsically motivated, over a 5-year time frame:</p> <p><b>H6.2.1</b> – Since intrinsically motivated individuals display greater relative stability of EI, across time.</p> <p><b>H6.2.2</b> – Since intrinsically motivated individuals display greater absolute stability of EI, across time.</p>	<p>Not Supported</p> <p>Not Supported</p>
<p><b>H6.3</b> - In an SCCT model, EI significantly predicts future EB, within a five-year period.</p>	<p>Mixed Support</p>

<p><b>H6.4</b> – ESSE and GSE are both significant predictors of future EB, within a five-year period.</p>	<p>Mixed Support</p>
<p><b>H6.5</b> - Having EI based on intrinsic motivators is a significant predictor of future EB, within a five-year period.</p>	<p>Not Supported</p>

### 6.3 – Results Discussion

#### *EI Stability Across Time*

In this chapter, and as a first approach to the analysis of the quality of the EI - EB link, when the behavior is not likely to immediately follow inquired/reported intentions. EI construct stability was analyzed through three different perspectives: item-structure stability, construct relative stability, and construct absolute stability. All of which for five different yearly periods, from one to five years.

The EI (6-item) measure used in EEP Portugal survey, a modified version of Thompson's (2009) scale (details in section 3.1.2. in Chapter III) was found to have an item-structure moderately stable for all analyzed time frames and items appear to become slight less correlated, as time goes by – results evolved from a .47 to a .34 correlation coefficient, from a one-year to a five-year period, respectively.

Comparing with the literature, Liñán & Rodríguez-Cohard (2008) using the EIQ measure (Liñán & Chen, 2009), a different 5-item Likert-type scale, yet using a comparable sample and analysis, for a three-year period, find a lower average correlation of .14 (p-value <.01) than the .42 (p-value <.001) here found, for the same period for 156 Portuguese HEI students. In sum, both measures appear to have some degree of stability (weak to moderate), in test-retest analyses for a short to middle term, with Thompson's (2009) scale offering a better item-structure stability, than Liñán & Chen's (2009) EIQ measure. This item-structure stability is expected to decrease, as the analyzed window increases in length.

As for the relative stability of the construct, students EI appear to have a strong to moderate stability, both when measured by the EI 6-item average (a common proxy for the construct value) and when measured as a latent construct in a SEM. This, given that results from one to five years, yield: (1) correlations coefficients between EI averages range from .653 to .454, respectively, and (2) SEM std. loadings, between EI latent constructs, range from .840 to .641 (and explained variance from 70.6% to 41.0%), respectively. Moreover, both results also reveal a clear tendency for a growing instability, as the window of analysis expands.

Comparing with the literature, Souitaris et al, (2007), using Kolvereid's (1996) EI(3-item) measure, and Liñán & Rodriguez-Cohard (2015), using the EI(5-item) measure, have also analyzed EI relative stability, for a five-month and a three-year period, respectively. The former reporting a correlation coefficient of .71 (n=250; p-value <.001) and the latter a correlation coefficient of .623 (n=135; p-value <.001). These may be said to be in line with the strong correlation, of .653 for one year and .615 found for the period of three years (p-values <.001), found in this thesis. Liñán & Rodriguez-Cohard (2015) have also conducted a stability analysis with SEM finding a much lower std. loading between EI constructs - .164 (p-value <.01) *versus* .771 (p-value <.001) - but a much higher explained variance -  $R^2 = 75.1\%$  *versus* 59.4% - for the same three-year time frame. The reason for such difference can be attributed to the fact that these authors measured the added value, of a prior measure of EI, in the context of a full TPB model (Ajzen, 1991) - where Attitudes, Perceived Behavior Control and Social Norms are also included as predictors of EI.

It is also interesting to compare these results with those from Chapter III. Namely, note that, with a single construct, the EI(T0) level, measured 5 years prior, it was possible to explain 41% of EI(T5) variance, which compares with the lower explained variance attained by Chapter's III SCCT EI models, of 31% to 36%, which included several constructs and other variables, measured, simultaneously, with EI. This clearly shows the need for future development of the application of SCCT to entrepreneurship, given the lack of explanatory power from the theory's cognitive constructs.

In sum, empirical evidence supports the proposition that EI levels have moderate to strong relative stability which, likely, decreases as time goes by. Thus, based on this chapter's results on Portuguese HEI students and those from Spain (Andalusia) from Liñán & Rodriguez-Cohard's (2015) study, a HEI student who is found to have a lower or a higher than average EI level, will, most likely, maintain such status over a five-year time frame.

Regarding the absolute stability of the construct and, thus, addressing the question of whether self-reported EI values actually change, or not, across time, two different perspectives were taken.

First, within a group level analysis - where the focus is to find if there is a general tendency for the sample's mean EI values to increase or decrease – EI are mostly found not to significantly change, during a 5-year time window. Thus, as a proposition for future research, if these results can be generalized, one should not expect that HEI students will have a general tendency to develop higher or lower EI levels, during a 5-year period. Or, stated differently, being five years older (*i.e.* age) does not appear to be a factor in conditioning EI of HEI students in any distinguishable direction. Comparing with the literature, Liñán & Rodríguez-Cohard (2015) also find no significant change between repeated measures of EI, at the group level, within a period of three years.

Second, at the individual level – where the focus is not to find general tendencies, but, rather, to find whether the EI values reported by each individual are expected to stay constant across time - the mean magnitude of the change ranged from .797 (within a 1-year period) to 1.125 (within a 5-year period) and change was found to increase the greater the analyzed time window is.

When considering the hypothesis that entrepreneurship intrinsic motivated individuals could display more stable EI than those only motivated by extrinsic outcomes - based on the assumption that entrepreneurship intrinsic motivations may not be satisfied with other behavioral/career choices - results provide no support for this hypothesis. This conclusion is valid for a 5-year period and for both the group-level analysis - testing a different general trend between both groups - and the individual-level analysis - testing the magnitude of the mean change of EI values across groups.

Discussing the lack of influence of the intrinsic-extrinsic based EI motivations distinction for the EI stability results, and to provide some rational for future research hypothesis, next, some arguments are proposed as possible justifications. For example, when analyzing these results in combination with those from Chapter V, on motivational factors stability, some of the hypothesis lack of empirical support could be attributed to the less than perfect motivational factor stability. Although, motivational factor were found more stable than specific motivators and the entrepreneurship intrinsic the most stable of all motivational factors, it is still likely that

students may, one day, be (or report being) mainly driven by entrepreneurship intrinsic motivations, to create their own new business, and, on a future day, basing their EI mainly on extrinsic motivators (*e.g.*, unexpectedly needing a job). This, possibility, would, of course, undermine the rationale for expecting such an association between motivational factors and EI stability. A different argument, that can also be proposed to justify these results, is the possibility that an extrinsic motivator associated with very high EI, may signal a very important need/want, for that individual, that he/she cannot attain through a different behavior (*e.g.*, to gain financial wealth, to be acknowledged, etc.). It would be as this generally extrinsic motivational factor, for this particular individual, would actually also be entrepreneurship intrinsic for him/her. Additionally, an interest on new business creation, just for its own sake (*i.e.* intrinsic in nature), could be conceived as more of a caprice that, although desired, if not satisfied, no fundamental need would come undone.

#### *Testing the EI – EB Link for a 5-Year Period*

The final focus of this thesis empirical analysis was the test of the EI - EB link. Initially tested using a modified version of the *baseline* SCCT EI model, from Chapter III, to incorporate a measure of EB that would have EI, EOE and ESE, as cognitive antecedents, as proposed in SCCT. To improve results' robustness, two different variables for EB were used: (1) a more conservative one, considering only actual new business creation, and; (2) another, inclusive of early stage EB, considering, also, the performance of any nascent activity - within a list of thirteen different activities (*e.g.*, invested own money, hired personal, bought or rented facilities or equipment, etc.) - deemed conducive to new business creation.

Five years after the 1stW EEP Portugal survey, out of the 223 students for which there was information regarding the variables of interest, 29 students (13.00%) had created their own new business venture and, another 34 (totaling 28.25%) had, at least, engaged into one nascent entrepreneurial activity. This value is close, but slightly higher, to the 20% reported for French University students by Delanoë-Gueguen & Liñán (2018), for a similar period. Nevertheless, it should be noted that the original validated sample for the 1stW survey was much bigger, with 1,309 students. Relative to this number the percentages would become much less expressive, with only 2.22% of students having created their own new business venture and 4.81% students having, at least, engaged into nascent entrepreneurial activity.

Discussing this chapter's results, one must remember that this is not a test of the EI - EB link, itself. Again, no one is expected to behave entrepreneurially – *i.e.* performing complex tasks conducive to a new business being created - without prior intent. What was in question, here, was if EI measured as it was, and without proposing any intention implementation deadline, is a good predictor of EB, during the five subsequent years.

Moreover, reasons for a lack of predictiveness in the model are multiple. For example: EI may change during this period, and people who had lower EI may have developed these intentions to higher levels and *vice-versa*; Individuals may intend to create their own business later, in life, *i.e.* more than 5 years after the initial survey; They may also be expecting the occurrence of a particular contextual event or environmental cue (linked with their implementation intentions) that has not yet occurred; etc.

Empirical evidence regarding the hypothesis that the EI construct is a direct cognitive antecedent of EB, received only mixed support. Only the less conservative alternative of the dependent variable yielded a positive significant std. effect of .354, while the measure that required actual new business creation resulted in a nonsignificant effect.

It was also found that the tested SCCT EI model significantly explains the dependent variable's variance, although to a very small degree, namely, the variance explained ranges between 5.0% and 15.1%, depending on the chosen dependent variable being the most conservative or the one including, also, nascent behavior.

These results compare with those reported, within TPB theoretical framework (*e.g.*, Hulsink & Rauch, 2010; Kolvereid & Isaksen, 2006; Kautonen, van Gelderen, & Tornikoski, 2013; Schlaegel & Koenig, 2014; Kautonen et al., 2015; Liñán & Rodriguez-Cohard, 2015; Delanoë-Gueguen & Liñán, 2018), but lay closer to the lower bound of already reported values, which range between 12.8% and 67.1%. However, the methodological differences, related, for example, with differences in the measurement of EI and EB and different time windows, for the longitudinal analysis, are extensive and may be the main cause of these different findings.

In sum, given the natural limitations that arise from testing the effectiveness of a behavioral intention measure, that does not set *a priori* a time limit that is coherent with the tested time window where actual behavior can be confirmed - which is common to many studies on the relationship between EI and EB – these results highlight the importance of studying EI stability

as a prerequisite for the validity of the research design that test the direct effect of past EI on EB.

That is, the more instable EI are, the less appropriate are the longitudinal research designs where EI are measured in an initial period and the occurrence of EB is measured within a long time-frame. Perhaps, counter intuitively, the more so, the greater the time window used. In this case, bigger appears to be worse, since, although as time goes by, the event of a new business being created increases in likelihood, according to this thesis results, the stability of EI decreases which undermines the argument for testing the EI – EB link, which is that planned behavior must follow contemporary intentions. As a suggestion for future longitudinal research, that uses lengthier time windows, causation would be more confidently inferred if EI levels would be periodically assessed until EB actually occurs. Using shorter time windows may also improve results and the quality of the research design, but it may be argued that it reduces the practical interest of studying intentions for future behavior.

#### *Alternative Formulations to SCCT Model of EB*

From the previous analysis, to hypothesis H6.03, EOE and ESE could not be found to have a significant direct effect on EB, a result that is not coherent with SCCT model propositions. This result, together with the findings from Chapter IV and V, led to a new set of hypotheses, based on the proposition that both EOE and ESE may not be the best measures to understand (and predict) the occurrence of EB.

Based on Chapter's IV findings, it was proposed that decomposing ESE, into its ESSE and GSE components, could reveal entrepreneurship related self-efficacy (any of its operationalizations) as a significant antecedent of EB. Based on Chapter's V findings, it was also proposed that a SCCT model of EB could improve its explained variance if including a variable that identified EI primarily based on entrepreneurship intrinsic motivations.

The test of the first hypothesis (H6.4) showed a very limited ability of the tested SCCT model to predict 'New Business Created' as only 7.0% of the variable's variance was able to be explained by EI, GSE, ESSE and EOE. Results provided mixed support for this hypothesis, which proposed that ESSE and GSE are both significant predictors of future EB, within a five-year period. Results suggest the relevance of GSE and the irrelevance of ESSE and EI, for

predicting successful creation of a new businesses. This is in contrast with the superiority of EI, over both GSE and ESSE, in predicting nascent EB.

This is an interesting research finding and one that reinforces the validity of Chapter's IV conclusions, where GSE is proposed to be an equally relevant cognitive construct for entrepreneurship research. It provides preliminary evidence regarding the different stages of the entrepreneurial process where ESSE and GSE may be more important. More specifically, ESSE and GSE appear equally relevant for the formation of EI, for the engagement into relevant nascent activities EI appears to be the crucial construct and, finally, GSE appears to be the most important cognitive construct for predicting the successful creation of a new business.

Contrary to other findings in the entrepreneurship literature on GSE (*cf.* Chen et al., 2001; Dimov, 2010), here a generalized measure of self-efficacy is not found empirically inferior to a specific measure of self-efficacy, in predicting behavior in a particular activity domain. Based on this thesis results, Schmutzler's et al. (2018) question, of which one is the best self-efficacy measure, ESE or GSE, should be reframed to include the identification of the particular stage of the entrepreneurial process to which the question is addressed to. Coherent with some of Rauch & Frese's (2007) propositions, GSE main differentiating factor (from ESSE) may be its influence on entrepreneurs' confidence to perform various unanticipated tasks, to cope with uncertainty and to persevere despite the obstacles. All these benefits, intuitively more related with the consequences and success of nascent behavior engagement, than with intending and choosing to initiate such behaviors, based on plans to deal with the foreseeable future.

The test of the last hypothesis (H6.5) received no empirical support, in the EEP Portugal dataset, since neither new business creation nor nascent EB were found significantly related with EI based on entrepreneurship intrinsic motivations. Contributing to the literature on the relevance of entrepreneurship intrinsic motivations (*e.g.*, Krueger & Brazeal, 1994; Kuratko et al., 1997; Carsrud & Brännback, 2011; Lanero et al., 2015; Delanoë-Gueguen & Liñán, 2018), from these results it appears that there are no differences in the likelihood of EB, for equal EI levels that only differ in their entrepreneurship intrinsic or extrinsic motivation nature. These results do not confirm Delanoë-Gueguen & Liñán's (2018) conclusions, that being motivated 'to manage the whole process' (an intrinsic factor) is significantly related with EB. Therefore, more research is needed, in the future, before stronger conclusions can be made.

### *Conclusion*

In sum, using a 5-year longitudinal research design, in this final empirical chapter we find EI to have a moderate to strong item-structure stability and relative stability. In terms of absolute stability, we found EI to have no clear tendency to change, with the sample displaying a total EI average that is relatively constant. However, at the individual level, students were not likely to have constant EI. On the contrary, either increasing or decreasing, the EI of Portuguese HEI students most frequently evolved during this period. Contrary to what had been hypothesized, having entrepreneurship intrinsic motivation, as a justification for self-reported EI, was neither found to be a moderating factor for EI stability, nor was it found to add any value to an SCCT EI Model to predict future EB. Finally, a SCCT EI model resulted in a very limited capability to predict future EB, and although EI was found to be the best cognitive predictor of nascent EB, only GSE resulted to be a significant cognitive antecedent of new business creation, for our sample. Together, these results may be interpreted as evidence of the limitations of this particular operationalization of the SCCT for explaining EB and, also, as evidence of the importance of EI for trying, but the superior relevance of GSE for predicting its success, *i.e.* a new business being created.

# **Chapter VII**

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## **Conclusions**

## Chapter VII: Conclusions

Entrepreneurship is an eclectic academic field, generating an increased interest from researchers from a diverse set of different disciplines, each with its own research traditions, perspectives, and methods. The diversity is extended to its definitions, with long-standing debates on the field's founding concepts, such as the definitions of entrepreneur and entrepreneurship itself.

From the thesis literature review, we validated the use of 'new business creation', as a definition of entrepreneurial behavior (EB), delimited its conceptual and temporal scope, highlighted its economic and social relevance and contextualized the research on entrepreneurial intentions (EI). Specifically, regarding this latter topic, we were also able to gain an overall view of EI research, its main theories and to identify that EI legitimacy, as a research topic, relies heavily on the existence of an intentions-behavior relationship.

This recent research topic/perspective relates with one of the key questions of entrepreneurship research (*cf.* Gartner, 1989) '*Why do certain individuals start firms when others, under similar conditions, do not?*'. A relevant one, if one assumes the possibility that a shortage of productive EB may have negative social and economic consequences (Schloss, 1968; Palmer, 1971; Baumol, 1990; Nabi & Liñán, 2011).

Yet, researching intentions is a distinct approach to this question, as it favors the analysis of the cognitive processes associated with the behavior, which are based on perceptions, that vary across both individuals and situations, and that can be subject to change and self-determination. Moreover, it has been proposed as a beneficial perspective for practitioners and educators, wanting to assist entrepreneurs to create new and successful ventures (Baron, 2004), given that entrepreneurs are believed to be able to develop their cognitive resources through practice, and improve their capabilities for identification, evaluation, and exploitation of business opportunities (Baron & Henry, 2010).

This is in contrast to the situational and the personological deterministic approaches, where researchers identify universal causal relationships between environmental and person characteristics and individual behavior (*cf.* Bird, 1988; Krueger & Brazeal, 1994). Epistemologically, intentions are proposed to be based on an interpretivist approach, which highlights "human intentionality as a key determinant of behavior, in addition to other internal

and external causal factors”. Such approach conflicts with the functionalist paradigm, that being proposed dominant in entrepreneurship, often favors deterministic causes alone. Thus, entrepreneurship is, here, understood as a course of action chosen to achieve the subjective ends of the entrepreneur (Packard 2017).

Intentions are proposed to mediate the long-researched attitude-behavior relationship (Bagozzi et al., 1989), capturing the motivational factors that influence behavior and being the resolution for eventual internal conflict between opposing interests (Ajzen, 1991; Gollwitzer, 1993). These are also posited to indicate how hard people are willing to try and to be the best predictors of future EB (Ajzen, 1991; Krueger, et al. 2000). The study of EI can also be a relevant form to identify emerging organizations, which will only be apparent later when some choices have already been made (Katz & Gartner, 1988). These are the basis for organizations initial form, direction and subsequent outcomes, such as survival, development, growth and change.

However, there is still a need for more and better research in the field of EI, namely, to contribute to underresearched areas, where empirical evidence is still scarce and needed, and to contribute with novel concepts, perspectives and methodologies, that may clarify existing debates in the literature. For instance, entrepreneurship research based on social cognitive career theory (SCCT: Lent et al., 1994, 2000) is still in its infancy and calls for more research have recently been made (Liguori, 2012; Liguori et al., 2018). Being a much less common cognitive framework in entrepreneurship research than other, more popular, models, SCCT has been proposed to offer a more comprehensive view of the joint effects of personal and environmental factors, on the cognitive determinants of career-related interests, intentions and behaviors (*cf.* Liguori, 2012). In this theory, the cognitive mediation mechanism, proposed to capture all perceived personal and environmental factors and translate them into purposeful behaviors has, so far, only found mixed empirical support (*e.g.*, Zhao et al., 2005; Lent et al., 2010; Liguori, 2012; Chen, 2013; Pfeifer et al., 2016; Austin & Nauta, 2016).

EI measurement is still not consensual and has, recently, been criticized for often being muddled, unique, and sometimes opaque to the reader (Bird, 2015). Self-efficacy (SE) and outcome expectations (OE), used as cognitive antecedents of EI in SCCT models, have also measurement issues that must be resolved, so this cognitive model may live up to its potential, it does in other research fields. Evidence of such issues are the on-going debate relative to what is the best measure of SE for EI model - a general SE (GSE) or an activity specific SE (*e.g.*, ESE) measure (*cf.* Chen et al., 2001; Bandura, 2012; Jackson et al., 2012) - and the fact that the

existing empirical evidence of the effect of EOE on EI, does not appear to be consistent and in line with its importance as posited by SCCT theory (e.g. Segal et al. 2002; Lanero et al., 2015).

Individual differences, as gender, have also been suggested as generating meaningful differences regarding EI, ESE and GSE, EOE and social support levels and their relationships (e.g., Scherer et al. 1990; Yang 2013; Schlaegel & Koenig 2014; Thompson & Kwong, 2016).

Finally, last but not least, recognizing that successful creation of a new business in the future, often has a component outside the volition control of the individual (Sheppard et al., 1988) and, also often, it implies a considerable temporal distance between formulating behavioral intentions and the behavior itself (cf. Lent & Brown 2006), the strength of the EI - EB relationship should not be assumed but rather tested. Yet, several authors point to a shortage of longitudinal studies in general, and especially regarding the study of EI temporal stability and the EI - EB link. This is an important gap in the literature since the legitimacy of the EI field lays heavily on the existence of relatively stable EI and a strong relationship between intentions and behavior.

Being involved in, and coordinating, the application of the international *Entrepreneurship Education Project* (EEP) survey, for Portuguese higher education institutions (HEI) students – a survey having SCCT as its theoretical framework – provided ample opportunity to address and contribute, in some degree, to all the literature gaps cited above. The EEP Portugal started with a first survey (1stW) in the academic year of 2010/2011 and had three more follow-up surveys during a 5-year period (Fup1: 2011/12, Fup2: 2013/14 and Fup3: 2015/16).

In the thesis' first study the main goal was to investigate the applicability and relevance of the SCCT model in explaining the EI of Portuguese HEI students. Testing the direct and indirect effects of ESE and EOE on EI and, also, the full cognitive mediation hypothesis, proposing that other noncognitive variables influence EI, only, through their effects on ESE and EOE. As a secondary purpose, this study also aimed at exploring the psychometric qualities of known measures of SCCT constructs, EI, ESE and EOE, and to explore gender-related differences.

Based on the confirmatory part of this chapter's analyses, we found that an SCCT EI model significantly explained the EI of Portuguese HEI students, between 31.0% and 37.3% of EI variance, depending on having or not included other variables in the model (related with personal inputs and perceived social supports). Furthermore, it was found that this cognitive model, although less parsimonious, is much more effective, predicting EI, than a model

comprised of noncognitive and demographic antecedents, which was only able to explain 9.1% of EI variance. With the most parsimonious version of the SCCT EI model, *i.e. baseline model*, we find that ESE is the main cognitive antecedent of EI (std. effect of .506), clearly outweighing the EOE effect on EI (std. effect of .143), being also a significant antecedent of EOE (.233). These results are coherent with *ex-ante* literature, showing a stronger ESE effect and a weaker/inconsistent EOE effect (*cf.* Segal et al. 2002; Lanero et al., 2015).

Regarding the SCCT proposition that the relationship of Personal Inputs and Perceived Social Supports with EI is fully mediated by ESE and/or EOE, we could not find empirical support for such a proposition. Using a more complex SCCT EI model, *i.e. comprehensive model*, the few results indicating mediation effects (*e.g.*, Perceived Social Support, Prior Entrepreneurial Experience and Gender), can only be stated as partial mediation, through ESE. However, it must be noted that the inclusion of such variables in the model does not improve EI explained variance considerably and, thus, the option for a more complex model will only be recommended for a more detailed analysis of these cognitive mechanisms, but not for EI prediction, only.

Identifying a difference between our results and those of Liguori (2012), relative to the direct effects of personal inputs on ESE, the question of what is the most relevant self-efficacy mediator for person-inputs and perceived social support, ESE or GSE, appears to be relevant. This given that, the author has control for GSE effects on both cognitive constructs, when testing for the direct effects of personal inputs on ESE.

Overall, these results are in line with previous research, using SCCT to explain EI of college students, despite the great diversity in construct measurement and model completeness. Comparing with the international EEP global sample, correlations between SCCT construct are equivalent except in the case of EOE-EI, where we find, approximately, only half the correlation found, globally (*cf.* Vanevenhoven & Liguori, 2013). Thus, we see grounds for proposing that EOE should be adapted to the studied population, rather than just imported from other studies and applied universally.

Relative to the psychometric qualities of the SCCT constructs measures, we find problems related with Thompson's (2009) EI measure, relatively to its reliability, convergent validity and face validity and, as Bird (2015), we think that there is a need for a better EI measurement of the EI construct.

Relatively to McGee's et al. (2009) ESE measurement, it appears unproblematic and useful for the Portuguese HEI setting, also. We do find that ESE for marshaling activities, appears to be the subdimension reflecting the most, the overall ESE, and, implementing financials, the one reflecting the least. Moreover, ESE for searching and marshaling activities are the most correlated ESE subdimensions with EI and, ESE on implementing financials, the least correlated. These results lead us to propose, like others, the importance of ESE research, at the subdimension level, with obvious practical consequences for entrepreneurial education.

About EOE, we found that the measure based on Krueger (2000) was not completely adjusted for a younger sample and, as already stated, the construct underperformed in the SCCT EI models, in relation to its theoretical relevance. Regarding the mounting evidence related with a particularly weak EOE-EI correlation, we propose that these results may be caused by an EOE measure that is more dependent, than ESE, on the specificities of the studied populations.

Regarding gender differences, we found that men display, on average, higher EI, GSE and ESE than women. The EI result is in line with the literature and the evidence regarding self-efficacy differences is still under debate. Relative to ESE, and exploring the data in greater detail, we identified empirical evidence of gender differences at the ESE subdimensions level. If confirmed by future research, these suggest that: when promoting women's ESE educators should focus more on searching and planning activities and when promoting men's ESE educators should focus more on implementing people activities, as these are where each gender scores the least, comparatively.

This first study's findings are believed to be relevant for researchers, since they add to the initial empirical evidence supporting the application of SCCT to the choice of an entrepreneurial career and, in this case, for Portuguese HEI students. They also provide strong empirical evidence of the superiority of a cognitive model in explaining EI variance, though providing preliminary evidence on the limitations of some of SCCT model's constructs, in capturing the proposed full cognitive mediation mechanism. The exploratory analysis on ESE subdimensions is viewed as both interesting for researchers, for future confirmatory analysis, and for educators, as a potential basis for reevaluating entrepreneurship education programs.

In a second study, our purpose was to propose a new perspective to the ongoing debate about which self-efficacy belief (SE) measure is the most appropriate antecedent for cognitive EI

models: a generalized (GSE) or an activity specific SE measure (*cf.* Chen et al., 2001; Bandura, 2012; Jackson et al., 2012; Schmutzler et al., 2018).

Concurring with others, who propose that GSE and specific SE can be complementary in explaining EI and EB, rather than substitutes (*cf.* Chen et al., 2001; Jackson et al., 2012), nonetheless, we argue the need for a new and better measure, of specific SE, than ESE, which muddles the particular effects related to GSE and specific SE. Consequently, an entrepreneurial specific self-efficacy beliefs (ESSE) measure is proposed, as one that facilitates the identification of ‘pure’ activity specific SE and that potentiates the benefits of including both GSE and specific SE, in the same model.

To infer about the probability that experience, educational interventions and contextual changes are likely to lead to GSE development, just like for ESE, a preliminary analysis was conducted by testing the general hypothesis that assumes GSE as a more stable construct than ESE. Using a five-year time window, this hypothesis has found mixed empirical support and, thus, no empirical support was found to justify the belief that HEI students’ GSE should be better considered as a trait-like construct, too stable to be of interest for cognitive models. On the contrary. From the analysis of ESE stability, unexpectedly, we found a general tendency for ESE to decrease. This may be justified by students’ overestimation of their entrepreneurial capabilities in activities that are not so intrinsically technical. If confirmed by future research, these findings can be useful for entrepreneurship educators, since they suggest that students may benefit from being confronted with the true difficulties of mastering the searching, marshaling and implementing people entrepreneurial activities.

With the objective of testing Chen's et al. (2001) ‘specificity matching’ argument, for which there is no clear empirical findings, yet, in the entrepreneurship literature (*cf.* Schmutzler et al., 2018), our results confirm that ESE, representing the activity specific SE, does predict EI better than GSE.

However, EI models are not only useful for predicting EI, they can also be important to understand the particular cognitive mechanisms behind intentions and action. For this purpose, we propose ESSE as a better measure of specific SE than ESE and one that can be better conciliated, simultaneously, with GSE in an EI model. Accordingly, in a *SCCT EI model with both GSE & ESSE*, with acceptable model fit and an EI explained variance of 27.0%, we find that it is possible to successfully decompose ESE effects into two different, statistically

significant and theoretically relevant components, the general SE (GSE) and the specific SE (ESSE). This decomposition provides a new perspective on Chen's et al. (2001) 'specificity matching' argument, which no longer receives empirical support.

In this *SCCT EI model with GSE & ESSE*, GSE influence on EI and EOE is not inferior to that of the activity specific SE measure ESSE. Stated differently, these last results support the proposition that perceptions of being especially capable of performing entrepreneurial activities may, at best, be as relevant as the perceiving oneself as generally capable of performing any tasks and activities. These findings favor Jackson et al. (2012) position over that of Bandura (2012), in the GSE relevance debate, and question the appropriateness of its supporting empirical evidence.

As with the previous stability analysis, these results lead us to propose GSE relevance for entrepreneurship research, but, also, for any other activity domain, where the number and the diversity of tasks parallel those of entrepreneurship and where current measures of specific SE are found to be highly correlated with GSE. Overall, this knowledge may lead to reconsidering some of the goals, programs and instruments used in entrepreneurship education, directed towards the GSE development of HEI students. Additionally, when valuing entrepreneurship relevant learning, be it experience or education, and its impact on SE, measuring both GSE and ESSE may provide a better methodological option, than only measuring ESE (where both components are undistinguishable). In this study we found that depending on the chosen measure, some demographic variables may, or may not, be found significantly correlated for the specific SE (*i.e.* ESE or ESSE).

Concluding this second study with its likely implications, we propose that for a more detailed examination of the cognitive mechanisms behind intentions, EI models should include both the GSE and, a newly proposed, entrepreneurship specific self-efficacy measure (ESSE). This may be found useful by researchers in the field of entrepreneurial cognition, both by clarifying and conciliating some of the empirical results in the literature and by opening new avenues for future research. This perspective may also be considered useful for researchers outside entrepreneurship, that study cognitive models using SE measures to predict generalized or novel performances intentions (*cf.* Chen et al., 2001; Jackson et al., 2012). For practice, these findings may also be considered relevant by entrepreneurship educators, because they emphasize that more importance should be given to increasing HEI students GSE and because

this new methodological development can assist them in better evaluating the effects of specific educational interventions on students' SE.

In a third study, we have chosen to address the puzzling existing empirical evidence on EOE, which portrays the construct as less relevant than ESE, for SCCT EI models. A finding also supported by this thesis empirical analysis, in our first study.

Given SCCT propositions and the fact that it seems counterintuitive that individuals would mostly intend to create a new business venture, just because they can, it was found relevant to explore EOE measurement. Proposing that EOE relevance may increase if adjusted to the specific expectations of a given population, first, we have found that, Portuguese HEI students cite many different reasons/motivators to justify their self-reported EI and they vary on both their prevalence and their associated average EI levels.

From the most cited to the least cited, we can report the following motivators: 'To have a particular job', 'To create or be creative', 'Personal realization', 'To gain property (to own a business)', 'To change society in a meaningful way', 'Experience the entrepreneurial process', 'To fulfil society's current needs', 'To gain financial wealth', 'Personal interest', 'To be independent', 'To have power', 'To be successful', 'To be challenged', 'To work for myself', 'For self-development', 'To have a job', 'To make a difference' and, 'To be acknowledged'. We have also found that these emergent motivators could be meaningfully associated into a reduced set of distinct motivational factors, namely: (F1) 'Intrinsic Motivation - The Entrepreneurial & Ownership Experience', (F2) 'Meaningful Social Contribution', (F3) 'Power & Status', (F4) 'Particular Occupational Interest' and (F5) 'To be Independent'.

Comparing with other studies in the literature, while most motivators and motivational factors can be found elsewhere, some cannot. Likewise, some of those found in different studies, may also be observed to rank differently, in terms of their citation frequency. For example, the 'Meaningful Social Contribution' and the 'Particular Occupational Interest' factors are exclusive of this study, while factors such as 'Family Security', 'Professional Dissatisfaction' and 'Taxes reduction/management', found by others, here, were not considered to be relevant.

Justifications for these differences may be multiple, and we propose the following factors as likely causes: students present reports may differ from new business owners' retrospective reports, national cultures may condition the prevalence of certain motivators (e.g. Individualistic *versus* collectivistic) and, also, different samples sizes and participants' average

age may cause different motivators to be cited. These findings point to the interest of performing more open-ended analyses to the motivations behind the EI of specific populations.

From the complete list of eighteen motivators, the five presenting the highest average EI levels (1-7), were: 'to have power' (6.39), 'to be independent' (6.38), 'to be successful' and 'experience the entrepreneurial process' (both with 6.32) and 'personal realization' (6.29). On the contrary, the bottom 5 motivators were: 'personal interest' (4.91), 'to have a job' (5.86), 'to gain financial wealth' (6.05), 'to gain property (to own a business)' (6.09) and 'to fulfil society's current needs' (6.10). On the relationship between students' entrepreneurship motivational factors and EI levels, we found: (F1) 'Intrinsic Motivation', the factor with the highest correlation with EI, followed by (F4) 'Particular Occupational Interest', (F2) 'Meaningful Social Contribution', (F3) 'Power & Status' and (F5) 'To be Independent'. These results may signal motivators that most likely lead to future new business creation and those which are more compatible with other careers, as organizational employees, respectively.

Since, to a great extent, the interest of studying the underlying motivations to EI is that these may be the basis of different future entrepreneurial events (Politis 2005) and be targeted by educational and political interventions, it was found relevant to investigate and compare entrepreneurship motivators temporal stability. Results show the average stability of individual motivators ranging from 19.20% (1-year analysis based on open-question) to 39,01% (5-year analysis based on a scale of a pre-determined set of motivators), although values varied greatly across motivators. A relatively low stability that improves if the criterion is slacked, to also count as recitation when the same motivational factor is cited (and not, necessarily, the same specific motivator). With this latter criterium, average recitation rates increased from 19.20% to 40.8% (in the 1-year analysis).

Thus, according to these results, using the specific motivators for longitudinal analysis may not be productive. For such purpose, motivational factors may be more appropriate given that these were found to be more stable. More specifically, if confirmed by future research, (F1) 'Intrinsic Motivation' and (F4) 'Particular Occupational Interest', are probably those with greater potential, given their greater temporal stability overall.

Exploring the possibility that educational and experiential variables may influence entrepreneurial motivations, overall, we found this not to be the case. The salience of a specific motivational factor appears invariant to the tested demographic variables. These results are

preliminary in nature and should be replicated by future research, across different populations and demographic variables, to confirm or dispute such conclusion.

Building on the previous results, this study evolved to its confirmatory analysis, by comparing the *baseline SCCT EI model* (from Chapter III) with a similar model that included an alternative, and population-specific, EOE measure, based on the previously found entrepreneurship motivational factors. As hypothesized, EI variance explained sharply increased, from 31.0% to 53.9%. This increase, in variance explained, is robust across three different formulations of the EOE measure and it was found not to be caused by dividing the construct into intrinsic and extrinsic factors, nor due to a change in the model's ESE-EI effect. Of these three different formulations, the one only using an entrepreneurship Intrinsic EOE measure (based on F1) clearly results in a better model fit and provided a std. loading for the EOE-EI effect of .465, which compares with only .143 found, for the same effect in the *baseline model* – which included a standard (non-population specific) EOE measure.

Discussing the final implications of this study, perhaps the small size effects of the EOE-EI relationship, also found by others in the literature (*e.g.*, Lanero et al., 2015; Chen, 2013), may be due to a lack of adjustment of the EOE construct to the specific entrepreneurship motivators of the respective populations. Also, when using a population-specific measure, EOE is no longer considered a second level cognitive antecedent, when compared with ESE, as found in Chapter III. Rather, as intuitively expected and as proposed by SCCT, we found EOE and ESE to be equivalent antecedents of the EI of the Portuguese HEI students. This study also provides supporting evidence in favor of using intrinsic motivators, in the context of SCCT EI models, especially when these are proposed to predict future events.

About this study originality, first, the large-scale content analysis performed on Portuguese HEI students EI justifications provides a rich description that may help refute frequent popular misconceptions relative to financial wealth being the main motivator for new business creation. Second, it provides a set of entrepreneurship motivational factors, including new ones, that may be found useful for future research. Third, it provides preliminary empirical evidence regarding the temporal stability of entrepreneurial motivations and their invariance across some demographic variables. Finally, fourth, it provides strong evidence that the use of a population-specific EOE measure is crucial to correctly analyze the EOE-EI relationship and to better predict EI in the context of an SCCT model, and that this is probably best achieved using of an Intrinsic EOE measure. The target audience of this study is potentially broader than the previous

two, going from the general population, to potential entrepreneurs, entrepreneurship educators, the media and policymakers.

Finally, given the still scarce empirical evidence on the EI and EB relationship (Kautonen et al., 2015; and Adam & Fayolle, 2016), the considerable variability of the effect sizes and small explained variance, in this final empirical study we have investigated the temporal stability of EI, within a 5-year time-window, and how well this construct is able to predict future EB. Additionally, as a secondary goal, we have also tested how different operationalizations of ESE and EOE - based on the findings from the two previous studies - may add to the understanding of the link between EI and future EB.

From the EI temporal stability analysis we were able to find that: (1) Thompson's (2009) modified EI scale has a moderately stable item-structure and compares favorably with Liñán & Chen's (2009) EIQ measure; (2) In line with the literature, EI levels were found to have moderate to strong relative stability, meaning that, in the same group, students EI relative position will tend to stay the same; (3) The group's EI also reveal absolute stability, since EI mean values do not appear to significantly change during this 5-year period; (4) From a newly proposed method of testing individual level absolute stability (*i.e.* measuring the absolute values of EI change) we found that students EI are expected to change, approximately, 1 point in magnitude (in Thompson's 2009, 7-point scale) within a 5-year period; Finally, (5) based on the proposition that those intrinsically motivated by entrepreneurship have no other alternative to satisfy this motivation, we have tested that these would lead to more stable EI. However, results provide no support for such a hypothesis. Neither a general trend of EI change, nor the magnitude of the mean absolute change of EI were statistically different between intrinsically or extrinsically motivated individuals.

The reasons for this insignificant result may be multiple, for example: the lack of stability of motivational factors, themselves; the possibility that an extrinsic motivator, attached to a very important need/want, may be perceived as only accessible through entrepreneurship and, therefore, becoming entrepreneurship intrinsic, *de facto*; and being interested in new business creation, just for its own sake, may be a caprice, not a fundamental need that has to be fulfilled.

The final focus of this study and of this thesis was the test of the EI - EB link. Initially, with a modified version of the first study's *baseline model*, with EB being predicted by EI, EOE and ESE, as in SCCT. To improve the analysis' robustness, EB was measured either solely as new

business creation or including both new business creation and nascent EB. Five years later, out of the 223 students in the analysis, 29 students (13.00%) had created their own new business and, 34 (15.25%) had become nascent entrepreneurs (totaling 63: 28.25%). These percentages are in line with those reported by similar studies (*e.g.*, Delanoë-Gueguen & Liñán, 2018). However, it must be noted that this study had an initial sample size of 1,309 students (1stW survey) and that, like in many comparable studies, most have dropped out due to follow-up attrition.

Overall, empirical evidence regarding this hypothesis received only mixed support. Only when both new business creation and nascent behaviors were considered EB, did the intentions-behavior relationship result in a positive significant std. effect (.354). Also, the explanatory power provided by the SCCT model of EB was very limited, with variance explained ranging between 5.0% and 15.1%, depending on behavior being measured in its most conservative formulation or also including nascent behavior, respectively.

These results are within the range of reported values for the TPB theoretical framework (*e.g.*, Schlaegel & Koenig, 2014; Kautonen et al., 2015; Delanoë-Gueguen & Liñán, 2018), but reside closer to its lower bound. Noteworthy is that this is not a test of the EI - EB argument, itself. Again, no one is expected to behave entrepreneurially without prior intent. What was in question was, if a particular EI measure, without any implicit deadline, is a good predictor of EB, during the five subsequent years.

The reasons for these low effects may be numerous and be both personal and contextual (*e.g.*, barriers), for example: EI is likely to change during this period, individuals may intend to create their own business later in life, and they may also be expecting the occurrence of an environmental cue, that did not yet occur. Regarding the different results from similar studies, methodological idiosyncrasies, related to EI and EB measurement and the different time windows, are proposed as potential causes.

Future longitudinal research on the EI – EB link, could improve causality inference if EI would be periodically assessed until the event of EB. Shorter time windows could also improve results and the quality of the research design, though reducing the potential for entrepreneurial events and the practical interest of studying intentions for future behavior.

In a context where, contrarily to SCCT propositions, neither EOE nor ESE could be found to have significant direct effects on EB, we proceeded to test some modifications to these

constructs' measurement, based on the previous findings. First, decomposing ESE, into its GSE and ESSE components, results suggested the importance of GSE and the insignificance of ESSE and EI, for predicting new business creation, and the superiority of EI, over both GSE and ESSE, in predicting nascent EB.

As we see it, this is an interesting finding and one which reinforces Chapter's IV conclusions, that propose GSE as an equally relevant cognitive construct for investigating the entrepreneurial process. Although preliminary evidence, it appears that depending on the stage of the process, ESSE, EI or GSE may alternate as the most important construct, namely: (1) While ESSE and GSE were equally relevant for the formation of EI; (2) to be a nascent entrepreneur, EI was more important; and (3) GSE was the most decisive construct to predict the creation of a new business.

Although coherent with the knowledge on GSE, deemed to affect the confidence to perform various unanticipated tasks, to cope with uncertainty and to persevere despite the obstacles (Rauch & Frese, 2007), this last finding contradicts others in the entrepreneurship literature (*cf.* Chen et al., 2001; Dimov, 2010). Therefore, requiring more research, for future confirmation. As a recommendation for future research, we believe that the question '*which is the best self-efficacy measure, ESE or GSE?*', should be investigated, in greater detail, by rather being directed to a particular stage of the entrepreneurial process.

Finally, testing the last hypothesis, no empirical support was found for the relationship between an EI based on entrepreneurship intrinsic motivations and EB. Yet, given that these results are preliminary and contradict those from Delanoë-Gueguen & Liñán's (2018), we call for more research on the topic, before advancing more definitive conclusions.

In sum, the relevance of this last study is its longitudinal research design and the focus on EI stability and the intentions-behavior link for entrepreneurship. This, since empirical evidence in these areas has been classified as scarce and recent calls for more research have been identified in the literature. Last but not least, this last study is also relevant as a first application of the developments present in our second study, related with the importance of decomposing the measurement of entrepreneurship-related SE into GSE and a newly proposed ESSE.

## **Concluding Remarks**

EI research has been proposed as a beneficial perspective for practitioners and educators, wanting to assist entrepreneurs to create new and successful ventures. This is the ultimate goal for this thesis's findings and their practical implications. Despite its recent popularity as a research topic, EI scholars identify several underresearched areas, and the need for novel concepts, perspectives and methodologies, that may clarify existing debates in the literature. Here, capitalizing on the opportunity created by the application of the EEP surveys to Portuguese HEI students, we tried to balance the importance given to responding to existing empirical research calls, relative to identified literature gaps, and the importance given to proposing new perspectives, which may be found relevant to clarify existing debates and to provide new avenues for future research.

More specifically, on one hand we tried to address recent calls for more empirical evidence on the temporal stability of EI, on entrepreneurial motivations, and on the application of an SCCT model to EI and EB. On the other hand, we explored and tested alternative SCCT models, with different measures and relationships, providing new perspectives and knowledge for this theory application to entrepreneurship and elsewhere.

This thesis' findings are believed to be relevant for researchers, as additional empirical evidence supporting the application of cognitive EI models, in general, and of an SCCT model for Portuguese HEI students, specifically, to explain and predict EI and EB. Though, its moderate explanatory power may also be indicative of a need for a better measurement of the theory's constructs. Also, the analysis of ESE subdimensions may be considered relevant for both researchers and educators, for its potential as a basis for reevaluating entrepreneurship education programs.

We also provided empirical evidence supporting the interest of considering GSE in EI models, for which we propose the benefits of including also an entrepreneurship specific self-efficacy measure (ESSE) rather than the traditional ESE. Entrepreneurial cognition researchers may find this empirical evidence and methodological development useful, for clarifying and conciliating some of the existent empirical results in the literature and by opening avenues for future research. For practice, entrepreneurship educators, may also consider these findings as a basis for increasing the attention given to students' GSE and as a potential improvement for valuing the effects of specific educational interventions on students SE.

This study provides a very rich description of Portuguese HEI students EI justifications, confirming these as multiple and as varying across existing studies. It also displays entrepreneurship motivators as relatively temporally unstable constructs with entrepreneurship intrinsic motivational factors being slightly more stable. It also provides strong evidence for the need to have population-specific EOE measures in SCCT EI models. Regarding the temporal stability of EI, this thesis offers a very comprehensive approach, employing different methods that portrait EI as likely to change but not independent from its past levels and without any definable general trend of change within a 5-year period. The target audience of this study may include the general population, potential entrepreneurs, entrepreneurship educators, the media and policymakers.

As research limitations, we should refer to the fact that business and economics related academic programs are clearly overrepresented in this sample of HEI students, in comparison with other academic fields. Therefore, results generalization is especially risky when the analyzed populations are outside these academic domains. Noteworthy is also the fact that survey dropout from follow-up attrition was considerable. Although a common occurrence, in similar longitudinal studies, and something that was here investigated and from which no bias was expected, this is something that impeded the use of additional tests and more sophisticated methods and that reduced the statistical significance of some results.

As a final recommendation for future researchers in the EI topic, like Bird (2015) we also think that construct measurement is still a central problem waiting to be resolved and an obstruction to cumulative sound empirical evidence. Therefore, some of the most influential future research will most likely be related with the development of sounder and more consensual measures.

## **Reference List**

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## References

- Abebe, M. A., & Gangadharan, A., Sutanonpaiboon, J. (2014). Perceived social support and social status as drivers of entrepreneurial career intentions between Caucasian and Mexican-American young adults. *Journal of Entrepreneurship Education, 17*(1), 63–82.
- Acs, Z. J., & Armington, C. (2004). Employment growth and entrepreneurial activity in cities. *Regional Development, 38*(8), 911–927.
- Acs, Z. J., & Audretsch, D. B. (2005). Entrepreneurship, innovation and technological change. *Foundations and Trends in Entrepreneurship, 1*(4), 149–195.
- Acs, Z. J., & Audretsch, D. B. (Eds.). (2010). *Handbook of entrepreneurship research: An interdisciplinary survey and introduction*. New York, NY: Springer Science & Business Media.
- Adam, A. F., & Fayolle, A. (2016). Can implementation intention help to bridge the intention-behaviour gap in the entrepreneurial process? An experimental approach. *International Journal of Entrepreneurship and Innovation, 17*(2), 80–88.
- Agarwal, R., Sambamurthy, V., & Stair, R. M. (2000). Research report: The evolving relationship between general and specific computer self-efficacy - An empirical assessment. *Information Systems Research, 11*(4), 418–430.
- Ahmed, S. U. (1985). nAch, risk taking propensity, locus of control and entrepreneurship. *Personality and Individual Differences, 6*(6), 781–782.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.
- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology, 52*(1), 27–58.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665–683.
- Ajzen, I. (2012). The theory of planned behavior. In P. Lange, A. Kruglanski, & E. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 1, pp. 438–459). London, UK: Sage.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Aldrich, H. E., & Martinez, M. A. (2001). Many are called , but few are chosen: An evolutionary perspective for the study of entrepreneurship. *Entrepreneurship Theory and Practice, 25*(4), 41–57.
- Almobaarek, W. N., & Manolova, T. S. (2013). Entrepreneurial motivations among female university youth in Saudi Arabia. *Journal of Business Economics and Management, 14*(1), S56–S75.

- Alvarez, S., & Barney, J. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, 1(1/2), 11–26.
- Alvord, S., Brown, L., & Letts, C. (2004). Social entrepreneurship and societal transformation an exploratory study. *Journal of Applied Behavioral Science*, 40(3), 260–282.
- Amit, R., Glosten, L., & Muller, E. (1993). Challenges to theory development in entrepreneurship research. *Journal of Management Studies*, 30(5), 815–834.
- Anderson, J., & Gerbing, D. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423.
- Armitage, C., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471–499.
- Armitage, C. J., Norman, P., & Conner, M. (2002). Can the Theory of Planned Behaviour mediate the effects of age, gender and multidimensional health locus of control? *British Journal of Health Psychology*, 7(3), 299–316.
- Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, 14(3), 396–402.
- Åstebro, T., & Chen, J. (2014). The entrepreneurial earnings puzzle: Mismeasurement or real? *Journal of Business Venturing*, 29(1), 88–105.
- Audretsch, D. (2007). Entrepreneurship capital and economic growth. *Oxford Review of Economic Policy*, 23(1), 63–78.
- Audretsch, D. B. (1995). *Innovation and industry evolution*. Cambridge, MA: MIT Press.
- Audretsch, D. B., & Fritsch, M. (2002). Growth regimes over time and space. *Regional Studies*, 36(2), 113–124.
- Audretsch, D. B., & Keilbach, M. (2004). Entrepreneurship capital and economic performance. *Regional Studies*, 38(8), 949–959.
- Audretsch, D. B., & Thurik, A. R. (1997). *Sources of growth : The entrepreneurial versus the managed economy* (No. Tinbergen Institute Discussion Paper, TI97-109/3, Erasmus University Rotterdam). Rotterdam.
- Audretsch, D., Belitski, M., & Desai, S. (2015). Entrepreneurship and economic development in cities. *Annals of Regional Science*, 55(1), 33–60.
- Audretsch, D., Carree, M., & Thurik, A. (2001). *Does entrepreneurship reduce unemployment?* (Tinbergen Institute Discussion Paper, No. 01-074/3, Erasmus University Rotterdam). Rotterdam.
- Audretsch, D. D. B., & Keilbach, M. (2005). Entrepreneurship capital and regional growth. *Annals of Regional Science*, 39(3), 457–469.
- Audretsch, D., & Peña-Legazkue, I. (2012). Entrepreneurial activity and regional competitiveness: An introduction to the special issue. *Small Business Economics*, 39(3),

531–537.

- Austin, M., & Nauta, M. (2016). Entrepreneurial role-model exposure, self-efficacy, and women's entrepreneurial intentions. *Journal of Career Development, 43*(3), 260–272.
- Autio, E., Keeley, R., Klofsten, M., Parker, G., & Hay, M. (2001). Entrepreneurial intent among students in Scandinavia and in the USA. *Enterprise and Innovation Management Studies, 2*(2), 145–160.
- Azen, R., & Sass, D. A. (2008). Comparing the squared multiple correlation coefficients of non-nested models: An examination of confidence intervals and hypothesis testing. *The British Journal Of Mathematical And Statistical Psychology, 61*(1), 163–178.
- Bae, T., Qian, S., Miao, C., & Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice, 38*(2), 217–254.
- Bagozzi, R., Baumgartner, J., & Yi, Y. (1989). An investigation into the role of intentions as mediators of the attitude-behavior relationship. *Journal of Economic Psychology, 10*(1), 35–62.
- Bandura, A. (1965). Vicarious processes: A case of no-trial learning. *Advances in Experimental Social Psychology, 2*, 1–55.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122–147.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1989). Human agency in Social Cognitive Theory. *Annual Review of Psychology, 44*(9), 1–26.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. American Psychological Association. New York, NY: W.H. Freeman and Company.
- Bandura, A. (1999). A social cognitive theory of personality. In L. Pervin & O. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 154–196). New York, NY: Guilford Publications.
- Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management, 38*(1), 9–44.
- Baptista, R., Karaöz, M., & Mendonça, J. (2014). The impact of human capital on the early success of necessity versus opportunity-based entrepreneurs. *Small Business Economics, 42*(4), 831–847.

- Baptista, R., & Thurik, A. R. (2007). The relationship between entrepreneurship and unemployment: Is Portugal an outlier? *Technological Forecasting and Social Change*, 74(1), 75–89.
- Barba-Sanchez, V., & Atienza-Sahuquillo, C. (2011). Reasons to create a new venture: A determinant of entrepreneurial profiles. *African Journal of Business Management*, 5(28), 11497–11504.
- Bardin, L. (2009). *Análise de conteúdo*. Lisboa, Portugal: Edições 70.
- Baron, R. A. (2004). The cognitive perspective: A valuable tool for answering entrepreneurship's basic why questions. *Journal of Business Venturing*, 19(2), 221–239.
- Baron, R. A. (2007). Entrepreneurship: A process perspective. In R. Baum, M. Frese, & R. A. Baron (Eds.), *The psychology of entrepreneurship* (2nd ed., Vol. 38, pp. 19–40). Lawrence Erlbaum Associates.
- Baron, R. A., & Henry, R. A. (2010). How entrepreneurs acquire the capacity to excel: Insights from research on expert performance. *Strategic Entrepreneurship Journal*, 4(1), 49–65.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
- Bates, T. (1990). Entrepreneur human capital inputs and small business longevity. *Review of Economics & Statistics*, 72(4), 551–559.
- Baum. (1994). *The relation of traits, competencies, vision, motivation, and strategy to venture growth (Doctoral dissertation)*. University of Maryland, College Park.
- Baum, J., Frese, M., & Baron, R. (2007). Entrepreneurship as an area of psychology study: An introduction. In B. J., F. M., & R. Baron (Eds.), *The Psychology of Entrepreneurship* (pp. 1–18). Mahwah, NJ: Lawrence Erlbaum.
- Baum, J. R., & Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89(4), 587–598.
- Baumol, W. J. (1990). Entrepreneurship: Productive, unproductive, and destructive. *Journal of Political Economy*, 98(5), 893–921.
- Bayarçelik, E. B., & Özşahin, M. (2014). How entrepreneurial climate effects firm performance? *Procedia - Social and Behavioral Sciences*, 150, 823–833.
- Belás, J., Dvorský, J., Tyll, L., & Zvaríková, K. (2017). Entrepreneurship of university students: Important factors and the propensity for entrepreneurship. *Administratie Si Management Public*, 28, 6–25.
- Belchior, R., & Liñán, F. (2017). Individual and cultural values as psychosocial cognitive antecedents and moderators of entrepreneurial intentions. In S. C. Santos, A. Caetano, C. Mitchell, H. Landström, & A. Fayolle (Eds.), *The Emergence of Entrepreneurial Behaviour Intention, Education and Orientation* (pp. 66–86). Cheltenham, UK: Edward Elgar Publishing.

- Biggs, T. (2002). *Is small beautiful and worthy of subsidy? Literature review*. International Finance Corporation (IFC). Washington, DC.
- Binder, M., & Coad, A. (2013). Life satisfaction and self-employment: A matching approach. *Small Business Economics*, 40(4), 1009–1033.
- Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *The Academy of Management Review*, 13(3), 442–453.
- Bird, B. (2015). Entrepreneurial intentions research: A review and outlook. *International Review of Entrepreneurship*, 13(3), 143–168.
- Bird, B. J. (1993). Demographic approaches to entrepreneurship: The role of experience and background. *Advances in Entrepreneurship, Firm Emergence, and Growth*, 1(11), 11–48.
- Bird, B., & Jelinek, M. (1988). The operation of entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 13(2), 21–29.
- Birley, S., & Westhead, P. (1994). A taxonomy of business start-up reasons and their impact on firm growth and size. *Journal of Business Venturing*, 9(1), 7–31.
- Blair, E., & Zinkhan, G. (2006). Nonresponse and generalizability in academic research. *Journal of the Academy of Marketing Science*, 34(1), 4–7.
- Bosma, N., Content, J., Sanders, M., & Stam, E. (2018). Institutions, entrepreneurship, and economic growth in Europe. *Small Business Economics*, 51(2), 483–499.
- Boso, N., Story, V. M., & Cadogan, J. W. (2013). Entrepreneurial orientation, market orientation, network ties, and performance: Study of entrepreneurial firms in a developing economy. *Journal of Business Venturing*, 28(6), 708–727.
- Boyd, N., & Vozikis, G. (1994). The influence of self-efficacy on the development of entrepreneurial intentions and actions. *Entrepreneurship Theory and Practice*, 18(4), 63–77.
- Brandstätter, H. (2011). Personality aspects of entrepreneurship: A look at five meta-analyses. *Personality and Individual Differences*, 51(3), 222–230.
- Braunerhjelm, P., & Svensson, R. (2010). The inventor's role: Was Schumpeter right? *Journal of Evolutionary Economics*, 20(3), 413–444.
- Brockhaus, R. (2004). Family business succession: Suggestions for future research. *Family Business Review*, 17(2), 165–177.
- Brockhaus, R. H. (1980). Risk taking propensity of entrepreneurs. *The Academy of Management Journal*, 23(3), 509–520.
- Brockhaus, R. H., & Horwitz, P. S. (1986). The psychology of the entrepreneur. In D. Sexton and R. Smilor (Ed.), *The art and science of entrepreneurship* (pp. 25–48). Cambridge, MA: Ballinger.
- Burgelman, R. (1983). Corporate entrepreneurship and strategic management: Insights from a

- process study. *Management Science*, 29(12), 1349–1364.
- Busenitz, L. W., & Barney, J. B. (1994). Biases and heuristics in strategic decision making: Differences between entrepreneurs and managers in large organizations. *Academy of Management Proceedings*, 1, 85–89.
- Busenitz, L. W., Plummer, L. A., Klotz, A. C., Shahzad, A., & Rhoads, K. (2014). Entrepreneurship research (1985-2009) and the emergence of opportunities. *Entrepreneurship: Theory & Practice*, 38(5), 1–20.
- Bygrave, W. (1989). The entrepreneurship paradigm (I): A philosophical look at its research methodologies. *Entrepreneurship Theory and Practice*, 14(1), 7–26.
- Byrne, B. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York, NY: Routledge, Taylor & Francis Group.
- Carland, J. W., Hoy, F., Boulton, W. R., & Carland, J. A. C. (1984). Differentiating Entrepreneurs from Small Business Owners: A Conceptualization. *Academy of Management Review*, 9(2), 354–359.
- Carland, J. W., Hoy, F., & Carland, J. A. C. (1988). “Who is an entrepreneur?” Is a question worth asking. *American Journal of Small Business*, 12(4), 33–39.
- Carlsson, B., Braunerhjelm, P., McKelvey, M., Olofsson, C., Persson, L., & Ylinenpää, H. (2013). The evolving domain of entrepreneurship research. *Small Business Economics*, 41(4), 913–930.
- Carr, J. C. J., & Sequeira, J. M. (2007). Prior family business exposure as intergenerational influence and entrepreneurial intent: A Theory of Planned Behavior approach. *Journal of Business Research*, 60(10), 1090–1098.
- Carree, M. A., & Thurik, A. R. (1998). Small firms and economic growth in Europe. *Atlantic Economic Journal*, 26(2), 137–146.
- Carree, M. A., & Thurik, A. R. (2010). The impact of entrepreneurship on economic growth. In D. B. A. Z.J. Acs (Ed.), *Handbook of Entrepreneurship Research* (pp. 557–594). New York, NY: Springer Science+Business Media.
- Carrier, C. (1994). Intrapreneurship in large firms and SMEs: A comparative study. *International Small Business Journal*, 12(3), 54–61.
- Carroll, G. R., & Mosakowski, E. (1987). The career dynamics of self-employment. *Administrative Science Quarterly*, 32(4), 570–589.
- Carsrud, A., & Brännback, M. (2011). Entrepreneurial motivations: What do we still need to know? *Journal of Small Business Management*, 49(1), 9–26.
- Carsrud, A. L., Olm, K. W., & Thomas, J. B. (1989). Predicting entrepreneurial success: Effects of multi-dimensional achievement motivation, levels of ownership, and cooperative relationships. *Entrepreneurship and Regional Development*, 1(3), 237–244.
- Carter, N. M., Gartner, W. B., & Reynolds, P. D. (1996). Exploring start-up event sequences.

- Journal of Business Venturing*, 11(3), 151–166.
- Carter, N. M., Gartner, W. B., Shaver, K. G., & Gatewood, E. J. (2003). The career reasons of nascent entrepreneurs. *Journal of Business Venturing*, 18(1), 13–39.
- Cassar, G. (2007). Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth. *Entrepreneurship and Regional Development*, 19(1), 89–107.
- Cassar, G. (2010). Are individuals entering selfemployment overly optimistic? An empirical test of plans and projections on nascent entrepreneur expectations. *Strategic Management Journal*, 31(8), 822–840.
- Cassar, G., & Craig, J. (2009). An investigation of hindsight bias in nascent venture activity. *Journal of Business Venturing*, 24(2), 149–164.
- Cha, M. S., & Bae, Z. T. (2010). The entrepreneurial journey: From entrepreneurial intent to opportunity realization. *Journal of High Technology Management Research*, 21(1), 31–42.
- Charney, A. H., & Libecap, G. D. (2003). The contribution of entrepreneurship education: An analysis of the Berger program. *International Journal of Entrepreneurship Education*, 1(3), 385–418.
- Chen, C., Greene, P., & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *Journal of Business Venturing*, 13(4), 295–316.
- Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a new general self-efficacy scale. *Organizational Research Methods*, 4(1), 62–83.
- Chen, L. (2013). IT entrepreneurial intention among college students: An empirical study. *Journal of Information Systems Education*, 24(3), 233–243.
- Churchill, N. C., & Hatten, K. J. (1987). Non-market-based transfer of wealth and power: A research framework for family businesses. *American Journal of Small Business*, 11(3), 51–64.
- Coad, A., Segarra, A., & Teruel, M. (2016). Innovation and firm growth: Does firm age play a role? *Research Policy*, 45(2), 387–400.
- Cole, A. (1969). Definition of entrepreneurship. In *Karl A. Bostrom Seminar in the Study of Enterprise* (pp. 10–22). Milwaukee: Center for Venture Management.
- Collewaert, V. (2012). Angel investors' and entrepreneurs' intentions to exit their ventures: A conflict perspective. *Entrepreneurship Theory and Practice*, 36(4), 753–779.
- Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory factor analysis practices in organizational research. *Organizational Research Methods*, 6(2), 147–168.
- Cook, C., Heath, F., & Thompson, R. (2000). A META-ANALYSIS OF RESPONSE RATES IN WEB- OR INTERNET-BASED SURVEYS. *Educational & Psychological Measurement*, 60(6), 821.

- Correia, F., Amaral, A., & Magalhães, A. (2002). Public and private higher education in Portugal: Unintended effects of deregulation. *European Journal of Education, 37*(4), 457–472.
- Costello, A. B. A., & Osborne, J. J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation, 10*(7), 1–9.
- Covin, J. G. (1991). Entrepreneurial versus conservative firms: A comparison of strategies and performance. *Journal of Management Studies, 28*(5), 439–462.
- Covin, J. G., & Miles, M. P. (1999). Corporate entrepreneurship and the pursuit of competitive advantage. *Entrepreneurship Theory and Practice, 23*(3), 47–63.
- Covin, J. G., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal, 10*(1), 75–87.
- Coyne, C. J., Sobel, R. S., & Dove, J. A. (2010). The non-productive entrepreneurial process. *The Review of Austrian Economics, 23*(4), 333–346.
- Crant, J. M. (1996). The proactive personality scale as a predictor of entrepreneurial intentions. *Journal of Small Business Management, 34*(3), 42.
- Crespo, N. F., Belchior, R. F., & Costa, E. B. (2018). Exploring individual differences in the relationship between entrepreneurial self-efficacy and intentions: evidence from Angola. *Journal of Small Business and Enterprise Development* <https://doi.org/10.1108/JSBED-03-2017-0105>.
- Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297–334.
- Cronbach, L., & Meehl, P. (1955). Construct validity in psychological tests. *Psychological Bulletin, 129*(1), 3–9.
- Cunningham, J. B., & Lischeron, J. (1991). Defining entrepreneurship. *Journal of Small Business Management, 29*(1), 45–61.
- Curran, P. J., Obeidat, K., & Losardo, D. (2010). Twelve Frequently Asked Questions About Growth Curve Modeling. *Journal of Cognition and Development, 11*(2), 121–136.
- Dana, L. (1995). Enterprising culture in Hong Kong. *Journal of Enterprising Culture, 3*(4), 497–510.
- Davidsson, P. (1995). Determinants of entrepreneurial intentions. In *RENT XI Workshop* (pp. 23–24). Piacenza, Italy.
- Davidsson, P., & Gordon, S. (2011). Panel studies of new venture creation: A methods-focused review and suggestions for future research. *Small Business Economics, 39*(4), 853–876.
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing, 18*(3), 301–331.

- Davidsson, P., & Wiklund, J. (2001). Levels of analysis in entrepreneurship research: Current research practice and suggestions for the future. *Entrepreneurship Theory & Practice*, 25(4), 81–99.
- de Vries, M. F. R. K. (1977). The entrepreneurial personality: A person at the crossroads. *Journal of Management Studies*, 14(1), 34–57.
- Dees, J. (1998). The meaning of social entrepreneurship. Kansas City, MO and Palo Alto, CA: Kauffman Foundation and Stanford University.
- Dees, J. G. (1989). Enterprising nonprofits. *Harvard Business Review*, 76, 54–69.
- Degeorge, J.-M., & Fayolle, A. (2011). The entrepreneurial process trigger: A modelling attempt in the French context. *Journal of Small Business and Enterprise Development*, 18(2), 251–277.
- Dehghanpour Farashah, A., & Farashah, A. D. (2015). The effects of demographic, cognitive and institutional factors on development of entrepreneurial intention: Toward a socio-cognitive model of entrepreneurial career. *Journal of International Entrepreneurship*, 13(4), 452–476.
- Delanoë-Gueguen, S., & Liñán, F. (2018). A longitudinal analysis of the influence of career motivations on entrepreneurial intention and action. *Canadian Journal of Administrative Sciences / Revue Canadienne Des Sciences de l'Administration* <https://onlinelibrary.wiley.com/doi/abs/10.1002/cjas.1515>.
- Delmar, F. F., & Davidsson, P. (2000). Where do they come from? Prevalence and characteristics of nascent entrepreneurs. *Entrepreneurship & Regional Development*, 12(1), 1–23.
- DeNisi, A. S. (2015). Some further thoughts on the entrepreneurial personality. *Entrepreneurship Theory and Practice*, 39(5), 997–1003.
- Denoble, A. F., Jung, K., & Ehrlich, S. B. (1999). Entrepreneurial self-efficacy: The development of a measure and its relationship to entrepreneurial action. In *Frontiers of Entrepreneurship Research* (pp. 73–87). Babson College.
- Desai, S., & Acs, Z. J. (2007). *A theory of destructive entrepreneurship*. Jena Economic Research Paper No. 2007-085.
- Dess, G. G., Lumpkin, G. T., & Covin, J. G. (1997). Entrepreneurial strategy making and firm performance: Tests of contingency and configuration models. *Strategic Management Journal*, 18(9), 677–695.
- DeTienne, D. R., Shepherd, D. A., & De Castro, J. O. (2008). The fallacy of “only the strong survive”: The effects of extrinsic motivation on the persistence decisions for underperforming firms. *Journal of Business Venturing*, 23(5), 528–546.
- Dewing, A. (1920). *The financial policy of corporations*. New York, NY: The Ronald Press.
- DiMaggio, P. (1988). Interest and agency in institutional theory. *Institutional Patterns and Organizations: Culture and Environment*, 1, 3–22.

- Dimov, D. (2010). Nascent entrepreneurs and venture emergence: Opportunity confidence, human capital, and early planning. *Journal of Management Studies*, 47(6), 1123–1153.
- Douglas, E. J., & Shepherd, D. A. (2000). Entrepreneurship as a utility maximizing response. *Journal of Business Venturing*, 15(3), 231–251.
- Douglas, E. J., & Shepherd, D. A. (2002). Self-employment as a career choice: Attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory and Practice*, 26(3), 81–90.
- Douhan, R., & Henrekson, M. (2010). Entrepreneurship and second-best institutions: Going beyond Baumol's typology. *Journal of Evolutionary Economics*, 20(4), 629–643.
- Duncan, T. E., & Duncan, S. C. (2009). The ABC's of LGM: An introductory guide to latent variable growth curve modeling. *Social and Personality Psychology Compass*, 3(6), 979–991.
- Dustmann, C., & Meghir, C. (2005). Wages, experience and seniority. *Review of Economic Studies*, 72(1), 77–108.
- Dyer Jr, W. G. (1994). Toward a theory of entrepreneurial careers. *Entrepreneurship Theory and Practice*, 19(2), 7–22.
- Edelman, L. F., Brush, C. G., Manolova, T. S., & Greene, P. G. (2010). Start-up motivations and growth intentions of minority nascent entrepreneurs. *Journal of Small Business Management*, 48(2), 174–196.
- Eden, D., & Aviram, A. (1993). Self-efficacy training to speed reemployment: Helping people to help themselves. *Journal of Applied Psychology*, 78(3), 352–360.
- Efron, B. (1979). Bootstrap methods: Another look at the jackknife. *The Annals of Statistics*, 7(1), 1–26.
- Efron, B. (1982). *The jackknife, the bootstrap and other resampling plans*. Philadelphia, PA: Society for industrial and applied mathematics (SIAM).
- Efron, B., & Tibshirani, R. (1986). Bootstrap methods for standard errors, confidence intervals, and other measures of statistical accuracy. *Statistical Science*, 20(2), 54–75.
- Efron, B., & Tibshirani, R. J. (1994). *An introduction to the bootstrap*. Boca Raton, FL: CHAPMAN & HALL/CRC.
- Efroymson, M. A. (1966). Stepwise regression - A backward and forward look. In *Eastern Regional Meeting*. Florham Park, NJ: Institute of Mathematical Statistics.
- Emerson, J., & Twerksy, F. (Eds.). (1996). *New social entrepreneurs: The success, challenge and lessons of non-profit enterprise creation*. San Francisco, CA: The Roberts Foundation, Homeless Economic Development Fund.
- Engelen, A., Gupta, V., Strenger, L., & Brettel, M. (2015). Entrepreneurial orientation, firm performance, and the moderating role of transformational leadership behaviors. *Journal of Management*, 41(4), 1069–1097.

- Engle, R. L., Dimitriadi, N., Gavidia, J. V., Schlaegel, C., Delanoe, S., Alvarado, I., ... Wolff, B. (2010). Entrepreneurial intent. *International Journal of Entrepreneurial Behaviour & Research*, 16(1), 35–57.
- Entrialgo, M., & Iglesias, V. (2016). The moderating role of entrepreneurship education on the antecedents of entrepreneurial intention. *Entrepreneurship and Management Journal*, 12(4), 1209–1232.
- Failla, V., Melillo, F., & Reichstein, T. (2017). Entrepreneurship and employment stability - Job matching, labour market value, and personal commitment. *Journal of Business Venturing*, 32(2), 162–177.
- Farrar, D., & Glauber, R. (1967). Multicollinearity in regression analysis. *The Review of Economics and Statistics*, 49(1), 92–107.
- Fatoki, O. (2014a). Student entrepreneurs on university campus in South Africa: Motivations, challenges and entrepreneurial intention. *Mediterranean Journal of Social Sciences*, 5(16), 100–107.
- Fatoki, O. (2014b). The entrepreneurial intention of undergraduate students in South Africa: The influences of entrepreneurship education and previous work experience. *Mediterranean Journal of Social Sciences*, 5(7), 294–299.
- Fayolle, A., & Liñán, F. (2014). The future of research on entrepreneurial intentions. *Journal of Business Research*, 67(5), 663–666.
- Fayolle, A., Liñán, F., & Moriano, J. a. (2014). Beyond entrepreneurial intentions: Values and motivations in entrepreneurship. *International Entrepreneurship and Management Journal*, 10(4), 679–689.
- Feldman, D. C., & Bolino, M. C. (2000). Career patterns of the self-employed: Career motivations and career outcomes. *Journal of Small Business Management*, 38(3), 53–67.
- Ferber, R. (1948). The problem of bias in mail returns: A solution. *Public Opinion Quarterly*, 12(4), 669–676.
- Fiet, J. O. (2001a). The pedagogical side of entrepreneurship theory. *Journal of Business Venturing*, 16(2), 101.
- Fiet, J. O. (2001b). The theoretical side of teaching entrepreneurship. *Journal of Business Venturing*, 16(1), 1.
- Fishbein, M., & Ajzen. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fishbein, M., & Cappella, J. N. (2006). The role of theory in developing effective health communications. *Journal of Communication*, 56(suppl\_1), S1–S17.
- Fisher, R. A. (1921). On the probable error of a coefficient of correlation deduced from a small sample. *Metron*, 1, 1–32.
- Fligstein, N. (1997). Social skill and institutional theory. *American Behavioral Scientist*, 40(4),

397–405.

- Fornell, C., & Larcker, D. (1981a). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(3), 39–50.
- Fornell, C., & Larcker, D. F. (1981b). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(3), 382–388.
- Frazier, B., & Niehm, L. (2006). Predicting the entrepreneurial intentions of non-business majors: A preliminary investigation. In *Proceedings of the USASBE/SBI Conference* (pp. 14–17). Tucson, AZ.
- Frese, M., & Gielnik, M. M. (2014). The Psychology of Entrepreneurship. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(1), 413–438.
- García-Quevedo, J., Pellegrino, G., & Vivarelli, M. (2014). R&D drivers and age: Are young firms different? *Research Policy*, 43(9), 1544–1556.
- Gartner, W. (1990). What are we talking about when we talk about entrepreneurship? *Journal of Business Venturing*, 5(1), 15–28.
- Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of new venture creation. *Academy of Management Review*, 10(4), 696–706.
- Gartner, W. B. (1989). “Who is an entrepreneur?” Is the wrong question. *Entrepreneurship Theory and Practice*, 12(4), 11–32.
- Gartner, W. B., Carter, N. M., & Reynolds, P. D. (2010). Entrepreneurial behavior: Firm organizing processes. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research* (pp. 99–127). New York, NY: Springer.
- Gartner, W., & Shaver, K. (2012). Nascent entrepreneurship panel studies: Progress and challenges. *Small Business Economics*, 39(3), 659–665.
- Garud, R., Hardy, C., & Maguire, S. (2007). Institutional entrepreneurship as embedded agency: An introduction to the special issue. *Organization Studies*, 28(7), 957–969.
- Gelderen, M. van, Brand, M., Praag, M. Van, Bodewes, W., Poutsma, E., & Gils, A. van. (2008). Explaining entrepreneurial intentions by means of the theory of planned behaviour. *Career Development International*, 13(6), 538–559.
- Gerry, C., Marques, C., & Nogueira, F. (2008). Tracking student entrepreneurial potential: Personal attributes and the propensity for business start-ups after graduation in a Portuguese university. *Problems and Perspectives in Management*, 6(4), 45–53.
- Giacomin, O., Janssen, F., Pruett, M., Shinnar, R. S., Llopis, F., & Toney, B. (2011). Entrepreneurial intentions, motivations and barriers: Differences among American, Asian and European students. *International Entrepreneurship and Management Journal*, 7(2), 219–238.
- Gibb, A. A. (1993). Enterprise culture and education: Understanding enterprise education and

- its links with small business, entrepreneurship and wider educational goals. *International Small Business Journal*, 11(3), 11–34.
- Gnyawali, D. R., & Fogel, D. S. (1994). Environments for entrepreneurship development: Key dimensions and research implications. *Entrepreneurship Theory & Practice*, 18(4), 43–62.
- Goethner, M., Obschonka, M., Silbereisen, R. K., & Cantner, U. (2012). Scientists' transition to academic entrepreneurship: Economic and psychological determinants. *Journal of Economic Psychology*, 33(3), 628–641.
- Gollwitzer, P. M. (1993). Goal achievement: The role of intentions. *European Review of Social Psychology*, 4(1), 141–185.
- Gollwitzer, P. M. (1999). Implementation intentions. *American Psychologist*, 54(7), 493–503.
- Goodman, J. S., & Blum, T. C. (1996). Assessing the non-random sampling effects of subject attrition in longitudinal research. *Journal of Management*, 22(4), 627–652.
- Gore, P., & Leuwerke, W. (2000). Predicting occupational considerations: A comparison of self-efficacy beliefs, outcome expectations, and person-environment congruence. *Journal of Career Assessment*, 8(3), 237–250.
- Grégoire, D. A., Corbett, A. C., & McMullen, J. S. (2011). The cognitive perspective in entrepreneurship: An agenda for future research. *Journal of Management Studies*, 48(6), 1443–1477.
- Guerrero, M., & Urbano, D. (2014). Academics' start-up intentions and knowledge filters: An individual perspective of the knowledge spillover theory of entrepreneurship. *Small Business Economics*, 43(1), 57–74.
- Guth, W. D. W., & Ginsberg, A. (1990). Guest editors' introduction: Corporate entrepreneurship. *Strategic Management Journal*, 11(Summer), 5–15.
- Haber, S., & Reichel, A. (2007). The cumulative nature of the entrepreneurial process: The contribution of human capital, planning and environment resources to small venture performance. *Journal of Business Venturing*, 22(1), 119–145.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139–152.
- Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics & Statistics*, 95(2), 347–361.
- Hardesty, D. M., & Bearden, W. O. (2004). The use of expert judges in scale development. Implications for improving face validity of measures of unobservable constructs. *Journal of Business Research*, 57(2), 98–107.
- Hart, S. L. (1992). An integrative framework for strategy-making processes. *Academy of Management Review*, 17(2), 327–351.
- Hartmann, H. (1959). Managers and entrepreneurs: A useful distinction? *Administrative*

- Science Quarterly*, 3(4), 429–451.
- Hébert, R. F., & Link, A. N. (2007). Historical perspectives on the entrepreneur. *Foundations and Trends in Entrepreneurship*, 2(4), 261–408.
- Heitjan, D. F., & Basu, S. (1996). Distinguishing “missing at random” and “missing completely at random.” *The American Statistician*, 50(3), 207–213.
- Henry, C., Hill, F., & Leitch, C. (2005). Entrepreneurship education and training: Can entrepreneurship be taught? Part II. *Education + Training*, 47(3), 158–169.
- Heuer, A., Aouni, Z., Pirnay, F., & Surlémont, B. (2009). The evolution of new venture creation intention: A longitudinal study. In *ICSB World Conference* (pp. 1–19). Washington, WA: International Council for Small Business.
- Higgins, J. M. (1994). *The management challenge: An introduction to management* (2nd ed.). New York, NY: Macmillan.
- Hills, G. E., & Singh, R. P. (2004). Opportunity recognition. In W. B. Gartner, K. G. Shaver, N. M. Carter, & P. D. Reynolds (Eds.), *Handbook of Entrepreneurial Dynamics: The Process of Business Creation* (pp. 259–272). London, UK: Sage Publications.
- Hirschi, A. (2013). Career decision making, stability, and actualization of career intentions: The case of entrepreneurial intentions. *Journal of Career Assessment*, 21(4), 555–571.
- Hmieleski, K., & Baron, R. (2009). Entrepreneurs’ optimism and new venture performance: A social cognitive perspective. *Academy of Management Journal*, 52(3), 473–488.
- Hmieleski, K. M., & Baron, R. A. (2008). When does entrepreneurial self-efficacy enhance versus reduce firm performance? *Strategic Entrepreneurship Journal*, 2(1), 57–72.
- Hocking, R. R. (1976). A biometrics invited paper. The analysis and selection of variables in linear regression. *Biometrics*, 32(1), 1–49.
- Hoelter, J. (1983). The analysis of covariance structures goodness-of-fit indices. *Sociological Methods & Research*, 11(3), 325–344.
- Hoffman, A. J. (1999). Institutional evolution and change: Environmentalism and the U.S. chemical industry. *The Academy of Management Journal*, 42(4), 351–371.
- Hogan, J., Roy, J., & Korkontzelou, C. (2004). Handling drop-out in longitudinal studies. *Statistics in Medicine*, 23(9), 1455–1497.
- Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *The Electronic Journal of Business Research Methods*, 6(1), 53–60.
- Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. (2002). Middle managers’ perception of the internal environment for corporate entrepreneurship: Assessing a measurement scale. *Journal of Business Venturing*, 17(3), 253–273.
- House, D. (1974). Entrepreneurial career patterns of residential real estate agents in Montreal.

- Canadian Review of Sociology & Anthropology*, 11(2), 110–124.
- Huang, C.-C., Wang, Y.-M., Wu, T.-W., & Wang, P.-A. (2013). An empirical analysis of the antecedents and performance consequences of using the moodle platform. *International Journal of Information and Education Technology*, 3(2), 217–221.
- Hui-Chen, C., Kuen-Hung, T., & Chen-Yi, P. (2014). The entrepreneurial process: An integrated model. *International Entrepreneurship and Management Journal*, 10, 727–745.
- Hulsink, W., & Rauch, A. (2010). The effectiveness of entrepreneurship education: A study on an intentions-based model towards behavior. In *ICSB World Conference* (pp. 1–25). International Council for Small Business.
- Ilouga, S. N., Mouloungni, A. C. N., & Sahut, J. M. (2014). Entrepreneurial intention and career choices: The role of volition. *Small Business Economics*, 42(4), 717–728.
- Ireland, R., & Webb, J. (2007). A cross-disciplinary exploration of entrepreneurship research. *Journal of Management*, 33(6), 891–927.
- Isenberg, D. (2011). Introducing the entrepreneurship ecosystem: Four defining characteristics. Retrieved December 19, 2018, from <http://www.forbes.com/sites/danisenberg/2011/05/25/introducing-the-entrepreneurship-ecosystem-four-defining-characteristics/#18e834038c42>
- Isenberg, D. (2014). What an entrepreneurship ecosystem actually is. Retrieved from <https://hbr.org/2014/05/what-an-entrepreneurial-ecosystem-actually-is>
- Jackson, D. (2001). Sample size and number of parameter estimates in maximum likelihood confirmatory factor analysis: A Monte Carlo investigation. *Structural Equation Modeling*, 8(2), 205–223.
- Jackson, D. (2003). Revisiting sample size and number of parameter estimates: Some support for the N:q hypothesis. *Structural Equation Modeling*, 10(1), 128–141.
- Jackson, J. J., Hill, P. L., & Roberts, B. W. (2012). Misconceptions of traits continue to persist: A response to Bandura. *Journal of Management*, 38(3), 745–752.
- Jaén, I., & Liñán, F. (2013). Work values in a changing economic environment: The role of entrepreneurial capital. *International Journal of Manpower*, 34(8), 939–960.
- Jayawarna, D., Rouse, J., & Kitching, J. (2011). Entrepreneur motivations and life course. *International Small Business Journal*, 31(1), 34–56.
- Jelčić, H., Phelps, E., & Lerner, R. M. (2009). Use of missing data methods in longitudinal studies: The persistence of bad practices in developmental psychology. *Developmental Psychology*, 45(4), 1195–1199.
- Josefy, M. A., Harrison, J. S., Sirmon, D. G., & Carnes, C. (2017). Living and dying: Synthesizing the literature on firm survival and failure across stages of development. *The Academy of Management Annals*, 11(2), 770–799.
- Kaplowitz, M., Hadlock, T., & Levine, R. (2004). A comparison of web and mail survey

- response rates. *Public Opinion Quarterly*, 68(1), 94–101.
- Karhunen, P., & Ledyeva, S. (2010). Determinants of entrepreneurial interest and risk tolerance among russian university students: Empirical study. *Journal of Enterprising Culture*, 18(3), 229–263.
- Katz, J. (2003). The chronology and intellectual trajectory of American entrepreneurship education 1876–1999. *Journal of Business Venturing*, 18(1), 283–300.
- Katz, J. A. (1992). A psychosocial cognitive model of employment status choice. *Entrepreneurship Theory & Practice*, 17(1), 29–37.
- Katz, J. A. (1994a). Guest editorial: Career approaches to entrepreneurship. *Entrepreneurship Theory & Practice*.
- Katz, J. A. (1994b). Modelling entrepreneurial career progressions: Concepts and considerations. *Entrepreneurship Theory and Practice*, 19(2), 23–40.
- Katz, J., & Gartner, W. B. (1988). Properties of emerging organizations. *Academy of Management Review*, 13(3), 429–441.
- Kautonen, T., Luoto, S., & Tornikoski, E. T. (2010). Influence of work history on entrepreneurial intentions in “prime age” and “third age”: a preliminary study. *International Small Business Journal*, 28(6), 583–601.
- Kautonen, T., van Gelderen, M., & Fink, M. (2015). Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions. *Entrepreneurship Theory and Practice*, 39(3), 655–674.
- Kautonen, T., van Gelderen, M., & Tornikoski, E. T. (2013). Predicting entrepreneurial behaviour: A test of the Theory of Planned Behaviour. *Applied Economics*, 45(6), 697–707.
- Keeble, D., Bryson, J., & Wood, P. (1992). The rise and role of small service firms in the United Kingdom. *International Small Business Journal*, 11(1), 11–22.
- Kehoe, C. M., & Pitkow, J. E. (1996). Surveying the territory: GVU’s five WWW user surveys. *The World Wide Web Journal*, 1(3), 77–84.
- Kent, C. A., D. L. Sexton, and K. H. V. (Ed.). (1982). *Encyclopedia of entrepreneurship*. Englewood Cliffs, NJ: Prentice-Hall.
- Kenworthy, T. P., & McMullan, W. E. (2012). Importing theory (summary). In *Frontiers of Entrepreneurship Research*. Babson College Entrepreneurship Research Conference.
- Khedhaouria, A., Gurău, C., & Torrès, O. (2015). Creativity, self-efficacy, and small-firm performance: The mediating role of entrepreneurial orientation. *Small Business Economics*, 44(3), 485–504.
- Kiehl, S. J. (1988). *A comparative study of the characteristics of high technology start-up firms (Doctoral dissertation)*. Portland State University.

- Kirzner, I. M. (1973). *Competition and entrepreneurship*. Chicago, IL: University Of Chicago Press.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York, NY: Guilford Publications.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*. New York, NY: Guilford Publications.
- Knight, F. H. (1921). *Risk, uncertainty, and profit*. Boston, MI: Houghton Mifflin.
- Kolvereid, L. (1992). Growth aspirations among Norwegian entrepreneurs. *Journal of Business Venturing*, 7(3), 209–222.
- Kolvereid, L. (1996). Organizational employment versus self-employment: Reasons for career choice intentions. *Entrepreneurship Theory and Practice*, 20(3), 23–31.
- Kolvereid, L. (1996). Prediction of employment status choice intentions. *Entrepreneurship Theory and Practice*, 21(1), 47–57.
- Kolvereid, L., & Isaksen, E. (2006). New business start-up and subsequent entry into self-employment. *Journal of Business Venturing*, 21(6), 866–885.
- Koolman, G. (1971). Say's conception of the role of the entrepreneur. *Economica*, 38(151), 269–286.
- Krabel, S., & Mueller, P. (2009). What drives scientists to start their own company? An empirical investigation of Max Planck Society scientists. *Research Policy*, 38(6), 947–956.
- Krauss, S. I., Frese, M., Friedrich, C., & Unger, J. M. (2005). Entrepreneurial orientation: A psychological model of success among southern African small business owners. *European Journal of Work and Organizational Psychology*, 14(3), 315–344.
- Kristiansen, S., & Indarti, N. (2004). Entrepreneurial intention among Indonesian and Norwegian students. *Journal of Enterprising Culture*, 12(1), 55–78.
- Krueger Jr., N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5–6), 411–432.
- Krueger Jr, N. F. (2000). The cognitive infrastructure of opportunity emergence. *Entrepreneurship Theory & Practice*, 25(3), 5–23.
- Krueger, N. (1993). The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship Theory & Practice*, 18(1), 5–21.
- Krueger, N. F. (2009). Entrepreneurial intentions are dead: Long live entrepreneurial intentions. In B. M. Carsrud A. (Ed.), *Understanding the Entrepreneurial Mind* (Internatio, pp. 51–72). New York, NY: Springer Science+Business Media.
- Krueger, N. F., & Brazeal, D. V. (1994). Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship Theory and Practice*, 18(3), 91–104.

- Kuckertz, A., & Prochotta, A. (2018). *What's hot in entrepreneurship research 2018? Hohenheim Entrepreneurship Research Brief*. Stuttgart, Germany. <https://doi.org/10.13140/RG.2.2.16780.00644>
- Kuckertz, A., & Wagner, M. (2010). The influence of sustainability orientation on entrepreneurial intentions - Investigating the role of business experience. *Journal of Business Venturing*, 25(5), 524–539.
- Kuratko, D. F. (2003). *Entrepreneurship education: Emerging trends and challenges for the 21st century. White Paper, Coleman Foundation*. U.S. Association of Small Business & Entrepreneurship.
- Kuratko, D. F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice*, 29(5), 577–598.
- Kuratko, D. F. (2017). Corporate entrepreneurship 2.0: Research development and future directions. *Foundations and Trends in Entrepreneurship*, 13(6), 441–490.
- Kuratko, D. F., Hornsby, J. S., & Covin, J. G. (2014). Diagnosing a firm's internal environment for corporate entrepreneurship. *Business Horizons*, 57(1), 37–47.
- Kuratko, D. F., Hornsby, J. S., & Naffziger, D. W. (1997). An examination of owner's goals in sustaining entrepreneurship. *Journal of Small Business Management*, 35(1), 24–33.
- Lance, C., Butts, M., & Michels, L. (2006). The sources of four commonly reported cutoff criteria what did they really say? *Organizational Research Methods*, 9(2), 202–220.
- Landström, H. (2002). Pioneers in entrepreneurship research, new frontiers of entrepreneurship. In *New Frontiers of Entrepreneurship* (pp. 13–32). Milan, Italy: Università Commerciale L. Bocconi.
- Landström, H., & Lohrke, F. (Eds.). (2010). *Historical foundations of entrepreneurship research*. Cheltenham, UK: Edward Elgar.
- Lanero, A., Vazquez, J.-L., & Aza, C. L. (2015). Un modelo social cognitivo de intenciones emprendedoras en estudiantes universitarios. *Anales de Psicología*, 31(1), 243–259.
- Lanero, A., Vázquez, J. L., & Aza, C. L. (2016). Social cognitive determinants of entrepreneurial career choice in university students. *International Small Business Journal*, 34(8), 1053–1075.
- Langkamp, D., Michelle, B., Bolton, D. L., & Lane, M. D. (2012). Individual entrepreneurial orientation: Development of a measurement instrument. *Education + Training*, 54(2/3), 219–233.
- Lee, S. H., & Wong, P. K. (2004). An exploratory study of technopreneurial intentions: A career anchor perspective. *Journal of Business Venturing*, 19(1), 7–28.
- Leff, N. H. (1979). Entrepreneurship and economic development: The problem revisited. *Journal of Economic Literature*, 17(1), 46–64.
- Lent, R., Brown, S., & Hackett, G. (2000). Contextual supports and barriers to career choice:

- A social cognitive analysis. *Journal of Counseling Psychology*, 47(1), 36–49.
- Lent, R., Brown, S., & Hackett, G. (2002). Social Cognitive Career Theory. In *Career Choice and Development* (4th ed., pp. 255–311). San Francisco, CA: Jossey-Bass.
- Lent, R. W. (2005). A social cognitive view of career development and counseling. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 101–127). Hoboken, NJ: John Wiley & Sons.
- Lent, R. W., & Brown, S. D. (2006). On conceptualizing and assessing social cognitive constructs in career research: A measurement guide. *Journal of Career Assessment*, 14(1), 12–35.
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45(1), 79–122.
- Lent, R. W., Ireland, G. W., Penn, L. T., Morris, T. R., & Sappington, R. (2017). Sources of self-efficacy and outcome expectations for career exploration and decision-making: A test of the social cognitive model of career self-management. *Journal of Vocational Behavior*, 99, 107–117.
- Lent, R. W., Paixão, M. P., Silva, J. T., & Leitão, L. M. (2010). Predicting occupational interests and choice aspirations in Portuguese high school students: A test of Social Cognitive Career Theory. *Journal of Vocational Behavior*, 76(2), 244–251.
- Liao, J., & Gartner, W. B. (2008). The influence of pre-venture planning on new venture creation. *Journal of Small Business Strategy*, 18(2), 1–21.
- Liargovas, P., & Skandalis, K. (2012). Motivations of migrant entrepreneurship in Greece: A factor analysis approach. *Journal of Small Business and Enterprise Development*, 19(4), 627–639.
- Liguori, E. (2012). *Extending Social Cognitive Career Theory into the entrepreneurship domain: Entrepreneurial self-efficacy's mediating role between inputs, outcome expectations, and intentions (Doctoral Thesis)*. Louisiana State University and Agricultural and Mechanical College.
- Liguori, E. W., Bendickson, J. S., & McDowell, W. C. (2018). Revisiting entrepreneurial intentions: A Social Cognitive Career Theory approach. *International Entrepreneurship and Management Journal*, 14(1), 67–78.
- Lin, S., & Si, S. (2014). Factors affecting peasant entrepreneurs' intention in the Chinese context. *International Entrepreneurship and Management Journal*, 10(4), 803–825.
- Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 33(3), 593–617.
- Liñán, F., & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: Citation, thematic analyses, and research agenda. *International Entrepreneurship and Management Journal*, 11(4), 907–933.

- Liñán, F., & Rodríguez-Cohard, J. C. (2015). Assessing the stability of graduates' entrepreneurial intention and exploring its predictive capacity. *Academia Revista Latinoamericana De Administracion*, 28(1), 77–98.
- Liñán, F., & Rodríguez-Cohard, J. C. (2008). Temporal stability of entrepreneurial intentions : A longitudinal study. In *48th Congress of the European Regional Science Association* (pp. 1–18). Liverpool, UK.
- Lindquist, M. J., Sol, J., & Van Praag, M. (2015). Why do entrepreneurial parents have entrepreneurial children? *Journal of Labor Economics*, 33(2), 269–296.
- Little, R. J., & Rubin, D. B. (2002). *Statistical analysis with missing data* (2nd ed.). New York, NY: Wiley.
- Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance*, 3(2), 157–189.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9), 705–717.
- Lomberg, C., Urbig, D., Stöckmann, C., Marino, L. D., & Dickson, P. H. (2017). Entrepreneurial orientation: The dimensions' shared effects in explaining firm performance. *Entrepreneurship Theory and Practice*, 41(6), 973–998.
- Low, M. B., & MacMillan, I. C. (1988). Entrepreneurship: Past research and future challenges. *Journal of Management*, 14(2), 139–161.
- Lucas, W., & Cooper, S. (2012). Theories of entrepreneurial intention and the role of necessity. In *Proceedings of the 35th Institute of Small Business and Entrepreneurship (ISBE) Conference*. Dublin, Ireland.
- Lumpkin, G. T., & Dess, G. G. (1996). The entrepreneurial clarifying it construct and linking orientation. *Academy of Management Review*, 21(1), 135–172.
- Lumpkin, G. T., & Dess, G. G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16(5), 429–451.
- Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The general self-efficacy scale: Multicultural validation studies. *The Journal of Psychology: Interdisciplinary and Applied*, 139(5), 439–457.
- Luthje, C., & Franke, N. (2003). The “making” of an entrepreneur: Testing a model of entrepreneurial intent among engineering students at MIT. *R & D Management*, 33(2), 135–147.
- Mace, C. (1935). Incentives. Some experimental studies. In *Reports from the Industrial Health Residency Board of London*. London, UK: HMSO.
- Magalhães, A., Amaral, A., & Tavares, O. (2009). Equity, access and institutional competition. *Tertiary Education and Management*, 15(1), 35–48.

- Markman, G. D., Balkin, D. B., & Baron, R. A. (2002). Inventors and new venture formation: The effects of general self-efficacy and regretful thinking. *Entrepreneurship Theory & Practice*, 27(2), 149–165.
- Markman, G. D., & Baron, R. A. (2003). Person-entrepreneurship fit: Why some people are more successful as entrepreneurs than others. *Human Resource Management Review*, 13(2), 281–301.
- Maslow, A. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396.
- Mathews, C., & Moser, S. (1995). Family background and gender: Implications for interest in small firm ownership. *Entrepreneurship & Regional Development*, 7(4), 365–378.
- Matthews, C. H., & Moser, S. B. (1996). A longitudinal investigation of the impact of family background and gender on interest in small firm ownership. *Journal of Small Business Management*, 34(2), 29–43.
- Mauer, R., Neergaard, H., & Linstad, A. K. (2017). Self-Efficacy: Conditioning the entrepreneurial mindset. In M. Carsrud, Alan L., Brännback (Ed.), *Understanding the Entrepreneurial Mind - Opening the Black Box* (pp. 233–257). New York, NY: Springer-Verlag.
- Mazzarol, T., Volery, T., Doss, N., & Thein, V. (1999). Factors influencing small business start-ups: A comparison with previous research. *International Journal of Entrepreneurial Behaviour & Research*, 5(2), 48–63.
- McArdle, J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology*, 60, 577–605.
- McClelland, D. C. (1961). *The Achieving Society*. New York, NY: The Free Press.
- McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review*, 96(4), 690–702.
- McGee, J. E., Peterson, M., Mueller, S. L., & Sequeira, J. M. (2009). Entrepreneurial self-efficacy: Refining the measure. *Entrepreneurship Theory and Practice*, 33(4), 965–988.
- McGrath, R. (1999). Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Review*, 24(1), 13–30.
- McKenzie, B., Ugbah, S., & Smothers, N. (2007). “Who is an entrepreneur?” Is it still the wrong question? *Academy of Entrepreneurship Journal*, 13(1), 23–44.
- Menzies, T. V., Diochon, M., Gasse, Y., & Elgie, S. (2006). A longitudinal study of the characteristics, business creation process and outcome differences of Canadian female vs. male nascent entrepreneurs. *International Entrepreneurship and Management Journal*, 2(4), 441–453.
- Miao, C., Qian, S., & Ma, D. (2017). The relationship between entrepreneurial self-efficacy and firm performance: A meta-analysis of main and moderator effects. *Journal of Small Business Management*, 55(1), 87–107.

- Micceri, T. (1989). The unicorn, the normal curve, and other improbable creatures. *Psychological Bulletin*, *105*(1), 156.
- Mill, J. S. (1909). *Principles of political economy with some of their applications to social philosophy*. London, UK: Longmans, Green and Co.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, *29*(7), 770–791.
- Miller, D. (2015, January). A downside to the entrepreneurial personality? *Entrepreneurship Theory & Practice*, pp. 1–8.
- Miller, N. E., & Dollard, J. (1941). *Social learning and imitation*. New Haven, CT: Yale University Press.
- Minola, T., Criaco, G., & Obschonka, M. (2016). Age, culture, and self-employment motivation. *Small Business Economics*, *46*(2), 187–213.
- Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2002). Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research. *Entrepreneurship Theory & Practice*, *27*(2), 93.
- Moberg, K. (2013). An entrepreneurial self-efficacy scale with neutral wording. In A. Fayolle, P. Kyrö, T. Mets, & U. Venesaar (Eds.), *Conceptual Richness and Methodological Diversity in Entrepreneurship Research: Entrepreneurship Research in Europe* (pp. 67–94). Cheltenham, UK: Edward Elgar Publishing.
- Molina-Azorín, J. F., López-Gamero, M. D., Pereira-Moliner, J., & Pertusa-Ortega, E. M. (2012). Mixed methods studies in entrepreneurship research: Applications and contributions. *Entrepreneurship & Regional Development*, *24*(5/6), 425–456.
- Molwus, J. J., Erdogan, B., & Ogunlana, S. O. (2013). Sample size and model fit indices for structural equation modelling (SEM): The case of construction management research. In Y. Wang, K. Lennerts, G. Q. P. Shen, Y. Bai, X. Xue, C. Sun, ... W. Xue (Eds.), *ICCREM 2013: Construction and Operation in the Context of Sustainability* (pp. 338–347). Reston, VA: American Society of Civil Engineers.
- Morris, M. H., & Sexton, D. L. (1996). The concept of entrepreneurial intensity: Implications for company performance. *Journal of Business Research*, *36*(1), 5–13.
- Mueller, R. O., & Hancock, G. R. (2008). Best practices in structural equation modeling. In J. W. Osborne (Ed.), *Best Practices in Quantitative Methods* (pp. 488–508). Thousand Oaks, CA: Sage Publications.
- Mueller, S., & Goic, S. (2002). Entrepreneurial potential in transition economies: A view from tomorrow's leaders. *Journal of Developmental Entrepreneurship*, *7*(4), 399–414.
- Murphy, P. J., Liao, J., & Welsch, H. P. (2006). A conceptual history of entrepreneurial thought. *Journal of Management History*, *12*(1), 12–35.
- Nabi, G., & Liñán, F. (2011). Graduate entrepreneurship in the developing world: intentions, education and development. *Education & Training*, *53*(5), 325–334.

- Naffziger, D. W., Hornsby, J. S., & Kuratko, D. F. (1994). A proposed research model of entrepreneurial motivation. *Entrepreneurship Theory and Practice*, 18(3), 29–42.
- Nevitt, J., & Hancock, G. R. (2001). Performance of bootstrapping approaches to model test statistics and parameter standard error estimation in structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, 8(3), 353–377.
- Nordstokke, D. W., & Zumbo, B. D. (2010). A new nonparametric levene test for equal variances. *Psicologica*, 31(2), 401–403.
- Nordstokke, D. W., Zumbo, B. D., Cairns, S. L., & Saklofske, D. H. (2011). The operating characteristics of the nonparametric Levene test for equal variances with assessment and evaluation data. *Practical Assessment, Research & Evaluation*, 16(5), 1–8.
- Oakey, R. P., Mukhtar, S. M., & Kipling, M. (2002). Student perspectives on entrepreneurship: Observations on their propensity for entrepreneurial behaviour. *International Journal of Entrepreneurship and Innovation Management*, 2(4–5), 308–322.
- Özyürek, R. (2005). Informative sources of math-related self-efficacy expectations and their relationship with math-related self-efficacy, interest, and preference. *International Journal of Psychology*, 40(3), 145–156.
- Pace, C. (1939). Factors influencing questionnaire returns from former university students. *Journal of Applied Psychology*, 23(3), 388–397.
- Packard, M. D. (2017). Where did interpretivism go in the theory of entrepreneurship? *Journal of Business Venturing*, 32(5), 536–549.
- Palmer, M. (1971). The Application of Psychological Testing to Entrepreneurial Potential. *California Management Review*, 13(2), 32–38.
- Parasuraman, S., Purohit, Y. S., Godshalk, V. M., & Beutell, N. J. (1996). Work and family variables, entrepreneurial career success, and psychological well-being. *Journal of Vocational Behavior*, 48(3), 275–300.
- Parker, S. C., & Belghitar, Y. (2006). What happens to nascent entrepreneurs? An econometric analysis of the PSED. *Small Business Economics*, 27(1), 81–101.
- Peikoff, L. (1993). *Objectivism: The philosophy of Ayn Rand*. New York, NY: Penguin Group.
- Perry, C., Macarthur, R., Meredith, G., & Cunnington, B. (1985). Need for achievement and locus of control of Australian small business owner-managers and super-entrepreneurs. *International Small Business Journal*, 4(4), 55–64.
- Pfeifer, S., Šarlija, N., & Zekić Sušac, M. (2016). Shaping the entrepreneurial mindset: Entrepreneurial intentions of business students in Croatia. *Journal of Small Business Management*, 54(1), 102–117.
- Piperopoulos, P. (2012). Could higher education programmes, culture and structure stifle the entrepreneurial intentions of students? *Journal of Small Business*, 19(3), 461–483.
- Pittaway, L., & Cope, J. (2007). Entrepreneurship education: A systematic review of the

- evidence. *International Small Business Journal*, 25(5), 479–510.
- Plaschka, G. R., & Welsch, H. P. (1990). Emerging structures in entrepreneurship education: Curricular designs and strategies. *Entrepreneurship Theory & Practice*, 14(3), 55–71.
- Politis, D. (2005). The process of entrepreneurial learning: A conceptual framework. *Entrepreneurship Theory and Practice*, 29(4), 399–424.
- Poon, J. M. L., Ainuddin, R. A., & Junit, S. H. (2006). Effects of self-concept traits and entrepreneurial orientation on firm performance. *International Small Business Journal*, 24(1), 61–82.
- Porter, M. (1990). *The Competitive Advantage of Nations*. New York, NY: Free Press.
- Prieto, L., Wang, L., Hinrichs, K. T., & Milling, H. A. (2010). Propensity for self-employment: Contrasting the USA and Mexico. *Journal of Small Business and Enterprise Development*, 17(3), 315–333.
- Ramos-Rodríguez, A. R., Martínez-Fierro, S., Medina-Garrido, J. A., & Ruiz-Navarro, J. (2015). Global entrepreneurship monitor versus panel study of entrepreneurial dynamics: Comparing their intellectual structures. *International Entrepreneurship and Management Journal*, 11(3), 571–597.
- Raposo, M. L. B., Ferreira, J. J. M., Paço, A. M. F., & Rodrigues, R. J. G. (2008). Propensity to firm creation: Empirical research using structural equations. *International Entrepreneurship and Management Journal*, 4(4), 485–504.
- Raposo, M., Paço, A., & Ferreira, J. (2008). Entrepreneur's profile: A taxonomy of attributes and motivations of university students. *Journal of Small Business and Enterprise Development*, 15(2), 405–418.
- Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4), 353–385.
- Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice*, 33(3), 761–787.
- Reynolds, P. D. and White, S. (1997). *Entrepreneurial Process*. Westport, CT: Quorum Books.
- Reynolds, P., Bosma, N., Erkkö, A., Hunt, S., De Bono, N., Servais, I., ... Chin, N. (2005). Global Entrepreneurship Monitor: Data collection design and implementation 1998-2003. *Small Business Economics*, 24(3), 205–231.
- Reynolds, P. D. (2007). New Firm Creation in the United States: A PSED I Overview. *Foundations and Trends in Entrepreneurship*, 3(1), 1–150.
- Reynolds, P. D. (2016). Start-up actions and outcomes: What entrepreneurs do to reach profitability. *Foundations and Trends in Entrepreneurship*, 12(6), 443–559.

- Reynolds, P. D., Carter, N. M., Gartner, W. B., & Greene, P. G. (2004). The prevalence of nascent entrepreneurs in the United States: Evidence from the panel study of entrepreneurial dynamics. *Small Business Economics*, 23(4), 263–284.
- Ribeiro, M. I., Fernandes, A. J. G., & Diniz, F. J. L. S. (2013). Propensity to entrepreneurship in higher education students: The case of a public institution of northeast Portuguese. *Regional Science Inquiry Journal*, 5(2), 75–85.
- Roberts, E. B. (1989). The personality and motivations of technological entrepreneurs. *Journal of Engineering and Technology Management*, 6(1), 5–23.
- Rogelberg, S. G., Conway, J. M., Sederburg, M. E., Spitzmüller, C., Aziz, S., & Knight, W. E. (2003). Profiling active and passive nonrespondents to an organizational survey. *Journal of Applied Psychology*, 88(6), 1104–1114.
- Rogelberg, S., & Stanton, J. (2007). Introduction understanding and dealing with organizational survey nonresponse. *Organizational Research Methods*, 10(2), 195–209.
- Ronstadt, R. (1986). Exit, stage left why entrepreneurs end their entrepreneurial careers before retirement. *Journal of Business Venturing*, 1(3), 323–338.
- Ronstadt, R. (1987). The educated entrepreneurs: A new era of entrepreneurial education is beginning. *American Journal of Small Business*, 11(4), 7–23.
- Ronstadt, R. (1988). The Corridor Principle. *Journal of Business Venturing*, 3(1), 31–40.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1–28.
- Rubin, D. B. (1976). Inference and missing data. *Biometrika*, 63(3), 581–592.
- Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation Analysis in Social Psychology : Current Practices and New Recommendations. *Social and Personality Psychology Compass*, 5(6), 359–371.
- Satorra, A., & Bentler, P. (1988). Scaling corrections for chi-square statistics in covariance structure analysis. In *American Statistical Association 1988 proceedings of the Business and Economics Sections* (pp. 308–313). Alexandria: VA: American Statistical Association.
- Satorra, A., & Bentler, P. M. (1994). Corrections to test statistics and standard errors in covariance structure analysis. In A. von Eye & C. C. Clogg (Eds.), *Latent Variables Analysis: Applications for Developmental Research* (pp. 399–419). Thousand Oaks, CA: Sage Publications.
- Schein, E. H. (1978). *Career dynamics: Matching individual and organizational needs*. Reading, MA: Addison-Wesley.
- Schere, J. L. (1982). Tolerance of ambiguity as a discriminating variable between entrepreneurs and managers. *Academy of Management Proceedings*, (1), 404–408.
- Scherer, R. F., Brodzinski, J. D., & Wiebe, F. A. (1990). Entrepreneur career selection and

- gender: A socialization approach. *Journal of Small Business Management*, 28(2), 37–44.
- Scherer, R. F., Adams, J. S., Carley, S. S., & Wiebe, F. A. (1989). Role model performance effects on development of entrepreneurial career preference. *Entrepreneurship Theory and Practice*, 13(3), 53–71.
- Schlaegel, C., & Koenig, M. (2014). Determinants of entrepreneurial intent: A meta-analytic test and integration of competing models. *Entrepreneurship Theory & Practice*, 38(2), 291–332.
- Schloss, H. H. (1968). The concept of entrepreneurship in economic development. *Journal of Economic Issues*, 2(2), 228–232.
- Schmitt-Rodermund, E. (2004). Pathways to successful entrepreneurship: Parenting, personality, early entrepreneurial competence, and interests. *Journal of Vocational Behavior*, 65(3), 498–518.
- Schmutzler, J., Andonova, V., & Diaz-Serrano, L. (2018). How context shapes entrepreneurial self-efficacy as a driver of entrepreneurial intentions. *Entrepreneurship Theory and Practice* <https://doi.org/10.1177/1042258717753142>.
- Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? *European Journal of Psychological Assessment*, 18(3), 242–251.
- Schuerger, J. M., Zarrella, K. L., & Hotz, A. S. (1989). Factors that influence the temporal stability of personality by questionnaire. *Journal of Personality and Social Psychology*, 56(5), 777–783.
- Schumacker, R., & Lomax, R. (2004). *A beginner's guide to structural equation modeling* (3rd ed.). London, UK: Routledge, Taylor & Francis Group, NY, London.
- Schumpeter, J. (1934). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle*. New Brunswick, NJ: Transaction Publishers.
- Schumpeter, J. (1942). *Capitalism, socialism and democracy*. Routledge, Taylor & Francis Group.
- Schwab, D. P. (2005). *Research methods for organizational studies* (2nd ed.). New York, NY: Lawrence Erlbaum Associates.
- Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy Scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). Windsor, England: NFER-Nelson.
- Segal, G., Borgia, D., & Schoenfeld, J. (2002). Using social cognitive career theory to predict self-employment goals. *New England Journal of Entrepreneurship*, 5(2), 47–56.
- Sesen, H. (2013). Personality or environment? A comprehensive study on the entrepreneurial intentions of university students. *Education & Training*, 55(7), 624–640.
- Sevä, I. J., Larsson, D., & Strandh, M. (2016). The prevalence, characteristics and well-being of 'necessity' self-employed and 'latent' entrepreneurs: Findings from Sweden.

*International Journal of Entrepreneurship and Small Business*, 28(1), 58–77.

- Shah, S. K., & Corley, K. G. (2006). Building better theory by bridging the quantitative-qualitative divide. *Journal of Management Studies*, 43(8), 1821–1835.
- Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33(2), 141–149.
- Shane, S. (2012). Reflections on the 2010 AMR decade award: Delivering on the promise of entrepreneurship as a field of research. *Academy of Management Review*, 37(1), 10–20.
- Shane, S., Kolvereid, L., & Westhead, P. (1991). An exploratory examination of the reasons leading to new firm formation across country and gender. *Journal of Business Venturing*, 6(6), 431–446.
- Shane, S., Locke, E. a., & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13(2), 257–279.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226.
- Shapero, A. (1977). The displaced, uncomfortable entrepreneur. *Psychology Today*, 9(6), 83–88.
- Shapero, A. (1984). The entrepreneurial event. In C. A. Kent (Ed.), *Environment for Entrepreneurship* (pp. 21–40). Lexington, MA: Lexington Books.
- Shapero, A. (1985). Why entrepreneurship? A worldwide perspective. *Journal of Small Business Management*, 23(4), 1–5.
- Shapero, A., & Sokol, L. (1982). The social dimensions of entrepreneurship. In C. A. Kent, D. L. Sexton, & K. H. Vesper (Eds.), *Encyclopedia of entrepreneurship* (pp. 72–90). Englewood Cliffs, NJ: Prentice-Hall.
- Sharma, P., & Chrisman, S. (2007). Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship. *Entrepreneurship Theory and Practice*, 23(3), 11–27.
- Shaver, K. (2010). The social psychology of entrepreneurial behavior. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research* (2nd ed., pp. 359–385). New York, NY: Springer.
- Shaver, K. G., Gartner, W. B., Crosby, E., Bakalarova, K., & Gatewood, E. J. (2001). Attributions about entrepreneurship: A framework and process for analyzing reasons for starting a business. *Entrepreneurship Theory and Practice*, 26(2), 5–32.
- Shaver, K., & Scott, L. (1991). Person, process, choice: The psychology of new venture creation. *Entrepreneurship Theory and Practice*, 16(2), 23–45.
- Sheehan, K. B., & McMillan, S. J. (1999). Response variation in e-mail surveys: An exploration. *Journal of Advertising Research*, 39(4), 45–54.
- Sheeran, P. (2002). Intention - Behavior relations: A conceptual and empirical review.

*European Review of Social Psychology*, 12(1), 37–41.

Sheeran, P., & Conner, M. (2017). Improving the translation of intentions into health actions: The role of motivational coherence. *Health Psychology*, 36(11), 1065–1073.

Sheeran, P., Orbell, S., & Trafimow, D. (1999). Does the temporal stability of behavioral intentions moderate intention-behavior and past behavior-future behavior relations? *Personality and Social Psychology Bulletin*, 25(6), 724–734.

Shepherd, D. A. (2003). Learning from business failure: Propositions of grief recovery for the self-employed. *Academy of Management Review*, 28(2), 318–328.

Shepherd, D. A., Covin, J. G., & Kuratko, D. F. (2009). Project failure from corporate entrepreneurship: Managing the grief process. *Journal of Business Venturing*, 24(6), 588–600.

Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325–343.

Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The self-efficacy scale-construction and validation. *Psychological Reports*, 51, 663–671.

Sheu, H.-B., Lent, R. W., Brown, S. D., Miller, M. J., Hennessy, K. D., & Duffy, R. D. (2010). Testing the choice model of social cognitive career theory across Holland themes: A meta-analytic path analysis. *Journal of Vocational Behavior*, 76(2), 252–264.

Shiraz, N., Rashid, M., & Riaz, A. (2011). The impact of reward and recognition programs on employee's motivation and satisfaction. *Interdisciplinary Journal of Contemporary Research In Business*, 3(3), 1428–1434.

Shook, C. L., Priem, R. L., & McGee, J. E. (2003). Venture creation and the enterprising individual: A review and synthesis. *Journal of Management*, 29(3), 379–399.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies : New procedures and recommendations. *Psychological Methods*, 7(4), 422–445.

Singh, S., Corner, P., & Pavlovich, K. (2007). Coping with entrepreneurial failure. *Journal of Management and Organization*, 13(4), 331–344.

Skinner, B. F. (1938). *The Behavior of organisms: An experimental analysis*. New York, NY, US: Appleton-Century.

Smith, A. (1776). An Inquiry into the Nature and Causes of the Wealth of Nations. In R. H. Campbell & A. S. Skinner (Eds.). London, UK: Reprinted, University of Chicago Press, 1976.

Sobel, R. (2008). Testing Baumol: Institutional quality and the productivity of entrepreneurship. *Journal of Business Venturing*, 23(6), 641–655.

Solesvik, M. Z. (2013). Entrepreneurial motivations and intentions: Investigating the role of

- education major. *Education + Training*, 55(3), 253–271.
- Solomon, G. (2007). An examination of entrepreneurship education in the United States. *Journal of Small Business and Enterprise Development*, 14(2), 168–182.
- Sommer, L. (2011). The Theory of Planned Behaviour and the impact of past behaviour. *International Business & Economics Research Journal*, 10(1), 91–110.
- Sorgner, A., & Fritsch, M. (2018). Entrepreneurial career paths: Occupational context and the propensity to become self-employed. *Small Business Economics*, 51(1), 129–152.
- Sorgner, A., Fritsch, M., & Kritikos, A. (2017). Do entrepreneurs really earn less? *Small Business Economics*, 49(2), 251–272.
- Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing*, 22(4), 566–591.
- Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice*, 41(1), 49–72.
- Spitzer Jr., D. M., & Ford, R. H. (1989). Essence of business incubators: The manager-tenant interaction. *Journal of Business and Entrepreneurship*, 1(1), 37–49.
- St-Jean, É., & Mathieu, C. (2015). Developing attitudes toward an entrepreneurial career through mentoring. *Journal of Career Development*, 42(4), 325–338.
- Stanley Budner, N. Y. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, 30(1), 29–50.
- Stephan, U. (2018). Entrepreneurs' mental health and well-being: A review and research agenda. *The Academy of Management Perspectives*, 32(3), 290–322.
- Stephan, U., Hart, M., & Drews, C.-C. (2015). *Understanding motivations for entrepreneurship - A review of recent research evidence. Rapid Evidence Assessment Paper*. Birmingham, UK. <https://doi.org/10.13140/RG.2.1.3343.2165>
- Stewart, W. H., & Roth, P. L. (2001). Risk propensity differences between entrepreneurs and managers: A meta-analytic review. *Journal of Applied Psychology*, 86(1), 145–153.
- Stewart, W., & Roth, P. (2007). A meta-analysis of achievement motivation differences between entrepreneurs and managers. *Journal of Small Business Management*, 45(4), 401–421.
- Stuart, R. R. W., & Abetti, P. A. P. (1990). Impact of entrepreneurial and management experience on early performance. *Journal of Business Venturing*, 5(3), 151–162.
- Stuetzer, M., Obschonka, M., & Schmitt-Rodermund, E. (2013). Balanced skills among nascent entrepreneurs. *Small Business Economics*, 41(1), 93–114.
- Tavousi, M., Hidarnia, A. R., Montazeri, A., Hajizadeh, E., Taremain, F., & Ghofranipour, F. (2009). Are perceived behavioral control and self-efficacy distinct constructs. *European*

*Journal of Scientific Research*, 30(1), 146–152.

- Teixeira, A. (2008). Entrepreneurial potential in engineering and business courses... Why worry now? In A. Azevedo (Ed.), *Innovation in Manufacturing Networks* (pp. 325–336). Boston, MA: Springer.
- Terjesen, S. A., Acs, Z. J., & Audretsch, D. B. (2010). International business, entrepreneurship and the global economy. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research* (pp. 431–456). New York, NY: Springer.
- Thébaud, S. (2016). Passing up the job: The role of gendered organizations and families in the entrepreneurial career process. *Entrepreneurship Theory & Practice*, 40(2), 269–287.
- Thompson, E. R. (2009). Individual entrepreneurial intent: Construct clarification and development of an internationally reliable metric. *Entrepreneurship Theory and Practice*, 33(3), 669–694.
- Thompson, P., & Kwong, C. (2016). Compulsory school-based enterprise education as a gateway to an entrepreneurial career. *International Small Business Journal*, 34(6), 838–869.
- Thorndike, E. L. (1898). Animal intelligence: An experimental study of the associative processes in animals. *The Psychological Review: Monograph Supplements*, 2(4), i-109.
- Tolentino, L. R., Sedoglavich, V., Lu, V. N., Garcia, P. R. J. M., & Restubog, S. L. D. (2014). The role of career adaptability in predicting entrepreneurial intentions: A moderated mediation model. *Journal of Vocational Behavior*, 85(3), 403–412.
- Trigo, V. (2003). *Entre o Estado e o Mercado: Empreendedorismo e a Condição do Empresário na China*. Portugal: Ad Litteram.
- Tukey, J. W. (1977). *Exploratory Data Analysis*. Reading, MA: Pearson.
- Ucbasaran, D., Shepherd, D. A., Lockett, A., & Lyon, S. J. (2013). Life after business failure: The process and consequences of business failure for entrepreneurs. *Journal of Management*, 39(1), 163–202.
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341–358.
- Urban, B. (2007). Associations between entrepreneurial empowerment and reasons for self-employment. *South African Journal of Economic and Management Sciences*, 10(3), 313–329.
- van Gelderen, M., Thurik, R., & Bosma, N. (2006). Success and risk factors in the pre-startup phase. *Small Business Economics*, 26(4), 319–335.
- van Praag, C. M., & Versloot, P. P. H. (2007). What is the value of entrepreneurship? A review of recent research. *Small Business Economics*, 29(4), 351–382.
- Vanevenhoven, J., & Liguori, E. (2013). The impact of entrepreneurship education: Introducing

- the entrepreneurship education project. *Journal of Small Business Management*, 51(3), 315–328.
- Vázquez, E., Gómez, S., & Vieira, E. (2010). Entrepreneurship and economic growth in Spanish and Portuguese Regions. In *50th Congress of the European Regional Science Association: "Sustainable Regional Growth and Development in the Creative Knowledge Economy."* Jönköping, Sweden: European Regional Science Association (ERSA).
- Vázquez, J., Lanero, A., Gutiérrez, P., García, M., Alves, H., & Georgiev, I. (2010). Entrepreneurship education in the university: Does it make the difference? *Trakia Journal of Sciences*, 8(3), 64–70.
- Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth*, 3(1), 119–138.
- Wagner, J. (2007). Nascent entrepreneurs. In S. Parker (Ed.), *The Life Cycle of Entrepreneurial Ventures* (pp. 15–37). New York, NY: Springer Science+Business Media.
- Wales, W. J. (2016). Entrepreneurial orientation: A review and synthesis of promising research directions. *International Small Business Journal*, 34(1), 3–15.
- Wales, W. J., Gupta, V. K., & Mousa, F.-T. (2013). Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal*, 31(4), 357–383.
- Walter, S., & Heinrichs, S. (2015). Who becomes an entrepreneur? A 30-years-review of individual-level research. *Journal of Small Business and Enterprise Development*, 22(2), 225–248.
- Wang, X. (2013). Why students choose STEM majors motivation, high school learning, and postsecondary context of support. *American Educational Research Journal*, 50(5), 1081–1121.
- Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small Business Economics*, 13(1), 27–55.
- Werner, S., Praxedes, M., and Kim, H. G. (2007). The reporting of nonresponse analyses in survey research. *Organizational Research Methods*, 10(2), 287–295.
- Weston, R., & Gore, P. (2006). A brief guide to structural equation modeling. *The Counseling Psychologist*, 34(5), 719–751.
- Wiklund, J. (1999). The sustainability of the entrepreneurial orientation - performance relationship. *Entrepreneurship Theory & Practice*, 24(1), 37–48.
- Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24(13), 1307–1314.
- Williams, L. J., Vandenberg, R. J., & Edwards, J. R. (2009). Structural equation modeling in management research: A guide for improved analysis. *Academy of Management Annals*, 3(1), 543–604.

- Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: Implications for entrepreneurship education. *Entrepreneurship Theory and Practice, 31*(3), 713–731.
- Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 76*(6), 913–934.
- Wright, S. L., Perrone-McGovern, K. M., Boo, J. N., & White, A. V. (2014). Influential factors in academic and career self-efficacy: Attachment, supports, and career barriers. *Journal of Counseling & Development, 92*(1), 36–46.
- Xie, C. (2014). Why do some people choose to become entrepreneurs? An integrative approach. *Journal of Management Policy & Practice, 15*(1), 25–38.
- Yang, J. (2013). The Theory of Planned Behavior and prediction of entrepreneurial intention among Chinese undergraduates. *Social Behavior and Personality, 41*(3), 367–376.
- Yoo, W., Mayberry, R., Bae, S., Singh, K., He, Q., & Lillard Jr., J. (2014). A study of effects of multicollinearity in the multivariable analysis. *International Journal of Applied Science and Technology, 4*(5), 9–19.
- Zadek, S., & Thake, S. (1997). Send in the social entrepreneurs. *New Statesman, 126*(458), 31.
- Zahra, S. (1991). Predictors and financial outcomes of corporate entrepreneurship: An exploratory study. *Journal of Business Venturing, 6*(4), 259–285.
- Zahra, S. A. S., Jennings, D. F., & Kuratko, D. F. (1999). The antecedents and consequences of firm-level entrepreneurship: The state of the field. *Entrepreneurship Theory and Practice, 24*(2), 47–67.
- Zahra, S., & Covin, J. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. *Journal of Business Venturing, 10*(1), 43–58.
- Zapkau, F. B., Schwens, C., & Kabst, R. (2017). The role of prior entrepreneurial exposure in the entrepreneurial process: A review and future research implications. *Journal of Small Business Management, 55*(1), 56–86.
- Zapkau, F. B., Schwens, C., Steinmetz, H., & Kabst, R. (2015). Disentangling the effect of prior entrepreneurial exposure on entrepreneurial intention. *Journal of Business Research, 68*(3), 639–653.
- Zhao, H., & Seibert, S. E. (2006). The big five personality dimensions and entrepreneurial status: a meta-analytical review. *Journal of Applied Psychology, 91*(2), 259–271.
- Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology, 90*(6), 1265–1272.

Zhao, H., Seibert, S. E., & Lumpkin, G. T. T. (2010). The relationship of personality to entrepreneurial intentions and performance: A meta-analytic review. *Journal of Management*, 36(2), 381–404.

# Appendices

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## Appendix A – HEI Programs Prevalence in the EEP Portugal Sample

Higher Education Institutions (HEI) programs prevalence, in the EEP Portugal sample, according to the following typology: Business, Business related and Non Business programs.

<b>All Academic Programs Identified as "Business Programs"</b>	<b>Count</b>	<b>%</b>
Includes all HEI Programs related with General Management & Managing Private Companies		
Gestão	318	25.08%
Ciência Empresariais	49	3.86%
Gestão de Empresas	41	3.23%
Empreendedorismo e Criação de Empresas	17	1.34%
Gestão Empresarial	4	0.32%
Gestão de Projectos	5	0.39%
Gestão Turística e Hoteleira	6	0.47%
Gestão e Estratégia Industrial	6	0.47%
Organização e Gestão de Empresas	2	0.16%
Administração e Gestão de Empresas	2	0.16%
Gestão e Engenharia Industrial e dos Serviços	1	0.08%
Gestão e Administração de Empresas	1	0.08%
Master of Science in Business Administration	1	0.08%
Gestão - Business Management	1	0.08%
Gestão de Organizações Desportivas - Gestão do Desporto	1	0.08%
Marketing / empreendedorismo e criação de empresas	1	0.08%
Management	1	0.08%
Gestão de Bancos e Seguradoras	1	0.08%
Gestão Geral, Estratégia e Desenvolvimento Empresarial	1	0.08%
<b>Total</b>	<b>459</b>	<b>36.20%</b>

All Academic Programs Identified as "Business Related Programs" Includes all other HEI Programs typically taught in business & economics schools/departments	Count	%
Economia	120	9.46%
Finanças	37	2.92%
Gestão de Recursos Humanos	33	2.60%
Marketing	31	2.44%
Marketing Management	17	1.34%
Matemática Aplicada à Economia e à Gestão	16	1.26%
Economia Industrial e da empresa	10	0.79%
Finanças e contabilidade	9	0.71%
Gestão de Marketing	8	0.63%
Gestão de Sistemas da Informação	8	0.63%
Gestão Pública	6	0.47%
Engenharia e Gestão Industrial	5	0.39%
Marketing e Publicidade	5	0.39%
Economia e Gestão da Ciência, Tecnologia e	5	0.39%
Mestrado finanças	4	0.32%
Economia Monetária e Financeira	4	0.32%
Negócios Internacionais	4	0.32%
Decisão Económica e Empresarial	4	0.32%
Análise Financeira	4	0.32%
Gestão da distribuição e Logística	4	0.32%
Matemática Financeira	3	0.24%
Mestrado em Gestão Integrada da Qualidade, Ambiente e Segurança	3	0.24%
Desenvolvimento e Cooperação Internacional	2	0.16%
Relações Humanas e Comunicação Organizacional	2	0.16%
Marketing Management	2	0.16%
Ciências Económicas	2	0.16%
Contabilidade, Fiscalidade e Finanças Empresariais	2	0.16%
Marketing Turístico	2	0.16%
Administração Pública	2	0.16%
Gestão e Desenvolvimento de Recursos Humanos	2	0.16%
Economia e Políticas Públicas	1	0.08%
Economia Monetária, Bancária e Financeira	1	0.08%
Curso Superior de Contabilidade e Finanças	1	0.08%
Economia Portuguesa e Integração Internacional	1	0.08%
Economia, Gestão do Turismo e Direcção Hoteleira	1	0.08%
Mestrado em Economia Internacional e Estudos Europeus	1	0.08%
Mestrado em Engenharia e Gestão de Sistemas de Informação	1	0.08%
Curso de Marketing Turístico	1	0.08%
Gestão Marketing	1	0.08%
Marketing e Gestão Estratégica	1	0.08%
Pos graduação marketing farmaceutico	1	0.08%
Gestão Ambiental	1	0.08%
Gestão de Serviços e Tecnologia	1	0.08%
Gestão/Comércio Exterior	1	0.08%
Mestrado em Gestão da Saúde	1	0.08%
Psicologia Social e das organizações	1	0.08%
Hospitality and Tourism Management	1	0.08%
Gestão de Serviços de Saúde	1	0.08%
Mestrado em Contabilidade	1	0.08%
Mestrado em Gestão e Engenharia Industrial e de Serviços	1	0.08%
Engenharia e Gestão Inovação	1	0.08%
<b>Total</b>	<b>377</b>	<b>29.73%</b>

<b>Most Represented "Non Business" Academic Programs</b>	<b>Count</b>	<b>%</b>
Includes HEI Programs which typically are not taught in business & economics schools/departments		
Solicitadoria	32	2.52%
Optometria - ciências da visão	10	0.79%
informatica para a saude	10	0.79%
Arquitectura(s)	10	0.79%
Engenharia Civil	9	0.71%
Psicologia(s)	5	0.39%
Som e Imagem	5	0.39%
	<b>81</b>	<b>6.39%</b>
Other Non business and less represented courses	351	27.68%
	<b>351</b>	<b>27.68%</b>
<b>Total</b>	<b>432</b>	<b>34.07%</b>

## **Appendix B - Final Versions of All Four Waves of EEP Portugal Surveys**

**[1<sup>st</sup> Wave EEP Survey (English Version) - Academic Year of 2010-2011]**

**[1<sup>st</sup> Follow-up EEP Survey (English Version) - Academic Year of 2011-2012]**

**[2<sup>nd</sup> Follow-up EEP Survey (Portuguese Version) - Academic Year of 2013-2014]**

**[3<sup>rd</sup> Follow-up EEP Survey (Portuguese Version) - Academic Year of 2015-2016]**

**[1<sup>st</sup> Wave EEP Survey (English Version) - Academic Year of 2010-2011]**

ENTREPRENEURSHIP EDUCATION PROJECT

(PORTUGAL)

[Introduction](#)

Welcome to Entrepreneurship Education Project,

This is an international scientific Project, coordinated by the Illinois State University (USA) and the Wisconsin University (USA), in which your higher education institution is taking part, jointly with other universities in sixty other countries, in order to improve the entrepreneurship education.

The maximum expected time for filling up this questionnaire is 30 minutes and your participation is very important.

In order to promote a high response rate, coordinating universities offer their students the possibility to enter a draw for a prize worth \$100 USD (via certificate gifts). If you are interested in entering this competition please specify below:

- Yes, please include me in the draw.  
 No, Please do not include me in the draw.

Please indicate your name and email address, in the end of this questionnaire so that, if you have been selected for the prize, it is possible to contact you.

If you have any doubt related to this survey please email it to: [eepportugal.rfb.2010@gmail.com](mailto:eepportugal.rfb.2010@gmail.com)

[Survey - Entrepreneurship](#)

Have you started a business that is presently operating?

(Note: If your answer is no, please move to question n. 2)

- Yes.  
 No.

You have started this business project:

- Where you live.  
 Where you attend university.  
 Somewhere else.

You have started this business project:

- alone.  
 with partners.

In the case you have started the business project with partners, they are:

- your family members.  
 friends from where you live.  
 School colleagues.  
 Others (please specify)

Which of the following working situations best describe what you did before starting your business Project?

- You have started your business Project full time (You had no other job apart from you business project).
- You have started your business Project part time (i.e., You had another job apart from you business project).

You have started this business Project on an international basis (i.e. with operations in more than one country)?

- Yes.
- No.

On the last day of the previous month, how many employees, including yourself were working in your business Project in the following conditions:

Paid employees – full time.	
Paid employees – part time.	
Unpaid employees – trainees.	

For the fiscal year of 2010, which has been your business turnover?

- Under €20.000
- [€20.001 - €80.000]
- [€80.001 - €400.000]
- [€400.001 - €800.000]
- [€800.001 - €4.000.000]
- Above €4.000.001

Are you planning starting a new business Project?

(Note: if your answer is no, please proceed to question 3)

- Yes.
- No.

This business Project:

- It has already been defined (if you have selected this option please specify in which industry you are planning to start your business).
- It is still something undefined (If you have selected this option please specify in which industry you are planning to implement your business).
- It is still just an idea to start my own business (In this case please proceed to c.)

Which of the following processes better represents the origin of your business idea:

- You have identified a market necessity and developed the idea about a new product/ service to satisfy it;
- You have developed an idea about a new product/service and tried to identify a market necessity that it could meet;
- You have identified a market necessity and the idea of a new product/service simultaneously.

You are planning to start a new business Project:

- Where you live.
- Where you attend university.
- Somewhere else.

You are planning to start a new business Project:

- Alone.
- With partners.

In case you are planning to start a business with partners, these are:

- Your family members.
- Friends from where you live.
- School colleagues.
- Others (please specify)

You are thinking on:

- Starting a new business project, full time, (i.e. you are willing to have another full time job apart from working in your business project).
- Starting a new business Project, part-time (i.e. you are willing to have another job apart from working in your business project).

3- Please specify the extent to which you agree with each of the following statements (Response scale: 1= Strongly disagree; 2= disagree; 3= Don't agree or disagree; 4= Agree; 5= Strongly agree):

4- Thinking about you, how true are the following statements (Response scale: 1 = Totally false; 2 = false; 3 = false to a certain extent; 4 = nor false nor true; 5 = true to a certain extent; 6= true; 7= totally true):

Response scale:	1	2	3	4	5	6	7
I never seek for opportunities to create a new business	<input type="checkbox"/>						
I am saving Money to start a new business Project.	<input type="checkbox"/>						
I don't read books on how to implement a new business project.	<input type="checkbox"/>						
I don't have any plans to start my own business Project.	<input type="checkbox"/>						
I spend time learning how to create a new business project.	<input type="checkbox"/>						
I don't have imagination for new products.	<input type="checkbox"/>						
I easily identify market needs for new products.	<input type="checkbox"/>						

I would like to manage a firm.	<input type="checkbox"/>						
I would like to create something new.	<input type="checkbox"/>						
I am willing to create a new business Project in the future.	<input type="checkbox"/>						
i. Why? (Please respond independently of your answer in j.)							

5- Identify other people’s opinion regarding your choice of pursuing with the creation of a new business Project.

Response scale:

1<sup>st</sup> column "Which is their opinion in a general manner?" (Response scale: 1 = Strongly negative; 2= Negative; 3= Lightly negative; 4= not positive nor negative; 5= Lightly positive; 6= Positive; 7= Strongly positive; NA = Not Applicable / Don't know)

2<sup>nd</sup> column "Do they think that you can succeed?" and 3<sup>rd</sup> column "They think that there are better things you could be doing?" (Response scale: Yes, No and NA; NA = Not Applicable / Don't know)

Question	Which is their opinion in a general manner?"								Do they think that you can succeed?			They think that there are better things you could be doing?		
	1	2	3	4	5	6	7	NA	Yes	No	NA	Yes	No	NA
Your parents or tutors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your husband/wife or any other significant relationship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your siblings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other family members.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your closest friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your acquaintances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6- Please specify how important it is for you the opinion of each of the following people, in order to decide about your type of Job (Response scale: 1 = not important; 2= small importance; 3= little importance; 4= neutral; 5= more or less important; 6= very important; 7 = extremely important; 8 = Not Applicable / don't know).

Response scale:	1	2	3	4	5	6	7	NA
Your parents or tutors	<input type="checkbox"/>							
Your husband/wife or any other significant relationship	<input type="checkbox"/>							
Your siblings.	<input type="checkbox"/>							
Other family members.	<input type="checkbox"/>							
Your closest friends.	<input type="checkbox"/>							
Your acquaintances	<input type="checkbox"/>							

7- The following statements regard your thoughts and feeling in various situations. For each statement, please, indicate the extent to which they describe (Response scale: 1= Does not describe you at all; 2= Describes you slightly; 3= Describes you very little; 4= Describes you well; 5= Describes you very well).

Response scale:	1	2	3	4	5
You frequently feel tender and concern for people who are less fortunate than you.	<input type="checkbox"/>				
Sometimes you don't feel sorry for other people when they are in trouble.	<input type="checkbox"/>				
When you see someone taking advantage of others you feel, somehow, protective in relation to the latter.	<input type="checkbox"/>				
Others' bad luck does not, usually, upset you a lot.	<input type="checkbox"/>				
Sometimes, when you see someone being treated unfairly you don't feel sorry for them.	<input type="checkbox"/>				
You frequently feel sensible to things you see happening.	<input type="checkbox"/>				
You describe yourself as a person with soft feelings.	<input type="checkbox"/>				

8- In this section several activities will be presented. For each of them, please, indicate the level of confidence you have on your present capacity of carrying each of these activities. Evaluate your degree of confidence entering a number between 0 and 100, in which 0 refers to a situation in which you don't have any confidence your capacity, 50 indicates that you are moderately confident on your ability to complete the activity and 100 indicates that you are sure about your capacity.

**Note:** "0" refers to a situation in which you don't have any confidence your capacity, "50" indicates that you are moderately confident on your ability to complete the activity and "100" indicates that you are sure about your capacity.

What is your confidence level on _____?	0 to 100 scale
To generate, on your own, a new idea for a product or service.	
To participate in a brainstorming with others to generate a new idea for a product or service.	
To identify the necessity for a new product or service.	
To conceive a product or service that satisfies the necessities or needs of a customer.	
To calculate the future customers' demand level for a new product or service	
To determine a competitive price for a new product or service.	
To estimate the necessary initial investment and cash flow to start a new business project.	
To conceive an efficient marketing campaign/advertisement for a new product or service.	
To make other believe and to identify themselves with your vision and plans for a new business project.	
To create a network (i.e. to establish contacts and exchange information with others).	
To explain, in a clear, concise and easy manner, both verbally or written, your ideas about a new business project.	
To supervise employees.	
To recruit and hire employees.	
To assign tasks and responsibilities to employees in your new business project.	
To efficiently manage everyday problems and crisis.	
To inspire, encourage and motivate your employees	
To provide your employees with training.	

To organize and maintain financial registries of your new business project	
To manage the financial assets of your new business project	
To read and interpret the financial statements.	

9- Please indicate to which extent you agree with the following statements (Response scale: 1= Highly disagree; 2= disagree; 3= does not agree or disagree; 4= agree; 5= highly agree):

Response scale:	1	2	3	4	5
I rather depend on myself than in others.	<input type="checkbox"/>				
I depend on myself most of times, and rarely rely on others.	<input type="checkbox"/>				
I frequently do whatever I feel like doing.	<input type="checkbox"/>				
My personal identity is very important to me, regardless of others.	<input type="checkbox"/>				
It is important that I do my job better than the others.	<input type="checkbox"/>				
Winning is everything	<input type="checkbox"/>				
Competition is the law of nature.	<input type="checkbox"/>				
When someone does his/hers job better than I do I feel tense and provoked.	<input type="checkbox"/>				
If a work colleague wins a prize, I feel proud.	<input type="checkbox"/>				
My work colleagues' wellbeing is important to me.	<input type="checkbox"/>				
For me, spending time with others is pleasurable.	<input type="checkbox"/>				
I feel well when I collaborate with others.	<input type="checkbox"/>				
Parents and children should keep together as much as possible.	<input type="checkbox"/>				
It is my duty to take care of my family even when I have to sacrifice what I want.	<input type="checkbox"/>				
Family should keep together, regardless of the necessary sacrifices.	<input type="checkbox"/>				
For me it is important to respect the decisions made by the groups in which I fit in.	<input type="checkbox"/>				

10- We are interested in your experience and your family members' experience on entrepreneurial projects.

- I- In the first column please respond “Yes”, “NO”, or “NA” (i.e. I don’t know/Not applicable) for each of the following questions.
- II- In the second column, please indicate if these experiences have increased or decreased with your confidence in the capacity of successfully creating and managing a new entrepreneurial Project (options: confidence increase, confidence decrease, no impact on your confidence; not applicable to this experience).
- III - In the third column, please respond “Yes”, “No” or “NA” (i.e. I don’t know/Not applicable) if any of the following experiences has involved a failed business Project.

Note: in this question, a failed business Project refers to a situation in which the Project failed as an organization, due to the lack of resources and/or problems in financial terms, and it excludes the sale of the company, fusion, or closing down due to the existence of better alternatives.

Question	These experiences _____ your confidence in successfully creating and managing a new business Project.							Some of these experiences involved a failed business project.		
	Yes	No	NA	Increased	Decreased	No impact	NA	Yes	No	NA
Did your parents / tutors ever create a business Project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did your siblings ever create a business Project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have your grandparents ever created a business Project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever had a paid position in a new firm or in a new business Project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever had an unpaid position Such as an internship) in a new firm or in a new business Project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11- How far would you expect to achieve the following results with the implementation of a new business Project? (Response scale: 1= Nothing; 2= Very little; 3= Little ; 4= Don't know; 5= Moderately; 6= Highly; 7= Very much)

Response scale:	1	2	3	4	5	6	7
Financial gains (personal wealth, personal income increase, etc).	<input type="checkbox"/>						
Independence /Autonomy (personal freedom, being your own boss, etc.)	<input type="checkbox"/>						
Personal gains (public recognition, personal development, proving that I can do things, etc.)	<input type="checkbox"/>						
Familiar security (ensuring the future of your family members; starting a business that could be passed on to the next generation, etc.)	<input type="checkbox"/>						
Time management (becoming more available to do other things).	<input type="checkbox"/>						
Other	<input type="checkbox"/>						
i. (Plesase specify)							

12- Please indicate the extent to which you agree in what relates each of the following statements (Response scale: 1= Highly disagree; 2= disagree; 3= does not agree or disagree; 4= agree; 5= highly agree):

Response scale:	1	2	3	4	5
You can always sort out difficult problems if you put enough effort.	<input type="checkbox"/>				
If you face contrasting positions you can always find the means to achieve what you want.	<input type="checkbox"/>				
It is easy to keep faithful to your objectives and achieve them.	<input type="checkbox"/>				
You are confident that you can deal with unexpected events in an efficient manner.	<input type="checkbox"/>				
Due to your competences and capabilities, you know that you can handle with unexpected situations.	<input type="checkbox"/>				
You can solve most of the problems if you put the necessary effort.	<input type="checkbox"/>				
When facing difficult situations, you remain calm because you can trust on your ability to manage every situation.	<input type="checkbox"/>				
When facing a problem you can, usually, find various solutions.	<input type="checkbox"/>				
If you are in trouble, you can, usually, think on a solution.	<input type="checkbox"/>				

Usually you can handle anything that you have to face.	<input type="checkbox"/>				
You frequently think in becoming an entrepreneur.	<input type="checkbox"/>				
You would like to see yourself as an entrepreneur.	<input type="checkbox"/>				
Becoming an entrepreneur is an important part of who you are.	<input type="checkbox"/>				
When you think about it, you find that the word entrepreneur would fit you very well.	<input type="checkbox"/>				
You are always thinking about becoming an entrepreneur.	<input type="checkbox"/>				
It is important for you to express you entrepreneurial aspirations.	<input type="checkbox"/>				

13- In what relates to your experience as an entrepreneur, please indicate all the entrepreneurial projects you have created (alone or with others) and that:

Have created wealth, indicating in which industry this project was operating.

Have not succeeded? (You should consider not successful projects those that had to stop operating due to the lack of resources and/or problems in financial terms, and it excludes the sale of the company, fusion, or closing down due to the existence of better alternatives).

14- In this section, some activities are presented. Please, specify, the confidence level that you have on your present capacity of undertaking each of the following activities, entering a number between 0 and 100.

**Nota:** "0" indicates that you have no confidence on your capacity, "50" indicates that you have some confidence that you can complete the activity, and "100" indicates that you are absolutely sure about your capacity.

What is your confidence level on your capacity of _____?	0 to 100 scale
Clearly identify a social necessity.	
Being highly motivated to defense a social cause.	
Being an agent of social change.	
Promoting a balance between the economic, social and environmental issues.	
Promoting ethical solutions.	

15- Please indicate the extent to which you agree with the following statements (Response scale: 1= Highly disagree; 2= disagree; 3= does not agree or disagree; 4= agree; 5= highly agree):

Response scale:	1	2	3	4	5
Companies should be socially responsible as far as it is not harmful for their profits.	<input type="checkbox"/>				
The only responsibility of managers is to maximize profits.	<input type="checkbox"/>				
Managers' responsibilities go beyond obtaining profits and include protecting and improving the society welfare seeking to respond to its necessities.	<input type="checkbox"/>				
Managers' responsibilities go beyond obtaining profits and include being proactive to find ways to improve the society in which they operate.	<input type="checkbox"/>				
If your future economical subsistence is compromised, you can rely on family or friends to financially support you.	<input type="checkbox"/>				
Your family or friends can guarantee a job when you graduate.	<input type="checkbox"/>				
Entrepreneurs are valued by the Portuguese society.	<input type="checkbox"/>				
The fact that an entrepreneur has failed in a new business project shows that he/she has no capacities in becoming a successful entrepreneur in the future.	<input type="checkbox"/>				

[Survey – Demographic data](#)

Gender?

Male

Female

Birth date?

In which country you were born?

What is the higher education institution you presently attend?

Which degree are you presently attending? (Please specify its denomination)

Degree type	Designation
<input type="checkbox"/> Degree	
<input type="checkbox"/> Specialization	
<input type="checkbox"/> Executive course	
<input type="checkbox"/> Post-graduation	
<input type="checkbox"/> Master	

<input type="checkbox"/> Degree + master	
<input type="checkbox"/> PhD	

Please specify the main reasons for choosing this degree.

How many curricular years has the course you are attending (Response scale: from 1 to 8 years)?

In which curricular year are you presently enrolled (Response scale: from 1 to 8 years)?

What is your average grade, so far? (0 to 20)

Note: If you don't know it, please do not respond.

You estimate that your average grade corresponds to:

- Percentile [0-25] (i.e. you are in the top 25% of the students with the best grades).
- Percentile [26-50] (i.e. above the average grades of your colleagues).
- Percentile [51-75] (i.e. Under the average grade of your colleagues but above the 25% of the students with lowest grades.)
- Percentile [76-100] (i.e. in the lowest 25% of the students with the lowest grades.)

How important you consider the final grade of your degree to be in order to gain access to a job with good conditions?

- Nothing.
- Very little.
- Little.
- Don't know.
- Moderate.
- A lot.
- Very much.

How important you consider the final grade of your degree to be in order to successfully create your own business?

- Nothing.
- Very little.
- Little.
- Don't know.
- Moderate.
- A lot.
- Very much.

In your degree have you specialized in a particular area? If you chose “yes” please specify the area (s).

- No
- yes

During your degree have you had the possibility of choosing optional courses? If you chose “yes” please specify which ones.

- No
- Yes

Please indicate which curricular units you have attended, or presently are attending, that explore the issues of entrepreneurship, firms’ start-up or innovation (in column 1); if this has been an option or not (column 3). If, in the present academic year you are attending one of these courses, please indicate how many classes have you attended so far.

Curricular unit denomination	Number of classes attended this year	Optional? (Yes/No)
------------------------------	--------------------------------------	--------------------

In which year are you expecting to graduate (response scale from 2010 to 2020)?

For each of the persons listed below, please indicate the country in which he/she was born.

(In the case of Portugal, please use PT).

Family Member	Country of birth
Father	
Mother	
Father’s father	
Father’s mother	
Mother’s father	
Mother’s mother.	

Think about the geographical area in which you were brought up. You consider it as:

- urban?
- rural?
- suburban?

In terms of financial wealth how do you classify your family in relation to the average family in the country in which you were born:

- Poor.
- Average (Mid class).
- Above the average.

Are you part of a minority group in Portugal? (In the case of affirmative answer please specify).

- Yes
- No.
- I don't know.

What is your civil status?

- With partner (married or living with your partner).
- No partner (single, divorced, or widowed).

What is your situation as a student?

- Full-time.
- Part-time.

Which is your present job situation?

- Full-time.
- Part-time.
- Not employed.
- You have created your own job.

How many years you have of job experience (including both full-time and part-time jobs)?

Please list the main activities (or hobbies) that you do in your leisure periods, indicating, maximum three, and the average number of hours you dedicate to them per week.

### Conclusion

We would like to enquiry you in approximately one year, in order to know how your educational experience has evolved. At that point in time, if you decide to be part of this project, completing a small internet based survey you will become part of a new draw.

- Yes, please contact me again.
- No, please don't contact again.

Please indicate your personal data so that we can contact you in the case that you have won the draw and, in case you have accepted (above), so that we can contact you to take part in the survey in the next year.

Name:	
Student name:	
School:	
Email address:	
Today's date:	

**Note:** Your name, student number and email address will only be used for the draw purposes and to match your survey's responses to the subsequent surveys, in the case you decide to take part in future surveys. Your name or any other information will not be shared with anyone, whatever the reason is.

**[1<sup>st</sup> Follow-up EEP Survey (English Version) - Academic Year of 2011-2012]**

**ENTREPRENEURSHIP EDUCATION PROJECT**

**GENERAL QUESTIONS**

**(ALL STUDENT ANSWER)**

**STUDENT INFORMED CONSENT**

Dear Survey Respondent

Thank you for continuing to participate in the Undergraduate Education Project. Your participation in this study is a critical step for understanding the influence an undergraduate education has on students' subsequent career decisions.

You must be 18 years old to participate, and the survey should take about 15-20 minutes to complete. In exchange for your time, if you choose, you will be entered in a drawing for one of one-hundred (100) \$100USD Visa Gift Cards, which will be awarded and delivered two weeks after data collection has ended.

Your responses are completely confidential. We are using Survey Monkey's SSL encryption and the data will be stored on their secure server. The survey data will be as secure as online communications can be. This same type of encryption is used for online banking and is in compliance with HIPAA standards. Per APA requirements, data from this study will be saved on a password protected computer for 5 years after the project is complete before the data are destroyed. The data will be stored in a separate file accessible only to the researchers working on this project. We will ask for your name, and e-mail address, but will only use that information to contact you in the future to study your career progression and to contact you in the event you are selected as a winner in the drawing for the Visa Gift Certificates.

There are no known risks associated with this study. Your participation is completely voluntary. While your responses to the survey questions are greatly desired, you may refuse to participate, skip questions, or discontinue participation at any time without penalty, without losing your place in the Visa Gift Card drawing, and without adversely affecting your relationship with your academic institution.

Thank you again for participating in this important project! If you have questions about this research, please contact the research director of this project, Dr. Doan Winkel, Assistant Professor of Entrepreneurship at Illinois State University, (438-2736), [dwinkel@ilstu.edu](mailto:dwinkel@ilstu.edu).

This project has been approved by the Illinois State University Institutional Review Board for the Protection of Human Subjects (IRB No. 2010-0250, IRB Exemption Date 7/29/2010). If you have questions about your rights as a research participant, please contact the Research Ethics & Compliance Office at 438-2520 or by email at [cechris@ilstu.edu](mailto:cechris@ilstu.edu).

**IF YOU AGREE THAT YOU ARE AT LEAST 18 YEARS OF AGE, AND CONSENT TO PARTICIPATE BY TAKING THIS SURVEY ON-LINE, PLEASE CLICK THE "I AGREE" BUTTON BELOW:**

1. Please indicate at which university you are currently studying, from which you recently graduated, or at which you most recently attended:

**\*\*I will include a drop-down list of all universities here\*\***

For contact purposes:

So that we can match your responses here with those you gave in a survey last year, please provide your name, the e-mail address you used for last year's survey, and a current e-mail address, if different.

1. Name
2. Last Year's E-mail address
3. Current E-mail address (if different than last year)

This information will only be used to match your responses, to contact you for any clarifications, and to enter the raffle if you choose to do so.

2. In appreciation for your time in completing this survey, we will be conducting a raffle for 100 \$100USD Visa Gift Cards. Would you like to be entered into this raffle?
  - a. Yes
  - b. No

**Please indicate your agreement with each of the following statements:**

**Response Scale:** 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree

3. I can always manage to solve difficult problems if I try hard enough.
4. If someone opposes me, I can find the means and ways to get what I want.
5. It is easy for me to stick to my aims and accomplish my goals.
6. I am confident that I could deal efficiently with unexpected events.
7. Thanks to my resourcefulness, I know how to handle unforeseen situations.
8. I can solve most problems if I invest the necessary effort.
9. I can remain calm when facing difficulties because I can rely on my coping abilities.
10. When I am confronted with a problem, I can usually find several solutions.
11. If I am in trouble, I can usually think of a solution.
12. I can usually handle whatever comes my way.

**Please use the below list of common human traits to describe yourself as accurately as possible. Describe yourself as you really are compared to other people you know of the same age and sex, not as you wish to be. So, generally, is it accurate or inaccurate that you are:**

**Response Scale:** 1=Inaccurate; 2= Somewhat inaccurate; 3= Neither accurate nor inaccurate; 4= Somewhat accurate; 5=Accurate

13. Shy; 14. Talkative; 15. Energetic; 16. Quiet; 17. Extraverted; 18. Outgoing; 19. Reserved; 20. Untalkative; 21. Creative; 22. Intellectual; 23. Unimaginative; 24. Artistic; 25. Intelligent; 26. Philosophical; 27. Deep; 28. Uncreative; 29. Envious; 30. Emotional; 31. Anxious; 32. Unworried; 33. Jealous; 34. Unenvious; 35. Moody; 36. Unanxious; 37. Efficient; 38. Disorganized; 39. Careless; 40. Untidy; 41. Neat; 42. Inefficient; 43. Systematic;

44.Organized; 45. Kind; 46. Sympathetic; 47. Harsh; 48. Cooperative; 49. Unkind; 50. Warm; 51.Rude; 52. Inconsiderate.

<b>53</b>	<b>BIZSTART</b>	In the last 365 days, have you started a business?
-----------	-----------------	--

1. Yes (*routed to Q2*)
2. No (*routed to Q12*)

<b>54</b>	<b>BIZSTART</b>	Is this business currently operating?
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1. Yes
2. No
  - a. If no, please explain why not

<b>55</b>	<b>BIZLOC</b>	Did you start this new venture? (If your home town and university town are the same, please select "Other", and type SAME)
-----------	---------------	--

1. In your home town
2. In your university town
3. Other (please specify)

<b>56</b>	<b>BIZTEAM</b>	Did you start this new venture?
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1. On your own
2. With partners

<b>57</b>	<b>BIZPART</b>	<i>If you started this new venture with partners, were these partners? (If your friends were from both home and school, please select "Other", and type SAME)</i>
-----------	----------------	---

1. Family members
2. Friends from home
3. Friends from school
4. Other (please specify) (**OTHERPART**)
5. Not applicable

<b>58</b>	<b>BIZTIME</b>	Which of the following best describes your working situation when you started your new venture:
-----------	----------------	---

1. I started a full-time venture (i.e., you did **not** have a job in addition to working for your new venture)
2. I started a part-time venture (i.e., you did have a job in addition to working for your new venture)

<b>59</b>	<b>BIZINTL</b>	Did you start this venture internationally (i.e., started operations in more than one country)?
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1. Yes
2. No

**As of the last day of the previous month, how many of each of the following types of employees (including yourself) work for your venture?**

<b>60</b>	<b>FULLEMP</b>	Full-time paid employees
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<b>61</b>	<b>PARTEMP</b>	Part-time paid employees
-----------	----------------	--------------------------

<b>62</b>	<b>INTERN</b>	Non-paid workers (e.g., interns, unpaid managers, etc.)
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<b>63</b>	<b>REVENUE</b>	For your 2011 fiscal year, what is the projected gross revenue you expect for your venture?
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1. Under \$25,000 (€20k)
2. \$25,001 - \$100,000 (€20k - €80k)
3. \$100,001 - \$500,000 (€80k - €400k)
4. \$500,001 - \$1,000,000 (€400k - €800k)
5. \$1,000,001 - \$5,000,000 (€800k - €4.000k)
6. Above \$5,000,000 (€4.000k)

<b>64</b>	<b>START</b>	Have you considered starting a venture?
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1. Yes (*routed to Q13*)
2. No (*routed to Entrepreneurial Intent questions*)

<b>65</b>	<b>STARTLOC</b>	Are you considering starting the venture? (If your home town and university town are the same, please select "Other", and type SAME)
-----------	-----------------	--

1. In your home town
2. In your university town
3. Other (please specify)

<b>66</b>	<b>STARSOLO</b>	Are you considering starting the venture?
-----------	-----------------	---

1. On your own
2. With partners

<b>67</b>	<b>STARTPART</b>	<i>If you are considering starting the venture with partners, would these partners be: (If your friends were from both home and school, please select "Other", and type SAME)</i>
-----------	------------------	---

1. Family members
2. Friends from home
3. Friends from school
4. Other (please specify) (**OTHERSTARTPART**)
5. Not applicable

<b>68</b>	<b>STARTIME</b>	Are you considering:
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1. Starting a full-time venture (i.e., you intend to *not* have a job in addition to working for your new venture)
2. Starting a part-time venture (i.e., you intend to have a job in addition to working for your new venture)

<b>69</b>	<b>BIZINTL</b>	Are you considering starting this venture internationally (i.e., starting operations in more than one country)?
-----------	----------------	---

1. Yes
2. No

**Thinking of yourself, how true is it that you:**

**Response Scale:** 1= very untrue; 2 = untrue; 3 = somewhat untrue; 4 =neither true or untrue; 5 = somewhat true; 6=true; 7=very true

70. Never search for business start-up opportunities
71. Are saving money to start a business
72. Do not read books on how to set up a firm
73. Have no plans to launch your own business
74. Spend time learning about starting a firm
75. Intend to set up a company in the future
  - a. Why? (Please explain why you answered the way you did in the previous question)

**Please indicate your agreement with each of the following statements:**

**Response Scale:** 1=strongly disagree to 5=strongly agree

- 76. I am not willing to take risks when choosing a job or a company to work for.
- 77. I prefer a low risk/high security job with a steady salary over a job that offers high risks and high rewards.
- 78. I prefer to remain on a job that has problems that I know about, rather than take the risks of working at a new job that has unknown problems, even if the new job offers greater rewards.
- 79. I view risk on a job as a situation to be avoided at all costs

**This section lists various activities. In the box to the right of each activity, please rate how confident you are in your ability to accomplish it at the present time. Rate your degree of confidence by typing a number between 0 and 100, where 0 indicates you have absolutely no confidence in your ability, 50 indicates you are moderately certain you can successfully complete the activity, and 100 indicates you are completely confident in your ability.**

**How much confidence do you have in your ability to \_\_\_\_\_?**

**Response Scale:** 0 to 100

- 80. Come up with a new idea for a product or service on your own.
- 81. Brainstorm with others to come up with a new idea for a product or service.
- 82. Identify the need for a new product or service.
- 83. Design a product or service that will satisfy customer needs and wants.
- 84. Estimate customer demand for a new product or service.
- 85. Determine a competitive price for a new product or service.
- 86. Estimate the amount of start-up funds and working capital necessary to start my business.
- 87. Design an effective marketing/advertising campaign for a new product or service.
- 88. Get others to identify with and believe in my vision and plans for a new business.
- 89. Network (i.e., make contact with and exchange information with others)
- 90. Clearly and concisely explain verbally my business ideas in everyday terms.
- 91. Clearly and concisely explain in writing my business ideas in everyday terms.
- 92. Supervise employees.
- 93. Recruit and hire employees.
- 94. Delegate tasks and responsibilities to employees in my business.
- 95. Deal effectively with day-to-day problems and crises.
- 96. Inspire, encourage, and motivate my employees.
- 97. Train employees.
- 98. Organize and maintain the financial records of my business.
- 99. Manage the financial assets of my business.
- 100. Read and interpret financial statements.

**Have you done the following in the past year, in relation to starting a new business?**

**Scale:** 1 = Yes; 2 = No

- 101. Bought facilities / equipment
- 102. Rented facilities / equipment
- 103. Looked for facilities
- 104. Invested own money

- 105. Asked for funding
- 106. Got financial support
- 107. Developed models
- 108. Devoted fulltime to business
- 109. Applied for license / patent
- 110. Formed a legal entity
- 111. Hired employees
- 112. Attended a 'start your own business' seminar or conference
- 113. Wrote a business plan or participated in seminars that focus on writing a business plan
- 114. Put together a start-up team
- 115. Saved money to invest in the business
- 116. Developed a product or service

**To what extent do you expect to achieve the following outcomes by starting your own venture?**

**Response scale:** 1 = not at all; 2= very little; 3= somewhat; 4= I am not sure; 5= moderately; 6= a good deal; 7= very much

- 117. Financial rewards (personal wealth, increase personal income, etc.)
- 118. Independence/Autonomy (personal freedom, be your own boss, etc.)
- 119. Personal rewards (public recognition, personal growth, to prove I can do it, etc.)
- 120. Family security (to secure future for family members, to build a business to pass on, etc.)
- 121. Have more time (Becoming more available to do other things besides work)
- 122. Other (please specify)

**123. In the last 365 days, did any of your parents, grandparents, or siblings start a business?**

- a. Yes
- b. No
- c.

In the first column, please answer yes, no, or I don't know to each question.

Yes

No

I don't know

In the last 365 days, did your parents/guardians start a new venture?
In the last 365 days, did any of your siblings start a new venture?
In the last 365 days, did any of your grandparents start a new venture?

In the second column, we are interested in whether exposure to others' entrepreneurial activities added to or detracted from your own confidence to successfully start and run an entrepreneurial business/venture answers. For example, in the first row, if your parents started a new venture, did your exposure to their experience impact your confidence?

- Added to your confidence
- Detracted from your confidence
- Had no impact on your confidence
- Not applicable/no such experience

In the last 365 days, a parent/guardian started a new venture?
In the last 365 days, a sibling started a new venture?
In the last 365 days, a grandparent started a new venture?

In the third column, please indicate whether the particular individual(s) identified in the first column have owned a business that failed (i.e., "failure" implies being forced to cease operations as an organization due to lack of resources and/or financial distress. This excludes selling one's business, merging, or stopping it because there are better alternatives.)

- Yes
- No
- I don't know

In the last 365 days, a parent/guardian started a new venture?
In the last 365 days, a sibling started a new venture?
In the last 365 days, a grandparent started a new venture?

**In the last 365 days, did you have any experience working for a new company/ entrepreneurial venture that was not yours?**

- Yes
- No

In the first column, we are interested in whether exposure to entrepreneurial activities added to or detracted from your own confidence to successfully start and run an entrepreneurial business/venture. For example, in the first row, if your parents started a new venture, did your exposure to their experience impact your confidence?

- Added to your confidence
- Detracted from your confidence
- Had no impact on your confidence
- Not applicable/no such experience

In the last 365 days, have you held a paying position in a new company / entrepreneurial venture?
In the last 365 days, have you held a non-paying position (such as intern) at a new company / entrepreneurial venture?

If you have held a position in a new company/entrepreneurial venture in the last 365 days, has that business failed (i.e., "failure" implies being forced to cease operations as an organization due to lack of resources and/or financial distress. This excludes selling one's business, merging, or stopping it because there are better alternatives.)

Yes / No / I don't know

**How many years of work experience do you have?**

Less than three months

From 3 to less than 6 months

From 6 to less than 9 months

From 9 to less than 12 months

From 1 to less than 2 years

From 2 to less than 3 years

From 3 to less than 4 years

*(Include other years in drop-down menu)*

**What is your marital status?**

Partnered (married, cohabitating, de facto)

Not partnered (single, divorced, widowed)

**Please indicate which of the follow best represents your current situation:**

I am an undergraduate college student (i.e., studying for my Bachelor's degree) *(will answer Student Track Question)*

I am a graduate student (i.e., studying for my Master's, Ph.D., or other post-graduate degree) *(will answer Student Track Questions)*

I recently graduated college and am pursuing a career *(will answer Current Employment Questions)*

I recently left college to pursue a career *(will answer Current Employment Questions)*

**ENTREPRENEURSHIP EDUCATION PROJECT**

**WAVE TWO STUDENT TRACK QUESTIONS**

**What is your academic major at the present time?**

**How many years do you have left to complete your major courses?**

**The next questions ask you about courses you have taken related to entrepreneurship, small business management, and creativity. In the first column, please list the identifiers for each entrepreneurship, small business management, and creativity course you have taken in the past two academic years, and then provide information in the other columns based on each course?**

<i>Please List Each Class Title/Subject Separately  (e.g., MQM224 Entrepreneurship I, SBM100 Intro to Small Business, CRT152 Creativity in the Arts, etc.)</i>	<i>Percentage of class sessions attended last academic year</i>	<i>Percentage of class sessions this academic year</i>	<i>Was the course optional? (Choices will be "optional" or "mandatory")</i>

**In what year did you start taking classes toward your current degree?**

**In what year do you plan on graduating (response scale from 2011 to 2019 or later)?**

**What is your current student status**

Full-time

Part-time

**What is your current grade point average (GPA)? (if you do not know this, please do not respond)**

**Please make your best estimate on how your GPA ranks in relation to all other students in your major:**

0-25<sup>th</sup> Percentile (among the best 25% of students in your major)

26-50<sup>th</sup> Percentile (above average compared to other students in your major)

51-75<sup>th</sup> Percentile (below average compared to other students in your major)

76-100<sup>th</sup> Percentile (among the lowest 25% of students in your major)

**Response Scale For All Below:** 1= not important at all; 2 = unimportant; 3 =neither important or unimportant; 4=important; 5=very important

**How important is the *knowledge* one gains during your university studies to securing what you believe is a good job?**

**How important do you consider *GPA* to be to securing what you believe is a good job?**

**How important is the *knowledge* one gains during your university studies to be successful in running your own business?**

**How important do you consider *GPA* to being successful in running your own business?**

**What is your current employment status?**

Full-time (working for someone else’s business) *(will answer Corporate Employment Questions)*

Part-time (working for someone else’s business) *(will answer Corporate Employment Questions)*

Self-employed and not working for another business *(will answer Self-Employment Questions)*

Self-employed and working part-time for someone else’s business *(will answer Self-Employment Questions)*

Self-employed and working full-time for someone else's business (*will answer Self-Employment Questions*)

Not employed (*will only answer the following two questions*)

## **ENTREPRENEURSHIP EDUCATION PROJECT**

### **WAVE TWO CORPORATE EMPLOYMENT QUESTIONS**

**On average, currently how many hours do you work per week?**

**Scale:** Range from "5 or fewer" to "100 or more"

**The following items ask you about your current employment. If you work in more than one organization, please complete the survey on the basis of your primary employment.**

**Which of the following best describes your employer/company?**

Private sector/for-profit business

Public sector/government

Non-profit organization

Other (please specify)

**Which of the following best describes the level of your current job?**

Hourly employee (e.g., bank teller, clerk, waiter, nurse aid, etc.)

Entry-level manager or supervisor (supervising non-management employees)

Middle-level manager

Upper middle manager (e.g., department head, superintendent, regional manager)

Executive (e.g., vice president, director, division head, business unit head)

Top management (e.g., chief executive, president, chief operating officer)

Other (please specify)

**Beside yourself, how many people does your company employ?**

0

1-14

15-49

50-99

100-499

500-999

1,000 - 4,999

5,000 or more

**What is the primary nature of your company?**

Agriculture

Mining  
Utilities  
Construction  
Manufacturing  
Trade (wholesale or retail)  
Information  
Finance  
Insurance  
Real estate  
Professional, scientific, or technical services  
Education  
Health care or social services  
Art, entertainment, or recreation  
Accommodation or food services  
Public administration  
Other (please specify)

**Please indicate your company's performance compared to competitors over the past three years on the following metrics. If your company was founded less than three years ago, please base your comparison on the time since it was founded.**

**Response scale:** 1=worse than competitors, 2=about the same as competitors, 3=better than competitors, NA= not applicable or don't know

Growth in sales  
Growth in market share  
Growth in employees  
Growth in profitability  
Profit margin on sales  
The ability to fund growth from profit

**What is your current annual income from work?**

Less than \$10,000  
\$10,000 to \$14,999  
\$15,000 to \$19,999  
\$20,000 to \$24,999  
\$25,000 to \$29,999  
\$30,000 to \$34,999  
\$35,000 to \$39,999  
\$40,000 to \$44,999  
\$50,000 to \$59,999

\$60,000 to \$69,999  
\$70,000 to \$79,999  
\$80,000 to \$89,999  
\$90,000 to \$99,999  
\$100,000 to \$124,999  
\$125,000 to \$149,999  
\$150,000 to \$174,999  
\$175,000 to \$199,999  
\$200,000 to \$224,999  
\$225,000 to \$249,999  
\$250,000 and above

## ENTREPRENEURSHIP EDUCATION PROJECT

### WAVE TWO SELF-EMPLOYMENT EMPLOYMENT QUESTIONS

The following items ask you about the business you currently own.

#### How long have you owned this business?

Less than three months  
From 3 to less than 6 months  
From 6 to less than 9 months  
From 9 to less than 12 months  
From 1 to less than 2 years  
From 2 to less than 3 years  
From 3 to less than 4 years

*(Include other years in drop-down menu)*

#### Which of the following best describes your employer/company?

Private sector/for-profit business  
Non-profit organization  
Other (please specify)

#### If you currently are employed at an organization other than one you own, which of the following best describes the level of that current job?

Hourly employee (e.g., bank teller, clerk, waiter, nurse aid, etc.)  
Entry-level manager or supervisor (supervising non-management employees)  
Middle-level manager  
Upper middle manager (e.g., department head, superintendent, regional manager)  
Executive (e.g., vice president, director, division head, business unit head)  
Top management (e.g., chief executive, president, chief operating officer)

Other (please specify)

**On average, currently how many hours do you work per week?**

**Scale:** Range from “5 or fewer” to “100 or more”

**Using the following table, please indicate in the first column how many people the company you own currently employs. In the second column, if you also work for another company, please indicate how many people that other company currently employs.**(Response scale: 0; 1-14; 15-49; 50-99; 100-499; 500-999; 1,000 - 4,999; 5,000 or more)

**Using the following table, please indicate in the first row the primary nature of the company you own. In the second column, if you also work for another company, please indicate the primary nature of that other company.**

Agriculture

Mining

Utilities

Construction

Manufacturing

Trade (wholesale or retail)

Information

Finance

Insurance

Real estate

Professional, scientific, or technical services

Education

Health care or social services

Art, entertainment, or recreation

Accommodation or food services

Public administration

Other (please specify)

**Do you have any prior working experience in the same industry of the business you currently own?**

Yes, in the same kind of business which you currently own

Yes, with a supplier in the same industry

Yes, with business clients in the same industry

No

**In the first column, please indicate the performance of the company you own compared to your competitors over the past three years on the following metrics. If your company was founded less than three years ago, please base your comparison on the time since it was founded.**

In the second column, if you also work for another company, please indicate the performance of that company compared to their competitors over the past three years on the following metrics. If that company was founded less than three years ago, please base your comparison on the time since it was founded.

**Response scale:** 1=worse than competitors, 2=about the same as competitors, 3=better than competitors, NA= not applicable or don't know

Growth in sales

Growth in market share

Growth in employees

Growth in profitability

Profit margin on sales

The ability to fund growth from profit

**What is your current annual income from work?**

Less than \$10,000

\$10,000 to \$14,999

\$15,000 to \$19,999

\$20,000 to \$24,999

\$25,000 to \$29,999

\$30,000 to \$34,999

\$35,000 to \$39,999

\$40,000 to \$44,999

\$50,000 to \$59,999

\$60,000 to \$69,999

\$70,000 to \$79,999

\$80,000 to \$89,999

\$90,000 to \$99,999

\$100,000 to \$124,999

\$125,000 to \$149,999

\$150,000 to \$174,999

\$175,000 to \$199,999

\$200,000 to \$224,999

\$225,000 to \$249,999

\$250,000 and above

**What percentage of this income is from the business(es) you own?**

**Response scale:** *Between 0 and 100)*

**How many of the following types of dependents do you currently support?**

Children (drop down menu of 1, 2, 3, 4 or more)

Parents/Grandparents (drop down menu of 1, 2, 3, 4 or more)

**Please list your three main hobbies/activities you do in your free time. Also, please indicate how many hours on average you spend in these activities per week.**

[2<sup>nd</sup> Follow-up EEP Survey (Portuguese Version) - Academic Year of 2013-2014]

**ENTREPRENEURSHIP EDUCATION PROJECT**

**(PORTUGAL)**

ID01 Nome	
ID02 Endereço de E-mail	
ID03 Endereço de E-mail alternativo*	
ID04 Instituição de ensino superior**	

O seu nome e endereço de e-mail só serão usados para fazer a correspondência entre as respostas dadas aos vários questionários deste projecto de investigação. O seu nome e e-mail não serão partilhados com ninguém, seja qual for a razão.

**Notas:**

\*No caso de pretender fornecer-nos um segundo endereço de e-mail para contacto, tem a opção de referir um segundo e-mail.

\*\* Se não se encontrar, presentemente, a frequentar nenhuma instituição de ensino superior, indique p.f. a última que frequentou.

**ID05. Indique p.f. qual dos seguintes estados melhor representa a sua situação actual:**

**Nota:** No caso de ser trabalhador estudante, seleccione a alínea a).

- a. Sou actualmente aluno do ensino superior.
- b. Terminei a licenciatura, recentemente, e estou agora a prosseguir uma carreira
- c. Terminei os meus estudos pós-graduados (i.e. pós-graduações, mestrados, Doutoramentos), recentemente, e estou agora a prosseguir uma carreira
- d. Abandonei a licenciatura, recentemente, e estou agora a prosseguir uma carreira
- e. Abandonei os meus estudos pós-graduados (i.e. pós-graduações, mestrados, Doutoramentos), recentemente, e estou agora a prosseguir uma carreira

**ID06. Que curso frequenta actualmente? (especifique p.f. a sua designação)**

- a. Licenciatura
- b. Especialização
- c. Curso para Executivos
- d. Pós-Graduação
- e. Mestrado
- f. Mestrado Integrado
- g. Doutoramento

**ID07. Indique p.f. qual a designação completa desse curso.**

**ID08. Qual a sua situação actual como estudante?**

- a.  Tempo inteiro.
- b.  Part-time.

**ID09. Em que ano iniciou o curso que actualmente frequenta?**

- droplist with past years (e.g. 2013, 2012, 2011, 2010, 2009, etc)

**ID10- Quantos anos curriculares tem o curso que frequenta actualmente?**

- droplist with (1, 2, 3, 4, 5)

**ID11- Em que ano curricular se encontra actualmente?**

**Nota:** Não se procura aqui saber o número de matrículas, mas sim o ano do curso em que está matriculado.

- droplist with (1, 2, 3, 4, 5)

**ID12. Qual a sua situação de emprego actual?**

- a. A trabalhar por conta de outrem a tempo inteiro.
- b. A trabalhar por conta de outrem em *part-time*.
- c. Criou o seu próprio emprego e não trabalha por conta de outrem.
- d. Criou o seu próprio emprego e trabalha por conta de outrem em *part-time*.
- e. Criou o seu próprio emprego e trabalha por conta de outrem a tempo inteiro.
- f. Não está empregado.

**ID13. Quantos anos possui de experiência profissional (incluindo trabalho em *part-time* e a tempo inteiro)?**

- droplist with (1,2,3,4,5, etc)

**ID14- Refira se já frequentou unidades curriculares em que a temática central era o empreendedorismo, a gestão de pequenas empresas e/ou a criatividade nos negócios.**

<i>Nome da unidade curricular que frequentou</i>	<i>Ano lectivo em que frequentou essa Unidade Curricular</i>	<i>Era uma Unidade Curricular Opcional?</i>
<i>(e.g. Empreendedorismo [S1], Empreendedorismo de base tecnológica [S2], Criatividade [S1], etc.)</i>	<i>(e.g. 2012/13 - Drop list)</i>	<i>("Sim" = opcional ou "Não" = obrigatória) - Drop list)</i>

Intenções

**Pensando em si próprio, até que ponto é verdade que:** (Escala de resposta: 1 = completamente falso; 2 = quase completamente falso, 3 = em certa medida é falso; 4 = nem falso, nem verdadeiro; 5 = em certa medida é verdadeiro, 6= quase completamente verdadeiro; 7= completamente verdadeiro)

<i>Escala de resposta:</i>	1	2	3	4	5	6	7
INT01. Nunca procura oportunidades para criar um novo negócio.	<input type="checkbox"/>						
INT02. Está a poupar dinheiro para começar um novo projecto empresarial.	<input type="checkbox"/>						
INT03. Não lê livros sobre como implementar um novo projecto empresarial.	<input type="checkbox"/>						
INT04. Não tem planos para criar o seu próprio projecto empresarial.	<input type="checkbox"/>						
INT05. Despende tempo a aprender sobre como criar um novo projecto empresarial.	<input type="checkbox"/>						
INT06. Tem intenção de criar um novo projecto empresarial no futuro.	<input type="checkbox"/>						
INT07M. As seguintes motivações contribuíram para o seu actual nível de intenções empreendedoras. (i.e. respondendo “7” – implicará que essa(s) motivação(ões) foi(ram) determinante(s) para sua resposta à pergunta anterior, e respondendo “1” – que não as considera relacionadas com a sua resposta anterior)?							
INT07Ma. Pretende ser independente (i.e. Não depender de ninguém, de ser o seu próprio patrão e/ou de poder ter um horário de trabalho flexível.)	<input type="checkbox"/>						
INT07Mb Pretende ter poder (i.e. Poder gerir e comandar os destinos de algo e/ou de outros).	<input type="checkbox"/>						
INT07Mc Pretende Realizar-se Pessoalmente (i.e. Ser feliz, de se sentir realizado e/ou de fazer o que realmente gosta.)	<input type="checkbox"/>						
INT07Md Pretende Experienciar esse processo particular, de criar um novo negócio.	<input type="checkbox"/>						
INT07Me Para ser bem-sucedido. (i.e. Vencer, ter sucesso).	<input type="checkbox"/>						
INT07Mf Pretende trabalhar para si mesmo (i.e. os resultados do seu trabalho estarem directamente ligados ao seu esforço e sucesso)	<input type="checkbox"/>						
INT07Mg Pretende ter um emprego (i.e. vê a criação do seu próprio negócio como uma forma de estar empregado)	<input type="checkbox"/>						

INT07Mh Para colmatar alguma(s) necessidade(s) da sociedade	<input type="checkbox"/>						
INT07Mi Desenvolvimento pessoal (i.e. Evoluir como pessoa - no seu conhecimento, experiência, visão, etc, - através da criação do seu próprio negócio).	<input type="checkbox"/>						
INT07Mj Pretende criar algo ou ser criativo	<input type="checkbox"/>						
INT07Mk Pretende mudar a sociedade de uma forma significativa	<input type="checkbox"/>						
INT07Ml Pretende ser socialmente reconhecido por isso	<input type="checkbox"/>						
INT07Mm Pretende fazer a diferença. (i.e. De se destacar pessoalmente)	<input type="checkbox"/>						
INT07Mn Pretende o desafio associado	<input type="checkbox"/>						
INT07Mo Pretende ganhar dinheiro (i.e. Lucros, mais valias).	<input type="checkbox"/>						
INT07Mp Pretende ter a propriedade de um negócio. (i.e. Deter a sua própria organização).	<input type="checkbox"/>						
INT07Mq Pretende trabalhar em algo que goste (i.e. Conseguir trabalhar em algo específico - indústria, sector, área de conhecimento, um particular emprego – ou para, simplesmente, trabalhar em algo que goste.)	<input type="checkbox"/>						
INT07Mr Tem interesse em criar um novo projecto empresarial	<input type="checkbox"/>						
INT07B. As seguintes barreiras contribuíram para o seu actual nível de intenções empreendedoras. (i.e. respondendo “7” – implicará que essa(s) barreira(s) foi(ram) determinante(s) para sua resposta à pergunta anterior, e respondendo “1” – que não as considera relacionadas com a sua resposta anterior)?	<input type="checkbox"/>						
INT07Ba Falta de competências pessoais (i.e. Falta de conhecimento relevante, mas passível de ser colmatado).	<input type="checkbox"/>						
INT07Bb Não é a altura(timing) certa para o fazer, devido à sua idade.	<input type="checkbox"/>						
INT07Bc Dificuldade em aceder aos recursos financeiros necessários (i.e. Financiamento inicial, fundo de maneio e capital próprio).	<input type="checkbox"/>						
INT07Bd Dificuldade em obter os recursos humanos necessários (i.e. Parceiros de negócio e/ou trabalhadores).	<input type="checkbox"/>						
INT07Be Dificuldade em obter outros recursos necessários	<input type="checkbox"/>						
INT07Bf Dificuldade ter ideias de negócio	<input type="checkbox"/>						

INT07Bg Ainda não pensou nisso	<input type="checkbox"/>						
INT07Ba Já detém um negócio e isso retira-lhe a intenção de criar um novo negócio no futuro	<input type="checkbox"/>						
INT07Ba É avesso(a) ao risco (i.e. Trata-se de um traço da sua personalidade)	<input type="checkbox"/>						
INT07Ba As circunstâncias actuais do meio-envolvente são arriscadas (i.e. Considera o actual ambiente económico, social e político especialmente arriscado para ter um nível de intenções superior ao que reportou)	<input type="checkbox"/>						
INT07Ba Custos de oportunidade (i.e. Embora admita a hipótese de criar o seu próprio negócio, não prefere criar o seu próprio negócio por considerar que os resultados esperados dessa opção seriam inferiores aos de um emprego por conta de outrem).	<input type="checkbox"/>						
INT07Ba Falta de perfil pessoal para o fazer (i.e. Não considera deter nem ser provável alcançar as características pessoais que considera serem necessárias)	<input type="checkbox"/>						
INT07Ba Ainda não apareceu uma oportunidade para o fazer	<input type="checkbox"/>						
INT07Ba Falta de interesse pessoal em criar um novo projecto empresarial	<input type="checkbox"/>						

### Planeamento

#### **P01- Está actualmente a planear em começar um novo projecto empresarial?**

- i.  Sim.
- ii.  Não.

#### **P02. Este projecto empresarial:**

- i.  É já um projecto definido.  
(Em caso de escolha desta opção, indique p.f. em que sector pretende implementar o seu negócio)
- ii.  Ainda é um projecto algo indefinido.  
(Em caso de escolha desta opção, indique p.f. em que sector pretende implementar o seu negócio)
- iii.  É apenas ainda uma ideia de vir a ter um negócio próprio.

#### **P03. Qual dos seguintes processos retrata melhor a origem da sua ideia de negócio:**

- i.  Identificou uma necessidade no mercado e desenvolveu uma ideia sobre um novo produto/serviço para a satisfazer;
- ii.  Desenvolveu uma ideia sobre um novo produto/serviço e procurou identificar uma necessidade no mercado que este novo produto/serviço pudesse satisfazer;
- iii.  Identificou a necessidade do mercado e a ideia de um novo produto/serviço em simultâneo.

**P04. Está a planear em começar um novo projecto empresarial:**

- i.  Sozinho.
- ii.  Com parceiros.

**P05. Esses parceiros serão:**

- i.  Membros da sua família.
- ii.  Amigos do seu local de residência.
- iii.  Amigos da sua escola.
- iv.  Outros

**P06. Está a planear em:**

- i.  Começar um novo projecto empresarial a tempo inteiro (i.e., não pretende ter um emprego para além de trabalhar no seu novo projecto empresarial).
- ii.  Começar um novo projecto empresarial em part-time (i.e., pretende ter um emprego para além de trabalhar no seu novo projecto empresarial).

**P07. Pretende começar esse novo projecto empresarial com um âmbito internacional (i.e., com operações em mais do que um país)?**

- i.  Sim.
- ii.  Não.

**N01- Relativamente ao seu novo projecto empresarial, nos últimos 365 dias você já:**

- 101. Comprou instalações / equipamento
- 102. Arrendou instalações / equipamento
- 103. Procurou instalações
- 104. Investiu do seu próprio dinheiro
- 105. Pediu financiamento
- 106. Obteve apoio(s) financeiro(s)
- 107. Desenvolveu modelo(s) de negócio
- 108. Dedicou-se a full time ao negócio
- 109. Candidatou-se a licença(s) ou patente(s)
- 110. Estabeleceu-se legalmente como uma sociedade ou como empresário em nome individual.
- 111. Contratou empregado(s)
- 112. Assistiu a um seminário ou curso sobre “como começar o seu próprio negócio”
- 113. Escreveu um plano de negócios, ou participou num seminário sobre como escrever um plano de negócios
- 114. Já juntou uma equipa para iniciar o negócio
- 115. Poupano dinheiro para investir no negócio
- 116. Desenvolveu produtos ou serviços

**Projectos Empresariais já criados**

**EMP1- Já criou algum novo negócio?**

- i.  Sim.
- ii.  Não.

**EMP2- Em que data criou o seu projecto empresarial?**

Nota: Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**EMP3- Esse negócio mantém-se actualmente em funcionamento?**

Nota: Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

- i.  Sim.
- ii.  Não. (Especifique p.f. porque não)

**EMP4- Iniciou esse projecto empresarial:**

Nota: Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

- i.  Sozinho.
- ii.  Com parceiros.

**EMP5- Esses parceiros eram:**

Nota: Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

- i.  Membros da sua família.
- ii.  Amigos do seu local de residência.
- iii.  Amigos da sua escola.
- iv.  Outros

**EMP6- Qual das seguintes situações de trabalho o descreveria melhor quando começou o seu novo projecto empresarial?**

Nota: Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

- i.  Começou o novo projecto empresarial a tempo inteiro (*i.e.*, não tinha um emprego para além de trabalhar no seu novo projecto empresarial).
- ii.  Começou o novo projecto empresarial em *part-time* (*i.e.*, tinha um emprego para além de trabalhar no seu novo projecto empresarial).

**EMP7. Começou esse novo projecto empresarial com um âmbito internacional (*i.e.*, com operações em mais do que um país)?**

Nota: Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

- iii.  Sim.
- iv.  Não.

**EMP8. No último dia do mês passado, quantos empregados (incluindo você) trabalhavam para o seu projecto empresarial nas seguintes condições:**

Nota: Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

60. Trabalhadores pagos a tempo inteiro.	
61. Trabalhadores pagos em <i>part-time</i> .	

62. Trabalhadores não pagos (e.g. estagiários, gestores sem remuneração, etc.)	
--	--

**EMP9. Para o ano fiscal de 2013, qual o volume de vendas que prevê obter para o seu novo projecto empresarial?**

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

- i.  Abaixo de €20.000
- ii.  [€20.001 - €80.000]
- iii.  [€80.001 - €400.000]
- iv.  [€400.001 - €800.000]
- v.  [€800.001 - €4.000.000]
- vi.  Acima de €4.000.000

**EMP10. - Relativamente à sua experiência enquanto empreendedor indique p.f. todos os projectos empreendedores que criou (sozinho ou com outros) e que:**

- a. tenham criado riqueza - Indicando a(s) data(s) de início e de fecho e a(s) indústria(s) em que esse(s) projecto(s) se inseria(m).
- b. não tenham sido bem sucedidos - Indicando a(s) data(s) de início e de fecho e a(s) indústria(s) em que esse(s) projecto(s) se inseria(m).

(Entenda-se como estando nesta situação os projectos que tiveram de deixar de operar, enquanto organizações, devido à falta de recursos e/ou problemas financeiros, o que exclui a venda, a fusão e o terminar as operações porque existem melhores alternativas.)

Dados Demográficos

**DEM01. Os seus pais/tutores, irmãos ou avós criaram algum projecto empresarial?**

<i>Escala de resposta:</i>	Sim	Não
a. Os seus pais/tutores alguma vez criaram um projecto empresarial?	<input type="checkbox"/>	<input type="checkbox"/>
b. O(s) seu(s) irmão(s) e/ou irmã(s) já alguma vez criaram um projecto empresarial?	<input type="checkbox"/>	<input type="checkbox"/>
c. Os seus avós alguma vez criaram um projecto empresarial?	<input type="checkbox"/>	<input type="checkbox"/>

DEM02. Alguma vez deteve uma posição (remunerada ou não) numa nova empresa, ou num novo projecto empresarial?

<i>Escala de resposta:</i>	Sim	Não
a. Alguma vez deteve uma posição <u>remunerada</u> numa nova empresa ou num novo projecto empresarial?	<input type="checkbox"/>	<input type="checkbox"/>
b. Alguma vez deteve uma posição <u>não remunerada</u> (como, por exemplo, estagiário) numa nova empresa ou num novo projecto empresarial?	<input type="checkbox"/>	<input type="checkbox"/>

DEM03. Qual é o seu estado civil?

- a.  Com parceiro (casado(a), em coabitação ou união de facto).
- b.  Sem parceiro (solteiro(a), divorciado(a) ou viúvo(a)).

DEM04. Qual é o número de dependentes a seu cargo

**14(9).** Descendentes (*e.g.* filhos, sobrinhos, etc.) (drop down menu of 0, 1, 2, 3, 4 or more)

**1(50).** Ascendentes (*e.g.* pais, avós, etc.) (drop down menu of 0, 1, 2, 3, 4 or more)

[3<sup>rd</sup> Follow-up EEP Survey (Portuguese Version) - Academic Year of 2015-2016]

Este é um questionário destinado exclusivamente aos participantes do primeiro questionário do Entrepreneurship Education Project (EEP) - Projecto de investigação científica internacional, coordenado nos EUA pelas Universidades de Illinois State e Wisconsin e, em Portugal, pelo ISEG, Universidade de Lisboa.

Qualquer dúvida relacionada com o presente questionário poderá ser enviada para o seguinte endereço de e-mail: [eeportugal.rfb.2010@gmail.com](mailto:eeportugal.rfb.2010@gmail.com)

Bem-vindo ao Entrepreneurship Education Project,

**> Organização do Questionário <**

- 1- Identificação como aluno e/ou trabalhador.
- 2- Intenções Empreendedoras.
- 3- Perceções de Autoeficácia.
- 4- Existência de Planos para começar o seu próprio negócio.
- 5- Negócios já criados.
- 6- Atualização de Dados demográficos.

**Nota:** O número de perguntas deste questionário depende da extensão da sua experiência empreendedora. As análises e os resultados serão sempre analisados de forma agregada, o seu total anonimato está assegurado.

**> Sugerimos que reserve 30 minutos de dedicação exclusiva para a realização deste questionário <**

O tempo previsto é de 15 a 25 minutos, mas é muito importante que possa ler com atenção as questões e refletir sobre as mesmas, se necessário, antes de responder.

Muito obrigado pela sua disponibilidade.

Ricardo Figueiredo Belchior

(Coordenador da equipa do EEP Portugal)

<https://www.iseg.ulisboa.pt/aquila/homepage/ricardobelchior>

<https://www.facebook.com/Ricardo-Figueiredo-Belchior-238875329484949/>

<https://www.linkedin.com/in/ricardobelchior>

**There are 47 questions in this survey**

### **Identificação**

**[[Nome completo: \***

[Please write your answer here:](#)

O seu nome e endereço de e-mail só serão usados para fazer a correspondência entre as respostas dadas aos vários questionários deste projecto de investigação. O seu nome e e-mail não serão partilhados com ninguém, seja qual for a razão.

**[[Endereço de E-mail: \***

[Please write your answer here:](#)

O seu nome e endereço de e-mail só serão usados para fazer a correspondência entre as respostas dadas aos vários questionários deste projecto de investigação. O seu nome e e-mail não serão partilhados com ninguém, seja qual for a razão.

**[[Endereço de E-mail alternativo\* :**

[Please write your answer here:](#)

\*No caso de pretender fornecer-nos um segundo endereço de e-mail para contacto, tem a opção de referir um segundo e-mail.

**[[Instituição de ensino superior\* : \***

[Please write your answer here:](#)

\* Se não se encontrar, presentemente, a frequentar nenhuma instituição de ensino superior, indique p.f. a última que frequentou.

**[[Indique p.f. qual dos seguintes estados melhor representa a sua situação actual: \***

**Please choose only one of the following:**

Sou actualmente aluno do ensino superior.

Terminei a Licenciatura e estou agora a prosseguir uma carreira.

Terminei os meus estudos pós-graduados (i.e. Pós-graduações, Mestrados, Doutoramentos) e estou agora a prosseguir uma carreira.

Abandonei a Licenciatura e estou agora a prosseguir uma carreira.

Abandonei os meus estudos pós-graduados (i.e. Pós-graduações, Mestrados, Doutoramentos) e estou agora a prosseguir uma carreira.

**Nota:** No caso de ser actualmente trabalhador estudante, seleccione a alínea a).

### **Identificação do Estudante**

**[[Que curso frequenta actualmente? \***

Only answer this question if the following conditions are met:

Answer was 'Sou actualmente aluno do ensino superior. ' at question '5 [ID05]' (Indique p.f. qual dos seguintes estados melhor representa a sua situação actual:)

Please choose only one of the following:

Licenciatura

Especialização

Curso para Executivos

Pós-Graduação

Mestrado

Mestrado Integrado

Doutoramento

**[[Indique p.f. qual a designação completa desse curso. \***

Only answer this question if the following conditions are met:

Answer was 'Sou actualmente aluno do ensino superior. ' at question '5 [ID05]' (Indique p.f. qual dos seguintes estados melhor representa a sua situação actual:)

Please write your answer here:

**[[Qual a sua situação actual como estudante?**

Only answer this question if the following conditions are met:

Answer was 'Sou actualmente aluno do ensino superior. ' at question '5 [ID05]' (Indique p.f. qual dos seguintes estados melhor representa a sua situação actual:)

Please choose only one of the following:

Tempo inteiro.

Part-time.

**[[Em que ano iniciou o curso que actualmente frequenta?**

Only answer this question if the following conditions are met:

Answer was 'Sou actualmente aluno do ensino superior. ' at question '5 [ID05]' (Indique p.f. qual dos seguintes estados melhor representa a sua situação actual:)

Please choose only one of the following:

2016

2015

2014

2013

2012

2011

2010

2009

2008

2007

2006

2005

2004

2003

Antes de 2003

**[[Quantos anos curriculares tem o curso que frequenta actualmente?**

Only answer this question if the following conditions are met:

Answer was 'Sou actualmente aluno do ensino superior. ' at question '5 [ID05]' (Indique p.f. qual dos seguintes estados melhor representa a sua situação actual:)

Please choose only one of the following:

- 1
- 2
- 3
- 4
- 5

**[[Em que ano curricular se encontra actualmente?**

Only answer this question if the following conditions are met:

Answer was 'Sou actualmente aluno do ensino superior. ' at question '5 [ID05]' (Indique p.f. qual dos seguintes estados melhor representa a sua situação actual:)

Please choose only one of the following:

- 1
- 2
- 3
- 4
- 5

**[[Qual a sua situação de emprego actual?**

Please choose only one of the following:

A trabalhar por conta de outrem a tempo inteiro.

A trabalhar por conta de outrem em part-time.

Criou o seu próprio emprego e não trabalha por conta de outrem.

Criou o seu próprio emprego e trabalha por conta de outrem em part-time.

Criou o seu próprio emprego e trabalha por conta de outrem a tempo inteiro.

Não está empregado.

### **Intenções Empreendedoras 1**

Pensando em si próprio, até que ponto é verdade que:

Escala de resposta:

1 = completamente falso;

2 = quase completamente falso,

3 = em certa medida é falso;

4 = nem falso, nem verdadeiro;

5 = em certa medida é verdadeiro,

6= quase completamente verdadeiro;

7= completamente verdadeiro.

Please choose the appropriate response for each item:

1      2      3      4      5      6      7

Nunca procura oportunidades para criar um novo negócio.

Está a poupar dinheiro para começar um novo projecto empresarial.

Não lê livros sobre como implementar um novo projecto empresarial.

Não tem planos para criar o seu próprio projecto empresarial.

Despende tempo a aprender sobre como criar um novo projecto empresarial.

Tem intenção de criar um novo projecto empresarial no futuro.

**Indique, por favor, o seu nível de concordância em relação a cada uma das seguintes afirmações:**

Escala de resposta:

1 = discorda muito;

2 = discorda;

3 = nem discorda; nem concorda;

4 = concorda;

5 = concorda muito.

Please choose the appropriate response for each item:

1      2      3      4      5

Pensa frequentemente em tornar-se um empreendedor.

Gostava de se ver como empreendedor.

Tornar-se um empreendedor é uma parte importante de quem é.

Quando pensa nisso, o termo empreendedor ajustar-se-lhe-ia bastante bem.

Está sempre a pensar em tornar-se um empreendedor.

É importante para si expressar as suas aspirações empreendedoras.

### **Intenções Empreendedoras 2**

Até que ponto as seguintes motivações justificam a sua intenção de criar um novo projecto empresarial no futuro.

Escala de resposta:

1 = completamente falso.

2 = quase completamente falso.

3 = em certa medida é falso.

4 = nem falso, nem verdadeiro.

5 = em certa medida é verdadeiro.

6 = quase completamente verdadeiro.

7 = completamente verdadeiro.

Please choose the appropriate response for each item:

1      2      3      4      5      6      7

Pretende ser independente. (i.e. Não depender de ninguém, de ser o seu próprio patrão e/ou de poder ter um horário de trabalho flexível.)

Pretende ter poder. (i.e. Poder gerir e comandar os destinos de algo e/ou de outros.)

Pretende Realizar-se Pessoalmente. (i.e. Ser feliz, de se sentir realizado e/ou de fazer o que realmente gosta.)

Pretende experienciar o processo de criar um novo negócio.

Para ser bem-sucedido. (i.e. Vencer, ter sucesso.)

Pretende trabalhar para si mesmo. (i.e. os resultados do seu trabalho estarem directamente ligados ao seu esforço e sucesso.)

Pretende ter um emprego. (i.e. vê a criação do seu próprio negócio como uma forma de estar empregado.)

Para colmatar alguma(s) necessidade(s) da sociedade.

Desenvolvimento pessoal. (i.e. Evoluir como pessoa - no seu conhecimento, experiência, visão, etc, - através da criação do seu próprio negócio.)

Pretende criar algo ou ser criativo.

Pretende mudar a sociedade de uma forma significativa.

Pretende ser socialmente reconhecido por isso.

Pretende fazer a diferença. (i.e. De se destacar pessoalmente.)

Pretende o desafio. (i.e. O desafio associado a criar um novo negócio com sucesso.)

Pretende ganhar dinheiro. (i.e. Lucros, mais valias.)

Pretende ter a propriedade de um negócio. (i.e. Deter a sua própria organização.)

Pretende trabalhar em algo que goste. (i.e. Conseguir trabalhar em algo específico - indústria, sector, área de conhecimento, um particular emprego – ou para, simplesmente, trabalhar em algo que goste.)

Gostaria de criar um novo projecto empresarial.

**Nota:** Respondendo “7” implicará que essa motivação foi determinante para seu nível de intenções; e respondendo “1” implicará que essa motivação nada teve a ver com o seu nível de intenções.

### **Percepção de autoeficácia geral**

Indique, por favor, o seu nível de concordância em relação a cada uma das seguintes afirmações:

Escala de resposta:

1 = discorda muito;

2 = discorda;

3 = nem discorda; nem concorda;

4 = concorda;

5 = concorda muito.

Please choose the appropriate response for each item:

1      2      3      4      5

Consegue sempre resolver problemas difíceis se se esforçar o suficiente.

Se alguém se lhe opuser, consegue encontrar os meios e as formas necessárias para conseguir o que quer.

É fácil manter-se fiel aos seus objectivos e atingi-los.

É confiante de que consegue lidar de forma eficiente com os eventos inesperados.

Graças às suas competências e capacidades, sabe que consegue lidar com situações imprevistas.

Consegue resolver a maioria dos problemas se investir o esforço necessário.

Quando confrontado com situações difíceis, consegue permanecer calmo(a) porque pode confiar na sua capacidade em estar à altura da situação.

Quando confrontado com um problema, consegue, normalmente, encontrar várias soluções.

Se está com dificuldades, consegue, normalmente, pensar numa solução.

Normalmente, consegue lidar com qualquer coisa que se deprece no seu caminho.

### **Percepção de autoeficácia específica**

**Até que ponto as seguintes barreiras condicionam a sua intenção de criar um novo projecto empresarial no futuro.**

Escala de resposta:

1 = completamente falso.

2 = quase completamente falso.

3 = em certa medida é falso.

4 = nem falso, nem verdadeiro.

5 = em certa medida é verdadeiro.

6= quase completamente verdadeiro.

7= completamente verdadeiro.

Please choose the appropriate response for each item:

1      2      3      4      5      6      7

Falta de competências pessoais. (i.e. Falta de conhecimento relevante, mas passível de ser colmatado.)

Não é a altura(timing) certa para o fazer, devido à sua idade.

Dificuldade em aceder aos recursos financeiros necessários. (i.e. Financiamento inicial, fundo de maneio e capital próprio.)

Dificuldade em obter os recursos humanos necessários. (i.e. Parceiros de negócio e/ou trabalhadores.)

Dificuldade em obter outros recursos necessários.

Dificuldade ter ideias de negócio.

Ainda não pensou nisso.

Já detém um negócio e isso retira-lhe a intenção de criar um novo negócio no futuro.

É avesso(a) ao risco. (i.e. Trata-se de um traço da sua personalidade.)

As circunstâncias actuais do meio-ambiente são arriscadas. (i.e. Considera o actual ambiente económico, social e político especialmente arriscado para ter um nível de intenções superior ao que reportou.)

Custos de oportunidade. (i.e. Embora admita a hipótese de criar o seu próprio negócio, não prefere criar o seu próprio negócio por considerar que os resultados esperados dessa opção seriam inferiores aos que espera obter de um emprego por conta de outrem.)

Falta de perfil pessoal para o fazer. (i.e. Não considera deter nem ser provável alcançar as características pessoais que considera serem necessárias.)

Ainda não apareceu uma oportunidade para o fazer.

Falta de interesse pessoal em criar um novo projecto empresarial.

**Nota:** Respondendo “7” implicará que essa barreira foi determinante para seu nível de intenções; e respondendo “1” implicará que essa barreira nada teve a ver com o seu nível de intenções.

**Nesta secção são apresentadas várias actividades. Para cada uma indique, por favor, o nível de confiança que tem sobre a sua presente capacidade em realizar cada uma dessas actividades. Avalie o seu grau de confiança digitando um número entre 0 e 100.**

Please write your answer(s) here:

Gerar, por si próprio, uma nova ideia para um produto ou serviço.

Realizar brainstorming com outros para gerar uma nova ideia para um produto ou serviço.

Identificar a necessidade de um novo produto ou serviço.

Conceber um produto ou serviço que satisfaça as necessidades ou desejos de um cliente.

Calcular o nível de procura para um novo produto ou serviço por parte dos futuros clientes.

Determinar um preço competitivo para um novo produto ou serviço.

Estimar o investimento inicial e o fundo de maneio necessários para iniciar um novo projecto empresarial.

Conceber uma campanha de marketing/publicidade eficaz para um novo produto ou serviço.

Conseguir que outros se identifiquem e acreditem na sua visão e planos para um novo projecto empresarial.

Criar uma network (i.e., estabelecer contactos e trocar informação com outros).

De forma clara, concisa e acessível, explicar verbalmente/por escrito as suas ideias sobre o novo projecto empresarial.

Supervisionar empregados.

Recrutar e contratar empregados.

Delegar tarefas e responsabilidades aos empregados no seu novo projecto empresarial.

Lidar eficazmente com os problemas e crises do dia-a-dia.

Inspirar, encorajar e motivar os seus empregados.

Dar formação aos empregados.

Organizar e manter registos financeiros do seu novo projecto empresarial.

Gerir os activos financeiros do seu novo projecto empresarial.

Ler e interpretar os documentos financeiros.

**Nota:** "0" indicaria que não tem qualquer confiança na sua capacidade, "50" indicaria que tem alguma confiança em ser capaz de completar a actividade e "100" indicaria que está completamente seguro na sua capacidade.

### **Normas Sociais**

Indique as opiniões das seguintes pessoas no que respeita à sua possível escolha em prosseguir com a criação de um novo projecto empresarial.

Escala de Resposta:

1= Extremamente negativa

2= Negativa

3= Ligeiramente negativa

4= Nem negativa, nem positiva

5= Ligeiramente positiva

6= Positiva

7= Extremamente positiva

NA= Não aplicável

Please choose the appropriate response for each item:

1      2      3      4      5      6      7      NA

Os seus pais ou tutores.

A(o) sua(seu) esposa(o) ou outra relação significante.

O(s) seu(s) irmão(s) e/ou irmã(s).

Os outros membros da família.

Os seus amigos mais chegados.

Os seus conhecidos.

**Os seus pais/tutores, irmãos ou avós criaram algum projecto empresarial?**

Please choose the appropriate response for each item:

Sim Não NA

Os seus pais/tutores alguma vez criaram um projecto empresarial?

O(s) seu(s) irmão(s) e/ou irmã(s) já alguma vez criaram um projecto empresarial?

Os seus avós alguma vez criaram um projecto empresarial?

### **Planos para um novo projecto empresarial**

**Está actualmente a planear em começar um novo projecto empresarial?**

Please choose only one of the following:

Sim

Não

### **A planear um novo projecto empresarial**

**Este novo projecto empresarial:**

**Nota:** Caso já esteja definido, indique p.f. em que sector pretende implementar o seu negócio

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '21 [PL01]' (Está actualmente a planear em começar um novo projecto empresarial?)

Please choose only one of the following:

É já um projecto definido.

Ainda é um projecto algo indefinido.

É apenas ainda uma ideia de vir a ter um negócio próprio.

Make a comment on your choice here:

**Qual dos seguintes processos retrata melhor a origem da sua ideia de negócio:**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '21 [PL01]' (Está actualmente a planear em começar um novo projecto empresarial?)

Please choose only one of the following:

Identificou uma necessidade no mercado e desenvolveu uma ideia sobre um novo produto/serviço para a satisfazer.

Desenvolveu uma ideia sobre um novo produto/serviço e procurou identificar uma necessidade no mercado que este novo produto/serviço pudesse satisfazer.

Identificou a necessidade do mercado e a ideia de um novo produto/serviço em simultâneo.

**Está a planear em começar um novo projecto empresarial:**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '21 [PL01]' (Está actualmente a planear em começar um novo projecto empresarial?)

Please choose only one of the following:

Sozinho.

Com parceiros.

**Esses parceiros serão:**

Only answer this question if the following conditions are met:

Answer was 'Com parceiros.' at question '24 [PL04]' (Está a planear em começar um novo projecto empresarial:)

Please choose only one of the following:

Membros da sua família.

Amigos do seu local de residência.

Amigos da sua escola.

Outros

**Está a planear em:**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '21 [PL01]' (Está actualmente a planear em começar um novo projecto empresarial?)

Please choose only one of the following:

Começar um novo projecto empresarial a tempo inteiro (i.e., não pretende ter um emprego para além de trabalhar no seu novo projecto empresarial).

Começar um novo projecto empresarial em part-time (i.e., pretende ter um emprego para além de trabalhar no seu novo projecto empresarial).

**Pretende começar esse novo projecto empresarial com um âmbito internacional?**

**(i.e. Com operações em mais do que um país.)**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '21 [PL01]' (Está actualmente a planear em começar um novo projecto empresarial?)

Please choose only one of the following:

Sim.

Não.

**Relativamente ao seu novo projecto empresarial, você já:**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '21 [PL01]' (Está actualmente a planear em começar um novo projecto empresarial?)

Please choose all that apply:

Comproou instalações / equipamento

Arrendou instalações / equipamento

Procurou instalações

Investiu do seu próprio dinheiro

Pedi financiamento

Obteve apoio(s) financeiro(s)

Desenvolveu modelo(s) de negócio

Dedicou-se a full time ao negócio

Candidatou-se a licença(s) ou patente(s)

Estabeleceu-se legalmente como uma sociedade ou como empresário em nome individual.

Contratou empregado(s)

Assistiu a um seminário ou curso sobre “como começar o seu próprio negócio”

Escreveu um plano de negócios, ou participou num seminário sobre como escrever um plano de negócios

Já juntou uma equipa para iniciar o negócio

Poupou dinheiro para investir no negócio

Desenvolveu produtos ou serviços

### **Projectos empresariais já criados**

#### **Já alguma vez criou um projecto empresarial?**

Choose one of the following answers

Please choose only one of the following:

Sim

Não

#### **Sobre os projectos empresariais já criados**

Em que data criou o seu último projecto empresarial?

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '29 [EM01]' (Já alguma vez criou um projecto empresarial?)

Please enter a date:

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**Esse negócio mantém-se actualmente em funcionamento?**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '29 [EM01]' (Já alguma vez criou um projecto empresarial?)

Please choose only one of the following:

Sim

Não (indique p.f., de forma sumária, o motivo.)

Make a comment on your choice here:

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**Iniciou esse projecto empresarial:**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '29 [EM01]' (Já alguma vez criou um projecto empresarial?)

Please choose only one of the following:

Sozinho.

Com parceiros.

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**Esses parceiros eram:**

Only answer this question if the following conditions are met:

Answer was 'Com parceiros.' at question '32 [EM04]' (Iniciou esse projecto empresarial:)

Please choose only one of the following:

Membros da sua família.

Amigos do seu local de residência.

Amigos da sua escola.

Outros.

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**Qual das seguintes situações de trabalho o descreveria melhor quando começou o seu projecto empresarial?**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '29 [EM01]' (Já alguma vez criou um projecto empresarial?)

Please choose only one of the following:

Começou o novo projecto empresarial a tempo inteiro (i.e., não tinha um emprego para além de trabalhar no seu novo projecto empresarial).

Começou o novo projecto empresarial em part-time (i.e., tinha um emprego para além de trabalhar no seu novo projecto empresarial).

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**Começou esse projecto empresarial com um âmbito internacional?**

(i.e. Com operações em mais do que um país.)

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '29 [EM01]' (Já alguma vez criou um projecto empresarial?)

Please choose only one of the following:

Sim

Não

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**No último dia do mês passado, quantos empregados (incluindo você) trabalhavam para o seu projecto empresarial nas seguintes condições:**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '31 [EM03]' (Esse negócio mantém-se actualmente em funcionamento?)

Please write your answer(s) here:

Trabalhadores pagos a tempo inteiro.

Trabalhadores pagos em part-time.

Trabalhadores não pagos (e.g. estagiários, gestores sem remuneração, etc.)

**Para o ano fiscal de 2016, qual o volume de vendas que prevê obter para o seu novo projecto empresarial?**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '31 [EM03]' (Esse negócio mantém-se actualmente em funcionamento?)

Please choose only one of the following:

Abaixo de €20.000

[€20.001 - €80.000]

[€80.001 - €400.000]

[€800.001 - €4.000.000]

Acima de €4.000.000

**Nota:** Se já criou vários negócios responda à questão tendo em mente o último negócio que criou.

**Relativamente à sua experiência enquanto empreendedor indique p.f. todos os projectos empreendedores que criou (sozinho ou com outros) e que tenham gerado lucro - Indicando a(s) data(s) de início e de fecho e a(s) indústria(s) em que esse(s) projecto(s) se inseria(m).**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '29 [EM01]' (Já alguma vez criou um projecto empresarial?)

Please write your answer here:

**Relativamente à sua experiência enquanto empreendedor indique p.f. todos os projectos empreendedores que criou (sozinho ou com outros) e que não tenham sido bem sucedidos**

**- Indicando a(s) data(s) de início e de fecho e a(s) indústria(s) em que esse(s) projecto(s) se inseria(m).**

Only answer this question if the following conditions are met:

Answer was 'Sim' at question '29 [EM01]' (Já alguma vez criou um projecto empresarial?)

Please write your answer here:

**Nota:** Entenda-se como estando nesta situação os projectos que tiveram de deixar de operar, enquanto organizações, devido à falta de recursos e/ou problemas financeiros, o que exclui a venda, a fusão e o terminar as operações porque existem melhores alternativas.

### **Actualização de alguns dados demográficos**

**Qual a sua idade?**

Your answer must be between 17 and 99

Only an integer value may be entered in this field.

Please write your answer here:

**Qual o seu género?**

Please choose the appropriate response for each item:

Masculino    Feminino

**Qual o seu grau académico?**

Please choose only one of the following:

Não é licenciado

Licenciatura

Mestrado

Doutoramento

**Quantos anos possui de experiência profissional?**

**Nota:** Incluindo trabalho em part-time e a tempo inteiro.

Please choose only one of the following:

Options from 0 to 50 (yearly) or Superior a 50

**Qual é o seu estado civil?**

Please choose only one of the following:

Com parceiro (i.e. casado(a), em coabitação ou união de facto).

Sem parceiro (i.e. solteiro(a), divorciado(a) ou viúvo(a)).

**Qual é o número de dependentes a seu cargo?**

Please write your answer(s) here:

Descendentes (e.g. filhos, sobrinhos, etc.)

Ascendentes (e.g. pais, avós, etc.)

**Alguma vez deteve uma posição (remunerada ou não) numa nova empresa, ou num novo projecto empresarial?**

Please choose the appropriate response for each item:

Sim Não

**Alguma vez deteve uma posição remunerada numa nova empresa ou num novo projecto empresarial?**

**Alguma vez deteve uma posição não remunerada (como, por exemplo, estagiário) numa nova empresa ou num novo projecto empresarial?**

**Refira se já alguma vez frequentou unidades curriculares em que a temática central era o empreendedorismo, a gestão de pequenas empresas e/ou a criatividade nos negócios.**

Indique p.f.:

(1) o nome de todas a(s) unidade(s) curricular(es) que frequentou,

(2) o ano lectivo em que frequentou essa unidade curricular,

(3) e se era uma unidade curricular opcional?

**Exemplo**

"Empreendedorismo de base tecnológica" - 2010/11 - Obrigatória

[Please write your answer\(s\) here:](#)

Designação da unidade curricular 1

UC1: Ano lectivo

UC1: Obrigatória/Opcional

Designação da unidade curricular 2

UC2: Ano lectivo

UC2: Obrigatória/Opcional

Designação da unidade curricular 3

UC3: Ano lectivo

UC3: Obrigatória/Opcional

**Muito obrigado mais uma vez, pela sua participação!**

Appendix C – Independent samples T-test for EI, EOE, ESE, GSE and ESSE constructs’ mean differences across Gender

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
EI(T0)avg	Equal variances assumed	,797	,372	5,026	1128	,000	,3599138274	,0716157678	,2193987292	,5004289255
	Equal variances not assumed			4,995	1038,655	,000	,3599138274	,0720595557	,2185149219	,5013127329
EOET0avg	Equal variances assumed	,610	,435	,165	1128	,869	,00754	,04564	-,08202	,09710
	Equal variances not assumed			,164	1041,940	,870	,00754	,04589	-,08251	,09760
ESE(T0)avg(Q079-Q098)	Equal variances assumed	,225	,635	2,077	1128	,038	1,707214217	,8218069518	,0947720416	3,319656393
	Equal variances not assumed			2,070	1050,963	,039	1,707214217	,8246184359	,0891283149	3,325300120
ESE_Searching(T0)avg	Equal variances assumed	7,609	,006	5,846	1128	,000	5,753048306	,9840776331	3,822219811	7,683876800
	Equal variances not assumed			5,942	1115,416	,000	5,753048306	,9681751468	3,853398571	7,652698040
ESE_Planning(T0)avg	Equal variances assumed	,836	,361	2,350	1128	,019	2,47885	1,05492	,40903	4,54867
	Equal variances not assumed			2,334	1036,414	,020	2,47885	1,06197	,39499	4,56272
ESE_Marshaling(T0)avg	Equal variances assumed	1,218	,270	1,674	1128	,094	1,729211499	1,032853658	-,297318936	3,755741933
	Equal variances not assumed			1,679	1075,514	,094	1,729211499	1,030134523	-,292089760	3,750512757
ESE_Imp-people(T0)avg	Equal variances assumed	,023	,880	-1,636	1128	,102	-1,55589885	,9507708015	-3,42137703	,3095793363
	Equal variances not assumed			-1,629	1045,776	,104	-1,55589885	,9551512622	-3,43013008	,3183323884
ESE_Imp-financial(T0)avg	Equal variances assumed	,608	,436	1,378	1128	,169	1,788143288	1,297863519	-,758354854	4,334641431
	Equal variances not assumed			1,379	1067,790	,168	1,788143288	1,297040581	-,756894341	4,333180918
GSE(T0)avg(Q136-145)	Equal variances assumed	1,049	,306	4,498	1128	,000	,1196668161	,0266070011	,0674620366	,1718715956
	Equal variances not assumed			4,503	1069,615	,000	,1196668161	,0265778052	,0675162632	,1718173689
NBT0index	Equal variances assumed	4,675	,031	-,913	1128	,362	-,05021	,05502	-,15816	,05774
	Equal variances not assumed			-,918	1087,918	,359	-,05021	,05468	-,15751	,05708
ESSE(T0)	Equal variances assumed	,065	,799	-,576	1128	,565	-,03433050	,05957345	-,15121773	,08255674
	Equal variances not assumed			-,572	1036,317	,567	-,03433050	,05997319	-,15201323	,08335224

Bootstrap for Independent Samples Test

		Mean Difference	Bootstrap <sup>a</sup>				
			Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
EI(T0)avg	Equal variances assumed	,3599138274	-,004295467	,0720390426	,001	,2151159753	,4969395675
	Equal variances not assumed	,3599138274	-,004295467	,0720390426	,001	,2151159753	,4969395675
EOET0avg	Equal variances assumed	,00754	-,00180	,04570	,870	-,08290	,09625
	Equal variances not assumed	,00754	-,00180	,04570	,870	-,08290	,09625
ESE(T0)avg	Equal variances assumed	1,707214217	-,007957067	,7969564710	,031	,1191672023	3,212683065
	Equal variances not assumed	1,707214217	-,007957067	,7969564710	,031	,1191672023	3,212683065
ESE_Searching(T0)avg	Equal variances assumed	5,753048306	-,000321655	,9302657488	,001	3,940508502	7,658817576
	Equal variances not assumed	5,753048306	-,000321655	,9302657488	,001	3,940508502	7,658817576
ESE_Planning(T0)avg	Equal variances assumed	2,47885	-,00676	1,08381	,021	,46838	4,54888
	Equal variances not assumed	2,47885	-,00676	1,08381	,023	,46838	4,54888
ESE_Marshaling(T0)avg	Equal variances assumed	1,729211499	,0000337558	1,052840627	,104	-,488020847	3,717986156
	Equal variances not assumed	1,729211499	,0000337558	1,052840627	,103	-,488020847	3,717986156
ESE_Imp-people(T0)avg	Equal variances assumed	-1,55589885	-,030471709	,9000631345	,090	-3,39383279	,3618665007
	Equal variances not assumed	-1,55589885	-,030471709	,9000631345	,089	-3,39383279	,3618665007
ESE_Imp-financial(T0)avg	Equal variances assumed	1,788143288	,0173028542	1,251198179	,164	-,706027406	4,271732397
	Equal variances not assumed	1,788143288	,0173028542	1,251198179	,161	-,706027406	4,271732397
GSE(T0)avg	Equal variances assumed	,1196668161	-,000092005	,0265341583	,001	,0687268136	,1693542805
	Equal variances not assumed	,1196668161	-,000092005	,0265341583	,001	,0687268136	,1693542805
NBindex(T0)avg	Equal variances assumed	-,05021	-,00125	,05392	,347	-,15542	,05727
	Equal variances not assumed	-,05021	-,00125	,05392	,347	-,15542	,05727
ESSE(T0)	Equal variances assumed	-,03433050	-,00097308	,05733569	,546	-,15035697	,07187595
	Equal variances not assumed	-,03433050	-,00097308	,05733569	,547	-,15035697	,07187595

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

## **Appendix D – Participation Rate Analysis**

Participation rates are very sensitive to the incorporation of new participants from large and yet unrepresented groups. For the usual way of computing such rates, in a big dataset, the worst-case scenario would be the case of a single student from a large enrolment course participating – since this case would greatly lower the response rate, without its participation generating equivalent influence in the study’s representativeness – therefore, a different participation rate analysis is here proposed. Namely, it is proposed that, more than needing to know the representativeness of each course in the study, it is important to know if participating students are likely typical members of such courses or not (and, thus, increasing the potential to be atypical/exceptional cases within these courses).

To present a response rate which is more compatible with the latter perspective, here, it is suggested that it is better that, after normally calculating each course participation rate (*i.e.* dividing the number of the study’s participants by the number of students enrolled in each course) these are weighted, not by the number of students enrolled in each course, but rather by the number of the study’s participants. Intuitively, this is the difference between: (1) going to every student from every course and asking them: ‘how many of your course colleagues have participated in the study?’, or (2) going to every study participant and asking them: ‘how many of your course colleagues have participated in the study?’.

For further clarification let us consider the following numerical example: in a study with only two courses represented, with enrollments of 10,000 and 150 students, 1 (.01%) and 135 (90%) students have participated, respectively. If the specific courses are not proposed as meaningful explanatory variables, should it be expected that, on average, the study participants may greatly differ from their nonparticipating peers? (1) with the first logic, one would report an average 1.34% participation rate, reading that on average 1.34%, of those enrolled in ‘represented’ courses, participated in the study and, thus, the answer to the question would probably be ‘yes’; (2) with the new proposition, an average 89.34% participation rate would be reported, reading that on average a student from the study will report an 89.34% participation rate in its course and, thus, the answer to the question would probably be ‘no’.

Again, here, the latter rate appears more informative, for the purpose of valuing the representativeness of the EEP Portugal sample and the ‘normality’ of its participants, something considered desirable (*cf.* Cook et al., 2000).

As it can be seen, in the table below, calculated participation rates ranged widely from .5% to 63.64%, and even in the same type of course (*e.g.* participation rate in the Bs course in Economics 1.85% *versus* 8.85% - from ISCTE-IUL and UTL-ISEG, respectively). With this different way of calculating the participation rate and the next three (conservative) assumptions, it is possible to extrapolate an approximate participation rate.

Assumptions:

- (1) A HEI course represented with at least one student, in the EEP Portugal sample, is evidence that invitations were sent to all students enrolled in that course.

And the caveats with this assumption are, for instance, that someone might be invited by a friend to participate, while the rest of his/her course students was not invited (a likely possibility, which would lead to an underestimation of the true response rate), or that invitations were sent to all students from a HEI course and not a single student decided to actually participate (an unlikely possibility, which would lead to an overestimation of the true response rate).

- (2) Participation rates<sup>45</sup> are equivalent to response rates. *i.e.* Assuming that, if there was an invitation directed towards all the students of a given course, all students of that course were knowledgeable of this invitation.

Possible caveats for this assumption are, for instance, that maybe not all course students had disclosed their e-mail contacts, the e-mail invitations may have been sent to the wrong e-mail addresses or invitation e-mails might have been blocked by junk mail filters (all possible but maybe not too frequent, leading to an underestimation of the true response rate).

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<sup>45</sup> Participation rates: number of respondents from a given course divided by the total number of students enrolled in that course.

- (3) The response rates that were not calculated, from the multiple less representative courses in the EEP Portugal sample, are equal or lower to the calculated weighted average response rate;

Possible caveat for this assumption is that, it might not be true (which would lead to an underestimation of the true response rate). Nevertheless, as it is possible to calculate the participation rate for over three quarters (76,91%) of the sample, and these were the most represented courses (in number of students), it is a very unlikely possibility (the one leading to the caveat).

If one admits that the upper limit should be equal to the weighted average of all analyzed courses (assumption 3) and the minimum value should be, a worst case scenario - *i.e.* assuming that all the course that were left out of this analysis tended to a 0% response rate - and, if all these three conservative assumptions hold, one can estimate the sample to be comprised of students who, on average, belong to courses where the response rate was between 8,94% and 11,62%. The reader may refer to the table below for greater detail on participation rates per HEI course.

<b>1st Wave EEP PT survey: Most Relevant Higher Educ. Institution &amp; Courses</b>	<b>Participation Rate</b>	<b>Sample</b>	<b>Total Population</b>
<b>UTL - ISEG</b>			
9147 - Bs Gestão	10,34%	128	1238
9081 - Bs Economia	8,85%	88	994
9140 - Bs Finanças	11,11%	22	198
3564 - PostGrad Marketing Management	20,88%	19	91
9210 - Bs Matemática Aplicada à Economia e à Gestão	9,64%	16	166
9294 - Ms Finanças	11,11%	16	144
9314 - Ms Marketing	18,18%	16	88
6438 - Ms Contabilidade, Fiscalidade e Finanças Empresariais	13,19%	12	91
9299 - Ms Gestão de Recursos Humanos	9,24%	11	119
9402 - Ms Ciências Empresariais	7,80%	11	141
<b>ISCTE-IUL</b>			
9147 - Bs Gestão	9,84%	84	854
9295 - Ms Gestão	15,25%	18	118
9157 - Bs Gestão de Recursos Humanos	4,79%	8	167
8029 - Bs Finanças e Contabilidade	2,95%	8	271
9156 - Gestão de Marketing	5,88%	8	136
9081 - Bs Economia	1,85%	7	378
6060 - Ms Contabilidade	17,24%	5	29
9299 - Gestão de Recursos Humanos	9,52%	4	42
<b>ESTG.F - IPPorto</b>			
9045 - Bs Ciências Empresariais + 8097 - (reg. pós-laboral)	13,88%	39	281
9242 - Bs Solicitadoria + 8015 - (reg. pós-laboral)	7,38%	27	366
<b>UBI</b>			
9512 - Ms Ciências Biomédicas	63,64%	14	22
9147 - Bs Gestão	4,45%	13	292
9119 - Bs Engenharia Informática	4,56%	11	241
6086 - Ms Empreendedorismo e Criação de Empresas	47,62%	10	21
9216 - Bs Optometria - Ciências da Visão	4,50%	9	200
<b>UM</b>			
9147 - Bs Gestão	5,49%	19	346
M175 - Ms Economia Industrial e da Empresa	13,89%	10	72
<b>ESTG - IPEleiria</b>			
9147 - Bs Gestão + 9991 - Gestão (reg. pós-laboral)	2,45%	13	531
9481 - Bs Informática para a Saúde	6,37%	10	157
9627 - Bs Contabilidade e Finanças + 9871 - (reg. pós-laboral)	2,61%	10	383
<b>UTAD - ECHS</b>			
9147 - Bs Gestão	10,55%	23	218
9295 - Ms Gestão (Ramos Empresarial + Público)	45,65%	21	46
9081 - Bs Economia	6,47%	13	201
6448 - Ms Empreendedorismo	30,43%	7	23
<b>ESG - IPSantarém</b>			
9152 - Gestão de Empresas + 9994 - (reg. pós-laboral)	6,52%	30	460
9206 - Marketing e Publicidade + 8006 - (reg. pós-laboral)	2,86%	6	210
<b>UTL - IST</b>			
9121 - Bs Engenharia Informática e de Computadores	0,50%	4	806
<b>ESCE - IPSetúbal</b>			
9157 - Bs Gestão de Recursos Humanos + 8111 - (reg. pós-laboral)	2,47%	9	364
9630 - Bs Gestão de Sistemas de Informação	3,36%	8	238
<b>ESAD.CR - IPEleiria</b>			
9457 - Bs Som e Imagem + 8127 - (reg. pós-laboral)	1,66%	5	302
9729 - Bs Design Gráfico e Multimédia	1,54%	4	259
<b>ESTM.P - IPEleiria</b>			
9178 - Bs Gestão Turística e Hoteleira + 9997 - (regime pós-laboral)	1,97%	6	304
9207 - Bs Marketing Turístico, 8007 - (reg. pós-laboral), 8119 - (reg. ensino a distância)	1,40%	3	215
<b>UTL - FA</b>			
9257 - Ms Arquitectura, 8434 - (reg. pós-laboral)	0,76%	7	916
<b>UCP - FCEE</b>			
9059 - Administração e Gestão de Empresas	0,57%	4	705
		<b>816</b>	<b>13.444</b>
<b>1st Wave EEP Portugal - Survey Avg Participation Rate of analyzed courses</b>		11,62%	
Number os students in the sample for which participation rate was analyzed		816	
Percentage os students in the sample for w hich participation rate was analyzed		76,91%	

**Source of "Total Population" per Higher Education Course:**

Education and Science Ministry's "Inquérito ao Registo de Alunos Inscritos e Diplomados do Ensino Superior, MEC".

**Note:** EEP Portugal - 1st Wave Survey Avg Participation Rate Interval should be interpreted as the average response rate for every course represented in our sample. Since our response rate analysis was focused on the course most represented (in number of students) in our sample we admitted that the upper limit should be equal to the weighted average of all analyzed courses and the minimum value should be, a worst case scenario, i.e. assuming that all the course that were left out of this analysis tended to a 0% response rate.

## Appendix E – Nonrespondents Analyses

### (1) Comparing EEP Portugal sample with known values for the population

Using data from the Portuguese National Bureau of Statistics (INE) and the Education and Science Ministry<sup>46</sup>, it is possible to compare the proportion of students enrolled into Portuguese higher education programs by the public or private nature of their institutions, by gender representation and academic program level and scientific area.

In the academic year of 2010-2011 there were a total of 403,445 students enrolled in Portuguese HEI, from which 189,348 (46.93%) were male and 214,097 (53.07%) were female. In this sample, out of 1,307 students who reported their gender<sup>47</sup>, 550 (42.08%) were male 757 (57.92%) female. This greater proportion of women in the sample, although not large (4.85% more), is statistically significant (one-tailed, p-value < .000; Chi-square test).

Due to the fact that the great majority of EEP Portugal Research Group was faculty in public HEI, students in this sample were almost all enrolled in public institutions. More specifically only 11 students (0.84%) out of 1,309, were from private HEI. According to national statistics<sup>48</sup> from a total of 403,445 students enrolled in HEI in Portugal, in the academic year of 2010-2011, 314,032 (77.84%), the great majority of students were enrolled in public HEI while only 89,413 (22.16%) were enrolled in private HEI. Contrary to other countries, public HEI in Portugal benefit, on average, from a greater academic reputation, than their private sector counterparts, among students, academics and employers (*cf.* Correia, et al. 2002; Magalhães, et al., 2009). Nevertheless, this sample clearly underrepresents the private sector students.

In Portugal there are two types of public HEI, Universities and Polytechnics. Originally Universities would have a more theoretical and knowledge production emphasis (*e.g.* the doctor degree can still only be given by Universities) and Polytechnics would focus more on

<sup>46</sup> Source: Annual statistical census from the Portuguese Education and Science Ministry (“*inquéritos estatísticos anuais, de carácter censitário, às instituições de ensino superior sobre os alunos matriculados e os diplomados do ensino superior, com período de referência a 31 de dezembro*” and “*Inquérito ao Registo de Alunos Inscritos e Diplomados do Ensino Superior*”) and, from the Portuguese National Bureau of Statistics (“*Estimativas Anuais da População Residente*”).

<sup>47</sup> For some students, although they did not explicitly disclose their gender in this survey, it was possible to identify it using their first name.

<sup>48</sup> Source: Portuguese Education and Science Ministry “*Inquérito ao Registo de Alunos Inscritos e Diplomados do Ensino Superior, MEC*”

knowledge and application and practice emphasis. Nowadays, the differences between these two types of institutions and the logic behind their separation has been questioned, as their educational and social outputs become less differentiated. In the domain of public HEI the majority, 193,633 students (61.66%), were enrolled in Universities, while 120,399 students (38.34%) were enrolled in Polytechnics. This compares to this thesis' sample of 980 students (74.87%) enrolled in Universities *versus* 329 students (25.13%) enrolled in Polytechnics. As such, a clear underrepresentation of those enrolled in Polytechnics exists in this sample.

In terms of scientific areas this sample, Management/Business & Economics courses are those which are most overrepresented in the 1<sup>st</sup> wave EEP sample, when compared to the population of HEI students. Management courses are represented with 459 students, accounting for 35.06% of the sample, which compares with 26.826 Management students in Portugal, accounting for 6.65% of the population. Economics courses are represented with 150 students, accounting for 11.46% of the sample, which compares with 9,230 Economics students, accounting for 2.29% of the population. Next, in the overrepresented courses category, there are some other Management related subdisciplines such as, "Human Resources" with 2.67% of the sample students *versus* 0.91% of the population; "Marketing and Advertising" with 5.35% of the sample students *versus* 2.18% of the population; and "Finance & Accountancy" related courses with 6.88% of the sample students *versus* 3.86% of the population. All other scientific areas are clearly underrepresented in this sample.

## **(2) Subjective estimates for the respondents/nonrespondents differences**

According to the literature, people with less interest in the subject matter of the survey - in the present case, entrepreneurship - may be less likely to respond, than those in the opposite side of the interest spectrum (*cf.* Armstrong & Overton, 1977; Rogelberg & Stanton, 2007). And, in EI literature, Goethner, et al. (2012) found that a substantial attrition (58.7%) led to a biased follow-up sample, by retaining participants who had more positive attitudes toward entrepreneurship than drop-outs - although statistically significant ( $p$ -value < .05), the size of this difference, unfortunately, was not disclosed. However, the concept that appears to best define the cognitive mechanism that triggers participation, might be that of survey's theme salience (which may be caused by personal interest and positive attitudes, but also by other causes) to the potential respondent. Evidence of salience relevance can be found: in Sheehan &

McMillan (1999), who found (in postal mail surveys) that the salience of an issue to the sampled population has stronger positive correlation with response rate than “any other issue or research-design decision including advance notice, follow-up contacts, or monetary incentives” (p. 47); and in Cook et al. (2000), who found, in a meta-analysis, that when (web-survey) results are less salient, response rates tend to be both slightly lower and also more highly variable. As such it is hypothesized that students with lower intentions levels and lower entrepreneurial outcome expectations, may all be underrepresented in this sample.

### **(3) Extrapolation methods: Early & late and complete & incomplete submissions respondents**

To test the statistical significance and to get an idea about the magnitude of the expected differences arising from the subjective estimates, tests are based in the assumption that passive nonrespondents (*i.e.* nonintentional nonrespondents - *e.g.* forgot) are more similar to late respondents (who only responded after a few different reminders), then they are to early respondents. Readiness and time trends have long been recognized as relevant data to hypothesize about nonrespondents (*cf.* Pace, 1939; Ferber, 1948), being the basis for nonresponse extrapolation methods.

Active nonrespondents (*i.e.* purposeful nonrespondents – *e.g.* felt it was boring) are usually a minority (*cf.* Rogelberg et al., 2003), and, in this study, it is assumed that active nonrespondents are more similar: to late respondents and to respondents who have not finished the survey.

In this thesis the emphasis is not so much on studying individual variables – *e.g.* describing the characteristics of Portuguese higher education students - but rather to study the relationship between variables, such as most academic researchers do – namely, this thesis studies the relationship between EI and its antecedents and their relationship with entrepreneurial behavior. These studies are more resistant to sample bias and, especially so, when there is diversity in the sample (*cf.* Blair & Zinkhan, 2006). Nevertheless, beside testing the invariance of constructs relationships, it is also relevant to know if this thesis results are better supported for higher than average EI and/or higher than average EOE students, due to nonresponse bias.

*Analysis of readiness to submit and survey completion*

In an attempt to get some insight on how nonrespondents differ from respondents and, based on the theory (above), proposing that those for whom the survey theme is less salient, might be less predisposed to invest time in responding to it, it is hypothesized that:

- [HaE3.01] Early respondents have, on average, higher entrepreneurial intentions (EI), than late respondents;
- [HaE3.02] Respondents who have completed the survey have, on average, higher entrepreneurial intentions (EI), than respondents who have not completed the survey.
- [HaE3.03] Early respondents have, on average, higher entrepreneurial outcome expectations (EOE), than late respondents;
- [HaE3.04] Respondents who have completed the survey have, on average, higher entrepreneurial outcome expectations (EOE), than respondents who have not completed the survey.
- [HaE3.05] Structural paths between the cognitive constructs of entrepreneurial intentions (EI), entrepreneurial self-efficacy (ESE) and entrepreneurial outcome expectations (EOE) - as these are predicted by SCCT – are not different across early and late respondents.

To test these hypotheses, a t-test (with bootstrapping technique: 1000 samples) was used, for the difference between means, when comparing the average self-reported levels of EI and EOE of early respondents *versus* late respondents, and those of respondents who completed the survey *versus* respondents who did not complete the survey.

To categorize the early and late respondents, the sample was divided into three different groups - as Kautonen, et al (2015b)<sup>49</sup>. The first group, that consists of the first 25% (*i.e.* the first quartile) respondents to the 1<sup>st</sup> wave survey, was defined as the early respondents group. The second group, which submitted their survey responses after the first 25% but earlier than the

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<sup>49</sup> Though, here it is compared an even more extreme case, since these authors used 30% (an easier threshold for nonsignificant results) and nonnormality is accounted for (using t-test with bootstrap technique), which they recognized, and, apparently, have not accounted for.

last 25% (*i.e.* the second and third quartiles), were neither considered early nor late respondents. Finally, the third group, that consisted of the last 25% (*i.e.* the fourth quartile) of the 1<sup>st</sup> wave survey respondents, were defined as late respondents.

To determine who completed the survey one of the last questions of the survey was used, namely: “What is the higher education institution you presently attend?”. The reason why this particular question was used is twofold: First, this was a question that, if not answered, would dictate the survey to be discarded from the sample; Secondly, being one of the last survey questions and given the unlikely problematic/sensitive nature of the question, if not responded to, it is likely that the respondent gave up on completing the survey at any time before, making it a good proxy of respondent survival to survey completion.

For the differences of means t-test(bootstrap) for independent samples, only surveys submitted that had responded to all items in each scale were used – namely, all 6-items for the EI scale and 4-items for the EOE scale – for which a simple scale item average is computed, for each respondent. The resulting samples for the “early *versus* late respondents” were: 1,752 EI 6-item respondents (on a Likert-type scale from level 1 to 7: lowest and highest EI levels, respectively) and 1,348 EOE 4-item respondents (on a Likert-type scale from level 1 to 7: lowest and highest EOE levels, respectively).

No statistically significant differences were found for any of the tested variables using the “early *versus* late respondents” criterion. Comparing a EI 6-item average of the first 25% respondents with the one of the last 25% respondents, EI avg. = 4.258 *vs* EI avg. = 4.213, results in a t-test(bootstrap) with a p-value = .453 and, therefore, hypothesis [HaE3.01] is not empirically supported by the data. And, finally, comparing a EOE 4-item average for the same groups, EOE avg. = 5.772 *vs* EOE avg. = 5.759, resulting in a t-test with a p-value = .763, which does not provide support for hypothesis [HaE3.03].

However, when comparing respondents using the “survey completion” criterion not all comparisons are insignificant. Namely, when comparing a EI 6-item average of those who completed their survey with those who did not, EI avg. = 4.323 (from 1,197 respondents) *versus* EI avg. = 4.048 (from 556 respondents), results in a t-test(bootstrap) with a p-value < .001 and, therefore, hypothesis [HaE3.02] is empirically supported by the data. And, comparing EOE 4-item average of those who completed their survey with those who did not, EOE avg. = 5.767 (from 1,248 respondents) *versus* EOE avg. = 5.745 (from 100 respondents), results in a t-

test(bootstrap) with a p-value = .789 and, therefore, hypothesis [HaE3.04] is not supported by the data.

Exploring, yet, another construct, the mean differences for the ESE 20-item average variable was also tested, finding no significant differences for both the readiness of submission and completeness tests.

Last, but not least, hypothesis [HaE3.05] was tested, in which the SCCT *Baseline EI model* structural paths differed significantly across early and late respondents (*i.e.* different loadings between the cognitive constructs of EI, ESE and EOE - as these are predicted by the theory), finding that the differences are not significant  $\text{CMIN}(\text{df})= 2,297(3)$  (p-value < .513) – using multiple-group analysis from AMOS software.

## Appendix F - Exploratory Factor Analysis

Third, and final, EFA for ESE(19-items), EI(3-items) and EOE(3-items) constructs

### FACTOR

```

/VARIABLES Q037_EIT0 Q040_EIT0 Q046_EIT0 Q079_ESET0 Q080_ESET0
  Q081_ESET0 Q082_ESET0 Q083_ESET0 Q084_ESET0 Q086_ESET0 Q087_ESET0 Q088_ESET0 Q089_ESET0
  Q090_ESET0 Q091_ESET0 Q092_ESET0 Q093_ESET0 Q094_ESET0 Q095_ESET0 Q096_ESET0 Q097_ESET0 Q098_ESET0
  Q130_Mgw Q131_Mind Q132_Mack_Msd_Mcha_Msuc
/MISSING LISTWISE
/ANALYSIS Q037_EIT0 Q040_EIT0 Q046_EIT0 Q079_ESET0 Q080_ESET0
  Q081_ESET0 Q082_ESET0 Q083_ESET0 Q084_ESET0 Q086_ESET0 Q087_ESET0 Q088_ESET0 Q089_ESET0
  Q090_ESET0 Q091_ESET0 Q092_ESET0 Q093_ESET0 Q094_ESET0 Q095_ESET0 Q096_ESET0 Q097_ESET0 Q098_ESET0
  Q130_Mgw Q131_Mind Q132_Mack_Msd_Mcha_Msuc
/PRINT INITIAL KMO REPR EXTRACTION ROTATION
/FORMAT SORT BLANK(.30)
/CRITERIA FACTORS(7) ITERATE(25)
/EXTRACTION ML
/CRITERIA ITERATE(25) DELTA(0)
/ROTATION OBLIMIN.
  
```

### Factor Analysis

#### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,908
Bartlett's Test of Sphericity	Approx. Chi-Square	10003,248
	df	300
	Sig.	,000

**Communalities**

	Initial	Extraction
Q037_EI(T0)	,338	,453
Q040_EI(T0)	,371	,534
Q046_EI(T0)	,358	,453
Q079_ESE(T0)	,517	,584
Q080_ESE(T0)	,376	,449
Q081_ESE(T0)	,507	,625
Q082_ESE(T0)	,543	,600
Q083_ESE(T0)	,499	,707
Q084_ESE(T0)	,490	,567
Q086_ESE(T0)	,400	,453
Q087_ESE(T0)	,570	,710
Q088_ESE(T0)	,362	,397
Q089_ESE(T0)	,467	,483
Q090_ESE(T0)	,592	,645
Q091_ESE(T0)	,635	,725
Q092_ESE(T0)	,574	,624
Q093_ESE(T0)	,522	,531
Q094_ESE(T0)	,567	,556
Q095_ESE(T0)	,504	,463
Q096_ESE(T0)	,683	,711
Q097_ESE(T0)	,759	,901
Q098_ESE(T0)	,668	,715
Q130_Mgw	,323	,433
Q131_Mind	,373	,602
Q132_Mack_Msd_Mcha_Msuc	,311	,412

Extraction Method: Maximum Likelihood.

**Goodness-of-fit Test**

Chi-Square	df	Sig.
406,566	146	,000

**Total Variance Explained**

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8,210	32,841	32,841	7,399	29,597	29,597	5,395
2	2,266	9,064	41,904	2,082	8,329	37,926	4,378
3	1,980	7,919	49,823	1,566	6,262	44,188	5,439
4	1,638	6,550	56,373	1,388	5,551	49,739	1,981
5	1,296	5,185	61,559	,819	3,276	53,015	2,803
6	,996	3,984	65,543	,583	2,331	55,346	4,464
7	,879	3,518	69,060	,497	1,990	57,336	3,453
8	,702	2,809	71,870				
9	,641	2,564	74,434				
10	,609	2,436	76,869				
11	,556	2,225	79,094				
12	,532	2,129	81,224				
13	,513	2,052	83,276				
14	,493	1,971	85,247				
15	,471	1,883	87,130				
16	,435	1,741	88,870				
17	,413	1,651	90,521				
18	,385	1,540	92,061				
19	,356	1,424	93,485				
20	,339	1,356	94,840				
21	,333	1,333	96,173				
22	,316	1,264	97,437				
23	,247	,986	98,423				
24	,230	,920	99,343				
25	,164	,657	100,000				

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Factor Correlation Matrix**

Factor	1	2	3	4	5	6	7
1	1,000	-,414	-,531	,177	-,362	-,588	-,461
2	-,414	1,000	,443	-,085	,181	,241	,464
3	-,531	,443	1,000	-,222	,204	,390	,310
4	,177	-,085	-,222	1,000	-,222	-,145	-,063
5	-,362	,181	,204	-,222	1,000	,393	,242
6	-,588	,241	,390	-,145	,393	1,000	,378
7	-,461	,464	,310	-,063	,242	,378	1,000

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

**Pattern Matrix<sup>a</sup>**

	Factor						
	1	2	3	4	5	6	7
Q087_ESE(T0)	,769						
Q086_ESE(T0)	,565						
Q088_ESE(T0)	,562						
Q089_ESE(T0)	,491						
Q097_ESE(T0)		-,950					
Q098_ESE(T0)		-,827					
Q096_ESE(T0)		-,798					
Q091_ESE(T0)			-,883				
Q090_ESE(T0)			-,831				
Q092_ESE(T0)			-,716				
Q094_ESE(T0)			-,580				
Q095_ESE(T0)			-,533				
Q093_ESE(T0)			-,487				
Q131_Mind				,784			
Q130_Mgw				,652			
Q132_Mack_Msd_Mcha_Msuc				,632			
Q040_EI(T0)					-,729		
Q037_EI(T0)					-,643		
Q046_EI(T0)					-,590		
Q081_ESE(T0)						-,761	
Q080_ESE(T0)						-,654	
Q082_ESE(T0)						-,589	
Q079_ESE(T0)						-,534	
Q083_ESE(T0)							-,747
Q084_ESE(T0)							-,584

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 10 iterations.

## Appendix G - Modification Indices Analysis

### *Modifications to the Measurement Model*

After analyzing the modification indices (MI) table, from AMOS software output, some of the proposed measurement model modifications, are justifiable and thought to exist beyond this dataset and, therefore, should be accommodated in the model. According to AMOS output if the analysis is repeated treating the covariance between the following variables' error terms as free parameters, the discrepancy would fall by at least the MI reported value<sup>50</sup>:

ESE12 and ESE13 (MI of 103.444): The first data driven change suggestion that is considered justifiable is the one that links the error terms of ESE for implementing people activities items 12 and 13. Item 12 "Supervise employees" and item 13 "Recruit and hire employees" are intrinsically correlated, because they both require good person judgment/valuation capabilities and they appear both to be compatible with a distant/hierarchical relation between boss and employee. This might be especially appealing for those who with a need for power personality (*cf.* McClelland, et al., 1989). (The final model reports a .393 correlation between the two error terms). [After which: Chi-square = 1329.369 (df=368, p-value=.000); Std. RMR=.0491; RMSEA= .051 with CI90 (.048;.054), PCFI= .838, NFI= .899, and CFI = .925]

ESE for planning and ESE for Implementing Finance first order constructs (MI of 50.903): The second data driven change suggestion that it was followed, is the one that links the error terms of ESE for planning activities and of ESE for imp. financials activities. The rationale here is that planning and finance all involve data collection and calculus and this may demand the same type of basic cognitive skills and, therefore, would make these ESE sub-factor correlate beyond ESE[2nd]. (The final model reports a .412 correlation between the two error terms). [After which: Chi-square = 1269.488 (df = 367, p-value=.000); Std. RMR=.0478; RMSEA= .050 with CI90 (.047;.053), PCFI= .840, NFI= .904, and CFI = .929]

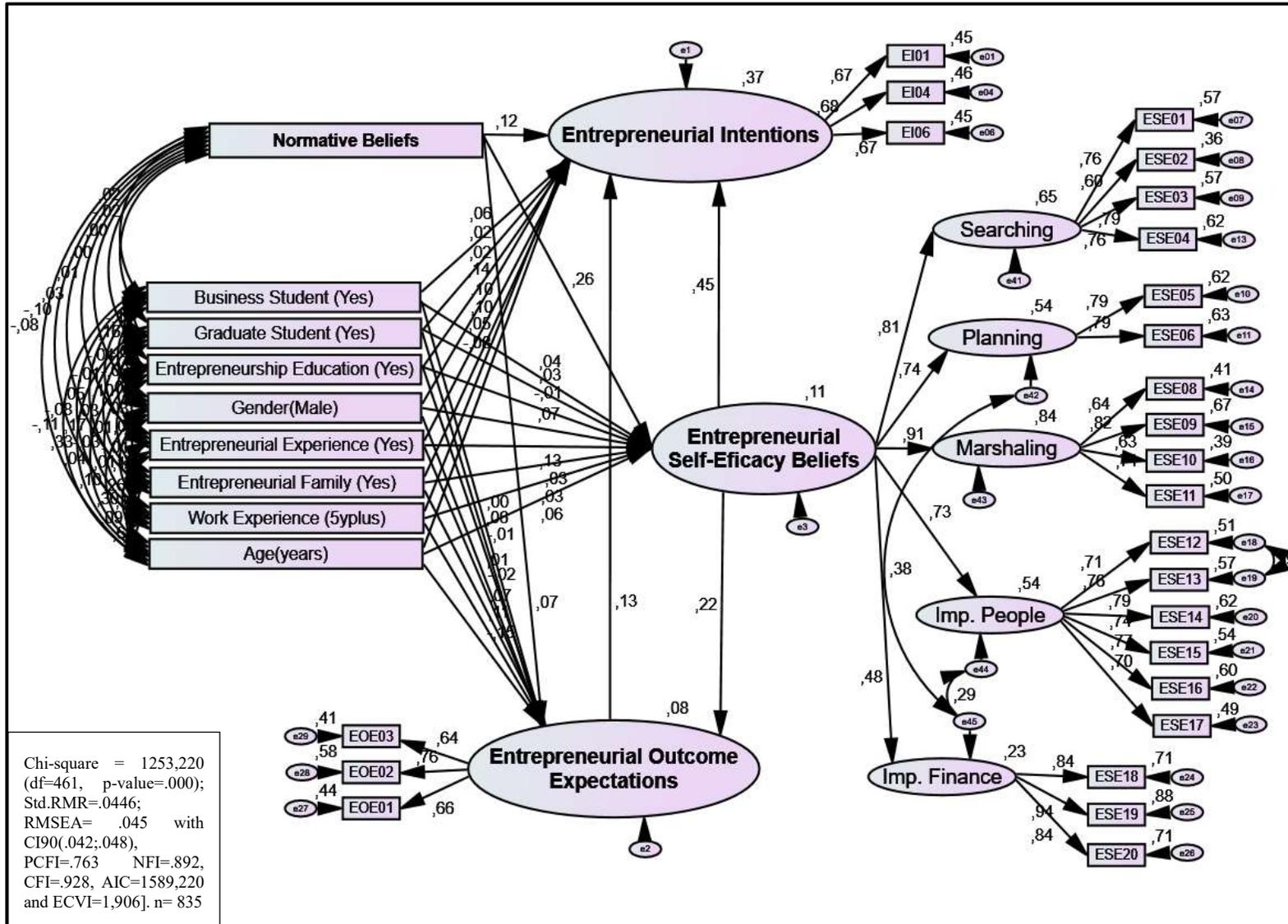
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<sup>50</sup> MI values reported were retrieved after each model modification, rather than, all *a priori* (since these change after each model adjustment).

ESE Imp. People and Imp. Finance first order constructs (MI of 53.626): The third data driven change suggestion that was accepted is the one that links the error terms of ESE first order constructs of ESE imp. people and ESE imp. financials. These are intrinsically correlated, because they both relate to efficacy perceptions regarding the implementation phase - as the constructs names clearly indicate. (The final model reports a .299 correlation between the two error terms). [After which: Chi-square = 1211.535 (df = 366, p-value=.000); Std. RMR= .0425; RMSEA= .048 with CI90 (.045;.051), PCFI= .842, NFI= .908, and CFI = .934]

ESE16 and ESE17 (MI of 23.894): The fourth, and final, data driven change suggestion that it is thought as justifiable is the one that links the error terms of ESE for imp. people activities items 16 and 17. Item 16 “Inspire, encourage, and motivate my employees” and item 17 “To provide your employees with training” are intrinsically correlated, because they both involve an active and direct personal communication with employees. For that reason it is believe that this correlation exists beyond this dataset, and should be accommodated in the model. (The final model reports a .201 correlation between the two error terms). [After which: Chi-square = 1183.385 (df = 365, p-value=.000); Std. RMR=.0427; RMSEA=.048 with CI90 (.045;.051), PCFI=.841 NFI=.910, and CFI = .936]

Appendix H - Comprehensive EI model results, including all cognitive and demographic determinants in the study.



## Appendix I - Nonrespondents by follow-up surveys drop-out

Assuming entrepreneurial intentions (EI) and entrepreneurial outcome expectations (EOE) as good indicators of the salience and the attitudes towards entrepreneurship, for Portuguese higher education (HE) students, based on the literature (*e.g.*, Sheehan & McMillan, 1999; Cook et al., 2000) the following hypotheses suggesting differences in average values and implicit variability were tested:

HaI4.01 – Students who have not dropped-out from subsequent follow-up EEP Portugal surveys have, on average, higher EI than those who have dropped-out.

HaI4.02 – Students who have not dropped-out from subsequent follow-up EEP Portugal surveys have, on average, less EI variability than those who have dropped-out.

HaI4.03 – Students who have not dropped-out from subsequent follow-up EEP Portugal surveys have, on average, higher EOE than those who have dropped-out.

HaI4.04 – Students who have not dropped-out from subsequent follow-up EEP Portugal surveys have, on average, less EOE variability than those who have dropped-out.

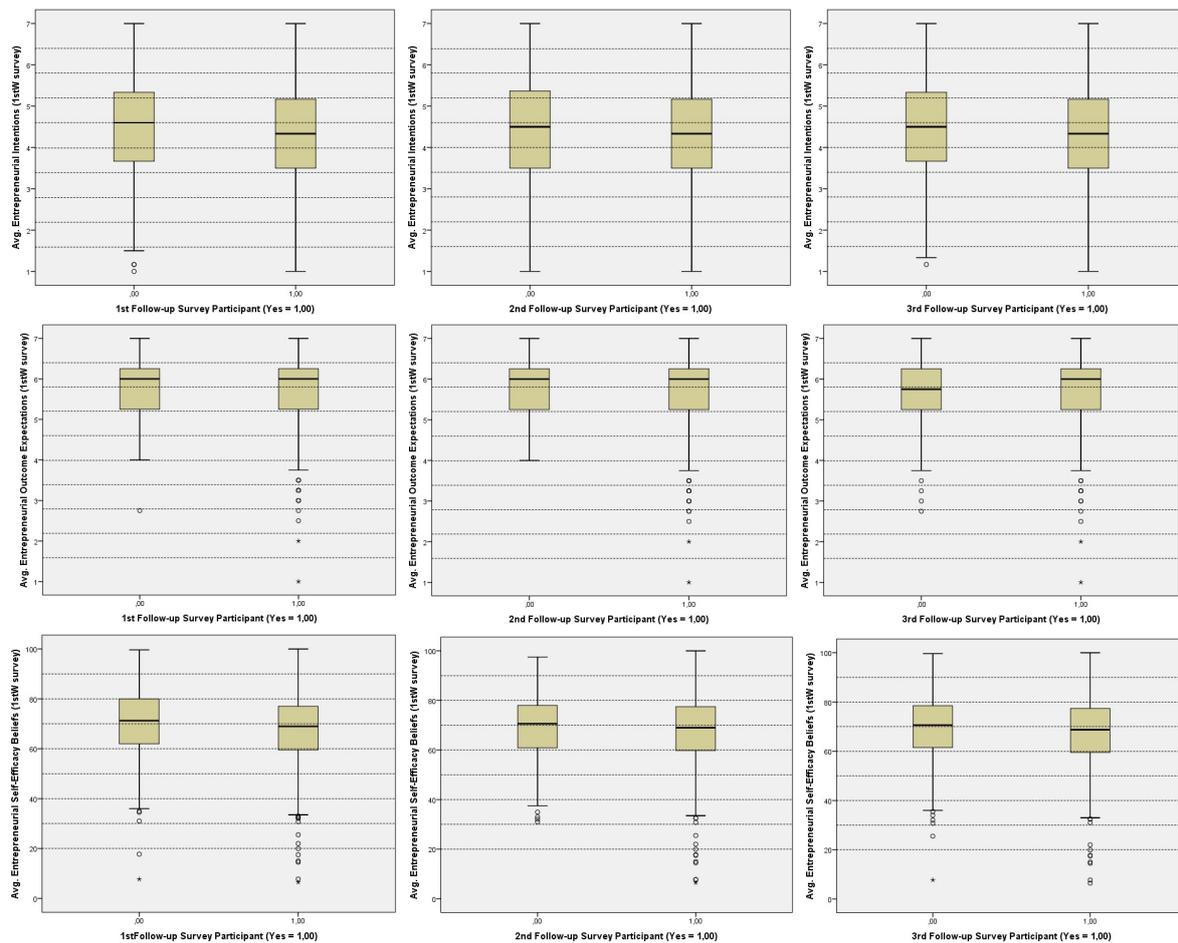
### Nonrespondents Analysis

Although all follow-up surveys have resulted in relevant middle sized samples and, apparently, maintaining considerable variability in all core variables of interest, as one can confirm through Figure aI4.01 (below) boxplot description, given the low response rate of 17,49% (#229 submissions), 13,06% (#171 submissions) and 24,52% (#321) registered in the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> follow-up surveys<sup>51</sup> attrition by follow-up drop-out has the potential for sampling bias, if the sample is found non-random for SCCT cognitive variables and their means and variances significantly departure from those registered from the 1stW survey.

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<sup>51</sup> All percentages relative to the 1stW EEP Portugal survey sample size (#1,309 valid submissions).

**Figure aI4.01:** Boxplot description of 1stW EEP Portugal survey students' EI(6 item avg.) [top line], EOE(4 item avg.) [middle line] and ESE(20 item avg.) [bottom line] compared with nonrespondents [left boxplot] and respondents [right boxplot] to follow-up surveys 1, 2 and 3 [left to right columns].



Here, following Goodman & Blum (1996) recommended procedure to assess the potential effects of attrition in longitudinal research. Namely, first, analyzing the significance of the marginal effects of this study's variables in a multivariable binary logistic model (hereinafter only logistic regression) that attempts to predict survey drop-out. This will assess the presence of non-random sampling relative to the studied variables, and it is especially appropriate because “it models the probability of being included in one of two response categories (*e.g.*, remaining in or leaving a sample), which is consistent with the definition of non-random sampling. Furthermore, it does not depend on assumptions regarding multivariate normality or equality of variance-covariance

matrices in the two groups.” (Goodman & Blum 1996, p. 634). Second, T-tests are used to test mean differences, and Chi-square tests of proportions differences, between 1<sup>st</sup>W sample and subsequent follow-up samples. Bootstrapping technique (Efron, 1979; Efron & Tibshirani, 1994) was used, in the logistic regression and the T-tests analysis, because it provides robust results even in the event of nonnormal data, while Chi-square tests are already non-parametric. Third, differences in the variables variability was tested using a non-parametric version of Levene’s test of variances equality (*cf.* Nordstokke & Zumbo, 2010; Nordstokke, et al., 2011).

Accordingly, and after having already presented the mean, standard deviation and correlation matrix, for all of our study variables, as these were reported in the first wave (1stW) EEP Portugal survey (refer to Chapter III), a test for the general hypothesis of non-random sample was performed, as suggested by Goodman & Blum (1996). Table aI4.01 (below) shows this test results, derived from a logistic regression where the dependent variable is a binary variable - taking the value “1” if the student failed to submit the respective follow-up survey, and “0” otherwise – and the independent variables are all<sup>52</sup> the variables (*i.e.* dependent and independent) used in this thesis models – measured at the time of the initial 1stW survey.

Regarding the logistic model goodness of fit, results will be presented into two different groups, first the results from the application of these models to Fup1 and Fup3 and, second, the application to Fup2. For Fup1 and Fup3 follow-up drop-outs were not significantly related with the variables, as tested by the models’ Chi-squares (Hosmer and Lemeshow Test [df]) of 7.079 [8] and 9.436 [8], respectively, and the pseudo R-squares (Cox & Snell R Square and Nagelkerke R Square) oscillated between 4.6% and 5.1%, which, considering, theoretically, a potential between 0% and 100%, are very low values. The model to predict Fup2 drop-outs, on the other hand, was found to fit the data significantly with a Chi-square (H&L test) of 30.290 [8] (p-value: < .001) and offering a still low, but not negligible explanatory power with (C&S and Nag.) pseudo R-squares of 10.1% and 17.6%. These results offer mixed evidence regarding the general hypothesis of random-sampling, with the evidence from Fup1 and Fup3 models indicating a not rejection verdict and

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<sup>52</sup> With the exception of ESSE which depends solely of the simultaneous report of ESE and GSE, both of which are already accounted for in these logistic models.

**Table aI4.01:** Binary multivariate logistic regression (with bootstrapping), to test the hypothesis of non-random sampling due to attrition from follow-up surveys drop-out, from 1st wave EEP Portugal survey participants.

SEM model Variables tested with binary logistic regression Sample: 1st Wave EEP Portugal survey	1st Follow-up			2nd Follow-up			3rd Follow-up		
	B	Bias <sup>a</sup>	Std. Error <sup>a</sup>	B	Bias <sup>a</sup>	Std. Error <sup>a</sup>	B	Bias <sup>a</sup>	Std. Error <sup>a</sup>
<b>Contextual Variables - Proximal and Distal</b>									
1. Gender (Male, Y/N)	-.018	,006	,198	-.234	-.031	,236	,000	,005	,177
2. Age (Years)	-.024	,000	,022	-.020	,001	,026	-.006	,002	,020
3. Family with entrepreneurship experience (Y/N)	-.095	,008	,191	,261	,013	,229	,032	,010	,181
4. Normative Beliefs (NB index: 6-item avg, 1-7)	-.157	-.007	,108	-.162	-.010	,123	,093	,003	,097
5. Education Level (Graduated Student, Y/N)	-.287	-.003	,220	-.608**	-.024	,242	-.616***	-.019	,193
6. Engaged in Business Education Course (Y/N)	,361	,017	,203	,352	-.002	,237	,383*	-.001	,186
7. Entrepreneurship Education exposure (Y/N)	-.512**	-.014	,186	-1,60***	-.068	,246	-.531**	,001	,175
8. Work experience (5 years or more, Y/N)	,135	,001	,305	,847*	,030	,395	,654*	,017	,284
9. Entrepreneurship experience (Y/N)	-.424	,001	,251	-.481	-.007	,317	-.300	,001	,249
<b>SCCT EI Direct Antecedents</b>									
10a. Entrep. Self-Efficacy (ESE: 20-Item factor)	,905	-.060	1,736	1,346	,069	1,918	,344	-.017	1,582
10.1. ESE Searching (4-Item factor)	,361	-.002	,393	,547	,011	,452	,190	,010	,376
10.2. ESE Planning (2-Item factor)	-.133	-.020	,284	-.205	,005	,311	-.124	-.013	,261
10.3. ESE Marshaling (4-Item factor)	-.350	,004	,515	-.391	-.022	,576	-.129	,014	,451
10.4. ESE Implementing People (6-Item factor)	,306	-.033	,740	,868	,052	,817	,324	,001	,682
10.5. ESE Implementing Financial (4-Item factor)	,457	,000	,439	,390	,006	,490	,150	,002	,403
10b. General Self-Efficacy (GSE: 10-Item factor)	,293*	,020	,125	,235	,008	,153	,032	,000	,119
11. Entrep. Outcome Expectations (EOE: 4-Item factor)	-.029	,000	,117	,062	,002	,141	,120	,005	,111
<b>SCCT Dependent Variable</b>									
12. Entrepreneurial Intentions (EI: 6-Item factor)	-.134	-.012	,123	,021	,005	,153	-.084	-.004	,114
Constant	3,097***			3,961***			,868		
-2 Log likelihood / Cox & Snell R Square / Nagelkerke R	814,84	,046	,071	622,65	,101	,176	897,12	,051	,075
Model Chi-square (Hosmer and Lemeshow Test) / df	7,079	8		30,290***	8		9,436	8	
Follow-up drop-out <sup>b</sup> (%) relative to 1st wave Survey	79,00%			84,60%			75,51%		
Sample size <sup>b</sup>	826			822			819		

EEP Portugal 1st wave survey academic year of 2010-2011, from 03-Oct-2010 to 08-Jul-2011.

Statistical significances: \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

a. Bootstrap results, based on 1000 bootstrap samples.

b. Considering only those who have reported all variables.

evidence from Fup2 (the least participated follow-up survey) indicating rejection of the random-sampling hypothesis.

In terms of specific variables in the logistic model, our results indicate that the only variable for which there is consistent evidence of significant non-random sampling, across all follow-up surveys, is entrepreneurship education exposure, which is negatively related with the chance of dropping-out the EEP Portugal follow-up surveys (Fup1, Fup2 and Fup3 p-values:  $< .01$ ,  $< .001$  and  $< .01$ , respectively). Worthy of mention were also the less consistently significant results of being a graduate students being negatively related (Fup2 and Fup3 p-values:  $< .01$  and  $< .001$ , respectively), and having at least 5 years of work experience being positively related (Fup2 and Fup3 p-values:  $< .05$  and  $< .05$ , respectively) to the chance of dropping-out from follow-up surveys. Although the variables GSE and being engaged in a business course also registered one positive significant result each, on the chance of dropping-out (p-values:  $< .05$ ), in Fup3 and Fup1 analysis, respectively, its lack consistency in the other two follow-up analysis may be due to having found a spurious association, or to an insufficient sample size incapable of detecting their minor size effect. Given that Fup3 was the biggest dataset of all three follow-ups, it may be speculated the first justification for GSE (spurious) and the second justification for being engaged in a business course (small effect).

It was then proceeded to test the potential effects of non-random sampling on the variables sample means and variances. Testing if there is a significant difference in these statistics when comparing follow-up surveys to the 1stW survey and, if so, providing information on the direction and the size of the difference.

First, regarding variables sample means or proportions (in the case of dummy variables), Table a11.2 presents the results of the Chi-square tests for binary variables, from which it can be verify that, graduate students (Fup1, Fup2 and Fup3 p-values:  $< .05$ ,  $< .05$  and  $< .001$ , respectively) and students with entrepreneurship education exposure (Fup1, Fup2 and Fup3 p-values:  $< .01$ ,  $< .001$  and  $< .001$ , respectively) were found to be significantly less likely to drop-out in subsequent follow-up surveys.

**Table aI4.02:** Results from the test of proportions difference with the Chi-squared test: comparing the prevalence of some demographic characteristics among participants of follow-up surveys, when compared with the registered in the initial, 1stW EEP Portugal survey sample.

Proportions difference test for binary variables included in the SEM model Sample: 1st Wave EEP Portugal survey	Sample size	1st Follow-up Respondents				2nd Follow-up Respondents				3rd Follow-up Respondents			
		Proportions differences (Y - N)	Yes	No	Pearson Chi-squared	Proportions differences (Y - N)	Yes	No	Pearson Chi-squared	Proportions differences (Y - N)	Yes	No	Pearson Chi-squared
<b>Contextual Variables - Proximal and Distal</b>													
1. Gender (Male, Y/N)	1307	0,87%	42,79%	41,93%	0,058	3,39%	45,03%	41,64%	0,702	-0,03%	42,06%	42,09%	0,000
3. Family with entrepreneurship experience (Y/N)	1243	3,96%	61,26%	57,30%	1,177	-2,01%	56,25%	58,26%	0,232	-0,83%	57,38%	58,21%	0,065
5. Education Level (Graduated Student, Y/N)	1250	7,92%	35,68%	27,76%	5,639*	8,66%	36,69%	28,03%	5,298*	13,07%	39,03%	25,96%	19,277***
6. Engaged in Business Education Course (Y/N)	1114	-6,42%	42,34%	48,77%	2,942	-6,35%	42,07%	48,42%	2,260	-8,58%	41,11%	49,70%	6,294*
7. Entrepreneurship Education exposure (Y/N)	1122	11,78%	55,91%	44,12%	9,876**	31,54%	73,33%	41,80%	56,272***	11,56%	55,02%	43,46%	11,527***
9. Entrepreneurship experience (Y/N)	1300	10,20%	22,71%	12,51%	15,996***	9,11%	22,22%	13,11%	10,060**	8,04%	20,38%	12,33%	12,697***

EEP Portugal 1st wave survey academic year of 2010-2011, from 03-Oct-2010 to 08-Jul-2011.  
 Statistical significances: \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

From Table aI4.02 (above) it is possible to compute<sup>53</sup> that graduate students and students with entrepreneurship education exposure have an increased chance of follow-up participation, in relation to their prevalence in the initial survey, within the following range intervals [28,53% ; 50,37%] and [26,71% to 75,45%], respectively. Business students results, although inconsistently significant – only reaching the lowest threshold (p-value < .05) in the Fup3 analysis, just like in the logistic model analysis – also appear to be influential, although in the opposite direction, being positively related with Fup3 survey drop-out. Together with the previous results, it can be stated that evidence was found in support of students educational background (level and type) being related with follow-up survey drop-out, in both a univariate and multivariate analysis scenarios.

Analyzing results across all follow-up samples, overall the prevalence of male students and students with entrepreneurial family background in the follow-up samples, cannot be said to be significantly different from that of the initial 1sW sample. These results provide no evidence that being a male or having a family member with entrepreneurial experience helps predict follow-up surveys drop-outs. And this appears to be true considering both their marginal independent effects (from the multivariate logistic models) and their individual<sup>54</sup> effects (from Chi-square tests).

All these Chi-square tests results were in line with the results from the logistic model, although there is potential for difference between both, when the independent variables in the multivariate analysis are correlated with each other - which is the case. And this is found when the proportion of students, in the 1stW sample, with prior entrepreneurial experience that have dropped-out is compared with the proportion of those who have not dropped-out. We found that, having this prior experience, when considered individually<sup>55</sup>, is significantly (Fup1, Fup2 and Fup3 p-values: < .001, < .01 and < .001, respectively) negatively related with dropping-out on subsequent follow-up surveys. The increase in their sample prevalence, from initial to follow-ups surveys, was found to be within the range interval of [65,20% to 81,49%].

In Table aI4.03 (below) the T-tests (for continuous variables) results, comparing variables mean values from follow-up surveys' respondents with nonrespondents, only EI appears to show

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<sup>53</sup> Increase in participation rate (*i.e.* proportion) = Respondents (Yes) / Nonrespondents (No) – 1).

<sup>54</sup> Rather than in a multivariate analysis, like the previous multivariate binary logistic models, where effects are measured by holding every other variable constant.

<sup>55</sup> *Idem.*

**Table aI4.03:** Results from the test of means difference with the t-test (bootstrapping with 1000 samples): comparing the average item value (registered in the initial, 1stW EEP Portugal survey sample), for each continuous variable in our model, between participants and drop-outs from follow-up surveys.

Means difference test for continuous variables included in the SEM model Sample: 1st Wave EEP Portugal survey	1st Follow-up Respondents				2nd Follow-up Respondents				3rd Follow-up Respondents			
	Means differ. (Y - N)	Yes Mean(se) <sup>a</sup>	No Mean(se)	t-test (df) <sup>d</sup>	Means differ. (Y - N)	Yes Mean(se) <sup>a</sup>	No Mean(se)	t-test (df) <sup>d</sup>	Means differ. (Y - N)	Yes Mean(se) <sup>a</sup>	No Mean(se)	t-test (df) <sup>d</sup>
<b>Contextual Variables - Proximal and Distal</b>												
2. Age (Years)	1,16	25,16 (0,49)	24,00 (0,21)	2,224* (316)	0,03	24,24 (0,53)	24,20 (0,21)	0,058 (1230)	0,43	24,53 (0,38)	24,10 (0,23)	0,962 (1230)
4. Normative Beliefs (NB index: 6-item avg. 1-7)	0,08	5,63 (0,06)	5,55 (0,03)	1,193 (1203)	0,19	5,73 (0,06)	5,54 (0,03)	2,814** (226)	0,02	5,58 (0,05)	5,56 (0,03)	0,377 (1203)
8. Work experience (Years) <sup>b</sup>	1,09	6,03 (0,51)	4,94 (0,21)	1,981 (273)	1,05	6,07 (0,63)	5,01 (0,20)	1,555 (147)	0,24	5,31 (0,38)	5,07 (0,23)	0,521 (1150)
<b>SCCT EI Direct Antecedents</b>												
10a. Ent. Self-Efficacy (ESSE index : 20-item avg. 0-100) <sup>c</sup>	2,48	70,20 (0,95)	67,72 (0,42)	2,450* (1256)	1,37	69,35 (0,99)	67,99 (0,42)	1,194 (1256)	1,72	69,46 (0,79)	67,74 (0,44)	1,903 (1256)
10b. General Self-Efficacy (GSE index: 10-item avg. 1-5) <sup>c</sup>	0,01	3,80 (0,03)	3,79 (0,01)	0,356 (1245)	0,01	3,80 (0,04)	3,79 (0,01)	0,253 (1245)	0,06	3,83 (0,03)	3,78 (0,01)	1,907 (1245)
11. Ent. Outcome Expectations (EOE index: 4-item avg. 1-7) <sup>c</sup>	0,03	5,79 (0,05)	5,76 (0,03)	0,522 (1243)	0,06	5,82 (0,06)	5,76 (0,02)	0,853 (1243)	-0,04	5,74 (0,04)	5,78 (0,03)	-0,704 (1243)
<b>SCCT Dependent Variable</b>												
12. Entrepreneurial Intentions (EI index: 6-item avg. 1-7) <sup>c</sup>	0,19	4,47 (0,08)	4,28 (0,04)	2,063* (1289)	0,06	4,37 (0,10)	4,30 (0,04)	0,613 (1289)	0,17	4,44 (0,07)	4,27 (0,04)	2,103* (1289)

EEP Portugal 1st wave survey academic year of 2010-2011, from 03-Oct-2010 to 08-Jul-2011.

Statistical significances: \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

a. Bootstrap results, based on 1000 bootstrap samples.

b. Work experience was measured in years, because it was considered to be more informative and it did not raise any concerns with multicollinearity with age as it does in multiple regressions.

c. Cognitive constructs were measured by the simple average of all their items, because it was considered to be more informative.

d. Levene's Test for Equality of Variances was used.

some consistency (verified by their significance in Fup1 and Fup3: p-values < .05), with follow-up drop-outs having, on average, lower EI than nonrespondents. Worthy of mention, although only significantly different in the Fup2 (p-values < .01) - which was the least participated follow-up survey - is the mean difference of NB, which is also lower for nonrespondents. Given the lack of consistency across the majority of follow-up surveys and the fact that some (*i.e.* age and ESE) of these only meet the lowest significance threshold (p-values < .05), the remaining effects are thought to be negligible. In terms of size differences, EI of respondents is only higher than EI of nonrespondents by 0.06 to 0.19 (Fup2 and Fup1, respectively) - in a total potential difference, *a priori*, of 6.00 – or, from a relative perspective, follow-up respondents had only a higher EI mean of 1.47% to 4.39%, than nonrespondents. This is apparent in the Figure aI4.01 boxplot results.

Thus, these results provide mixed empirical evidence regarding hypothesis HaI4.01 – since it appears that two out of three EEP Portugal follow-up samples have captured students with significantly higher EI than those of have dropped-out, but this differences are very small and were not sufficient to be considered marginally significant, to explain the event of student's drop-out from follow-up survey in a multivariate model - where all other variables concur in the prediction – and provide empirical evidence for rejecting hypothesis HaI4.03, since neither marginally, nor even individually, could it be found a significant positive relationship between EOE mean values and follow-up survey response survival.

Regarding variables' samples variances, Table aI4.04 presents the results of the non-parametric version of Levene's test of variances equality, to provide evidence on whether reducing the sample, to only those who responded to follow-up surveys, diminishes or enhances the variance of the variables. It was found that, overall (considering results for all follow-ups) the variances can be said not to change significantly. Nevertheless, individually, for Fup1 GSE and for Fup2 NB variabilities were actually significantly different for respondents than for nonrespondents (at the lowest level of significance: p-values < .05) - respondents to Fup1 exhibiting a higher GSE inter-quartile-range value by 0.1 and, respondents to Fup2, exhibiting lower NB inter-quartile-range value by 0.25, than those measured on follow-up drop-outs<sup>56</sup>. Therefore, these results imply rejecting hypotheses HaI4.02 and HaI4.04, since neither EI nor EOE were found with significantly reduced variances in follow-up samples.

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<sup>56</sup> To help the reader better understand the relative sizes of these differences, please remember that GSE items were measured in a scale of 1-5, while NB items were measured in a scale of 1-7.

**Table aI4.04:** Results from the Levene’s test (non-parametric) used to verify the equality of variances, for each continuous variable in the SEM model, between participants and drop-outs from follow-up surveys.

Levene's test (nonparametric) for equality of variances for continous variables included in the SEM model Sample: 1st Wave EEP Portugal survey	1st Follow-up Respondents			2nd Follow-up Respondents			3rd Follow-up Respondents		
	Yes IQR <sup>a</sup>	No IQR <sup>a</sup>	Levene's statistic non-parametric	Yes IQR <sup>a</sup>	No IQR <sup>a</sup>	Levene's statistic non-parametric	Yes IQR <sup>a</sup>	No IQR <sup>a</sup>	Levene's statistic non-parametric
<b>Contextual Variables - Proximal and Distal</b>									
2. Age (Years)	7,50	5,00	,213	6,00	6,00	1,229	6,50	6,00	,003
4. Normative Beliefs (NB index: 6-item avg. 1-7)	1,20	1,20	1,283	0,92	1,17	4,782*	1,20	1,20	,274
8. Work experience (Years) <sup>b</sup>	6,00	5,00	,744	4,00	5,00	,766	5,00	5,00	,480
<b>SCCT EI Direct Antecedents</b>									
10a. Ent. Self-Efficacy (ESSE index : 20-Item avg. 0-100) <sup>c</sup>	18,13	17,50	,131	17,10	17,75	,120	17,06	17,87	,170
10b. General Self-Efficacy (GSE index: 10-Item avg. 1-5) <sup>c</sup>	0,60	0,50	6,519*	0,60	0,50	2,834	0,47	0,50	,531
11. Ent. Outcome Expectations (EOE index: 4-item avg. 1-7) <sup>c</sup>	1,00	1,00	,019	1,00	1,00	,310	1,00	1,00	,004
<b>SCCT Dependent Variable</b>									
12. Entrepreneurial Intentions (EI index: 6-item avg. 1-7) <sup>c</sup>	1,67	1,67	0,161	1,90	1,67	1,937	1,67	1,67	,907

EEP Portugal 1st wave survey academic year of 2010-2011, from 03-Oct-2010 to 08-Jul-2011.

Statistical significances: \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 (2-tailed)

a. Inter Quartil Range (IQR) is a more appropriate measure of variability in non-parametric variables.

b. Work experience was measured in years, because it was considered to be more informative and it did not raise any concerns with multicollinearity with age has it does in multiple regressions.

c. Cognitive constructs were measured by the simple average of all their items, because it was considered to be more informative.

d. A nonparametric variation of Levene's Test, for Equality of Variances, was used, where the ranking of values substitutes its values in Levene's formula. (cf. Nordstokke & Zumbo, 2010; Nordstokke, et al., 2011)

**Appendix J - Coding criteria for students' entrepreneurial intentions motivators**

<b>MOTIVATORS</b>	<b>CODE</b>	<b>Coding criteria (original wording – Portuguese)</b>	<b>Coding criteria (English translation)</b>
To have a job	<i>Mj</i>	Ter ou assegurar um emprego (indefinido).	Have or provide him a (undefined) job.
To have a particular job	<i>Msj</i>	Conseguir trabalhar em algo específico (indústria, sector, área de conhecimento), um emprego particular ou, mais genericamente, para trabalhar em algo de que goste.	Be able to work on something specific (industry, sector, area of knowledge), a particular job or, more generally, to work on something he enjoys.
Due to personal interest	<i>Mpir</i>	Fazer algo que gosta ou que lhe interessa.  Nota: Isto sem que seja perceptível que a origem dessa satisfação/interesse possa ser integralmente acomodado por outro dos códigos existentes - <i>i.e.</i> com um motivador mais específico.	Do something he likes and/or has interest on.  Note: This without it being noticeable that the origin of this satisfaction/interest can be fully accommodated by other existing codes - <i>i.e.</i> with a more specific motivator.

For personal realization	<i>Mreal</i>	<p>Ser feliz, ou de se sentir realizado.</p> <p>Nota: Isto sem que seja perceptível que a origem dessa realização possa ser integralmente acomodada por outro dos códigos existentes - <i>i.e.</i> com um motivador mais específico.</p>	<p>Be happy, or to feel accomplished.</p> <p>Note: This without it being noticeable that the origin of this achievement can could be fully accommodated by other existing codes - <i>i.e.</i> with a more specific motivator.</p>
To experience the entrepreneurial process	<i>Ment</i>	<p>Experienciar esse processo particular, que é criar um novo projeto empresarial.</p>	<p>Experience that particular process, of creating a new business venture.</p>
To be independent	<i>Mind</i>	<p>Não depender de ninguém, de ser o seu próprio patrão e/ou de poder ter um horário de trabalho flexível.</p>	<p>Not to depend on anyone, be his own boss and/or be able to have a flexible work schedule.</p>
To work for myself	<i>Mwmy</i>	<p>Poder trabalhar para si mesmo, ou seja, de os resultados do seu trabalho estarem diretamente ligados ao seu esforço e sucesso.</p>	<p>Be able to work for oneself, that is, for the results of one's work to be directly linked to one's effort and success.</p>
To have power	<i>Mhp</i>	<p>Poder gerir e comandar os destinos de algo e/ou de outros.</p>	<p>Be able to manage and control the destinies of something and/or of others.</p>

To be challenged	<i>Mcha</i>	Explorar algo desconhecido, e/ou pela incerteza dos resultados gerados, com a criação do seu próprio negócio.	Explore something unknown, and/or by the uncertainty of the results generated by the creation of one's own business.
For self-development	<i>Msd</i>	Evoluir como pessoa (no seu conhecimento, experiência, visão, etc.) através da criação do seu próprio negócio.	Evolve as a person (on one's knowledge, experience, vision, etc.) through the creation of one's own business.
To create	<i>Mcrea</i>	Ser criativo. De inovar, criar, ou inventar algo.	Be creative. To innovate, to create or to invent something.
To be acknowledged	<i>Mack</i>	Ser socialmente reconhecido por ou através disso.	Be socially recognized by or through it.
To be successful	<i>Msuc</i>	Vencer. De ter sucesso.	Win. To have success.
To make a difference	<i>Mmdf</i>	Fazer a diferença. De se destacar pessoalmente.	Make a difference. To stand out, personally.
To gain financial wealth	<i>Mgw</i>	Um ganho financeiro ( <i>i.e.</i> lucros, mais valias).	Obtain a financial gain ( <i>i.e.</i> profit).

To gain property (to own a business)	<i>Mgp</i>	Um ganho de propriedade ( <i>i.e.</i> ter a sua própria organização).	Obtain a property gain ( <i>i.e.</i> to have his own organization).
To fulfill society's current needs	<i>Mfn</i>	Colmatar as necessidades atuais da sociedade.	Fulfill society's current needs.
To change society in a meaningful way	<i>Mcs</i>	Mudar a sociedade de uma forma significativa.	Change society in a meaningful way.
Ambiguous	<i>MAmb</i>	Sendo evidente a referência a um ou mais motivadores, para justificar a intenção de criar um novo projeto empresarial no futuro, <u>não</u> é possível classificá-lo(s), com um grau de confiança considerado razoável, numa das tipologias de motivadores criadas.	Being obvious a reference to one or more motivators, to justify the intention to create a new business venture in the future, it is not possible to classify it, with a reasonable degree of confidence, on one of the motivators types created.

**Appendix K - Coded examples of the students' responses containing entrepreneurial intentions motivators.**

<i>MOTIVATORS</i>	<i>CODE</i>	<b>Coded examples (original wording – Portuguese)</b>	<b>Coded examples (English translation)</b>
To have a job	<i>Mj</i>	“Uma vez que o desemprego é tão grande, a única forma de exercer alguma profissão será criando uma.” [ID:0945; EI level 5]	“Since unemployment is so high, the only way to exercise any profession will be by creating a job.” [ID:0945; EI level 5]
To have a particular job	<i>Msj</i>	“É um dos meus objetivos ser capaz de providenciar o meu sustento e trabalhar na área da minha preferência” [ID:0732; EI level 7]	“It's one of my goals to be able to provide my living and working in the area of my preference” [ID:0732; EI level 7]
Due to personal interest	<i>Mpir</i>	“Depois de tirar o curso gostava de abrir uma empresa com colegas.” [ID:0678; EI level 5]	“After finishing this program, I would like to start a business with colleagues. [ID:0678; EI level 5]
For personal realization	<i>Mreal</i>	“Porque seria a forma que me preencheria por completo a nível profissional.” [ID:0879; EI level 6]	“Because it would be the way that would completely fulfill me at a professional level.” [ID:0879; EI level 6]

To experience the entrepreneurial process	<i>Ment</i>	“Ambição pessoal em estar inserido na realidade empresarial” [ID:0045; EI level 7]	“Personal ambition to be a part of the business world” [ID:0045; EI level 7]
To be independent	<i>Mind</i>	“Gostaria de ser independente, de gerir o meu próprio negócio, de depender única e exclusivamente de mim” [ID:0120; EI level 7]	“I would like to be independent, to manage my own business, depend solely and exclusively on me” [ID:0120; EI level 7]
To work for myself	<i>Mwmy</i>	“Tenciono ser patrão de mim próprio. Não depender dos outros e poder gerar o meu próprio dinheiro e riqueza com o fruto do meu trabalho”. [ID:0923; EI level 7]	“I intend to be my own boss. Not to depend on others and be able to generate my own money and wealth as a fruit of my work”. [ID:0923; EI level 7]
To have power	<i>Mhp</i>	“Quero tentar criar um projeto para ser patrão e pôr em prática as minhas ideias” [ID:0822; EI level 7]	“I want to try to create a project to be a boss and implement my ideas” [ID:0822; EI level 7]
To be challenged	<i>Mcha</i>	“Gostaria de criar um projeto empresarial na medida em que isso iria por as minhas capacidades de sustentar e rentabilizar esse negócio à prova.” [ID:0751; EI level 5]	“I would like to create a business venture since this would put to test my ability to sustain a business and make it profitable.” [ID:0751; EI level 5]
For self-development	<i>Msd</i>	“Uma forma de progressão e desenvolvimento pessoal e empresarial” [ID:0999; EI level 6]	“A form of personal and entrepreneurial progression and development” [ID:0999; EI level 6]

To create	<i>Mcrea</i>	“A ideia de criar e inovar está sempre presente no meu pensamento” [ID:0609; EI level 7]	“The idea of creating and innovating is always present in my thoughts” [ID:0609; EI level 7]
To be acknowledged	<i>Mack</i>	“Ganhar respeito dentro da comunidade empresarial” [ID:0439; EI level 7]	“Earn respect within the business community” [ID:0439; EI level 7]
To be successful	<i>Msuc</i>	“É uma excelente oportunidade de conseguir obter sucesso, quer a nível pessoal, quer profissional.” [ID:0155; EI level 7]	“It's a great chance to achieve success, both personally and professionally” [ID:0155; EI level 7]
To make a difference	<i>Mmdf</i>	“Gostaria de ficar na história da inovação.” [ID:0875; EI level 6]	“I would like to make it into the history of innovation” [ID:0875; EI level 6]
To gain financial wealth	<i>Mgw</i>	“Possibilidade de obter mais lucros financeiramente” [ID:0687; EI level 6]	“The possibility of obtaining, financially, more profit” [ID:0687; EI level 6]
To gain property (to own a business)	<i>Mgp</i>	“É algo que sempre me entusiasmou, ter um negócio meu.” [ID:1016; EI level 6]	“It's something that has always excited me, to have my own business” [ID:1016; EI level 6]

To fulfill society's current needs	<i>Mfn</i>	“É importante para mim vir a ser parte da solução para alguns dos problemas da sociedade atual.” [ID:0129; EI level 7]	“It is important for me to be part of the solution for some of the problems of today's society.” [ID:0129; EI level 7]
To change society in a meaningful way	<i>Mcs</i>	“Gosto da ideia de deixar o mundo um pouco melhor do que quando cheguei.” [ID:0333; EI level 6]	“I like the idea of leaving the world a little bit better than when I got here.” [ID:0333; EI level 6]
Ambiguous	<i>Amb</i>	“Depende das oportunidades que surjam.” [ID:0215; EI level 4]	”It depends on the opportunities that may arise.” [ID:0215; EI level 4]

**Note:** The criteria for example's inclusion in this table was that: (1) it originated from a student with an EI level that was the level that had the most significant proportion of students with this motivator, among all EI levels; (2) the example was as clear as possible, as to complement the category definition, and to help the reader understanding its full meaning.

## Appendix L - Motivational factors prevalence across different demographic groups

Benefiting from the previously performed EFA (in Chapter V), the salience of a particular motivational factor is posited whenever a specific motivator, that is primarily loaded by this factor, was cited in the 1stW survey. For example, if the student reported that his motivation for creating a new business was to have and own a personal business, this would be scored as a case where the dependent variable and, thus, the salient motivational factor, is (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience*.

Results from the logistic binary regressions, that can be consulted in Table aL5.01, provide, in general, a low model fit and are quite weak in their capabilities to predict the dependent variables salience of motivational factors for EI.

However, there are two models that do fit the data (according to the significant Omnibus Tests of Model Coefficients and the insignificance of the Hosmer and Lemeshow Test, namely the regression for predicting the salience of motivational factor (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* and (F3) *Power & Status*. In both these models, some demographic variables do appear to influence the prevalence of such factors, as those that mainly govern students EI. For (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience*, being younger ( $B = -.075$ ,  $sig. = .05$ ) and being a business student ( $B = .400$ ,  $sig. = .029$ ) appear related with having this type of motive and, for having (F3) *Power & Status* as salient motive, it's more influential to be a man ( $B = .636$ ,  $sig. = .002$ ) and having had family with prior entrepreneurship experience ( $B = .467$ ,  $sig. = .034$ ). Motivational factor (F5) *To be Independent*, may also be slightly negatively related with being a business student ( $B = -.576$ ,  $sig. = .075$ ).

Again, looking at the measures of model fit and model explanatory power, such as the value of the Nagelkerke *r-squared*, it should be noted that although significant relationships were found the tested variables provide a very unsatisfactory model of motivational factor salience for EI.

Interesting enough there was both one intrinsic and one extrinsic motivational factor, (F1) *Intrinsic Motivation - The Entrepreneurial & Ownership Experience* and (F3) *Power & Status*, respectively, that were found to be significantly associated with some demographic variables.

The former, by age (being younger) and by being a business student, and the later, by being a man and by and having had a family with prior entrepreneurship experience.

Relatively to the F1 relationships it could be said that it is expectable, that those who have less life and work experience be more fascinated by the process/experience of creating one's own business, therefore it is probably not surprising that the intrinsic interest for entrepreneurship may, on average start to fade as new experiences mount on one's *curriculum*.

Also, even more intuitive appears to be the second result, where those who have chosen a business course appear to be more intrinsically motivated to create their own new business. With the same argument but in the opposite direction, this may explain why the motivational factor (F5) *To be Independent*, was found to be less associated with business students. For these students, creating a business is more than a means to be financially independent, they are more likely to value (and be valued) by their entrepreneurial behaviors. Regarding the F2 results, the first appears to be in line with the literature, where, for example Carter et al. (2003) finds that men rated wealth and prestige higher than nascent women entrepreneurs. The second result suggests the possibility that for those whose families have already taken the entrepreneurial path, the notion of having power and status may be especially related with succeeding in the same career.

**Table aL5.01 – Logistic binary regression results testing the demographic antecedents of individuals’ motivational factors justifying their EI.**

Demographic Variables / Motivational Factors	Intrinsic Motivation			Meaningful Social Contribution			Power & Status			Particular Occupational Interest			To be Independent		
	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
Age (Years)	<b>-0.075</b>	<b>0.038</b>	<b>0.050</b>	-0.055	0.037	0.136	-0.031	0.044	0.487	-0.016	0.036	0.656	0.060	0.060	0.311
Gender(Men)	0.262	0.180	0.146	0.163	0.173	0.348	<b>0.636</b>	<b>0.208</b>	<b>0.002</b>	0.168	0.176	0.339	-0.402	0.316	0.203
Graduate Student (Yes/No)	-0.121	0.241	0.617	0.134	0.225	0.552	-0.374	0.288	0.194	0.081	0.224	0.718	0.336	0.358	0.348
Business Student (Yes/No)	<b>0.400</b>	<b>0.183</b>	<b>0.029</b>	0.246	0.176	0.163	-0.036	0.212	0.864	0.030	0.178	0.865	-0.576	0.324	0.075
Prior Entrepreneurial Education (Yes/No)	-0.046	0.179	0.795	-0.196	0.172	0.256	-0.094	0.207	0.651	0.256	0.175	0.144	0.227	0.306	0.458
Work Experience (years)	0.042	0.038	0.273	0.024	0.037	0.511	-0.002	0.044	0.969	0.003	0.037	0.942	-0.041	0.061	0.501
Prior Entrepreneurial Experience (Yes/No)	0.155	0.259	0.551	-0.068	0.257	0.792	0.212	0.294	0.472	0.049	0.253	0.846	-0.360	0.458	0.432
Family Entrepreneurial Experience (Yes/No)	0.268	0.185	0.147	0.145	0.176	0.412	<b>0.467</b>	<b>0.220</b>	<b>0.034</b>	0.088	0.179	0.621	0.413	0.320	0.198
Constant	0.056	0.739	0.939	0.040	0.709	0.955	-1.339	0.855	0.117	-0.947	0.706	0.180	-3.865	1.174	0.001
Omnibus Tests of Model Coefficients ( <i>Chi-square; df; Sig.</i> )	19.199	8	0.014	9.737	8	0.284	20.511	8	0.009	4.066	8	0.851	11.568	8	0.172
Model Summary ( <i>-2 Log likelihood; Cox &amp; Snell R2; Nagelkerke R2</i> )	767.739	0.027	0.040	813.242	0.014	0.020	611.576	0.029	0.049	797.455	0.006	0.009	342.359	0.017	0.041
Hosmer and Lemeshow Test ( <i>Chi-square; df; Sig.</i> )	5.932	8	0.655	6.657	8	0.574	9.287	8	0.319	1.555	8	0.992	10.967	8	0.204

## **Appendix M – In-depth explanation of this thesis construct stability analysis**

Individual self-reports, on any given construct test-retest analysis, may change from one moment to the other. Although any change will occur at the construct's items level, different types of changes may occur and, since these may signal different relevant phenomena, different analyses are required.

In this thesis, three main types of within-individual construct stability and one type of group level construct stability, are analyzed: In a within-individual analysis (1) the stability of a construct's item-structure (*e.g.*, Liñán & Rodríguez-Cohard, 2008); (2) the stability of an individual's construct level, relative to the levels of other individuals in the sample (relative stability) (*e.g.*, Liñán & Rodríguez-Cohard, 2015); and (3) the absolute (size) change of the individual's construct level; and, finally, in a group level analysis, a measure of the significance of change in the group's (global sample) mean construct level (*e.g.*, Liñán & Rodríguez-Cohard, 2015). Next, a brief summary on the potential insights, and the methods used, for each type of analysis.

One source of instability, that may occur for multi-item constructs, is that related with a change in the relative importance of each item for the construct's measurement. For a reflective construct, where changes in items values should be, mostly, influenced by the construct value, changes in its items' structure, that do not affect all items simultaneously, are not desirable and may be seen as a reliability problem. Therefore, this type of stability has more to do with the quality of the construct instrument, and its measurement, than it has to do with the stability of the construct overall levels. This analysis was performed by testing the correlation between a construct's items in a first and a second moment, for each individual in the sample (Pearson correlations). The correlation can be perfect (*i.e.* '1') if in a second moment the items values equal, to those reported in the first moment, or, in the case of a linear transformation that affects all items equally. After calculating the mean value off all individual correlations, the mean correlation will be proposed as significant, if it is found statistically different than zero, in a one sample T-test and, in such case, qualified in terms of its average strength (.00-.19 "very weak"; .20-.39 "weak"; .40-.59 "moderate"; .60-.79 "strong"; .80-1.0 "very strong" following Evans, 1996). In sum, stability of a construct's item-structure will be proposed, if the mean of all individual correlations is found significant, and its strength will be a qualification of the measure's quality and its measurement.

Another source of instability is the one related with eventual changes in the relative position of an individual in his group (*i.e.* the rest of the sample) in term of their construct levels. Addressing the related question of: ‘would it be possible to predict individuals’ future construct levels, based on their previous values?’ Thus, here, item values structures are no longer analyzed, but, rather, reduced to a global result, that is proposed to represent the construct’s overall value. Yet, just like in the previous analysis, these values do not have to stay the same in absolute terms, to produce the highest levels of stability, these same levels may be achieved with a linear transformation that affects all items equally. Meaning that, if all individuals have their construct levels raised by, say 20%, stability may be claimed (to the highest degree) but this does not mean that individuals did not have their construct levels raised, during the period, they did increase. It only means that the overall relationships between individuals in that sample is exactly the same, in both periods, when comparing them exclusively based on this construct’s levels. This analysis was conducted using two different methods: (1) where, first, the construct’s items are reduced to their average value (a proxy for the construct real value), and a second, where construct averages (one for each individual in the sample) from two periods are correlated (Pearson correlation); (2) using a linear regression structural equations model (SEM), where items are conceptualized as incorporating a measurement error and reflecting a (real) latent construct value, the latter is then used as a predictor of its future values. The relationship (std. loading / effect size) between the latent construct value, in two different moments, is tested for significance and its strength and the variance explained by the model will be proposed to be an indication of the stability degree. Finally, in this analysis, both methods will provide empirical evidence on the relative stability of the construct, not the absolute stability of its values across a pre-determined period.

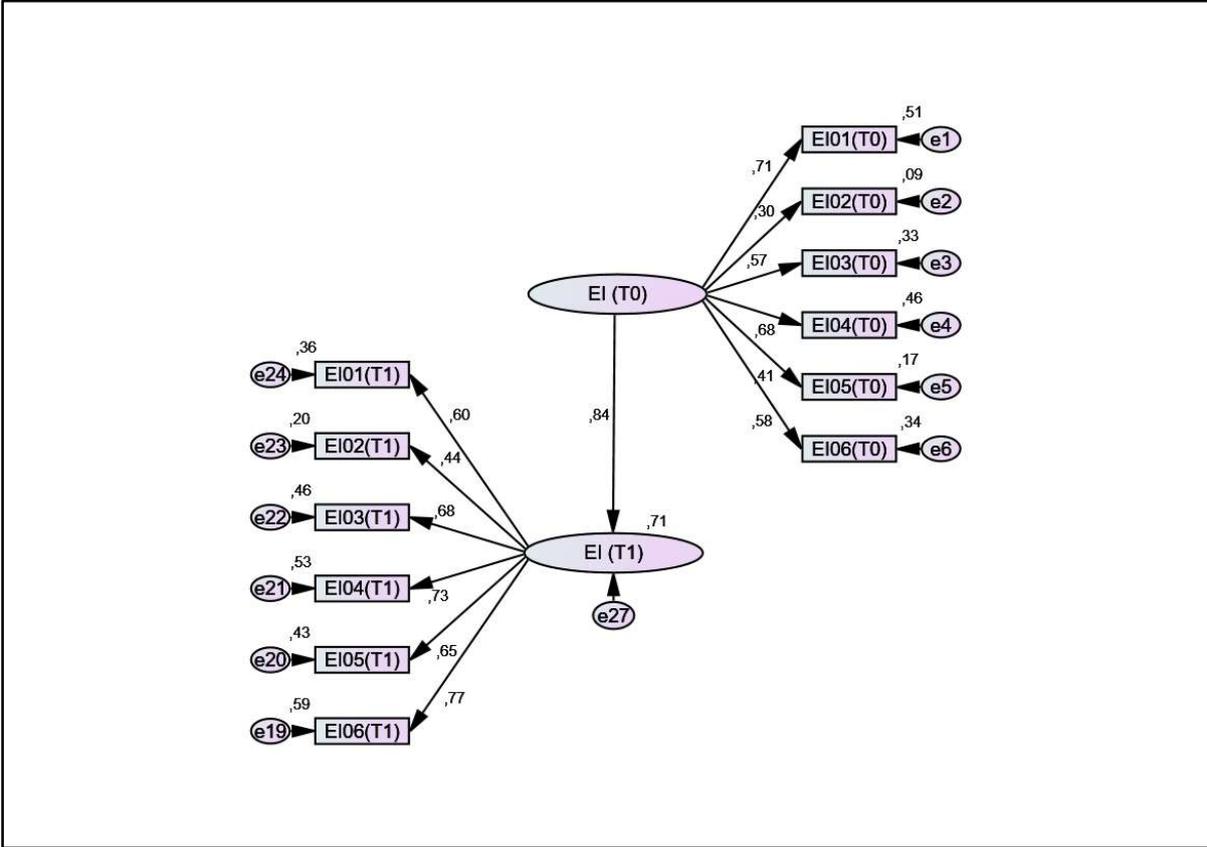
Still, at the individual level, a final source of instability is analyzed here, the changes in the absolute value of the construct. That is, answering the question of: ‘has the value of the construct (in its scale) decreased or increased and, if so, to which degree (*i.e.* change size)?’ Since, in a same sample, both negative and positive variations of construct levels may be observed, to measure a construct’s mean size variation, without this positive and negative values offsetting one another, variations were computed based on their absolute values. Thus, refocusing the question to: How much can we expect that the construct value may change around its initial value, within a predetermined period of time? Arguably, the analysis that produces the stability result most closely

associated with its intuitive notion. The method used was, first, to calculate the absolute difference (*i.e.* the difference in |modulus|), between the construct items averages, assessed in two different periods, for each individual, and, second, to calculate the mean value of all this differences and test for its significance, with a one sample T-test.

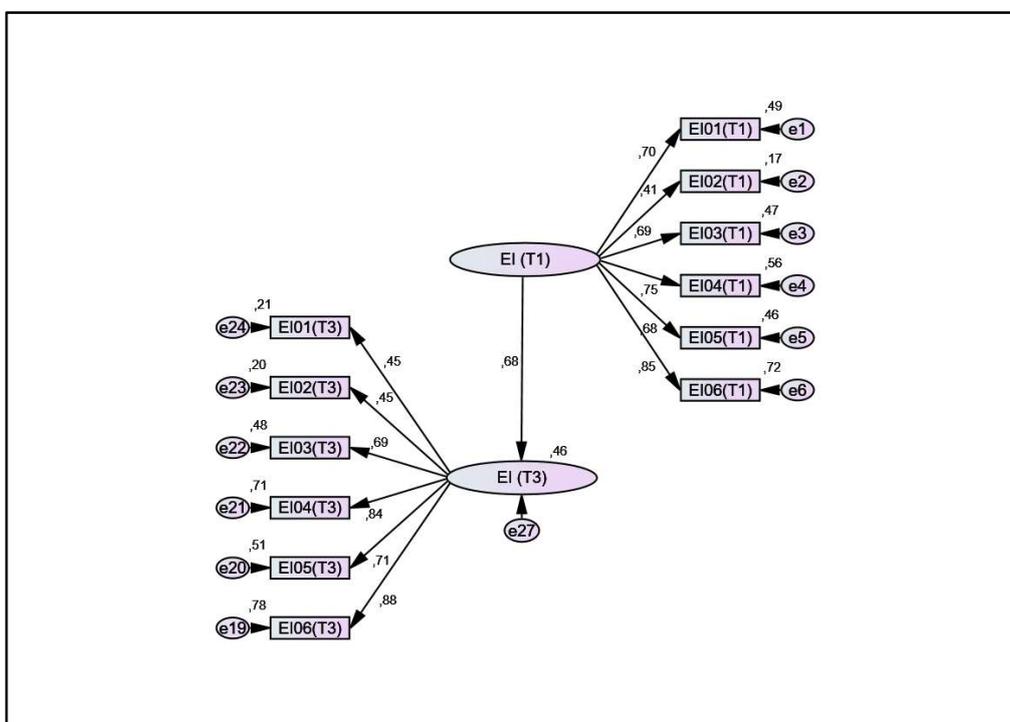
Finally, at the group level, stability of the construct's mean value for the entire sample, as an all, is also analyzed. Again, focus is on changes in the construct levels but here, directed to answering the question of: 'has the value of the construct (in its scale) decreased or increased for the entire sample and, if so, to which degree (*i.e.* change size)?' The method is, first, to calculate the differences between the construct items averages, from a later date with those from an earlier date, and, second, to calculate the mean value of such averages and test if it is significantly different from zero, with a one sample T-test. The individuals in the sample will be said to display a stable construct level, as a group, if no significance is found and an positively/negatively evolving construct, otherwise. This, independently of individual levels having (or not) changed in this sample.

Appendix N – SEM analysis to EI latent construct stability, for 1 to 4 years (H6.1.2)

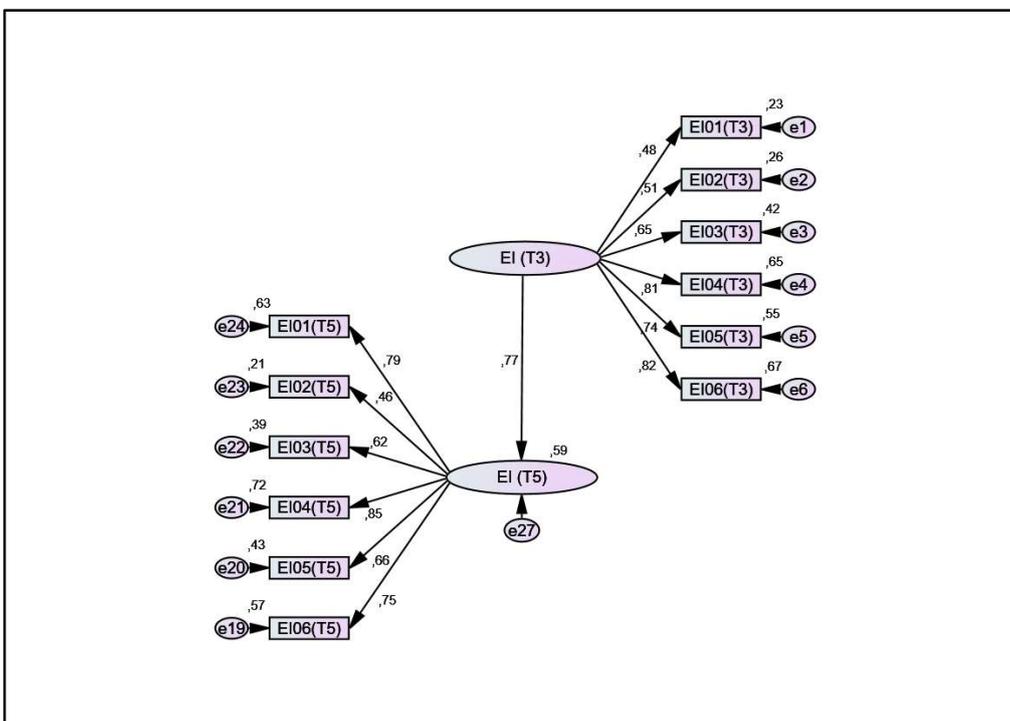
EI latent construct stability for an 1-year period (n=95)



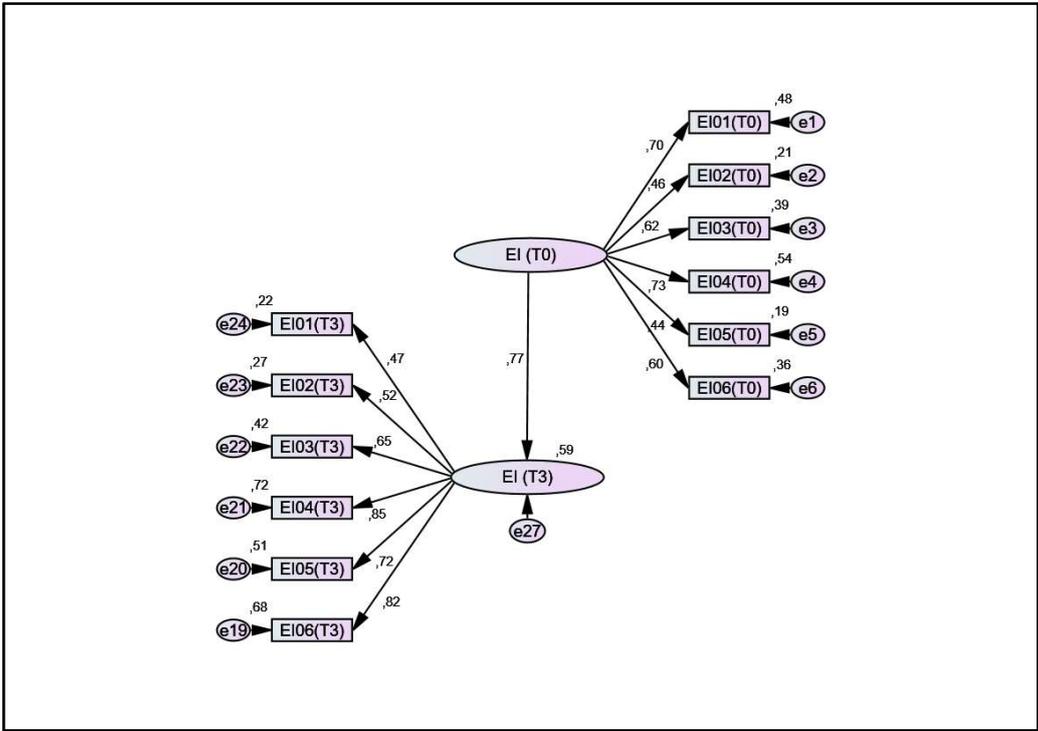
EI latent construct stability for a 2-year period (n=60)



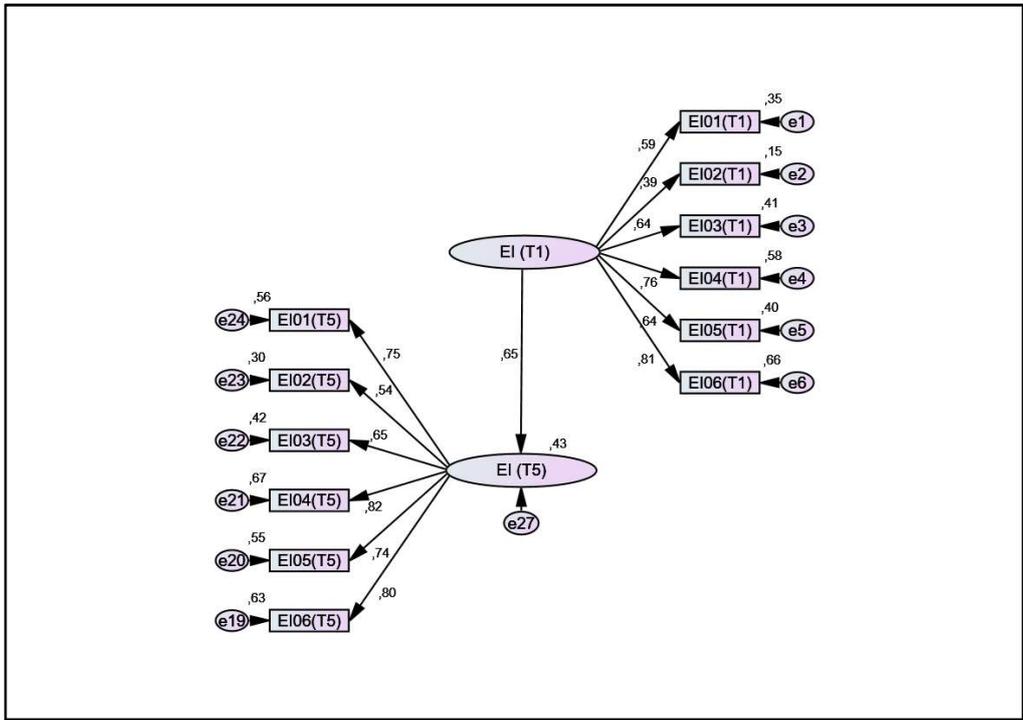
EI latent construct stability for a 2-year period (n=94)



EI latent construct stability for a 3-year period (n=92)



EI latent construct stability for a 4-year period (n=96)



## Appendix O – Descriptive statistics for EI (6-item) average differences, and absolute changes, for five yearly periods from 1 to 5 years.

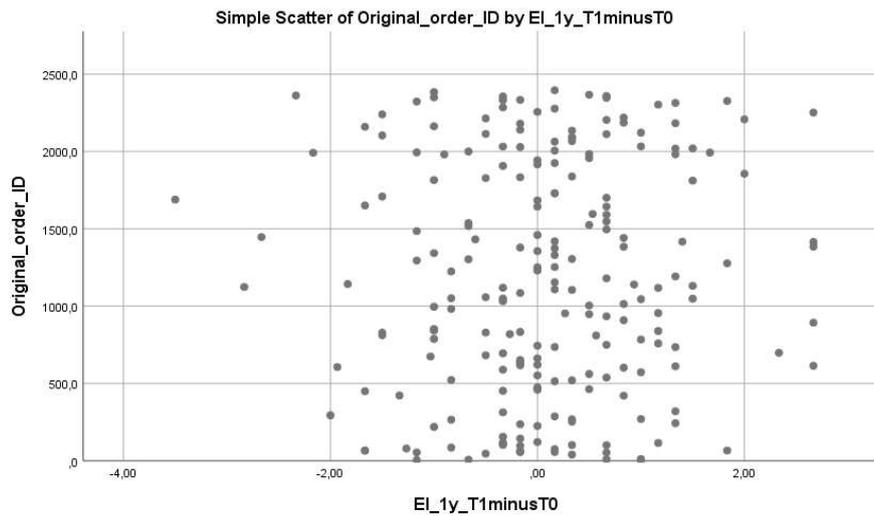
### Descriptive statistics

		EI avg change within 1 year (T1-T0)	EI avg change within 2 year (T3-T1)	EI avg change within 2 year (T5-T3)	EI avg change within 3 year (T3-T0)	EI avg change within 4 year (T5-T1)	EI avg change within 5 year (T5-T0)	EI avg ABS change within 1 year (T1-T0)	EI avg ABS change within 2 year (T3-T1)	EI avg ABS change within 2 year (T5-T3)	EI avg ABS change within 3 year (T3-T0)	EI avg ABS change within 4 year (T5-T1)	EI avg ABS change within 5 year (T5-T0)
N	Valid	212	91	111	164	110	283	212	91	111	164	110	283
	Missing	1097	1218	1198	1145	1199	1026	1097	1218	1198	1145	1199	1026
Mean		,0701	-,2007	-,1384	,0157	-,2933	-,0979	,7965	,9429	,8526	,8998	1,0042	1,1250
Median		,0833	-,1667	-,1667	,0000	-,3333	-,1667	,6667	,8333	,6667	,6667	,8333	1,0000
Mode		,00	-,50 <sup>a</sup>	-,17 <sup>a</sup>	,00	-,33 <sup>a</sup>	-,50 <sup>a</sup>	,17	,50	,17	,00	,33	,50
Skewness		-,151	-,378	,127	-,246	-,268	,211	1,203	1,163	,988	,992	1,226	1,036
Std. Error of Skewness		,167	,253	,229	,190	,230	,145	,167	,253	,229	,190	,230	,145
Kurtosis		,633	,101	,272	,163	,350	,074	1,440	1,333	,396	,568	1,743	1,075
Std. Error of Kurtosis		,333	,500	,455	,377	,457	,289	,333	,500	,455	,377	,457	,289
Percentiles	5	-,16667	-,25000	-,19000	-,21250	-,25750	-,23333	,0000	,1000	,0000	,0000	,0000	,16667
	10	-,16667	-,18000	-,16333	-,16167	-,19833	-,20000	,1667	,1667	,1667	,1667	,1667	,1667
	25	-,50000	-,10000	-,83333	-,66667	-,10250	-,10000	,2833	,3333	,3333	,3333	,3333	,50000
	50	,08333	-,16667	-,16667	,00000	-,33333	-,16667	,6667	,8333	,6667	,6667	,8333	1,00000
	75	,66667	,66667	,50000	,83333	,66667	,83333	1,1667	1,3333	1,3333	1,3333	1,3333	1,66667
	90	1,33333	1,33333	1,33333	1,50000	1,46667	1,83333	1,66667	1,96667	1,83333	1,91667	2,00000	2,33333
95	1,83333	1,73333	1,90000	1,83333	1,90833	2,16667	2,22500	2,50000	2,16667	2,33333	2,66667	2,72000	

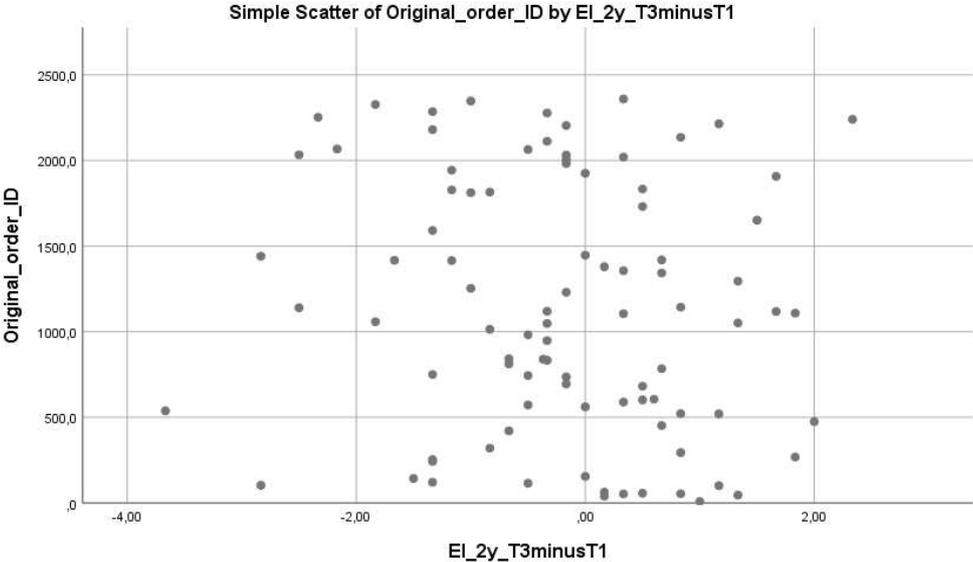
a. Multiple modes exist. The smallest value is shown

### Scatter Plots

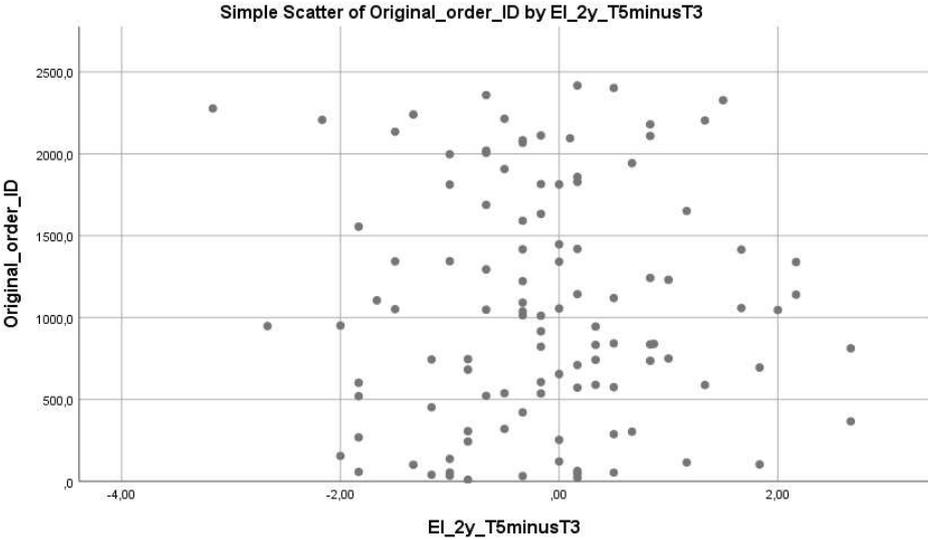
#### 1-Year EI change (n=212)



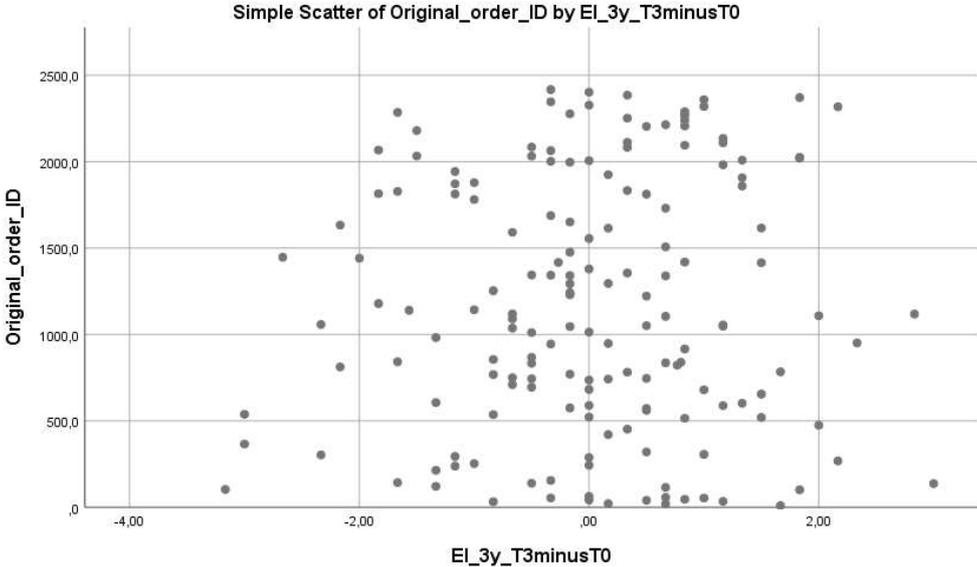
2-Year EI change (n=91)



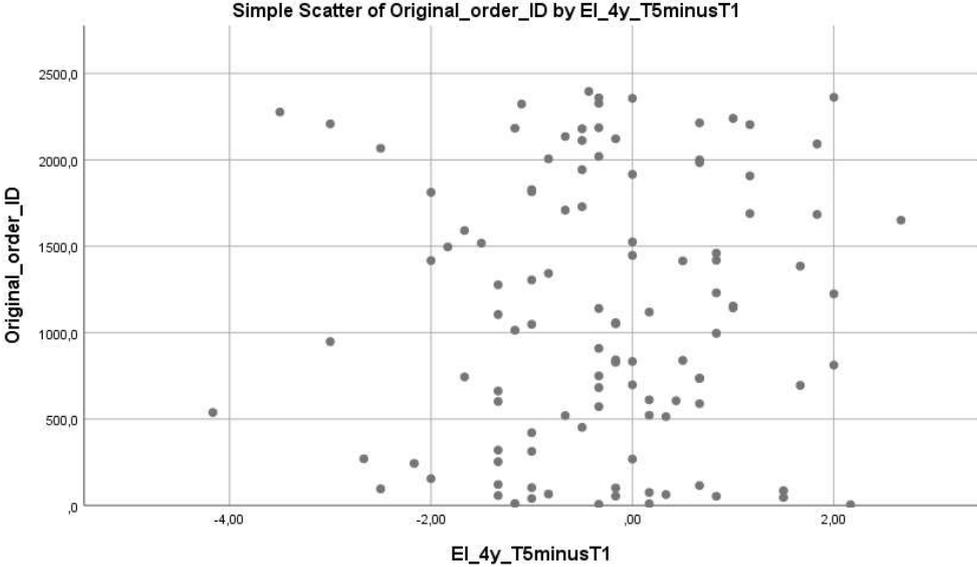
2-Year EI change (n=111)



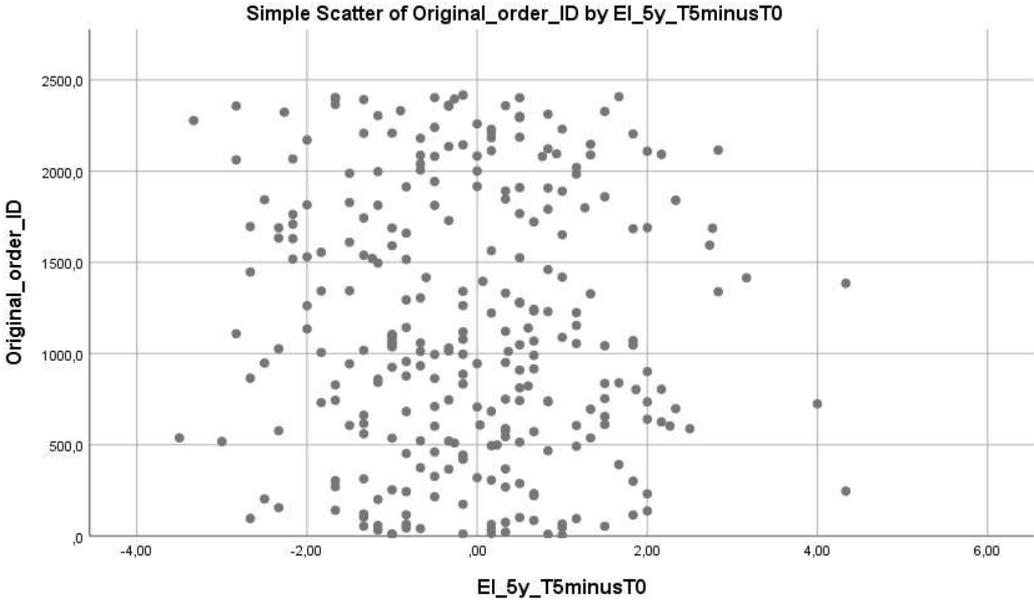
3-Year EI change (n=164)



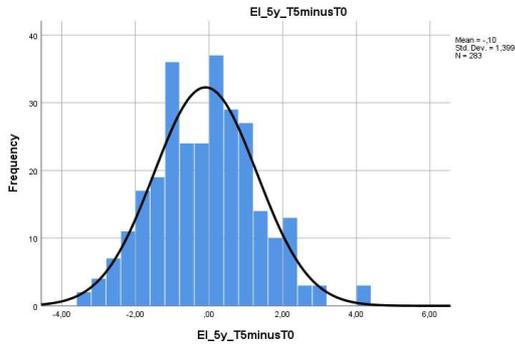
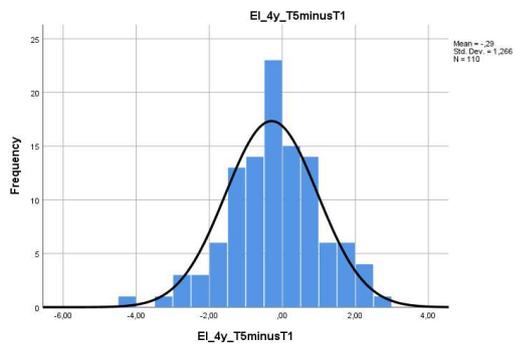
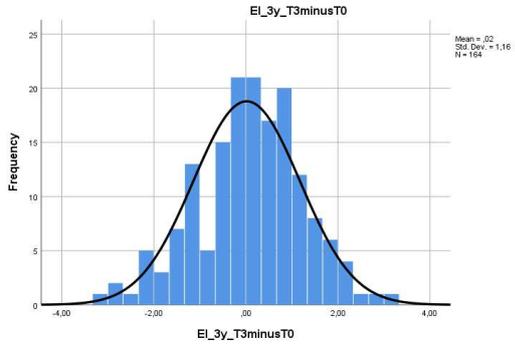
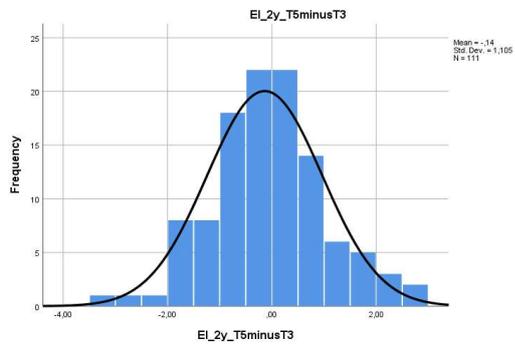
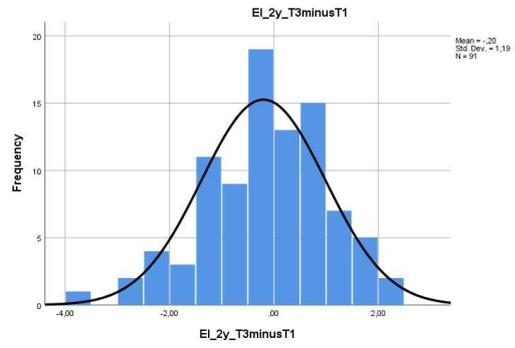
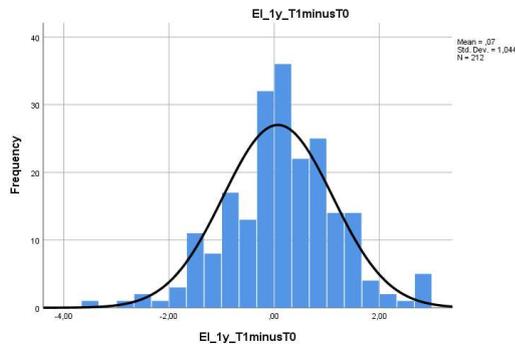
4-Year EI change (n=110)



5-Year EI change (n=283)



**Histograms:** Within-individual EI (6-item) differences for five different periods (from 1 to 5 years)



**Histograms:** Within-individual EI (6-item) absolute changes, for five different periods (from 1 to 5 years)

