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Life satisfaction and lifelong learning: The role of intrinsic motivation and adaptation of the MSSP lifelong learning scale

João Filipe Matos^a, Vitor Hugo Silva^{bc}, Paulo Silvestre^{ae} and António Manuel Gouveia Pinto^d

^aLusófona University, Lisbon, Portugal; ^bInstituto Universitário de Lisboa (ISCTE-IUL), Centro de Estudos sobre a Mudança Socioeconómica e o Território (Dinâmia'CET), Lisboa, Portugal; ^cDigital Human-Environment Interaction (HEI)-Lab, Lusófona University, Lisbon, Portugal; ^dUniversidade Autónoma de Lisboa (UAL), Lisboa, Portugal; ^eCentro de Estudos Interdisciplinares em Educação e Desenvolvimento (CeIED).

**corresponding author: João Filipe Matos, [Campo Grande 376, 1749-024 Lisboa], Portugal. Email: p6219@ulusofona.pt*

Life satisfaction and lifelong learning: The role of intrinsic motivation and adaptation of the MSSP lifelong learning scale

The present study aimed to analyze the relationship between life satisfaction (SWL) and lifelong learning (LLL), when mediated by intrinsic motivation (IM), in a Portuguese 55+ generation group. For this purpose, it was necessary to adapt and validate the MSSP Lifelong Learning Scale (MSSP - LLL). The investigation is quantitative in nature, with a cross-sectional temporal scope. It used a convenience (non-probabilistic) sample. The MSSP LLL results from the translation and adaptation of the WielkLLS and LLTS scales to the Portuguese population. The exploratory and confirmatory analysis reached a three-dimensional structure (composed of 13 items): motivation for learning (ML), skills development (SD) and need for new learning (NL). Study 1 - was developed with a sample of 151 participants, of which 97 (64.2%) were female, with a mean age of 62.74 years. The scale showed acceptable psychometric qualities. Study 2 - the sample consisted of 388 participants, of which 212 (54.6%) were female, presenting the sample with a mean age of 64.15 years. We conclude that intrinsic motivation (IM) has significant explanatory power as a mediating variable in the relationship between SWL and ML, SD and NL.

Keywords: Quality education; Lifelong learning; Satisfaction with life

Introduction

The relationships between life satisfaction and lifelong learning are central to understand how adults live and engage in formal or informal activities promoting learning and wellbeing. This is particularly important for the 55+ generations. Engaging in endeavors for enjoyment, or out of inquisitiveness, devoid of the intent of acquiring immediate recompense, cultivates autonomy, the enhancement of competencies, ingenuity, and analytical and contemplative reasoning. This subsequently nurtures individuals' intrinsic drive, and promotes participation in demanding tasks (Crown, 2006; Stephan, et al., 2008). The acquisition of capabilities augments knowledge, elevates confidence and self-worth, engendering a sense of personal

identity, while advancing physical and psychological wellness and contentment with life (Malmquist, 2022; Stephan, et al., 2008). In the absence of an extrinsic incentive (Lin, 2020), intrinsic motivation emerges as the primary impetus for engagement and involvement in educational activities among older adults (Lakin, et al., 2007; Lin, 2020; Nuttman-Shwartz, 2004; Stephan, et al., 2008; Wang, et al., 2016).

Physical and psychological wellness is consistently correlated with motivation for learning (Deci & Ryan, 2008). Individuals with intrinsic motivation derive fulfillment from the educational process (Nuttman-Shwartz, 2004; Pires, 2009), and learning is positively associated with personal accomplishment as an intrinsic value is ascribed to education (Dias & Fonseca, 2007; Stephan, et al., 2008).

Intrinsic motivation among older adults enables them to investigate their surroundings, enhance performance, rendering learning more effective and acquired skills more profound and intricate, thereby providing superior levels of well-being and life satisfaction (Stephan, et al., 2008). Consequently, learning evolves into a liberating endeavor, fostering a sense of agency and autonomy, particularly post-retirement (Nuttman-Shwartz, 2004). Hence, intrinsic motivation not only enhances the engagement with learning in older adults but also facilitates interpersonal connections and the regulation of emotions, in addition to influencing levels of personal fulfillment (Crown, 2006; Lin, 2020; Nuttman-Shwartz, 2004).

Nevertheless, according to Carpentieri (2014), interest in education and motivation for learning in adults are not static and can fluctuate over time, contingent upon circumstances, needs, expectations, and objectives. Participation, continuation, or discontinuation of Lifelong Learning (LLL) activities may be influenced by numerous factors, such as transitions in professional circumstances, alterations in workplace, interest in specific topics, illness, divorce, or bereavement.

Furthermore, the literature suggests that individuals experiencing mobility challenges, gradual loss of autonomy, physical or mental health issues, and elderly individuals, or those residing in rural locales, encounter barriers to educational access and exhibit diminished levels of motivation for learning (Lin, 2020). Stephan, et al. (2008) reference a deficiency in empirical knowledge to elucidate how intrinsic motivation impacts the motivation of older individuals. However, the literature also indicates that theoretical frameworks regarding the psychology of motivation that are tailored to the examination of LLL remain notably limited (Dias & Fonseca, 2007). Conversely, the analysis of LLL predicated on educational qualifications or the duration of formal education is evidently inadequate, restrictive, and reductive, as it fails to encompass all varieties of learning contexts—formal, non-formal, and informal (Gaio-Alves, 2010; Lima, 2018; Sabates & Hammond, 2008). In general, the examination of LLL tends to predominantly address the period of active life, that is, up to the retirement age (Biesta, 2006; Gaio-Alves, 2010).

In this article we report and discuss the results of an analysis of the relationships between life satisfaction and lifelong learning in Portugal. After a brief presentation of the theoretical background, we present the study 1 whose goal was to adapt and validate a scale that can be used in different contexts (formal, non-formal, and informal) and not just in an academic, professional or research context, therefore providing an answer to a national scientific knowledge gap. Afterwards, study 2 is presented aiming to understand the relationships between satisfaction with life and lifelong learning, when mediated by intrinsic motivation. We conclude with the discussion of the main results putting them in the context of the state-of-art.

Theoretical background

Lifelong learning (LLL)

LLL is a process of continuous personal transformation, which usually happens voluntarily and intentionally (Marcaletti et al., 2018; Pesen & Epçaçan, 2017). In addition to being a process of personal development, it has repercussions on the social, professional, and technological fabric (Yamashita et al., 2019). Education and learning can be understood as a process of transformation that involves the acquisition of knowledge, standards, routines, beliefs, values and lifestyles within a social context (Kaplan, 2016).

LLL aims to make each person better, more competent and effective in responding to different challenges. Continuity, persistence, support, overcoming, self-esteem, self-realization, personal interest, goals and expectations can lead people to seek and engage with knowledge (Kaplan, 2016; Knight et al, 2023; Marcaletti et al., 2018; Yamashita et al., 2019) while lack thereof, on the contrary, may make individuals avoid participation in educational activities (Boshier & Collins, 1993).

Biesta (2006), speaks of the learning triangle, from a multidimensional perspective of LLL, where the function of personal, economic, and democratic fulfillment stands out. In general terms, LLL can be understood as an inevitable human activity that offers learning opportunities from birth to the end of life (Kaplan, 2016; Kirby et al., 2010; Pesen & Epçaçan, 2017). More than being a solely individual responsibility, it must be understood as a collective responsibility (Biesta, 2006; Gaio-Alves, 2010; Lima, 2018) because education is the primary activity that promotes the development of learning, knowledge, skills, talents and creativity (Kaplan, 2016).

As for learning contexts, they can take on a formal, non-formal and informal aspect.

The formal context implies that learning takes place in a controlled environment, where

there is an educational program, taking place in educational or training institutions (e.g. Secondary Schools), which will result in accreditation or a diploma; the non-formal context, despite not awarding any formal certificate or diploma, can also occur in education and training institutions, and there may be a pre-defined program, but with an adaptable and flexible structure (e.g. Senior Universities); and in the informal context, learning can occur in any situation, spontaneously, individually, without a specific intention, and in an unorganized manner (e.g., recreational club or through the observation of other people) (Boztepe & Demirtaş, 2016; Kaplan, 2016; Yamashita et al., 2019).

Given the multiplicity of possible definitions of LLL, it has sometimes become difficult to establish a clear guideline. Biesta (2006) refers to LLL as a “composite” and elusive concept, which can have different meanings for different people, and can mean different things simultaneously. Gaio-Alves (2010) states that LLL is such a broad and comprehensive concept that it takes on a polysemous connotation and even a certain opacity.

It is important to understand that LLL can be analyzed considering different theoretical models (e.g., humanist, economic, psychological, social) (Fleming, 2020). As an example, for LLL in the humanist paradigm, the purpose of knowledge is to provide citizens with information to make them better people, encourage coexistence and social peace. This rationale is rooted on the idea that informed people are more competent and capable of defending themselves (self-protection), understanding their rights, and fighting for their interests and needs - LLL as a right (Biesta, 2006). There is also a view that asserts the right to citizenship and democratic values, closely associated to a social or socio-political agenda.

For the economic approach to LLL, people are now understood as human resources that generate value for society and the economy, in other words, as human capital. Skills that improve employability, as well as working conditions, investment in training, qualification of human resources, competitiveness, productivity, individualism, modernity, innovation and technology are now valued. Thus, knowledge becomes a work tool and highly regarded as knowledge capital at the service of nations (Bardi, et al., 2023; Fleming, 2020; Gaio-Alves, 2010; Leyretana & Trinidad, 2021; Lima, 2003). According to Biesta (2006), LLL is now understood as a duty. It is important to clarify that the economic and the humanistic views may share arguments but are in essence two distinct approaches to LLL.

Discourses of national and international institutions about LLL

The regulation of education and training in Europe has been changing, becoming increasingly complex and multilevel (Gaio-Alves et al., 2010). Opinions are not consensual. While different institutions share many points of view on educational policies, they also pursue their own agendas, objectives, interests, indicators and intervention priorities that assist decision-making (Biesta, 2006; Gaio-Alves et al., 2010).

Moreover, it is apparent a convergence in educational policies, from trans and supranational institutions, such as UNESCO, the Organization for Economic Cooperation and Development (OECD), the World Bank and the European Union (Biesta, 2006), contributing to outline common agendas under a view of knowledge-based economy (Gaio-Alves et al., 2010).

With restricted public finances, the EU focus is more and more placed on markets, and structural and economic competitiveness. Thus, the engine of economic recovery and

growth became LLL (European Commission, 2010). In fact, LLL became a political foundation that initially presented a humanist perspective developed by UNESCO (Delors, 1998; Faure et al., 1972, Valiente et al., 2020), somewhat utopian (Sitoe, 2006; Valiente et al., 2020), which aimed to make people more educated and participatory, promoting democratic values and social justice through adult education (Biesta, 2006; Fleming, 2020; Gaio-Alves, 2010; Kirby et al., 2010; Lima, 2018; Rubenson, 2006; Sitoe, 2006). This perspective was fueled by the European Union and the OECD (Valiente et al., 2020), within the context of “learning economy” based on human capital in a knowledge-oriented society (Biesta, 2006). LLL also became a tool for social control, bringing together and integrating people in disadvantaged conditions through employment (Coffield, 1999). Thus, LLL went from a right to a duty (Biesta, 2006).

The OECD (1997) understands LLL for everyone as a way of improving the relationship between the needs of economies and the needs of labor markets by training the workforce (human resources available to the economy). As markets require the capacity to adapt and renew, this will have direct repercussions on the life of those people, their families, their workplaces and the communities in which they live. In the Portuguese context, LLL assumed, similarly to the EU vision, a markedly economic expression (Gaio-Alves, 2010).

Satisfaction with life (SWL)

The concept of satisfaction with life (SWL) is complex to define because it is multidimensional, multidetermined, and subjective. It is often associated with quality of life, happiness and well-being (Boeren, 2021). In the cognitive process of global assessment (Diener et al., 1985; Diener et al., 2001), SWL refers to the more stable and

lasting assessment that a person makes of their life trajectory (Badri et al., 2022).

Assessment domains may include, among other factors, the quality of relationships (personal, family and friends), work, health and personal development, socioeconomic status (Badri et al., 2022; Luhmann & Hennecke, 2017; Sabates & Hammond, 2008), especially in adulthood.

As a subjective measure of general well-being, it can also include the assessment of quality of life (Bozorgpour & Salimi, 2012; Diener et al., 1985; Diener et al., 2001).

The SWL assessment translates into an individual appraisal of their life circumstances at a certain time, comparing it with expectations, values and personal goals. This process examines various aspects of personal life, such as physical and mental health, degree of autonomy, interpersonal relationships, how fulfilled the person is, safety conditions, where they live, economic conditions, the available community services, social support, and the meaning of life (Alahdad et al., 2013). SWL can be conditioned or catalyzed by internal factors, among which certain personality characteristics such as extraversion, optimism, adaptability and resilience (Alahdad et al., 2013; Diener et al., 1985), cultural values, beliefs, self-esteem and self-efficacy, which normally remain stable throughout life (Diener et al., 1999; Diener et al., 2001); and external factors, also known as contextual, linked to socioeconomic conditions, interpersonal relationships or professional achievement. Sociocultural factors, such as norms and values, the perception of (in)succes, social inequalities, intersectionality (gender, race, ethnicity) are conditions that can also be considered in the assessment of SWL (Alahdad et al., 2013; Upmane & Sebre, 2010).

Thus, SWL can be defined as a complex and multidimensional construct, which brings personal, contextual, social and cultural factors into interaction, assuming a dynamic and variable role throughout life. To some extent, research on SWL has revealed that its

assessment is based on present experience (Diener et al., 1999; Diener et al., 2001), and what people have been able to achieve given their life experience (Upmane & Sebre, 2010). SWL is a concept linked to subjective well-being, happiness, contentment, optimism, quality of life, empathy, assertiveness, self-esteem and resilience, essentially positive psychological dimensions (Diener et al., 2001).

People who are satisfied with their lives seem more willing to dedicate themselves to projects that correspond to their expectations and interests. After a certain age, and correlated with personal, family, social and work stability, older adults tend to dedicate themselves to projects that fulfill and satisfy them, and learning can have this rejuvenating role (Sabates & Hammond, 2008).

There appears to be a positive relationship between learning and SWL, particularly in terms of personal development, improvement of living conditions, increased self-esteem (Sabates & Hammond, 2008), and the development of a sense of competence and self-efficacy (Boulton-Lewis, 2010). In the 55+ generation, learning allows active, dynamic and civic participation, with the creation of support networks and the establishment of meaningful relationships, improving social relationships in socio-educational activities (Bjursell, 2019). The feeling of usefulness and purpose, giving meaning to life, makes it more satisfying and rewarding. Evidence also shows that the relationships between learning and SWL are good predictors of better levels of mental health (Yanga et al., 2016).

In practice, promoting LLL, directly and indirectly, will improve SWL in adults. To achieve this, it is necessary to create stimulating and attractive environments that arouse curiosity and intergenerationality, and that value all learning environments (formal, non-formal and informal). It is important that each person feels comfortable, and that learning generates added value to their lives. Programs for that purpose must adapt to

new generations of older adults, both in cultural as well as in socio-educational terms (Bjursell, 2019; Boulton-Lewis, 2010; Purdie & Boulton-Lewis, 2003).

Considering the aims of the study 1, we formulated the following hypothesis:

(H1): The higher the satisfaction with life, the greater the propensity of people to engage in lifelong learning activities.

Motivation in Lifelong Learning

According to Boshier and Collins (1983), when reflecting on adult education, it is important to understand why people learn and what motivates them to learn at different stages of life as well as characteristics or personal learning profiles and which group learning dynamics are interrelated with self-esteem and self-realization. Moreover, it is also fundamental to grasp the needs of the job market; or whether there is congruence and alignment of the programs that articulate the needs, motivations and participation in adult learning, with national and international educational objectives.

One of the first authors to address motivation for adult learning in a more consistent way was Houle (Lin, 2020), with the so-called Houle Typology. He developed studies to guide people in adult education, classifying participants in his studies into three categories: goal-oriented; activity-oriented; and learning-oriented (Houle, 1961).

As with all approaches, scientific knowledge does not seem to be free from criticism.

Among the main critics of Houle's typology was Boshier, one of the most recognized theorists in adult education and motivation. Boshier and Collins (1983) speak of a world in constant transformation, where the teachings transmitted by Houle's typology would have to be adapted to the contemporary social context, since “society has moved from an industrial age to a post-technological era of information and service” (Gordon, 1993, p.1).

The first group in Houle Typology is characterized by using education to achieve personal goals, after identifying areas of interest or need; they are less restrictive in their activities and learning methods, so the manner of learning and what to learn could be inconsistent, discontinuous and not uniform. Still, they are people dedicated to their areas of interest; already an activity-oriented group, they value social contact and human relationships. Regarding the second group, people practically did not read and seemed to have no pre-defined objectives about what to learn. Finally, in the third group, oriented towards learning, each person learns undertaking a specific activity aimed at a particular objective, making this involvement with learning more complex (Houle, 1961). This approach was more than the sum of its parts (objectives and activities), as it required continuity, persistence, a certain autonomy and interest in education. Most of the adults in Houle's study were people who read a lot, and learning was part of their essence, making them unable to distance education from their 'conscious self' and their way of being (Gordon, 1993; Houle, 1961).

The theory developed by Boshier was especially critical of Houle's Typology, regarding the orientation towards activity, as it stated that there was a whole set of arguments that had not been explored, such as social contact, social stimulation, external expectations or duration and time of community service. Houle's typology was not tested according to statistical criteria, so it was difficult to understand how a tripartite structure was developed and what its empirical evidence was (Boshier & Collins, 1983).

Boshier dedicated himself to the study of human behavior linked to the participation of adults in educational activities, developing the Education Participation Scale - EPS (Boshier, 1971). This scale seeks to understand what type of functional relationships are established between motivational orientations, considering the antecedents and

consequences of involvement in educational activities in adults (Boshier & Collins, 1993).

Gordon (1993) argues that adult education serves to satisfy students' initial needs and that when these needs are satisfied, involvement in educational activities no longer makes as much sense (homeostatic perspective). However, there is another particularly critical current of the homeostatic perspective, as it does not seem to be in line with periods of rapid transformations in society, which states that, even after satisfying initial needs, adults persist in their involvement with education, becoming proactive and insatiable people in the search of knowledge (Botkin et al. 1998).

Self Determination Theory (SDT) is an approach that promotes knowledge in the area of motivation and personality, arguing that there are three innate psychological needs that must be fulfilled: the need to develop skills, the need for autonomy, and the need for relationships. People are thus endowed with evolved internal resources that help in the self-regulation of behaviors, but for this to occur, contextual conditions are necessary that promote the positivity of the processes for a consistent and constructive development in social terms and well-being (Ryan & Deci, 2000).

When these needs are met, people can become self-motivated, demonstrate satisfactory levels of physical and mental health, be responsible, show commitment, master new skills, seek new learning opportunities and develop their talents. Conversely, failure to meet these needs can lead to frustration, disinterest, disillusionment, apathy, vulnerability, passivity, mental health problems and even a decrease in motivation levels. Therefore, motivation has the capacity to influence several areas of an individual's personal life, such as health, education, employability, participation in sporting or religious activities, among many others (Ryan & Deci, 1985, 2000).

Motivation can act as a catalyst for personal growth, facilitating self-motivation, integration and adaptation. Studying motivation is optimizing knowledge about the causes and effects of human and social behavior, performance, health and personal well-being (Ryan & Deci, 2000).

In this way, SDT also distinguishes motivation into three types: (i) intrinsic motivation (IM), (ii) extrinsic motivation (EM) and (iii) amotivation. IM is characterized by intentionality, curiosity, interest and the pleasure of carrying out certain tasks in a genuine way, associated with the exploration of new scenarios and opportunities, persistence even when faced with demanding challenges, creativity with the generation of ideas with value, autonomy and well-being. It is a good predictor of new learning, the driving force being within each person (Deci & Ryan, 1985; Ryan & Deci, 2000). The second type, EM, involves carrying out activities whose driving force is external to the person, although it can also be regulated internally. Tangible rewards (salary or recognition) may occur, as well as the task being carried out to avoid negative consequences or punishments. Still, EM can result in apathy, passive conformity, demotivation, and active personal commitment, since, as people become adults, responsibilities change. EM implies that self-regulated behavior is analyzed considering internalized social values (Deci & Ryan, 1985; 2000). EM presents four styles of regulation: external regulation; introjected regulation (here are rules that must be met to avoid guilt or anxiety, so the level of regulation is not completely assumed); identified regulation (there is appreciation of an objective or regulation, in which the person consciously identifies with this value and recognizes it as fundamental); and integrated regulation (when after identifying regulation they become part of the behavioral repertoire, as they are congruent with personal values and needs) (Ryan, 1995). Lastly, the third type, amotivation, refers to the lack of will, proactivity, or intrinsic and

extrinsic motivation to carry out certain tasks, resulting in a lack of commitment, delivery or effort (Deci & Ryan, 1985, 2000; Ryan, 1995).

Considering the previous review and the aims of study 2, we formulated the following hypothesis:

(H2) Intrinsic motivation mediates the relationship between life satisfaction and lifelong learning.

As the validation of the scale for the Portuguese context gave rise to a tridimensional structure of lifelong learning, our second hypothesis was divided into more specific hypotheses, namely:

- (H2a) The greater the satisfaction with life, the greater the motivation to learn, when mediated by intrinsic motivation;
- (H2b) The greater the satisfaction with life, the greater the skills development, when mediated by intrinsic motivation;
- (H2c) The greater the satisfaction with life, the greater the need for new learning, when mediated by intrinsic motivation;

Having highlighted the importance of the constructs under study, we now present Study 1, which reports the process of adapting and validating the scale used in the research.

Study 1

The examination of the extant measurement scales intended to investigate attitudes towards adult lifelong learning within a global framework has unveiled a considerable corpus of scholarly work, specifically including the Education Participation Scale (EPS) (Boshier, 1991); the Motivated Strategies for Learning Questionnaire (MSLQ, by Pintrich et al., 1991); the Adult Attitudes Toward Adulthood and Continuing Education Scale (Blunt & Yang, 2002); the Development of the Employee Lifelong Learning Scale (ELLS) articulated by Gardiner and Kline (2007); the Lifelong-Learning

Tendency Scale (LLTS) (Coskun, 2009); the Lifelong Learning Competence Scale (LLLCS) formulated by Uzunboylu and Hürsen (2011); and the Lifelong-Learning Scale - WielkLLS (Wielkiewicz & Meuwissen, 2014).

The analysis of the currently available scales for assessing lifelong learning within the Portuguese milieu indicates that there exists only the adaptation and validation of the Jefferson Scale tailored for the nursing domain (Rodrigues et al., 2012), wherein the majority of the items are highly specific and concentrated on this distinct environment. An example of such items is 'Lifelong learning is a responsibility of all nurses' or 'One of the important objectives of nursing schools is to develop students' lifelong learning skills' which were found to be challenging to adapt to the context of the present inquiry. A particular study was also recognized that validated the Adult Attitudes Toward Continuing Education Scale (Darkenald & Hayes, 1988), esteemed as one of the most prevalent scales for evaluating adult learning per the authors' assertions. Nevertheless, this validation is not without its shortcomings, attributed to the absence of an independent appraisal of its psychometric properties coupled with its modest construct validity, which is regarded as a limitation (Dias & Fonseca, 2007).

Furthermore, it is imperative to acknowledge that the evaluation of lifelong learning exclusively in terms of the duration of formal education (academic qualifications) would constitute a myopic and constrained perspective, as it would omit learning that transpires in non-formal and informal contexts (Gaio-Alves, 2010; Lima, 2018).

Consequently, lifelong learning was evaluated utilizing two measurement instruments: the Lifelong-Learning Scale - WielkLLS and the Lifelong Learning Tendency Scale - LLTS. These instruments were chosen owing to their concise nature, broad applicability, relevance to motivational aspects of learning, and satisfactory psychometric properties.

It is imperative to acknowledge that although the initial scale (WielksLLS) was primarily conceptualized to assess the evaluation of pedagogical methods and curricular efficacy, it is equally accurate to assert that this scale further evaluates attitudes, behaviors, and motivations that are prevalent across a multitude of learning environments (including formal, non-formal, and informal contexts). The dimensions of cognition and behavior may be implicated, alongside the capacity to address challenges, to perceive learning as a significant endeavor, to exhibit curiosity, and to display adaptability, thus indicating that these attributes are not exclusively confined to the educational setting. Furthermore, this scale examines the degree of autonomy and the attitudes that individuals ought to cultivate in their personal development, asserting its broad applicability and replicability in contexts beyond the traditional school environment. Additionally, it is essential to emphasize that the competencies developed within or outside educational settings are interdependent and relevant to various quotidian circumstances.

Therefore, the decision was made to translate and validate a lifelong learning scale tailored for the Portuguese demographic. This objective constitutes the focus of Study 1, in this article.

Methodology

Participants

As shown in Table 1, the sample consisted of 151 participants aged 55 years or older, of whom 97 (64.2%) were female. The average age of participants was approximately 63 years ($SD = 7.86$) and ranged from 55 to 93 years. Most of the participants were married or had partners ($n = 104$; 69.8%), some of them working in a no-term contractual relationship ($n = 62$; 41.2%).

Table 1

Instruments

Lifelong-Learning Scale - WielkLLS - Wielkiewicz & Meuwissen (2014)

The Lifelong-Learning Scale was initially developed by Wielkiewicz, et al, (2005). However, as it was intentionally focused on the acquisition of academic skills, it was adapted, giving rise to WielkLLS, consisting of 16 items (Wielkiewicz & Meuwissen, 2014). This scale emphasizes the individual qualities that maintain a positive attitude towards learning, such as motivation to learn, curiosity, and the development of skills associated with personal lifelong learning needs. For example, it presents items such as "I like to analyse problems and issues in depth". High scores seem to be good indicators of reading, thinking, reflection, writing, discussion abilities, as well as of the development of critical thinking in the search for problem-solving, be it of a personal or community nature. Moreover, good performance on this scale is a good indicator of academic and professional performance. It should also be noted that performing well in this measure is not necessarily synonymous with lifelong success (Wielkiewicz & Meuwissen, 2014). The scale consists of a single dimension. In each item statement, the participant is asked to respond according to a 5-point Likert scale, in which 1 corresponds to "Never"; 2 to "Rarely"; 3 to "Sometimes"; 4 to "Often"; and 5 to "Always or daily".

Lifelong-Learning Tendency Scale - LLTS – Coskun (2009)

The Lifelong-Learning Tendency Scale was developed by Coskun (2009) and consists of 27 items. The scale values the search for voluntary and self-motivated knowledge, both for personal reasons and for professional reasons. It gives value to motivation, initiative in the search for knowledge, curiosity, and the organization of learning (Coskun & Demirel, 2010). LLTS consists of four dimensions: Motivation (M) (items from 1 to 6); Perseverance (PSV) (items from 7 to 12); Lack of regulation for learning (LRL) (items from 13 to 18); and Lack of curiosity (LC) (items from 19 to 27). The first two dimensions have a positive connotation towards learning, the latter two have a negative connection. LLTS presents 15 inverted items (from 13 to 27). An example of an item is "I believe I can only learn new things and acquire new skills if they are directly related to my profession/activity".

Each statement prompts a response according to a Likert scale of 6 points: 1 corresponds to "Very appropriate"; 2 to "Partially adequate"; 3 to "Most likely suitable"; 4 to "Most likely inappropriate"; 5 to "Partially inadequate"; and 6 to "Very inappropriate". The higher the values, the higher the trend in the person evaluated.

Procedures

Three bilingual researchers were contacted to translate the two lifelong learning scales: Lifelong-Learning Scale - WielkLLS (Wielkiewicz & Meuwissen, 2014) and the Lifelong-Learning Tendency Scale - LLTS (Coskun, 2009).

With the new guidelines on the best practices of translation, this came to be understood as a process of adaptation that considers the language of destination, culture and even social issues in some cases (Ozolins, et al, 2020). It should be said that the translation aims to evaluate the same construct, in order to maintain a functional equivalence (Son, 2018). The translation process implies the adaptation, omission, and alteration of

expressions to ensure the similarity of the meaning (Ozolins, et al., 2020). After reaching a consensus on the final version of the two scales, a research protocol was developed, consisting of three sections: free and informed consent (FIC); sociodemographic data, and instruments. This protocol was applied to a set of 8 people (pre-test), in order to verify whether it would be understandable, and evaluate the need for possible adjustments, which was not the case.

To combat possible digital illiteracy (Giaretta & Di Giulio, 2018), the protocol was made available in paper format; but also, in online format through Qualtrics XM. Of a total of 151 participants, 52 were online responses. The analysis of data collected shows that there are no significant differences between online and on-paper responses. The sample submitted their responses between February 7, 2022, and March 23, 2022. Data analysis was performed using the statistical software Statistical Package for Social Sciences (SPSS), version 28.0, and Stata SE 17.0.

Results

An Exploratory Factor Analysis (EFS) was performed on all the items that make up the scales. The organization of these items dictated a structure of 13 items that are distributed along three, called Motivation for Learning (ML), Skills Development (SD) and Need for New Learning (NL).

The rationale behind the ML dimension states that these people are predisposed to learn (intrinsic motivation), they are people who persist in the path of knowledge, like to be up to date, dedicate themselves to learning, seek to overcome challenges and like to reflect on issues within their field of interest, being curious and creative. As for the SD dimension, it assumes that skills go beyond the simple acquisition of theoretical knowledge, as it is also possible to develop practical skills and arguments that add value to personal and professional life. These may include communication, reading, writing,

critical thinking, problem solving, collaboration or adaptation skills. Ultimately, it is about preparing people to face real-world challenges and to become active, productive and successful members of society. Finally, the NL dimension, which, despite consisting of only two items (a limitation that we will address later), is based on understanding what openness, trust and fears come into play when one engages in new learning and assessing whether participants feel this need. This dimension can help to grasp beliefs associated with a certain activity or profession, openness to new experiences and capacity for change.

Based on this structure, a confirmatory factor analysis was performed, and the model was tested. We found that the best solution is a three-factor model ($\chi^2 (57) = 68.21, p < .001$; $\chi^2/\text{gl} = 1.20$; CFI = .978; TLI = .970; RMSEA = .051) when compared to the one-dimensional model or the two-factor model (table 2).

Table 2

Study 2

Methodology

Participants

The sample consisted of 388 participants aged 55 or over, of which 212 (54.6%) were female. The average age was 64.15 years ($SD = 8.13$), ranging between 55 and 103 years. Most participants were married or live in a de facto union ($n = 244$; 62. 9%), were retired ($n = 142$; 36.6%), and presented as educational qualifications higher education ($n = 97$; 25.1%). Most participants lived with their partner ($n = 156$; 40.2%) and in their own home ($n = 302$; 77.8%). Regarding the appreciation of lifelong

learning, 13 (3.4%) participants attended a Senior University in the previous 3 years; and 8 (2.1%) participants attended higher education in the previous 3 years (table 3).

Table 3

Instruments

Satisfaction with life and situational motivation were also evaluated, using the following instruments:

Life Satisfaction Scale (SWLS)

The Life Satisfaction Scale (SWLS) was developed by Diener, et al., (1985), consisting of 5 items. It aimed to evaluate life satisfaction in a global manner. The Portuguese version of the SWLS was translated, adapted, and validated by Simões (1992) and is composed of 5 items that constitute the only dimension: Satisfaction with Life (SWL). Each item corresponds to a statement, to which the participant is asked to respond on a 5-point Likert scale, in which 1 corresponds to "I disagree very much"; and 5 to "I agree very much". As for the psychometric qualities of national validation, internal consistency revealed a Cronbach's alpha of .77. The results can range from 5, which corresponds to an extremely dissatisfied view of life, and 25, completely satisfied. The midpoint of the scale corresponds to the value of 15.

Situational Motivation Scale (SMS)

The Situational Motivation Scale was originally developed by Guay et al. (2000), consisting of 16 items. The objective was to measure the participant's motivation during a specific activity.

The Portuguese version was translated, adapted, and validated by Gamboa et al. (2013), and consists of 14 items and four dimensions: Intrinsic Motivation (IM) - items 1, 5, 9, and 11; Identified Regulation (IR) - items 2, 6 and 12; External Regulation (ER) - items 3, 7 and 13; Amotivation (AM) - items 4, 8, 10 and 14. Each item corresponds to a statement, which the participant is asked to respond to on a 7-point Likert scale, in which 1 corresponds to "Does not match anything" and 7 to "Exactly matches".

Regarding the psychometric qualities of national validation, internal consistency was satisfactory, with Cronbach's alphas for IM $\alpha = .89$; IR - $\alpha = .77$; ER - $\alpha = .78$; AM - $\alpha = .79$.

Procedures

A quantitative study was carried out, with a cross-sectional temporal scope. A convenience sample (non-probabilistic) was constituted, and a snowball sampling system was used. According to PORDATA (a certified statistical database about Portugal), there are 3.888.157 people (population) aged 55 years or older. To calculate the sample size and validate the research parameters, the Comento (https://comento.com) sample calculator was used. For a population of 3,888,157 people aged 55 years or older living in Portugal, with a sampling error of 5%, with a 95% confidence interval, for a sample considered heterogeneous, we needed 385 people for the sample to be representative of the population.

The structure of the investigation protocol consisted of three sections: informed consent (IC); sociodemographic data and instruments. As inclusion criteria, participants had to be Portuguese, 55 years of age or older, and understand the Language Code Portuguese. As exclusion criteria, participants should not have a diagnosed mental illness.

Participants with diagnosed mental disorders were excluded because they could introduce confusing variables into the analysis, which would make the interpretation of

the results difficult. Psychological characteristics and motivation for learning may be different from those of the general population, and in some cases may affect the ability to understand instructions, consent and respond. In order to protect possible digital illiteracy (Giaretta & Di Giulio, 2018), the protocol was made available in paper format as well as in online format on the Qualtrics XM platform.

In both studies, the paper-based research protocol used the snowball sampling system, which means initially identifying a set of people who met the inclusion criteria (called seeds), and who were asked to nominate other people with the same characteristics, developing the so-called chain reference method (Cohen et al., 2018). The protocol in the online format was published on the social network Facebook in both studies.

Responses were collected between 6 April 2022 and 2 June 2022. Data analysis was performed using the statistical software Statistical Package for the Social Sciences (SPSS), version 28.0 and Stata SE 17.0.

Results

The following results focused on the psychometric characteristics of the Lifelong Learning Scale (LLL) that was intended to be validated, complemented with statistical analysis and analysis of the mediation model.

Psychometric characteristics of the LLL Scale

Using descriptive analysis, we found that the average scores per item vary between 2.32 (item 3) and 4.33 (item 5). Most items have average values close to the intermediate value, considering a Likert scale of 5 points. As for the standard deviations, we found some dispersion, since they vary between .83 (items 5 and 7) and 1.26 (item 4).

Regarding distribution measures, we found that item 5 (-1,233) is the one that most deviates from a normal distribution (= 0), assuming most items have a negative

asymmetric distribution, except for items 3 and 4 (inverted items). As regards flattening, most items have a platykurtic distribution (< 0) (table 4).

 Table 4

Regarding the internal consistency of the LLL dimensions, it was found that Cronbach's Alpha values exceed the threshold of .70 referenced in the literature. The Learning Motivation (ML) dimension presented a $\alpha = .86$, and the Skills Development (SD) dimension $\alpha = .85$, indicating good reliability values (Marôco, 2007). The Need for New Learning (NL) dimension presented a $\alpha = .73$.

Statistical analysis

Life satisfaction correlates moderately, positively, and significantly with the remaining dimensions under study, except for the Need for new Learning (NL) whose correlation is weak ($\rho = .179$, $p < .001$). Intrinsic motivation and motivation for learning ($\rho = .662$, $p < .001$), and intrinsic motivation and identified regulation ($\rho = .858$, $p < .001$) are strongly, positively, and significantly related (table 5).

 Table 5

After the confirmatory analysis, we conclude that the three-factor model presents a better fit [$\chi^2(60) = 118.15$, $p < .001$; $\chi^2/df = 1.97$; CFI = .973; TLI = .965; RMSEA = .050] than the single-factor solution [$\chi^2(65) = 475.98$, $p < .001$; $\chi^2/df = 7.32$; CFI = .811; TLI = .773; RMSEA = .127].

Model under analysis

The higher life satisfaction (SWL), the greater the propensity for people to engage in Lifelong Learning (LLL). According to our study, LLL is a three-dimensional concept composed of the following dimensions: Motivation for Learning (ML), Skills Development (SD) and the Need for New Learning (NL).

The aim was to ascertain to what extent intrinsic motivation mediated the relationship between satisfaction with life and the motivation for learning. In this mediation analysis, there was a significant total effect of life satisfaction in motivation for learning ($B = .06$, $SE = .07$, $p < .001$), but this decreased after the inclusion of the mediating variable intrinsic motivation ($B = .03$, $SE = .01$, $p < .001$). The mediating variable has a significant effect on motivation for learning when controlled by life-satisfaction ($B = .30$, $SE = .03$, $p < .001$), and the indirect effect was significant ($B = .03$, $SE = .01$, $BCI [.02, .04]$), showing the existence of a partial mediation. The covariates did not present a significant effect.

Next, the aim was to establish to what extent intrinsic motivation mediated the relationship between satisfaction with life and skills development. In the mediation analysis, there was a significant total effect of satisfaction with life in skills development ($B = .08$, $SE = .01$, $p < .001$), but it dropped after the inclusion of the mediating variable intrinsic motivation ($B = .05$, $SE = .01$, $p < .001$). The mediating variable has a significant effect on the skills competencies when controlled by satisfaction with life ($B = .38$, $SE = .03$, $p < .001$), and the indirect effect was significant ($B = .03$, $SE = .01$, $Boot CI [.03, .04]$), showing the existence of partial mediation. Only the covariate age was significant with a negative effect ($B = -.02$, $SE = .01$, $p = .001$).

Finally, the aim was to determine to what extent intrinsic motivation mediated the relationship between satisfaction with life and the need for new learning. In the

mediation analysis, there was a significant total effect of satisfaction with life in the need for new learning ($B = .05$, $SE = .01$, $p < .001$), but it decreased after the inclusion of the variable mediator intrinsic motivation ($B = .03$, $SE = .01$, $p = .042$). The mediating variable had a significant effect on the need for new learning when controlled by satisfaction with life ($B = .23$, $SE = .03$, $p < .001$), and the indirect effect was significant ($B = .02$, $SE = .01$, *Boot CI* [.00, .05]), showing the existence of a partial mediation. Only the covariate age was again significant with a negative effect ($B = -.02$, $SE = .01$, $p = .001$) (table 6).

Table 6

Discussion

The results of the study confirmed our first hypothesis "The higher the satisfaction with life, the greater the propensity of people to engage in lifelong learning activities". High levels of life satisfaction show to be associated with greater success at work, higher levels of income, greater satisfaction with relationships making these relationships longer lasting, fewer health problems (Luhmann & Hennecke, 2017), greater predisposition to learn, more intrinsically motivated people (Antaramian, 2017) and longer longevity (SCL, 2022).

Life satisfaction seems to be associated with motivation, either because people may be dissatisfied and need to react, being more predisposed to action, or because, despite being satisfied with life, they intend to increase or maintain their living conditions (self-regulatory behavior) (Luhmann & Hennecke, 2017). For Crow (2006), motivation seems to be the key attribute of a lifelong learner. Intrinsically motivated people seem to

develop a connection that involves satisfaction in the development of learning activities, not by obligation, but rather by the interest they have in or pleasure they derive from developing a particular activity. People become more committed to themselves and to the task, presenting a greater predisposition to learning.

Results show that life stability seems to be a relevant factor in motivation for lifelong learning. This factor may be associated to an interconnection of elements such as cognitive and metacognitive, motivational and affective, developmental and social factors, and factors related to individual differences (Crow, 2006; McCombs, 1991).

The learning process impels intentionality and the focus on the construction of meaning, which can (should) be accompanied by support and guidance, especially in complex activities. It is a process that adds and aggregates knowledge to what already exists and that can be influenced by the learning context. Creativity, natural curiosity, or novelty are developed through intrinsic motivation that may be related to personal interests, providing the power of choice in participating (or not), and the notion of control of the learning process. In an idiosyncratic component, it should be noted that each person has their own learning strategies, with different approaches and abilities to learn and self-motivate (McCombs, 1991).

It is in the intersection of personal and contextual factors (Crow, 2006) that more experienced people find (or not) motivation to participate in formal, informal, and non-formal learning activities (Boztepe & Demirtaş, 2016).

The hypotheses "The greater the satisfaction with life, the greater the motivation to learn, when mediated by intrinsic motivation" was confirmed. People with personal and family stability seem to be more available to themselves and others, facilitating their adaptation to different contexts, showing themselves to be more motivated. Their predisposition to engage in learning activities is also facilitated (Kaya & Çenesiz,

2020). When health and well-being are rated as positive, and levels of life satisfaction are high, the tendency is to establish more and better as well as longer lasting relationships with others and with the social context. Positionings towards the community tend to change, with greater control over own lives seeming to attribute meaning to their experiences and lead them to improve and invest in personal development (Ryff, 2014).

The satisfaction of physical and psychological needs coupled with intrinsic motivation contribute to higher levels of life satisfaction and well-being (Sheldon, 2005). Still et al. (2020) allude to the need for a balance between individual and contextual /environmental factors in the field of education and learning, which help determine the nature of behaviors. Positive approaches related to learning have protective and preventive effects, as well as gains in personal development.

Regarding hypothesis H2b: "The greater the satisfaction with life, the greater the skills development, when mediated by intrinsic motivation", was also confirmed. We conclude that as people get older the appreciation of skills development decreases. This is in line with Purdie and Boulton-Lewis (2003) who report that the gerontological perspective places greater emphasis on "losses" than on "gains" in relation to aging. However, this view can negatively influence older people, keeping them from participating in learning activities and contributing to less productive aging. This design can be considered a barrier to learning, so it is important to inform, clarify, demystify, and encourage skills development.

The ability to have control over time and activities allows more experienced people to adjust to the changes around them, such as losing their spouse or having to take care of their grandchildren (Bjursell, 2019). People involved in lifelong learning activities seem to be more intrinsically motivated, showing better levels of quality and satisfaction with

life, and are more willing to perform different activities and get out of their comfort zone to engage in challenging and stimulating activities with higher levels of self-confidence (Purdie & Boulton-Lewis, 2003).

Involvement in social activities, a participatory and active life, the development of a perspective of citizenship, and the chronological marker (age) were identified as motives why people participate in education activities (Bjursell, 2019; Boulton-Lewis, 2010; Purdie & Boulton-Lewis, 2003). People who engage in social activities, who have a participatory, active, and citizen life (Bjursell, 2019; Boulton-Lewis, 2010; Purdie & Boulton-Lewis, 2003) seem to be more willing to learn, as if this were a compensatory strategy of empowerment. Our study generally confirms those claims.

Characteristics such as flexibility are motivating factors creating openness to new learning. Feeling that they have the ability to control and manage time and their activities allows for proper adaptation (Bjursell, 2019).

According to Bjursell (2019), people who are accompanied (through social support) and are socially positioned, who establish positive relationships with others, and who feel motivated, develop a sense of community, which facilitates dynamism, civic participation, active citizenship, a sense of belonging and the development of skills. The effects of formal and informal learning in this generation can foster feelings of pleasure, utility, self-confidence, self-esteem, life satisfaction, promote more and better social relationships, better problem solving capacity and higher health levels (Boulton-Lewis, 2010).

As for our third and final hypothesis, which states that “The greater the satisfaction with life, the greater the need for new learning, when mediated by intrinsic motivation”, data do not allow its confirmation. As people get older, the need for new learning seems to decrease. But we should stress that the population of the study was constituted by adults

of the 55+ generation, to whom the concept of learning is still strongly connected to formal schooling. Therefore, there may be some difficulty in conceptualising the need for learning in the non-formal or informal contexts such as referred by Coskun and Demirel (2010,) Pesen and Epçaçan (2017) and Rosa (2020). Our study also showed a residual participation by adults from Universities, Polytechnics or Senior Universities, which may justify, in some way, such results.

According to Bjursell (2019), the “post-work generation”, or “on the way to...”, is an extremely heterogeneous group of people with very different life experiences, who can also be distinguished by differences in age, gender, social class, degree of autonomy and interests. At the same time, the importance they attach to learning may also be distinct. This author stresses the importance that is attributed to learning by the elderly, as it is necessary to distinguish “consumers of education” from “creators of knowledge”.

The study developed by Boulton-Lewis (2010) concluded that the importance attributed to learning at older ages translates into the maintenance of active brains and the challenge of the activities involved, while some of the barriers to learning are due to lack of time or the scarcity of the formative offer of interest. As important as understanding how older people learn, it seems to be evaluating what their real learning needs are. Physically and mentally autonomous people at older ages, who take control of their lives, seem to correlate positively to continued participation in lifelong learning and education.

The ever-changing world, with an increasingly ageing population, phenomenon some call a “silver tsunami” (Boulton-Lewis, 2010), asks for attention to this generation, particularly in terms of knowledge. Involvement in continuous learning can help combat, for example, some degree of technological or digital illiteracy (Purdie &

Boulton-Lewis, 2003), and at the same time promote older citizens' desire to be more informed of their social and political rights and duties and the important role they have and should play in society (Weaver, 1999).

Within the domain of motivational psychology, Self-Determination Theory provides a framework through which we can analyze our findings. The positive and statistically significant correlation between Life Satisfaction and Lifelong Learning within the demographic of individuals aged 55 and above, may suggest that life satisfaction facilitates the fulfillment of fundamental psychological needs, which are inherently linked to autonomy, competence, and interpersonal relationships (Deci & Ryan, 1985).

When these essential needs are adequately met, individuals are inclined to experience elevated levels of well-being (both physical and psychological) and, as a result, tend to adopt a more optimistic perspective on life, thereby fostering intrinsic motivation (Deci & Ryan, 1985).

The perception of possessing control over one's life, having the agency to make decisions, and perceiving oneself as autonomous and independent, along with the ability to engage in activities that intrinsically motivate them, enriches the process of learning, thereby contributing to personal growth and integration, endowing life with meaning and facilitating moments of enjoyment and self-valuation (Crown, 2006; Stephan et al., 2008).

In light of these arguments, we assert that matters pertaining to health, well-being, and education (more specifically, those related to lifelong learning) have evolved into essential components of active citizenship and serve as a political catalyst in the contemporary milieu. Enhancing skills, equipping individuals for success, and fostering an awareness of well-being and social justice represent some of the prevailing objectives (Zepke, 2013).

Consequently, Self-Determination Theory posits that the motivations underlying learning and engagement with knowledge can enhance levels of confidence, resilience, and the sense of efficacy and competence (Deci & Ryan, 1985). Furthermore, meaningful social connections and relationships are also likely to be amplified among more seasoned populations, with older adults demonstrating a heightened motivation to engage in learning and to fortify interpersonal connections, in what can be characterized as a cyclical and perpetual process (McCombs, 1991).

Each endeavor can be interpreted as a challenge (Stephan et al., 2008), merging (intrinsic) motivation for learning with the development and recognition of skills (Zepke, 2013), to ensure affirmative and successful dispositions towards knowledge and learning (Deci & Ryan, 1985; 2008).

In relation to participation in adult education, our findings also invoke a critical examination of Boshier's contributions, particularly within the framework of continuing education and lifelong learning. Understanding the factors that motivate older adults to partake in educational pursuits facilitates a comprehensive comprehension of the interrelations among various dimensions (Boshier, 1971; 1973; 1991; Boshier & Collins, 1993). Engagement in educational activities may correlate with the attainment of individual aspirations and the enhancement of self-concept and self-esteem. The establishment of goals and the elevation of life satisfaction can contribute significantly to both personal and professional growth. The advancement of skills acquired through educational avenues exemplifies an ongoing learning trajectory that may exhibit connections with Lifelong Learning (LLL) principles (Boshier & Collins, 1993). Diverse educational contexts, whether formal, non-formal, or informal, may foster distinct relationships with educational participation (Boshier, 1971; 1973).

Consequently, there exists a necessity for continual learning, the acquisition of

knowledge, and the capacity to adapt to changes to confront life's varied challenges (both personal and occupational), thereby acquiring new competencies requisite for fulfilling diverse societal roles (Boshier & Collins, 1993).

Moreover, the motivational dimensions associated with learning, as posited by Boshier, are complex and multifaceted, as they can significantly impact the decision-making process concerning the continuation or cessation of learning engagement (Boshier, 1973). Motivation can manifest through various avenues, including personal gratification, cognitive advancement, the realization of life ambitions, external expectations, enhancement of interpersonal relationships, community engagement, the cultivation of critical, divergent, and creative thinking, or merely the augmentation of overall life satisfaction and quality. In Boshier's framework, life satisfaction and Adult Learning Volition (ALV)—comprising motivation for learning, skill development, and the necessity for new educational endeavors—can be interpreted as either antecedents or consequences of participation in adult education (Boshier, 1971; 1991; Boshier & Collins, 1993), which may be shaped by social, psychological, and institutional factors (Boshier, 1973).

Limitations of the studies

One limitation of the studies (1 and 2) was the weak adherence to the online format survey. The strategy of using the instrument in paper format made data collection more time consuming. Feedback received was that the research protocol was somewhat long, but this may be due to the font used in the document because the team of researchers took care to prepare it with large fonts, to overcome any vision impairment.

Regarding the research protocol, it had to be conceived and developed in such a way as to be understandable for participants with both low and high levels of education.

Although the survey on validated scales, we received feedback that for some participants long statements (sentences) were difficult to understand.

A limitation felt in study 1 was, specifically, the issue related to income, as suggested by the literature review. We found that in both formats (online and paper), the participants did not answer the question of income and avoided answering related items. Therefore, it was withdrawn in study 2.

Regarding the statistical quality of the validated scale, we highlight that the “Need for new learning” dimension consists of only two items. This can limit the grasp of the meaning and complexity of the phenomenon under study due to lack of sensitivity. This, in turn, may translate into a simplified and potentially inaccurate representation of learning needs, with the consequent lower variability and sensitivity of data, which can call into question statistical robustness (Morgado et al., 2017; Raykov, 2008).

Although the number of participants in study 2 is considered to be of a rather good dimension for a sample in this kind of study, we cannot conclude that it is representative of the Portuguese 55+ population, given that some parameters may not represent the national population specifically, such as living in their own homes, where the majority responded affirmatively. Therefore, generalization of the results is not statistically possible, and this should be considered in their interpretation. The meagre national scientific production on the issue addressed in the study with the Portuguese 55+ generation makes it difficult to conclude about the evolution of the situation under analysis.

Suggestions for future studies

It will be important to extend this type of study to other behavioral and motivational dimensions that help to understand the psychological mechanisms that can more clearly explain the dynamics of lifelong learning. Longitudinal studies would be needed to

identify the evolution mechanisms and the relationships between lifelong learning and life satisfaction.

It would be important to use more moderating variables of a dispositional and a situational character, using different research approaches. Furthermore, it is relevant to address the issue of social desirability bias to support a higher degree of objectivity.

It is also suggested that the lifelong learning scale, now under study, be applied to other types of samples.

To conclude

The results obtained indicate that the scale has a reliable and consistent structure in all its dimensions.

We conclude that intrinsic motivation plays a very important role in lifelong learning and satisfaction with life, particularly in terms of motivation for learning, skills development, and the need for new learning in a 55+ Portuguese population. Intrinsic motivation showed significant explanatory potential and may be a relevant impulse for this generation to engage in activities that make them grow, become more active, participatory and intervening in the community, developing and defending citizenship and democratic values, helping them make informed decisions and solve problems, thus contributing to critical thinking and stimulating them to seek and disseminate knowledge in various forms.

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Table 1. Sample characteristics for study 1

		Participants	
		<i>n</i>	%
Gender	Female	97	64.2
	Male	54	35.8
	Total	151	100
Marital status	Single	18	12.1
	Married/ Common-law partners	104	69.8
	Divorced	15	10.1
	Widow	12	8.1
Employment situation	Fixed-term contract	31	20.7
	Endless employment contact	62	41.3
	Green receipts	5	3.3
	Unemployed	5	3.3
	Retired	46	30.7
	Student	1	.7
Academic qualifications	No schooling	2	1.3
	Less than 4 years of schooling	8	5.3
	4 Years of schooling (1st cycle of primary education)	15	10.0
	6 Years of schooling (2nd cycle of primary education)	12	8.0
	9 Years of schooling (3rd cycle of primary education)	18	12.0
	12 Years of schooling (Secondary school)	28	18.7
	Higher education	66	38.0
	Does not apply	1	.7
Age		M	SD
		62.74	7.86

Legend: n - Absolute frequency; % - Relative frequency; M – Mean; SD - Standard Deviation;

Table 2. Exploratory factor analysis

	ML	SD	NL	CR	AVE
I talk to others about things I learned	,831			.70	.56
I like to analyze problems and issues in depth	,787				
I like learning new things	,754				
I like intellectual challenges	,752				
I see myself as an eternal learner	,702				
I'm curious about many things	,663				
I often look in libraries or bookstores for interesting books or magazines		,858		.62	.60
Writing is part of my regular activities		,808			
Reading is part of my regular activities		,783			
My activities involve the application of critical thinking		,761			
I read for pleasure or entertainment		,659			
I think I will have difficulty learning with my profession			,861	.22	.72
I believe that only (...) with my profession/activity			,840		
KMO = .801					
Bartlett's Test of Sphericity: $\chi^2 (78) = 544.90, p < .001$					
Single-factor solution: $\chi^2 (60) = 154.33, p < .001; \chi^2/\text{gl} = 2.57; \text{CFI} = .817; \text{TLI} = .762; \text{RMSEA} = .144$					
Two-factor ^(MA & NA + DC) solution: $\chi^2 (59) = 92.46, p < .001; \chi^2/\text{gl} = 1.57; \text{CFI} = .935; \text{TLI} = .914; \text{RMSEA} = .086$					
Two-factor ^(MA + NA & DC) solution: $\chi^2 (59) = 89.05, p < .001; \chi^2/\text{gl} = 1.51; \text{CFI} = .942; \text{TLI} = .923; \text{RMSEA} = .082$					
Three-factor solution: $\chi^2 (57) = 68.21, p < .001; \chi^2/\text{gl} = 1.20; \text{CFI} = .978; \text{TLI} = .970; \text{RMSEA} = .051$					

Note. ML - Motivation for learning; SD - Skills development; NL - Need for new learning; CR – Composite Reliability; AVE – Average Variance Extracted;

Table 3. Sample characteristics for study 2

		Participants	
		<i>n</i>	%
Gender	Female	212	54.6
	Male	176	45.4
	Total	388	100
Marital status	Single	36	9.3
	Married/ Common-law partners	244	62.9
	Divorced	65	16.8
	Widow	43	11.1
Employment situation	Fixed-term contract	82	21.1
	Endless employment contact	127	32.7
	Green receipts	12	3.1
	Unemployed	25	6.4
	Retired	142	36.6
Academic Qualifications	No schooling	14	3.6
	Less than 4 years of schooling	26	6.7
	<i>4 Years of schooling (1st cycle of primary education)</i>	57	14.7
	6 Years of schooling (2nd cycle of primary education)	48	12.4
	9 Years of schooling (3rd cycle of primary education)	62	16.0
	12 Years of schooling (Secondary school)	84	21.6
	Higher education	97	25.1
With those who live?	Alone	69	17.8
	With your partner	156	40.2
	With children	41	10.6
	With your partner and children	101	26.0
	Others	21	5.4
Where you live?	Own house	302	77.8
	Rented house	76	19.6
	Other	10	2.6

Table 3. Sample characteristics for study 2 (continue)

		Participants	
		<i>n</i>	%
Have you been to senior university in the last 3 years?	Yes	13	3.4
	No	375	96.6
Have you attended a University, Polytechnic or Institute in the last 3 years?	Yes	8	2.1
	No	380	97.9
		M	SD
Age		64.15	8.13

Note. *n* - Absolute frequency; % - Relative frequency; M - Mean; SD – Standard Deviation;

Table 4. Descriptive statistics (n = 388)

Lifelong Learning Scale Items	M	SD	Skew.	Kurt.
1. I like to analyze problems and issues in depth	3.84	.92	-.797	.548
2. I look in libraries or bookstores for interesting books or magazines	3.26	1.19	-.255	-.856
3. I don't believe I can learn new things and acquire new skills if they are not directly related to my profession/activity	2.32	1.24	.538	-.856
4. I think I will have difficulty learning new things and acquiring new skills related to my profession	2.39	1.26	.583	-.774
5. I like learning new things	4.33	.83	-1.233	1.415
6. I like intellectual challenges	3.91	.96	-.669	-.146
7. I talk to others about things I learned	4.05	.83	-.858	.896
8. Writing is part of my regular activities	3.30	1.21	-.304	-.919
9. Reading is part of my regular activities	3.59	1.16	-.588	-.475
10. My activities involve critical thinking	3.47	1.09	-.433	-.432
11. I see myself as an eternal learner	3.98	.96	-.854	.386
12. I read for pleasure or entertainment	3.72	1.17	-.675	-.415
13. I'm curious about many things	4.20	.87	-1.00	.634

Note. M – Mean; SD – Standard deviation; Skew. – Skewness; Kurt. - Kurtosis

Table 5. Mean, Standard Deviation, and Spearman Correlation (n = 388)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Gender												
2. Age	64.15	8.13	-.155**									
3. Satisfaction with life	17.31	4.36	.053	.099	(.862)							
4. Intrinsic motivation	5.02	1.18	.082	-.017	.325***	(.877)						
5. Motivation for learning	4.05	0.69	.069	-.043	.386***	.548***	(.858)					
6. Skills development	3.46	0.92	.136**	-.081	.358***	.556***	.662***	(.847)				
7. Need for new learning	3.64	1.11	.062	-.150**	.179***	.330***	.409***	.326***	(.733)			
8. External regulation	4.42	1.21	.024	-.028	.227***	.443***	.339***	.364***	.050	(.779)		
9. Identified regulation	5.15	1.23	.033	-.020	.309***	.858***	.528***	.520***	.325***	.530***	(.881)	
10. Amotivation	3.34	1.45	-.021	.014	-.060	-.165**	-.099	-.034	-.327***	.268***	-.202***	(.888)

Note. * $p < .05$ ** $p < .01$; *** $p < .001$; Gender: 0 = Men, 1 = Women; (...) Cronbach Alpha

Figure 1. Mediation model - Illustrative explanation of the relationship between life satisfaction and lifelong learning (motivation for learning, skills development and need for new learning) when mediated by intrinsic motivation

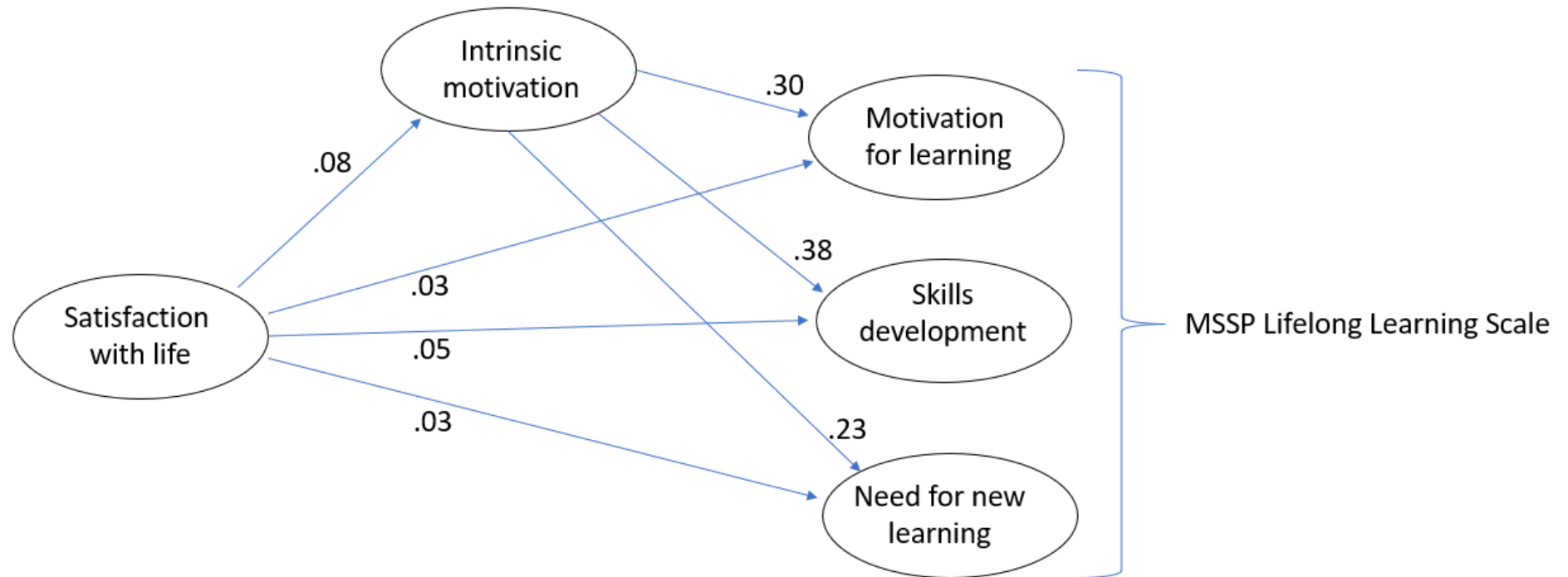


Table 6. Regression coefficients of the relationship between Satisfaction with Life (SWL) and Motivation for Learning (ML), Skills Development (SD) and Need for New Learning (NL), when mediated by Intrinsic Motivation (IM)

	Intrinsic Motivation		Motivation for Learning		Skills development		Need for new learning	
	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI
<i>Constant</i>	4.61	[3.63, 5.59]	2.35	[1.83, 2.87]	1.79	[1.08, 2.49]	3.51	[2.49, 4.52]
Satisfaction with life	.083	[0.06, 0.11]	.03	[0.02, 0.05]	.05	[.03, .06]	.03	[.00, .05]
Intrinsic motivation			.30	[0.26, 0.35]	.38	[.31, .45]	.23	[.13, .32]
Gender			.00	[-0.11, - 0.11]	.08	[-.07, .23]	.02	[-.19, .24]
Age			-.01	[-0.01, 0.00]	-.02	[-.03, -.01]	-.02	[-.04, -.01]
Indirect Effect			.16; 95% Boot CI [0.11, 0.22]		.15; 95% Boot CI [0.10, 0.20]		.07; 95% Boot CI [.04, .12]	
Total Effect			.06; 95% CI [0.04, 0.07]		.08; 95% CI [.06, .01]		.05; 95% CI [.02, .07]	
			$R^2 = .39; F(4, 383) = 60.96,$		$R^2 = .38; F(4, 383) = 58.03,$		$R^2 = .12; F(4, 383) = 12.67,$	
			$p < .001$		$p < .001$		$p < .001$	