University Institute of Lisbon
Business School
Department of Human Resources and Organizational Behavior

An emotion-based model of criminal investigators' competences in Polícia de Segurança Pública

Rui Filipe Resende Melo Coelho de Moura

A thesis presented in partial fulfilment of the requirements for the degree of
Doctor in Management, specialization in Human Resources and Organizational Behavior

Supervisor:
Doutor Nelson Jorge Campos Ramalho, Assistant Professor,
ISCTE – University Institute of Lisbon

March, 2018

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Abstract PT

A competência é um conceito central na GRH, pois oferece a possibilidade de ser a referência estratégica em torno da qual todas as práticas de RH podem ser articuladas. Os modelos e perfis de competência existentes têm sido desenvolvidos através da integração da literatura, mas ainda não integram bem o papel que as emoções desempenham nas organizações.

A presente investigação pretende explorar os modelos de competências com base em emoções, concentrando-se numa profissão emocionalmente exigente: a do investigador criminal, articulando com o recrutamento e seleção, bem como com a formação inicial.

Depois de caracterizar o contexto institucional em que trabalham os investigadores criminais da PSP, o estudo começa por explorar o recrutamento e seleção de polícias bem como as práticas de formação inicial nas forças de segurança europeias, focando quer oficiais quer agentes. Os resultados mostraram divergências entre forças de segurança e entre as duas carreiras, não tendo sido possível identificar qualquer padrão emergente. Adicionalmente, não foram identificadas práticas de base emocional.

A investigação evoluiu para explorar como mapear as emoções numa perspectiva do desempenho, condicionando todo o modelo de construção de competências proposto por Bartram e Roe (2005). Com uma amostra de 703 questionários preenchidos por investigadores criminais, recolhemos dados sobre comandos emocionais, personalidade, aptidões, conhecimentos, habilidades, atitudes e valores para testar um conjunto sequencial de relações entre estes construtos. Os resultados de análises de equações estruturais mostram fluxos de associações que ligam os sistemas de comando emocional a competências específicas, moderados num determinado interface pelos valores.

O modelo sincrético resultante incorporou quer competências quer emoções (na camada basilar), seguindo uma metodologia de modelação em interfaces, o que lhe conferiu uma composição e relação diferentes entre os interfaces. Os resultados sugerem a possibilidade de estruturar um modelo de competências para investigadores criminais assente em emoções, expressas como os fundamentos emocionais da personalidade humana (Davis & Panksepp, 2011) designados por sistemas de comando emocional.

Keywords PT

Emoção; competência; polícia; força de segurança, recrutamento, seleção; formação inicial; Polícia de Segurança Pública; PSP

Abstract

Competence is a core concept in HRM as it offers the possibility of being the strategic reference around which all HR practices are articulated. Competence models and profiling have been developing by integrating extant literature but are yet to fully grasp the role emotions play in daily organizational life.

The present research is set to explore emotion-based competence modelling by focusing on an emotional demanding profession: that of criminal investigator, linking with recruitment and selection as well as initial training.

After reviewing the institutional context in which criminal investigators work (PSP), the study starts by exploring police recruitment and selection, and initial training practices in European police forces, focusing both on officials and officers. Findings showed divergences both between police forces and careers thus showing no emergent pattern on these issues. More importantly, no emotion-driven practices was reported.

The research evolved to explore how emotions could be mapped under the performance agenda conditioning the entire building of competence model as proposed by Bartram and Roe (2005). With a sample of 703 questionnaires filled in by criminal investigators we collected data on emotional commands, personality, abilities, knowledge, skills, attitudes and values to test a sequential set of relations between these constructs. Findings from SEM analysis show streams of associations linking emotional commands up to specific competences, moderated at certain level by values.

The resulting syncretic model addressed both competences and emotions (at the lowest layer), following a modelling methodology in sequenced layers (interfaces) which rendered it a different composition and relation between layers. Findings suggest that it is possible to structure a competence model for criminal investigators with emotions considered at the ground layer as the emotional foundations of human personality (Davis & Panksepp, 2011) expressed as the Emotion Command Systems.

Keywords

Emotion; competence; police; law enforcement, recruitment, selection; initial training; Public Security Police; PSP

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Dedicatory

To Ana and Gabriel, both my live and love.

To my Father and my Mother. No words will ever be able to express what you mean to me.

To Nuno, Mariana, Bruna and Duarte, hoping that this thesis will inspire you to a life full of achievements.

To all Policemen. Be Safe.

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Introduction

This thesis is focused in the *Polícia de Segurança Pública* - Public Security Police – PSP criminal investigators and in the emotion-based competences.

The available scientific literature aimed at systematizing knowledge to generate models for managing emotions in an organizational context is still at an early stage with works that propose either mere types (e.g. Bolton & Boyd, 2003) or are centered around one or another model lacking empirical validation (e.g. Ashkanasy & Daus 2002).

Moreover, the literature focuses on generic organizational contexts, especially entrepreneurial character and societal contexts Anglo-Saxon, such as the *Competence architecture model* of Roe (2002). At the beginning of the last decade, Slaski (2002) defended the heuristic value that an organizational approach in the light of the emotions offered and would understand the organizational dynamics and promote opportunities for new techniques and research methods.

This incipiency found deepens further in the context of specific organizations, such as police institutions. There has been a clear failure on its specificity in these institutions and the performance of functions of the criminal investigation, although there is work which highlight the report for the United States Army signed by Shipman et al. (2011) which consists of a management model of emotions for leaders as well as the study of van Gelderen, Konijn and Bakker (2011), where they analyzed the interpersonal process of emotional labor and the role of positive emotions.

Shipman et al. (2011) refer in the report that the management of emotions is important for the army due to the specific characteristics of the environment in which the military operates. Similar statement can be made regarding the police institutions, where the plurality of scenarios can, itself, evoke the importance of the topic to be studied.

In addition, van Gelderen, Bakker, Konijn and Demerouti (2011) stress the importance of the specification of emotional dissonance in the different components of suppression of positive emotions and negative elements of police in performance of daily functions and consequent emotional distress.

We still address Kop and Euwema (2001) to highlight the importance of the organizational stressors on the performance of police functions, specifically in relation to burnout and employment of violence.

There are therefore additional theoretical potential to make an approach in the context of specific institutional police. We consider that this thesis appears to have considerable heuristic potential contribution to both the state of the art (theory, models and tools) and the expected impact in the field applied organizational and societal. More specifically, the applied aspect, the contributions to the scientific knowledge achieved will enable the institution to provide the elements that play police criminal investigative functions with the right "tools" to better perform and thus contribute to greater organizational effectiveness in towards a safer society.

This thesis seeks to contribute to this research area focusing on the emotions of police elements in criminal investigation and their competences. In a diachronic perspective, we chose to carry out the approach to the role of the institution in the stages of selection, training and monitoring of preventive and intervening elements of criminal investigation.

Internationally there are already some studies that address the core conceptual part of this study. For example we indicate the work done by Batts et al. (2006) where reference is made to the use of emotional intelligence as a necessity in conducting debriefings, as a means of improving internal communication in police institutions to increase the retention of police elements. What can only occur if that subject is included in training *curricula*.

The recruitment and selection techniques is one of the topics covered by a strong branch of academic investigation, also in police organizations (Altuntop, 2008; Batts et al., 2006; Brand, 2008; Bruce, 2013; Caglar, 2004; Chenoweth, 1961; Coffee, Kyritsis, & Navickas, 2014; Comeau, 2010; Ho, 1999; Jain, 1987; Kong, Hok-lai, 2008; McCullough & Spence, 2014; McMurray, Karim, & Fisher, 2010; Moreira & Machado, 2014; O'Neill & Holdaway, 2007; Oliver, 2014; Orrik, 2008; Raganella & White, 2004; Sanders, Hughes, & Langworthy, 1995; Scrivner, 2006; TCOLE, 1977; The International Association of Chiefs of Police & Office of Community Oriented Policing Services, 2009; Waters, Hardy, Delgado, & Dahlmann, 2007; Williams, 1992; Yearwood, 2003). Overall the general core objective is to get the best candidates.

The topic of emotions in recruitment and selection techniques is also addressed (Ashkanasy, 2003; Boateng & Agyei, 2013; Burnette, 2006; Dunow, 2013; S. E. Martin, 1999; Ogińska-Bulik, 2005; Anat Rafaeli & Sutton, 1987; Ray, Mackie, Rydell, &

Smith, 2008; Schneider, 2009), but the literature reviewed, so far, in our opinion, hasn't pull up the topic as a relevant one for Academia.

The match between job performance and competences of the workforce has been widely studied (Ali, 2009; Ali, Garner, & Magadley, 2012; Bakker & Heuven, 2006; Barrick & Mount, 1991; Chappell, 2008; Cortina, Doherty, Schmitt, Kaufman, & Smith, 1992; Forero, Gallardo-Pujol, Maydeu-Olivares, & Andrés-Pueyo, 2009; Greguras & Diefendorff, 2009; Lievens & Patterson, 2011; Lowmaster & Morey, 2012; McCarty & Skogan, 2012; Noblet, Rodwell, & Allisey, 2009; Salgado, 1998; Yang, Yen, & Chiang, 2012) and even funded (TRACE Project, 2005). Overall, the gold is to identify the major practices and approaches regarding the improvement and valuation of individual competences.

Performance is linked to emotions, which provides, according to Ashkanasy (2004), an interesting and vast theoretical field of investigation in human resources and organizational behavior.

According to the PSP's Organic Law and the Statutory Decree-law, police functions are legally assumed in two main perspectives: the organizational perspective and individual perspective.

In the organizational perspective, the elements with police functions can perform all the functions that fall within the scope of the powers legally attributed to the PSP. Abstractly, we noted that the police elements perform the functions necessary to ensure democratic legitimacy, ensuring internal security and the rights of citizens under the Constitution and the law.

In the individual perspective elements with police functions perform the functions provided for by law according to the respective category. The legislator associated with each category of the three police careers functional contents.

Whether considered the organizational perspective, or the individual perspective, there is not clearly typified the degree of importance of the association of emotions and competences to police activity. We can assume that from the professional experiences of some of the elements with decision-making, knowledge sharing and eventually analogy with other similar organizations, derives the decision of the inclusion in the curricula of training content and training in psychology, and more specifically, the emotions and competences. However, this approach does not seem to us to elaborate a

strategic or expressed method, with respect to any of the careers officers, nor their "interdependence" in everyday performance of police duties. We should also consider the work of Adams and Buck (2010), reporting that the police elements are permanently at risk with regard to health problems (physical), burnout, psychological stress, abuse of alcohol and drugs, and suicidal tendencies. Slate et al. (2007) presents the idea that these physical, psychological and behavioral outputs, all negative, result from some harsh conditions in the circumstances of daily police work.

The main goal of this thesis is to address the criminal investigation career at PSP, and their specific path from recruitment and selection to specialization and concrete job performance, under the emotions-based competences paradigm. More specifically, we aim to study the recruitment and selection techniques to become a PSP officer or official. We will perform an international study to examine European police forces via the European Union Agency for Law Enforcement Training – CEPOL, surveying the selection and initial training career police personnel. Then we'll look at the competences for the criminal investigator, identifying a methodology with potential for replication in other specific police jobs. To accomplish these specific goals, we will critically review the relevant literature in these areas and present the main findings from previous research, complementing them with the results from our own studies.

We have structured the present work is in 3 main parts. In the first part, which includes the first and second chapters, we present the organization path and all formal rules about recruitment and selection, and of initial training – both for entering in the Official and Officer careers, and in the criminal investigation work. We also present a European study on these topics.

In the second part, which includes chapters 3 to 7, we discuss the competences profiling for criminal investigators to define a methodology to identify a competences profile.

The third part, which includes chapter 8, is the new model of emotion-based competences.

Finally, we will present an overall conclusion reviewing the main key aspects of the thesis, discussing its main implications and suggesting further investigation paths.

Chapter 1 - The *Polícia de Segurança Pública* - Public Security Police – PSP

To offer a comprehensive view of relevant topics under analysis, we opted beforehand to present the institutional background both juridically and historically supported as its main coordination mechanism lies in written law and regulations. The first section offers this longitudinal view and is mostly based on Fernandes (2012) and some internal unofficial sources. The second and third sections are intended to narrow the focus on the institutional framework for selection and initial training, crossing institutional regulations, law, and academic literature. The last section integrates previous subjects to conclude that procedures are consistent with a rational view of organizations (matching its institutional nature). The absence of emotion as a key issue in selection and initial training is a noticeable issue which raises further research questions.

Section 1.1 - The Organization History: some topics

In its Greek remote origins *Polis*, from which derives the word *Polícia* had the meaning of city government, that is, the activity of the state entered within the duties that competed to legislate and execute in protection of populations.

The evolution of population and its consequences generated the necessity to organize and maintain, in the interest of the community, special bodies in charge of monitoring society at large. This was necessary to ensure compliance with the Law, guaranteeing its application for the benefit of common good.

Over the centuries the concept *Polícia* evolved and began to designate the entire organizations, even the incipient and modest ones, which were up to the effective and permanent protection of the communities and their property. Individuals working in these organizations, in all activities, were expected to regular monitoring individuals who were accused. This function considerably extended their scope of intervention under their authority, thus resulting in its fragmentation and specialization.

King *Fernando* was the first Portuguese monarch to recognize the need to create and structure a body of men specially tasked to guard against and suppress acts of violence that offended people or their property. He did it by Royal Charter, creating the *quadrilheiros* of Lisbon (Fernandes, 2012).

The *Alcaide* of every land had authority to choose these quadrilheiros, the men who should assist in his mission. Each *quadrilheiro* member would have street or streets assigned, being required to have their weapons ready, at the doorstep, to immediately respond with them when needed, especially if someone claimed for justice.

Over time, the *quadrilheiros* mission was adapted to the social realities. Throughout the sixteenth and seventeenth centuries public safety was the subject of care and appropriate legislation. Only in the eighteenth century, the effective arrangements for the maintenance of public order and fight criminals were enacted and implemented, through actions of policing. This was the first use of the word *Polícia*.

The 1755 earthquake highlighted the shortcomings of *quadrilheiros*, and caused the creation in Lisbon of the General Intendancy of Police of the Court and of the Kingdom, by royal decree of June 25th, 1760, from King *José I* (Fernandes, 2012).

The Marquis of Pombal was then the First Secretary of State, in the hands of which the General Intendancy pursued more political objectives than public security. Hence its failure, partly mitigated by Queen Mary I who entrusted it to the hands of *Diogo Inácio de Pina Manique*, its most celebrated Intendant.

As a consequence of the liberal revolution of 1820, the General Intendancy was extinguished.

The Royal Guard Police was established in 1801 and officially recognized by Royal Charter of January 2nd, 1802. It was the first equipped and armed force established to ensure security. As a military organized and efficient body gave a valuable contribution to the cause of public order. Its involvement into the Liberal Wars taking side with *Miguelista* faction, caused it extinction on May 26th, 1834, shortly after the Convention of *Évora Monte*. The Municipal Guard, created by Decree of July 3rd, 1834, appears because of the extinction of the Royal Guard Police. But having taken decisive position in solving the Revolution of January 31st, 1891, the Municipal Guard was allegedly dissolved on the date of the implementation of the Republic (1910).

The National Guard was created by Decree of May 22nd, 1823. Connected to the Government that created it, the National Guard lived at the mercy of fluctuations that characterized the life of the country, easily influenced and marked by many political events. Moreover, due to various internal reorganizations it never achieved cohesion, discipline. Extinct on October 7th, 1846, the National Guard was characterized as an

institution that has always lived at the mercy of the situation and that depended on who served as a scapegoat whenever circumstances demanded.

In 1867, by Decree of the King *Luis*, the Civic Police was established on July 2nd, as a police force set up in all districts under the direct dependence of the respective governors. The Civic Police experienced, since its inception, numerous changes and reforms, from the designation itself to the nature of the missions. Today, it is the *Polícia de Segurança Pública* - Public Security Police – PSP, whose national day is celebrated on July 2nd.

In sum, the evolution of police as an institution in Portugal evidences its close dependency of societal changes and predominant views on how organizations should be structured and function. Among such views, the rational structuring and operating logics made its way by means of *zweckrational* imperative which may help understand why emotional issues were seen as irrelevant or second ordered.

Section 1.2 - Selection at PSP

According with the 44th Article of the Law 5/99, of January 27th, the Training Department of the National Direction, through its Division of Recruitment and Selection Methods, has the competence to:

- Study, propose and implement techniques for recruitment and selection of staff;
- Undertake or promote the evaluation of applicants to PSP by psychometric and psychological testing;
- Promote the actions of recruitment and selection of staff, as well as providing technical support to actions taken by other services.

The Law 5/99 was repealed by the Law 53/2007, of August 31st. In the Ordinance 383/2008, of May 29th, the Training Department kept its existence and with the Ordinance 416/2008, of June 11th, as enabling act, the National Director of PSP, by the written order 19935/2008, of July 17th, published in July 28th at *Diário da República*, assigned to the Psychology Division of that Department the competence to:

- Undertake or support the evaluation of candidates by psychometric and psychological testing;
- Provide technical support to the actions of staff recruitment and selection.

Section 1.2.1 - Official selection

The first recruitment and selection process for Police Officials trainees was approved, according to the 28th article of the Decree-Law 423/82, by the written order of the Minister of Interior 16/84, of April 2nd, published in April 26th at *Diário da República*.
The selection process included a medical exam and four main admission tests: physical agility tests, cultural written testing, psychological evaluation, and personal interview. A new recruitment and selection process was enacted by the written order of the Minister of Interior 4/85 of February 27th, published in March 12th at *Diário da República*, but kept the same admission tests with minor technical adjustments. A couple Decree-Laws were enacted up to 1993 (Decree-Law 318/86, of September 25th, and Decree-Law 402/93, of December 7th) but the selection process showed resilience and remained preserved. Only in 1995, with the Ordinance 101/95, of February 2nd the selection process of 1985 was updated to three functional tests and one job-related test. The functional tests were: physical agility tests, medical exams, and psychological evaluation. The job-related test was a personal interview.
The Ordinance 101/95 was repealed by the Ordinance 174/2010, of March 23rd. And this one was repealed by the Ordinance 230/2010, of April 26th. Despite these legal rearrangements, the selection process remained the same: the three functional tests and the job-related test.
As regards the psychological evaluation, the written order 16/84 of the Minister of Interior, set the assessment of intellectual abilities, skills assessment, intervention and decision capabilities of the candidate. The written order 4/85 of the Minister of Interior, kept the same psychological evaluation but with the result expressed as fit or unfit. Minor changes were introduced by Ordinance 230/2010 slightly changing the results expression from unfit (inapto) to not fit (não apto).
In the interim, in 2000, the Director of ISCPSI approved a written order in December 19th, with the Regulation of the prerequisites of access and admission to ISCPSI

(hereinafter Regulation). This Regulation found juridical support in the Decree-Law 296-A/98[1], of September 25th as its enabling act. Although the Regulation could be legally censored, for our purpose the general content is very similar to the content of the Ordinance 101/95. But this is, for the first time, an explicit regulation of the psychological evaluation.

According to the Regulation, the psychological aptitude tests, to be conducted by psychologists, intended to assess intellectual skills; assessment, intervention and decision-making capabilities of the candidate and consisted of:

- Paper and pencil tests - including battery testing skills, values scale, psychological inventory of personality development and clinical inventory multiphasic personality;
- Situational awareness tests - which consist of a set of problems to be addressed by the candidates, at first on an individual basis and then negotiating within group the ideal solution to the problems posed. These tests are intended to assess the dominance, practical intelligence, sense of responsibility, organizational skills, and sociability;
- Psychological assessment interview - which consists in the analysis of the various factors evaluated by previously mentioned tests and exercises and is designed to further evaluate the candidate's presentation and aplomb, verbal expression, critical thinking, motivation, dynamism, thoughtfulness, the sense of responsibility, autonomy, self-concept, the project of life, maturity, emotional stability, sociability, and leadership.
- The vocational interview intended to assess the motivational aspects, the character and personality.

[1] Regulation of the access regime and admittance to higher education in Portugal.

Since 2000, the psychological evaluation consists mainly in the application of an intelligence screening battery based on Thurstone's primary factors[2].

This battery is particularly useful as a screening test when a simple but global overview of intelligence level is essential. This battery covers the following four ability dimensions: Verbal Intelligence, Numerical Intelligence, Visualization, and Memory. Two test forms are available: a standard form (used for official selection) and a short form.

Section 1.2.2 - Officer selection

The Decree-Law 39.497, of December 31st, 1953, and the Decree-Law 39.950, of February 26th, 1954, set some generic norms about the officer recruitment process. However, they made no reference about the psychological evaluation within the recruitment and selection process.

In February 11th, 1979, the PSP Order of Service published an internal written unnumbered order from the PSP Chief of Staff. To our knowledge, this was the first written reference to psychological evaluation concerning officer recruitment and selection. The admission tests included psychometric tests to evaluate intellectual abilities and personality profile. These psychometric tests were taken at the Psychological Studies Centre of the Portuguese Army. As a legal diploma, it is only in 1980, in the Decree-Law 134/80, of May 19th, that the first reference to psychological evaluation in the officer recruitment and selection was made. The candidates that fulfil the prerequisites were expected to be submitted to a verbal aptitude test, psychometric test, physical agility tests, and medical exams. The Decree-Law 134/80 was amended by the Decree-Law 260-A/81, of September 2nd, but without any change in the psychological evaluation process. Following this Decree Law, by November 5th, the PSP Order of Order of Service published an internal written order from the PSP Chief of Staff clarifying that the psychometric tests were set to define both the intellectual abilities and personality profile.

[2] For confidentiality reasons, we are obliged not to identify the battery.

In December 20th, 1985, the General-Commander of PSP approved a written order with the rules for the personnel recruitment and selection process. The admission tests included psychometric tests and a job-related interview. One year after, the Regulatory Decree 50/86, of October 3rd, established the general regulation of the officer recruitment and selection process. The selection included psychological exams and interviews to ascertain the intellectual, skills assessment and intervention capacities, and aspects of character, motivation and personality of the candidates for the exercise of the police job.

The Regulatory Decree 50/86 was repealed by the Regulatory Decree 17/96, of December 20th. This general regulation preserved the selection methods and the purposes highlighting their appropriateness to the profile of the police function. Ordinance 122/2000, of March 8th tacitly repealed it but, once again, the psychological evaluation kept its specific rules, as regulated in 1996. Following a global legal reform, the Ordinance 236-A/2010 of April 28th updated the psychological evaluation norms. The selection methods included psychological assessment tests and a professional selection interview. The psychological assessment tests aim to assess, by appropriate techniques: skills, personality traits, and abilities of the candidates to determine their adaptability to the demands of police functions, taking as reference the institutional mission of PSP. The professional selection interview aims to assess, objectively and systematically: the work experience and behavioral aspects occurred between the interviewer and the interviewee, including those related to the communication and interpersonal skills.

As in the official selection process, since 2000, the officer psychological evaluation, used the same intelligence screening battery, but in the short form.

Section 1.3 - Initial training at PSP

The first legal reference to the Police Training School (EPP) dates from 1962, in the Decree-Law 44.447, of July 4th. Its 13th Article stated that EPP is set to instruct enlisted agents and to organize courses and examinations for police officers' promotion or specialization. Decree-Law 173/77, of May 2nd, created the Enlisting Center of Instruction, under EPP dependency. It was repealed by the Decree-Law 145/78, of June

17th which renamed the Enlisting Center of Instruction to the Guards Training School, in the dependency of the General-Command of PSP.

The Decree-Law 145/78 was tacitly repealed by the Decree-Law 129-B/84, of April 27th, which reestablished the Police Training School (Escola Prática de Polícia – EPP).

Concerning officials' initial training, in 1982 the Decree-Law 423/82, of October 15th, established the Superior School of Police, set to start activities in the academic year of 1984/85.

The Law 5/99 of January 27th, renamed the General Command of Public Security Police to the National Direction ran by a National Director. Likewise, it renamed the Superior School of Police (Escola Superior de Polícia - ESP) to Advanced Institute for Police Sciences and Internal Security (as up today, Instituto Superior de Ciências Policiais e Segurança Interna - ISCPSI).

The ISCPSI is a police establishment of higher education that imparts the Master course on Police Sciences for officials. The project to create this institute dates from 1979 and aimed to gradually replace Army officials serving in PSP, by new Police officials with a university degree on Police Sciences. By 1994 ISCPSI's degree in Police Sciences was recognized as a formal academic degree by the Decree-Law 298/94 of May 18th, which approved the curriculum and the syllabi of this program.

We took McDermott and Hulse (2012) view that initial training is set to provide technical and interpersonal skills as the basis of all police work. This is our standpoint to address the initial training at PSP as follows.

Section 1.3.1 - Official initial training

Police Officials training course took place for the first time at ESP in 1984. Ever since Psychology was a course comprehended in the curriculum (see Table 1) proposed by the Installing Committee. This was both previewed by Decree-Law 423/82 and the Ordinance 261/84, of April 24th. A course set in the third year comprehended 30 hours of Psychology which remained unaltered in spite a curriculum update by the Ordinance 738/85, of September 30th.

With the Decree-Law 318/86 and the written order of the Interior Minister of June 19th, 1989, published in July 6th Psychology syllabi expanded to two courses, one assigned

with 45 hours at the third year and the other 30 hours at the fourth year. The Decree-Law 402/93 and the Ordinance 298/94, further expanded Psychology syllabi repositioning the first course in the second year and the other in the fourth, both with 45 hours. In 2009 a new Decree-Law (DL 275/2009, of October 2nd) upgraded the training course to an Integrated Master's degree in police sciences, covering 5 years long. The Written Order of the PSP's National Director 7902/2010, of January 25th, published in May 5th updated the Curriculum. The Psychology course was expanded to a full 180 hours (90 hours at the third semester, and 90 hours at the seventh semester, second and fourth years respectively).

Legal norm	Ordinance 261/84	Ordinance 738/85	Written Order of the Interior Minister (1989)	Ordinance 298/94	Written Order of the PSP's National Director (2010)
Hours	30 hours	30 hours	75 (45+30) hours	90 (45+45) hours	180 (90+90) hours

Table 1 – Psychology unit at the Officials course curriculum

This shows a clear investment in Psychology which was accompanied by changes in its syllabi contents (see Table 2).

Syllabi topics	1984 1989	1989 1994	1994 2006	2006 2009	2009 2016
Introduction[3]	Y	Y	Y[4]	Y	Y
Human behavior - genetic basis	Y	Y	Y[5]	Y	N
Perception	Y	Y	Y	Y	Y
Intelligence	Y	Y	Y	Y	Y
Personality	Y	Y	Y	Y	Y
Environment and Behavior	Y	Y	Y	N	N
Motivation	Y	Y	Y	Y	Y
Abnormal behavior	Y	Y	Y	N	N
Group leadership	Y	Y	Y	N	N
Socialization process	N	Y	Y	Y	Y
Individual behavior	N	Y	Y	N	N
Attitudes	N	Y	Y	Y	Y
Diagnosis of individual behavior	N	Y	Y	N	N
Aggression and violence	N	Y	Y	N	N
Collective behavior	N	Y	Y	N	N
Social conflict	N	Y	Y	N	N
Foundations of social behavior	N	N	Y	N	N
The Society, the individual and personality	N	N	Y	N	N
Psychology applied to the selection and training of personnel	N	N	Y	Y	Y
Human learning	N	N	Y	Y	Y
Cognitive dissonance	N	N	Y	Y	N
Conformity and deviance	N	N	Y	Y	N
Collective Psychology	N	N	Y	Y	N
Frustration and conflict	N	N	Y	N	N
Career development	N	N	Y	N	N
Stress, Anxiety and Welfare	N	N	Y	N	N
Assessment methodologies	N	N	Y	N	N
The first movement advocating social emergency or a "clinic fine"	N	N	N	Y	Y
The new social defense	N	N	N	Y	Y
The sophistication of actors linked to the criminal phenomenon and techniques	N	N	N	Y	Y
Core concepts and practical implications[6]	N	N	N	Y	Y

Table 2 – Official initial training Psychology syllabus evolution

[3] Concept and Purpose; Streams of Psychology and its background; Research Methods in Psychology; Treatment of the results, inferences and the meaning of laws in Psychology

[4] Psychology as a science: concept and purpose of Psychology; The different streams of Psychology; The study methodology in Psychology.

[5] Heredity and behavior.

[6] "Normal behavior" and "deviant behavior."; The normativity of developmental transgression and juvenile delinquency; Critique of the concept of "criminal personality" and new types of crime; Critique of the concepts of "dangerousness" and "insecurity"; Conflict management and stress.

Some topics were kept, some were updated and some excluded. However, it is strikingly noticeable the absence of an explicit mention to affective processes, emotions or their management. Notwithstanding, they may be tacitly treated but the absence of explicit mention does not allow one to rule out their sub representation.

Section 1.3.2 - Officer initial training

Officers display not only strong technical capabilities but interpersonal skills. Therefore, law enforcement agencies must train their officers on how to interact effectively with the public (McDermott & Hulse, 2012).

The Decree-Law 39.950, of February 26th, 1954, stated some generic norms about the officer recruitment process, but did not have any reference about psychological evaluation in the recruitment and selection process. The same occurred regarding Officer initial training curriculum and syllabi.

Following the publication of the Decree-Law 47267, of October 21st, 1966, and according to its 8th article, the Ordinance 24233, of August 13th, 1969, in its 49th article committed to the general commander the approval of the Officer initial training syllabi.

In February 11th, 1979, the PSP Order of Service published an internal written order from the Chief of Staff that mentions the syllabi of the Officer initial training without reference to Psychology. Although there's a Human Relations[7] course which syllabus we could not locate institutionally to check if there was any Psychology topic.

In November 5th 1981, following the publication of the Decree-Law 260-A/81, of September 2nd, 1981, the PSP Chief of Staff published in the Order of Service an internal written order repealing the February 11th, 1979 one preserving the syllabus as is.

By January 26th 1987, the Decree-Law 37/87 transferred the approval authority from the Chief of Staff to the Minister of the Interior as regards all syllabi implied in EPP courses. We could not locate institutionally any formal document issued under this issue.

[7] Literal translation.

The first reference to Psychology and Sociology occurs in the Directive for the Coordination of the Officer Program in 1987/1988. This reference points out the two courses as a recent inclusion in the 1986/1987 officer's training syllabi. This was the status up to 1992. In this year the officer training program comprehended 15 hours in Psychology. From 1992 to 1996 the officer training syllabus changed to 30 hours of Social Psychology. In 1999 the officer training program renamed the course to Psychosociology. Until 2010 the number of hours ranged from 20 to 40.

The Decree-Law 26/2009, of October 2nd, and the Written Order of the PSP National Director 39/GDN/2010, of December 3rd, approved the attendance and evaluation norms, as well as the program for Officer initial training. The Psychosociology course upgraded to 45 hours. This program represents a paradigm shift in training, establishing the competence-based training. The present syllabus comprehends the following topics:

- Introduction to Psychosociology.
- Man: a social being.
- Socialization.
- Stages of socialization.
- Social groups.
- Culture, values and standards.
- Minority groups.
- Police and minorities.
- Other groups: alcoholism, drug addiction.
- Violence / Aggression.
- The victimization and the reaction of the victims.
- Domestic violence.
- Sexual assault victims.
- Mistreatment of elderly.
- Child abuse.
- Bullying and cyberbullying.
- Suicide.
- How to deal with suicidal individuals.
- Suicide in police.

- Critical incident.
- Type responses to critical incidents.
- Police victimization.
- Stress.
- Occupational stress.
- Stress management.
- Conflict management.
- The negotiation processes.
- Skills to resolve a conflict.
- Communication styles.
- Process of conflict resolution.

Section 1.4 - Discussion and conclusions

More than 140 years elapsed since Portugal established institutions with the explicit mission of ensuring the tranquility and security of people and their property. One of the evidences is PSP, the core focus institution of our thesis. The evolution of the PSP mirrored that of Society at large, as public institutions are set to fulfill societal needs and any change in those will sooner or later reflect upon the institutional level. Such changes follow the rational-legal primacy and thus were evidenced in the naming, functions, structure and operational practice.

We could identify some formal documents dating back decades which are set to establish specific norms about selection and initial training in PSP, both for police officers and officials. Although Psychology is widely acknowledged and applied within police personnel management, especially in selection and training, the legal and regulatory framework is void of explicit focus on emotional issues. Such is consistent with the institutional nature which traditionally base its functioning on giving primacy to reason according with Weber's view of *zweckrational* action (Albrow, 1992) but it also reflects the Portuguese late bloom of Psychology only in the late 1960s (Borges, 1986) which justifies the formal use of the Psychological Studies Centre of the Portuguese Army to conduct psychological evaluation concerning officer recruitment since the late 1970s.

However, organizational studies have been highlighting the importance of emotions in organizations (e.g. Ashkanasy 2003b; Elfenbein 2007; Menges & Kilduff 2015) and putting an explicit focus on this topic may offer a more comprehensive understanding of its importance, role, and institutional management.

Therefore, we will move on by addressing emotional in police selection and initial training with the support of an empirical study focusing on the wider institutional context of European police institutions.

Chapter 2 - Addressing emotions in Police selection and initial training: a European study[8]

Section 2.1 - Emotions in Police organizations

Emotions in law enforcement is an under researched subject despite the evident central role emotions play in the daily life of policemen (Daus & Brown, 2012).

The nature of police work and constant exposure to risk may result in negative physical, psychological, and behavioral outputs (Slate et al., 2007), which often translate into burnout and use of violence (Kop & Euwema, 2001). Many other health problems and deviant behaviors such as abuse of alcohol or drugs, and suicidal tendencies have been reported in policemen (Adams & Buck 2010, Violanti *et al.* 2015). These problems are important not only for individuals, but also for society at large due to their potential for impairing police work by decreasing work quality and raising absenteeism and police violence, thereby compromising public safety (Basinska *et al.* 2014, Kop *et al.* 1999).

Persons in law enforcement must guard their emotions during moments of tension, and may experience emotional dissonance and distress as a result (van Gelderen *et al.* 2007, van Gelderen, Bakker, *et al.* 2011). This has been found to predict burnout, especially when related to depersonalization (Schaible & Gecas, 2010). Although some authors treat dissonance as a predictor of burnout and psychological strain, more recently it was found to fully mediate between deliberative dissonance acts of policemen and experienced psychological strain (van Gelderen, Bakker, Konijn, & Binnewies, 2014). Additionally, the specific organizational context may shape and impact emotions, suggesting that emotional intelligence contributes to the development of police leadership (Drodge & Murphy, 2002).

Research acknowledges that police officers are routinely exposed to situations that trigger intense negative emotions. These situations are typically characterized by unpredictability, risk, stress, anger, and anxiety, and officers have a strong need for effective methods to control their emotions (Berking, Meier, & Wupperman, 2010).

[8] This chapter was the base for an original article accepted for publication in the European Police Science and Research Bulletin in June 2017 under the title "Addressing emotions in Police selection and initial training: a European study".

However, the literature on models for managing emotions in organizational contexts is still at an early stage, with works that propose either typologies (Bolton & Boyd, 2003) or are centered around models lacking empirical support (Ashkanasy & Daus, 2002). Moreover, reported research is mostly focused on generic organizational contexts, especially of a business nature, overlooking the context of specific organizations such as police. There is a clear lack of specificity in these institutions and the performance of functions of criminal investigation. A noteworthy exception is Shipman *et al.* (2011), who produced a report for the United States Army targeting a management model of emotions for leaders, which is important for the army due to the characteristics of the environment in which the military operates. A similar consideration may be appropriate for police institutions due to the similarity their underlying culture (Jaramillo *et al.* 2005, Kiely & Peek 2002, Tuckey *et al.* 2012).

The state of the art made by both Gooty *et al.* (2009) and Ashkanasy and Humphrey (2011) indicates that despite the considerable collection of research there is still much to be done in order to build cumulative knowledge and systematize sound and useful theoretically models. The problems identified (and challenges posed) by Gooty *et al.* (2009) were: 1) inconsistent definitions, 2) absence of affective dimensions (a result of the inability to aggregate discrete emotions), 3) absence of a longitudinal view of emotions, and 4) disregard for the context. Ashkanasy and Humphrey (2011) add to this list the focus on multilevel research. All in all, there seems to be a consensus that this is a field rich in research value that deserves further attention.

A special focus on emotions regarding police personnel management practices is driven by recruitment and selection practices and initial training. Both domains converge in increasing the chances of building a future police force suited for the institutional purpose. The remainder of the literature review will cover both domains, seeking to determine the state of the art, with the ultimate goal of analyzing the centrality of emotions and psychological-related issues in this context.

Section 2.2 - Recruitment and selection in Police organizations

In 1973 certain police forces in the United States started to adopt the recommendation made by the National Advisory Commission on Criminal Justice Standards and Goals

about the formal police selection process. The recommendation was to include a written test of mental ability or aptitude, an oral interview, a psychological examination, and a background investigation. The goal was clear: "introducing greater screening and standardization to the selection process would result in a more qualified police force" (Cochrane *et al.* 2003, p. 513).

The police recruitment process has the long standing purpose of providing law enforcement agencies with the best practices to attract and select well-qualified applicants for employment as police officers (TCOLE, 1977), especially in light of the importance of their role in dealing with global security challenges (Kilcullen, 2005). The need for a high standard in selection (Burbeck & Furnham 1985, Hogarty & Bromley 1996) makes it a very costly and time-consuming process (Decker & Huckabee, 1999), which due to its complexity and lack of a clear job description has difficulties in attracting candidates (Orrik, 2008).

Literature review reveals two strategies for attracting and selecting the most suitable candidates. The first assumes social representativeness as a requirement to provide a group of well-qualified applicants. By means of "outreach recruitment" (TCOLE, 1977) the police institution effectively observes the civil rights acts and deploys an equal opportunity policy. The second strategy targets an elite of highly qualified applicants who are expected to differ considerably from the social strata norms which represent police clientele (Stinchcombe, 1981). Four methods of recruitment are commonly used: word-of-mouth, nepotism, walk-in applications and job advertisement (TCOLE, 1977). Stinchcombe also highlights the importance of employer reputation for recruitment purposes, a factor that has been gaining momentum (G. Martin, Beaumont, Doig, & Pate, 2005).

Five decades have elapsed since Chenoweth (1961) made a seminal attempt to systematically analyze police psychological selection procedures, lamenting that the basic foundations of police selection in use in 1829 still prevailed. These foundations seem to remain in use today to describe the ideal police officer (Decker & Huckabee, 1999).

Two decades ago Pynes and Bernardin (1988) concluded that police officer selection research was not yet a strong subject in Academia. Perez and Shtull (2002) affirm that the procedures of police selection have only recently been the subject of analysis and

discussion. Currently, it is a worldwide research subject (e.g. Chan 2006, Weitzer & Hasisi 2008) and an intensely debated topic (Dantzker, 2011) that is far from having reached a consensual level of consistency, as noticeable by Detrick's (2012) and Dantzker's (2012) ongoing discussion. On the basis of the theory-practice bridging process of scientific knowledge development (Van de Ven & Johnson, 2006) and within the realm of selection research, five issues should be covered to fully analyze this research area (Salgado, Viswesvaran, & Ones, 2001): prevalence of use, measurement and construct validity, criterion-related validity, incremental validity issues, and group differences. The subsequent review addresses these issues.

A survey to all State police departments and to the departments in the 50 largest US cities conducted by Ash *et al.* (1990) covering selection procedures showed a widely shared core of police selection tests and procedures. These were: cognitive screening, MMPI, medical exams, background check, agility and physical strength tests, situational tests, polygraph, and psychiatric examinations. A comparative analysis on the preceding four decades showed a sharp increase in the use of personality and psychiatric tests as well as situational and assessment centers (cf. Hogarty & Bromley 1996) with the corresponding decrease of cognitive, aptitude, and ability tests. Authors converge with previous findings of Yuille (1986) that the growing employment of psychologists and psychological techniques co-occurs with the degree of professionalization of police personnel selection.

Ho (1999) concluded that several police departments have employed a variety of psychometric and behavioral measures to select officers. The process is not unique, but generally includes some common techniques such as written test, psychological test, oral interview, agility test, medical examination, and background check. Additionally, Weighted Application Blanks (WABs) or Biographical Information Blanks (BIBs) are also used in police recruitment and selection (Browne *et al.* 2005).

A U.S. national survey on psychological testing for police officer selection conducted by Cochrane *et al.* (2003) found a positive trend in the use of psychological assessment procedures amongst the majority of police agencies with a stratified random sample representative of the U.S. municipal police agencies. The authors conclude that although psychological evaluation guidelines (e.g. APA standards) are not yet observed by all police agencies, most use a comprehensive and advanced set of selection instruments.

Regarding measurement and construct validity, in 1992 Arvey *et al.* presented a construct validation approach by means of confirmatory factor analysis to find that the physical ability test events were based on two latent variables, namely strength and endurance, taken as proxies of the job performance of police officers. Although incipient, this shows an underlying construct in use to rate applicants. However, Lonsway (2003), focusing on gender differences, found evidence that physical ability tests may have validity problems due to the lack of consensus on the requirements for policing as well as underlying theoretical problems.

It is noteworthy to cite Landon and Arvey's (2007) review on construct validity in personnel selection, which clearly states that this field needs further development due to its complexity and due to the lack of literature. Also, the authors consider that there is a stigma about construct validation in personnel selection, which helps to explain the considerable scarcity of literature on this subject regarding police selection.

Concerning criterion-related validity, a research report by Koper *et al.* (2001) to the U.S. National Institute of Justice suggests a proxy of police officer selection effectiveness judged by the rate of hired applicants who went through all the training until being judge ready for field work.

Weiss *et al.* (2000) approached the validity of several scales used in police selection, discussing their ability to predict the expected behavior. Later, Weiss *et al.* (2003) detailed the MMPI-2 L scale as a tool in police selection.

Personality tests in police selection are addressed by Barrett *et al.* (2003), who point out that conscientiousness scales should not be considered to be reliable evidence for police selection. In 2003 Salgado *et al.* presented a work about the criterion validity of general mental ability (GMA) and specific cognitive ability tests for predicting job performance ratings and training success. In their work, they point out that cognitive ability tests are in general more widely used in selection processes in the countries of the European Union than in the United States.

Sellbom *et al.* (2007) examined the validity of scores on pre-hire administration of the MMPI-2 RC and Substance Abuse scales in predicting behavioral misconduct in police officers. They conclude that MMPI-2 may validly predict behaviors and attitudes in police candidates and the RC scale has the highest predictor power of police officer misconduct.

Caillouet *et al.* (2010) studied the predictive validity of the PSY-5 for predicting police officer candidate outcomes along with the MMPI-2 scales. They concluded that the consequences for most existing MMPI-2 scales in the selection process were small "because of the fact that few of those undergoing testing are likely to exhibit the types of severe psychopathology that the commonly used scales were designed to detect" (Caillouet et al., 2010). They also concluded that PSY-5 does not represent an evidently substantial advance for predicting police officer performance.

Tarescavage *et al.* (2014) examined the predictive validity of MMPI-2- Restructured Form (MMPI-2-RF) which, overall and taking into account the limitations described, is sustained for police selection. Detrick and Chibnall (2014) also stress the positive response distortion in police selection with the MMPI-2-RF, leading us to consider that additional investigation is needed about its validity.

Regarding incremental validity, following a controversy on the impact of intelligence tests on police candidates, personality tests were pointed out by Bartol (1996) as a common alternative.

Chibnall and Detrick (2003) tested the ability of the NEO PI-R to explain police officer performance over and above the MMPI-2 and IPI and found that it is worthwhile to include it in such an assessment. Likewise, Sellbom *et al.* (2007) found that the MMPI-2 and RC scale maintain behavioral and attitudinal prediction power over and above clinical scales.

The incremental validity of the assessment center method against cognitive ability tests was also studied by Krause *et al.* (2006). Their results indicate that assessment center ratings provide a distinctive impact on the prediction of training performance beyond cognitive ability tests.

More recently Lievens and Patterson (2011) found that high-fidelity simulations (assessment centers), low-fidelity simulations (situational judgment tests), and knowledge tests are all valid predictors of job performance. Moreover, the incremental validity was higher for assessment centers, followed by situational judgment tests, and knowledge tests, in this order.

Finally, concerning group differences, the outreach recruitment for group diversity and equal opportunity act (TCOLE, 1977) intrinsically acknowledges the need to consider all the groups in the community in the selection process. However, it omits how this

translates in terms of tests norms. The minority group selection issue was under observation (Jain, 1987) and still is (Kong 2008, Gray 2011).

Analyzing police selection procedures, Perez and Shtull (2002) found negative issues linked with prejudice and bias. In the same way, Ben-Porat *et al.* (2012) concluded that in order to better deal with communities, police forces must improve their ability to hire with diversity and overcome their own favoritisms and preconceptions. Also, Waters *et al.* (2007) discuss the best strategy to attract candidates from local ethnic minority communities and present two key-ideas: that recruitment strategy should consider involving families and the minority applicants, and their distinct levels of skill and human capital in the selection procedures. All these authors assume the intrinsic added value of a diversity policy in action. However, an empirical study conducted in the UK found indications that diversity policies in such a context may be counterproductive (Cashmore, 2002).

Diversity management in police institutions seems still to be an understudied subject in which a lack of comprehensive studies covering recruitment, promotion, and retention is seen (Ewijk, 2011). This implies that there remains a large range of research opportunities in this field, especially regarding the technical issues underlying police selection and minorities. An example of such studies can be found in Meijer *et al.* (2008), who pointed out that to achieve a varied ethnic work environment it is important to use both cognitive ability and non-cognitive ability tests in the police selection process. Both tests should be used because cognitive ability tests have greater predictive-validity for ethnic minorities compared with the majority group while non-cognitive ability tests do the opposite.

Overall, and according to the literature, one may conclude that most police organizations use several recruitment and selection tools and processes to find the best candidate for the job. Weiss *et al.* (2013) affirm that these methods are performed to reject applicants who reveal, "psychopathology or problematic personality characteristics that could interfere with their performance as a law enforcement officer" (2013, p. 123).

Despite the advancements, Beckman *et al.* (2003) concluded that more can be done in the police recruitment, and that the selection research topic remains valid, especially regarding the European police forces.

Section 2.3 - Initial training in Police organizations

The behavioral outcomes that police training should attain is today quite different from those in which training was semi-military and strict-discipline based (Foley, 2014). For instance, Gravelle and Rogers (2011) emphasize the unarmed, courteous, patient, and restrained when confronted behavioral guidelines that policing by consent implied. McDermott and Hulse (2012) observe that providing an initial training course for police is the common solution among Police organizations in seeking to provide technical and interpersonal skills from the basis of all police work.

According with Mather (2012) the British case may provide an noteworthy illustration for how police training practices have evolved over time. Starting in the 1930s as an *ad hoc* practice, focused on Law, and devoid of a common national framework, training became a subject of mutual adjustment between police forces, until the Oaksey report triggered a national training strategy which lasted until the early 1970s and offered a common eclectic training program. This was followed by a renewal of training goals, by including public relations. This decision gained greater centrality after the Brixton riots report and later decisions about continuous education. This ultimately translated into training to uphold the policing-by-consent approach, which requires greater interpersonal skills in dealing with the public and especially with diverse communities. More recently, with the institution of the Initial Police Learning and Development Program (IPLDP), and despite the effort to standard training, Mather (2012) identifies some disparity in its implementation. This is especially critical because more so than cognitive development, attitudinal change consolidation is critical for police work. Considering that pre-academy attitudes may play a role in predicting police behavior over and above formal training, and also that it is the informal police culture and field experience that prevails over both (Haarr, 2001), such attitudinal change becomes vital.

Along with the development of policing ethos, training faces major challenges such as greater accountability and professionalism, adopting new technologies, and a relentless change in police culture (Foley, 2014). Chappell (2008) found equivalent training effectiveness for traditional police curriculum compared with community policing based curriculum, although a moderation effect was found for level of education and gender.

Mather (2012) conducted a study seeking to analyze effectiveness of initial training toward the acquisition of the right attitudes and behaviors amongst new police recruits. From this study, it is worth noting that syllabi were perceived as being overly focused on the criminal law with a lessened but needed attention to equipment, the role of police in the society, and problem solving. The traditional focus on technical and task related training endures as the dominant subject areas overshadowing soft skills, which are critical for community policing (Chappell 2008). Additionally, the format of training delivery, mostly based on didactic/instruction methods, is doubtfully trainee-centered, and hinders a developmental approach (Foley, 2014).

The literature is rich in discussions of training evolution, methods, and implications for police practice. Notwithstanding, there is little on issues concerning emotional training in a profession that has been labelled as the most suppressive of emotional display (Denkers, 1986).

It is known that policemen with greater emotional stability and positive affect experience fewer negative psychological outcomes (Bar-On, Brown, Kirkcaldy, & Thome, 2000) and that law enforcement agencies seek to filter out applicants with emotional instability (Marzella, 2000). Emotions are even more central when the institutional culture sees emotional display as a weakness countering the police identity and valued behavior (Tuckey et al., 2012). Moreover, the acknowledged inability of personality and other non-clinical psychological evaluation methods to determine a candidate's emotional stability (Oliver, 2014) makes somewhat surprising the lack of research specifically targeting emotion-related issues in police recruitment, selection, and training. The ultimate goal of this study is to help fill that gap.

Section 2.4 - Method

Section 2.4.1 - Sample and procedure

According to Bayley (1999), comparative international studies are essential to understand the characteristics of police forces, but still more than a decade has elapsed since that and the call for comparative studies, and it has yet to be answered (Ewijk, 2011). In light of our literature review, we opted to target European police forces

through the European Police College – CEPOL (https://www.cepol.europa.eu/), which comprises the 28 European Union member CEPOL national contact points. The study covered both official and officer careers. All police force representatives were invited to answer an online survey hosted in Qualtrics, or to readdress the invitation to the appropriate contact person.

The required institutional guarantees that all responses would be anonymous, and that no country or police force would be identified were given. A preview of the sections of the survey was also provided in order to allow the informed consent. A name, affiliation, and institutional email address were provided to enable prospective participants to assure the legitimacy of the inquiry.

From these invitation we received 15 answers of which 14 are partially usable (due to missing data) but only 9 are fully usable for police official items and 10 for police officer items, thus corresponding to an initial response rate of 54% that turned into 36% to 32% valid response rate range, which matches the usual figures (35.7%, sd=18.8) seen in empirical studies targeting organizational representatives (Baruch & Holtom 2008, Baruch 1999).

Section 2.4.2 - Measures

The survey had four sections. The first covered characterization variables of the police forces such as legal designation and nature, which are not a subject of further analysis due to the confidentiality commitment. These data were collected to check source legitimacy and prevent double entries. The second section included questions about recruitment and selection practices for both official and officer careers. The third had questions about the initial training course, also for both careers. The survey finished with two open-ended questions about selection practices and initial course syllabi trends in the police force. Emotion-related questions were scattered throughout the four sections.

Selection practices included techniques, dimensions, and instruments and were identified by crossing Cochrane *et al.'s* (2003) and Koper *et al.'s* (2001) lists of practices, adjusted for European terminology. The resulting list comprised the following nine selection techniques: written aptitude testing, personal interview, physical agility

test, polygraph exam, voice stress analyzer, psychological evaluation, drug testing, medical exam, and background check. Respondents were requested to freely select which among these were in use in their respective police forces posteriorly coded as a "yes" or "no" variable.

To theoretically consolidate the selection dimensions we followed the competence architectural model (Roe 2002, Bartram & Roe 2008, Roe 2014) comprising personality, intelligence, knowledge, skills, and attitudes to which we added motivation as used by Cochrane *et al.* (2003) as well as the instruments that measure these constructs. These instruments comprised commonly used tools such as MMPI-2, 16PF, Situational and Clinical interview scripts as well as Group dynamics scripts or Rorschach / Inkblot. Respondents were requested to freely select which among these were in use in their respective police forces posteriorly coded as a "yes" or "no" variable.

The third section of the questionnaire targeted the extension of emotion-related training provided to officers and officials. In order to avoid framing answers, instead of a direct question about training in emotions, we opted to ask for training in Psychology, which would unavoidably cover emotion-related topics. Beforehand, the respondents were requested to answer if there was any course or module in Psychology included in initial police training. Whenever positive, they were asked to indicate how many teaching hours and which syllabi contents were in use.

The last section comprised two open ended questions covering future organizational trends in recruitment and selection processes and in initial police training.

Section 2.4.3 - Data analysis

The data analysis strategy was a twofold procedure that adhered to the exploratory nature of the study via a data mining approach (Hand, Manilla, & Smith, 2001). We conducted a Multiple Correspondence Analysis (MCA) in order to identify topographic spaces and characteristic associations between the variables, namely the selection practices (Greenacre & Blazius, 2006). To complement the MCA (Lebart, Morineau, & Piron, 2006) we conducted a hierarchical cluster analysis to search for patterns, with the aim of identifying a possible typology of these selection practices. Due to the nature of

data we opted to use Ward as a linkage method and Euclidean distances for binary variables (dummy coded for 1=yes and 2=no).

The same procedure was applied with specific psychology-related syllabi (in the cases where there is at least one module in Psychology taught) and finally, text transcripts from open answered questions concerning future trends in police selection and training in Europe were content analyzed and resulting data treated with a final MCA.

Section 2.5 - Results

Findings are reported separately for officials and officers. Likewise, selection techniques are reported separately from initial training features with the exception of "future trends", where they are treated jointly due to the organizational level of the focus.

Section 2.5.1 - Selection techniques

Having been requested to report the use of several techniques for descriptive purposes, respondents showed that for officials (Table 3) four techniques are always in use: personal interview, psychological evaluation, medical exam, and physical agility tests. Other techniques tend to be used by the majority (77.8%) of selection services, namely written aptitude testing and background check. About one third of selection services test for drug use and all services reported *not* using polygraph and voice stress analyzer.

Techniques	Valid Percent
Medical exam	100.0
Personal interview	100.0
Physical agility test	100.0
Psychological evaluation	100.0
Background check	77.8
Written aptitude testing	77.8
Drug testing	33.3
Polygraph exam	0.0
Voice stress analyzer	0.0

Table 3 – Officials selection techniques in use

Dimension	Cronbach's Alpha	Variance Accounted For		
		Total (Eigenvalue)	Inertia	% of Variance
1	.774	3.300	.330	32.996
2	.611	2.222	.222	22.222
Total		5.522	.552	
Mean	.709[a]	2.761	.276	27.609

Table 4 – Model Summary

	Dimension		Mean
	1	2	
O - Personality	.732	.031	.381
O - Intelligence	.434	.107	.271
O - Attitude	.327	.131	.229
O - Specific skills	.502	.053	.278
O - Knowledge	.009	.058	.034
O - MMPI-2	.192	.371	.282
O - Clinical Interview	.130	.608	.369
O - Rorschach / Inkblot	.180	.496	.338
O - Group dynamics	.732	.031	.381
O - Situational interview	.062	.337	.199
Active Total	3.300	2.222	2.761
% of Variance	32.996	22.222	27.609

Table 5 – Discrimination Measures

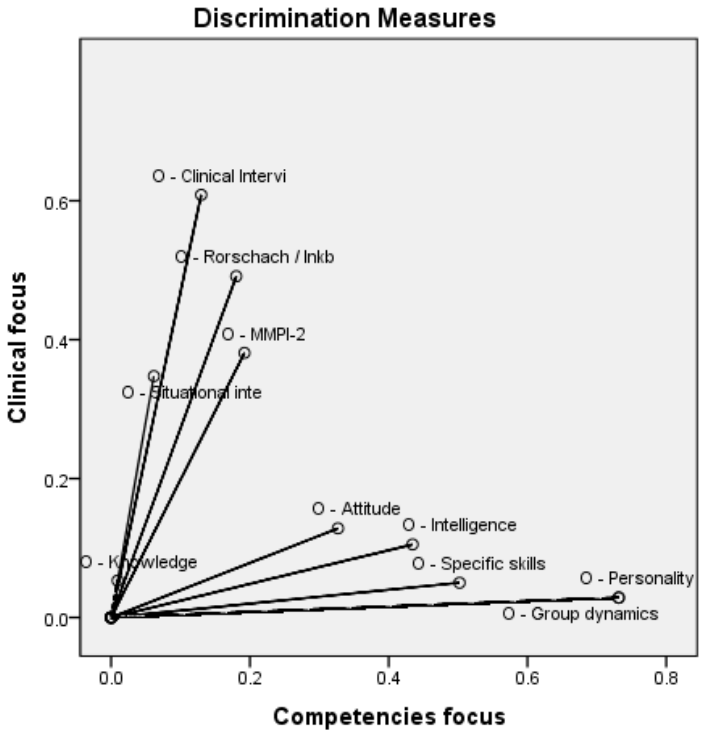
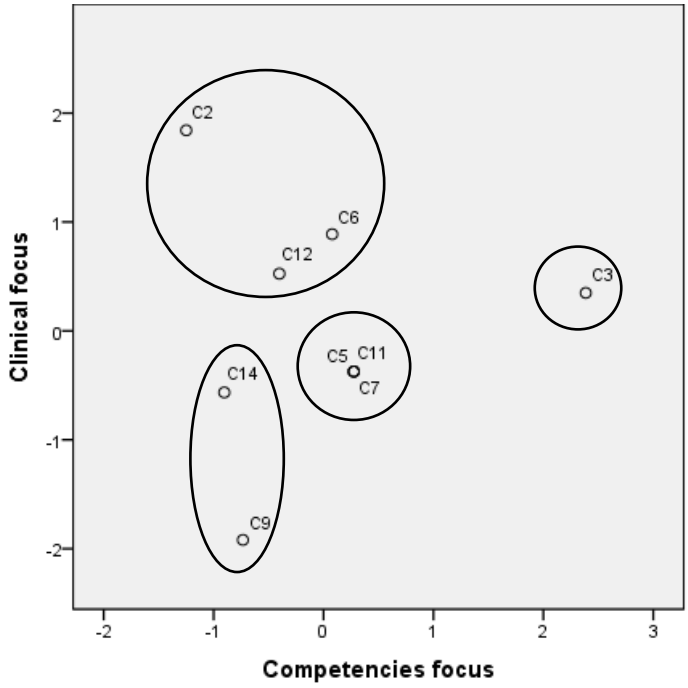


Figure 1 – Dimensions

The MCA indicates a two-dimensional solution (Tables 4 and 5) that, despite a modest explained variance (27.6%), incorporates two key theoretical dimensions in the options and selection policies (Figure 1) and shows a good average level of reliability (Cronbach´s alpha=0.71): a competencies focused dimension (with a good Cronbach's alpha=0.77) and a clinical focused dimension (with a modest Cronbach's alpha=0.61). Note that although the conventional cut off value for Cronbach's alpha is 0.70, taking into consideration Schmitt's (1996) assertions and the small sample in this study (which was pointed out as a critical issue in calculating Cronbach's alpha), we have opted to lower the cut off down to 0.60 within the range of valid levels, in line with Robinson *et al.'s* (1991) and Hair *et al.'s* (1998) recommendations for exploratory studies.

Joining the MCA results with the hierarchical cluster analysis we obtain the following mapping (object points labelled by number of identification, for anonymity sake):



Variable Principal Normalization.

Figure 2 – Cluster Mapping

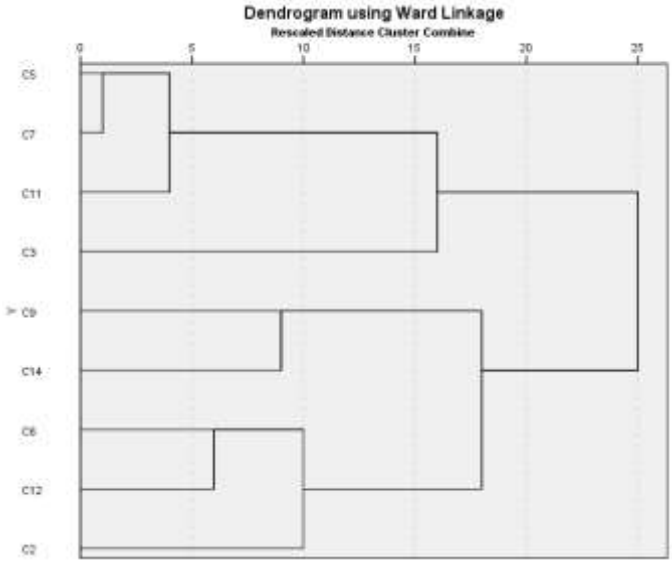


Figure 3 – Cluster Dendrogram

Regarding officials (Table 6), three European countries fall into the first cluster characterized by a focus on evaluating personality and motivation, using clinical instruments such as the clinical interview, the personal history questionnaire, or Rorschach. The second cluster, with two countries, shares the clinical focus but uses MMPI as the favored instrument for clinical personality assessment, under a more

comprehensive framework taking into consideration personality, intelligence, and motivation, as well as using a situational interview. The third cluster is a single country case showing a full KSA focus counting (also) on group dynamics and no clinical assessment. The fourth cluster is composed of three countries and expresses the most comprehensive competency-focused approach, covering both KSA and APOs.

	Clusters (Ward)				**Total**
	Cluster 1 APOs & Clinical focus N= 3	**Cluster 2 APOs N= 2**	**Cluster 3 Competencies focused N= 1**	**Cluster 4 Comprehensive evaluation N= 3**	
Personality	100.0%	100.0%	0.0%	100.0%	88.9%
Intelligence	66.7%	100.0%	0.0%	100.0%	77.8%
Motivation	100.0%	100.0%	100.0%	100.0%	100.0%
Attitude	66.7%	50.0%	100.0%	100.0%	77.8%
Specific skills	0.0%	0.0%	100.0%	100.0%	44.4%
Knowledge	33.3%	50.0%	0.0%	66.7%	44.4%
MMPI-2	0.0%	100.0%	0.0%	0.0%	22.2%
Personal History Questionnaire	66.7%	0.0%	0.0%	66.7%	44.4%
Clinical Interview	100.0%	0.0%	0.0%	0.0%	33.3%
16 PF	0.0%	0.0%	0.0%	0.0%	0.0%
California Psy Inventory	0.0%	0.0%	0.0%	0.0%	0.0%
Eysenck Personality Questionnaire	0.0%	0.0%	0.0%	0.0%	0.0%
Inwald Pers Inventory	0.0%	0.0%	0.0%	0.0%	0.0%
Hilson Safety/Security Risk Inventory	0.0%	0.0%	0.0%	0.0%	0.0%
Mental Status Exam	0.0%	0.0%	0.0%	0.0%	0.0%
Rorschach / Inkblot	33.3%	0.0%	0.0%	0.0%	11.1%
Group dynamics	0.0%	0.0%	100.0%	0.0%	11.1%
Situational interview	0.0%	50.0%	0.0%	0.0%	11.1%

Table 6 – Official psychological instruments

As for officers, having been requested to report the use of several techniques for descriptive purposes, respondents showed that all selection services use personal interview (Table 7). Most selection services test for physical agility (90%), psychological evaluation (80%), written aptitude (60%), and medical exam (60%). Half

of the services conduct a background check of candidates and about 20% test for drug use. All selection services reported not using polygraph or voice stress analyzer.

Techniques	Valid Percent
Personal interview	100.0
Physical agility test	90.0
Psychological evaluation	80.0
Written aptitude testing	60.0
Medical exam	60.0
Background check	50.0
Drug testing	20.0
Polygraph exam	0.0
Voice stress analyzer	0.0

Table 7 – Officers' selection techniques

The MCA indicated (Tables 8 and 9) a two-dimensional solution that also has a limited explanatory power (29.5%) but incorporates two theoretical dimensions that have face validity and a good average reliability (Cronbach's alpha=0.76): a competencies focused dimension (Cronbach's alpha=0.79), and a cognitive focused dimension (Cronbach's alpha=0.71).

Dimension	Cronbach's Alpha	Variance Accounted For		
		Total (Eigenvalue)	Inertia	% of Variance
1	.797	3.635	.330	33.046
2	.717	2.871	.261	26.098
Total		6.506	.591	
Mean	.762[a]	3.253	.296	29.572
a. Mean Cronbach's Alpha is based on the mean Eigenvalue.				

Table 8 – Model Summary

	Dimension		Mean
	1	2	
o - Intelligence	.917	.023	.470
o - Attitude	.069	.325	.197
o - Specific skills	.287	.327	.307
o - Clinical Interview	.151	.071	.111
o - Group dynamics	.917	.023	.470
o - Situational interview	.021	.210	.116
o - Rorschach / Inkblot	.011	.171	.091
o - Personal History Questionnaire	.204	.492	.348
o - Personality	.917	.023	.470
o - MMPI-2	.124	.356	.240
o - Knowledge	.018	.846	.432
Active Total	3.635	2.871	3.253
% of Variance	33.046	26.098	29.572

Table 9 – Discrimination Measures

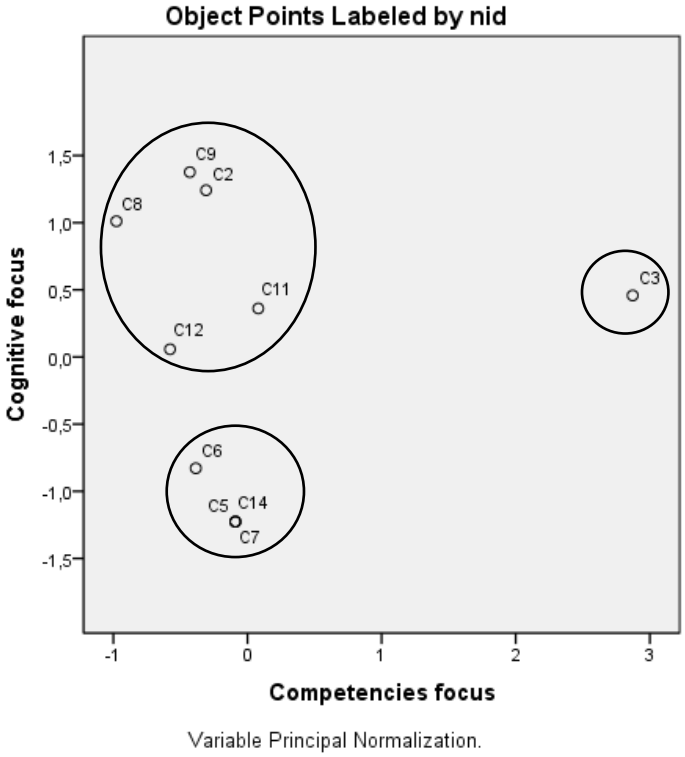


Figure 4 – Cluster Mapping

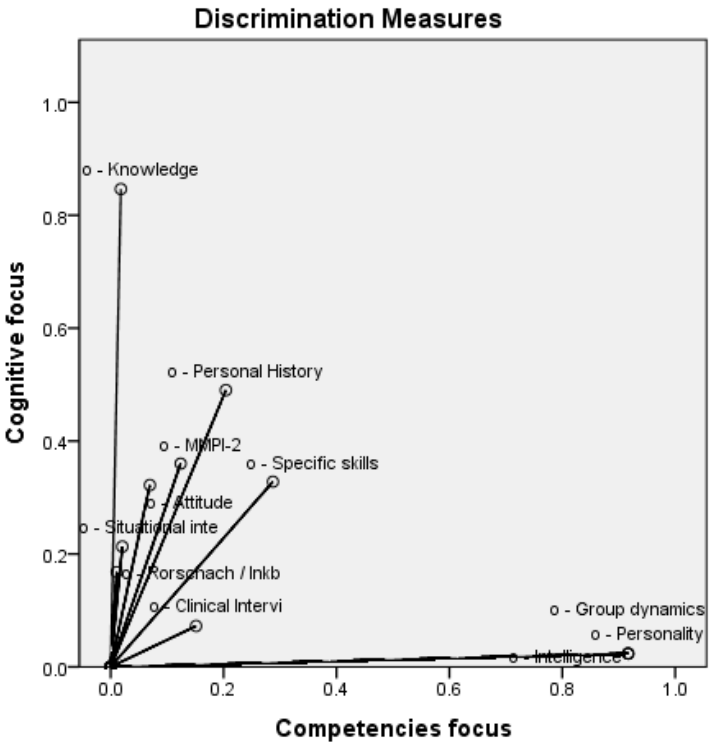


Figure 5 – Dimensions

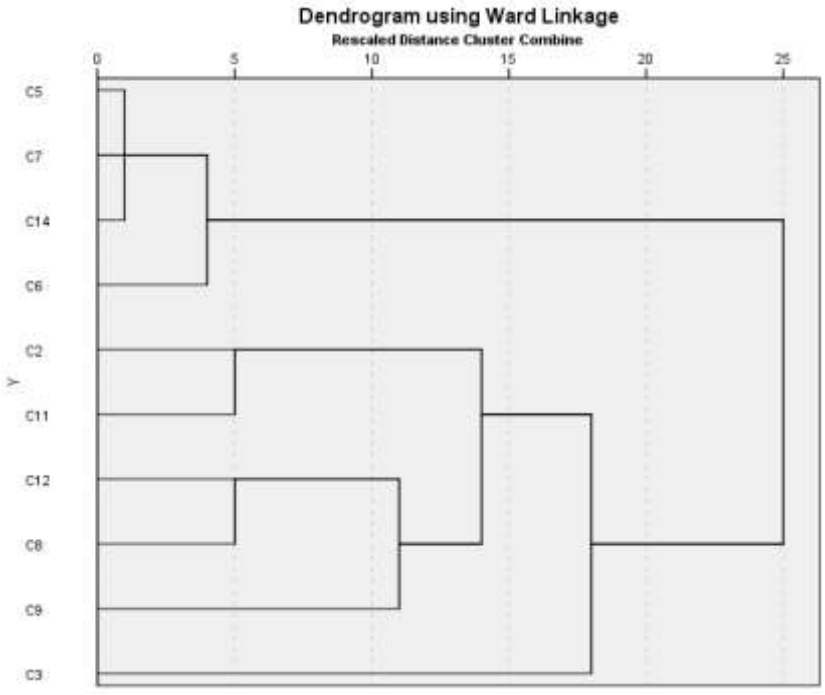


Figure 6 – Cluster Dendrogram

The first cluster is composed of four countries that have a more comprehensive coverage of KSAs and APOs. The second cluster is composed of five countries in which officer candidates are assessed with a focus on APOs and motivation without any focus on knowledge assessment, while a minority of the countries consider clinical issues. The third cluster is composed of a single country characterized by a focus on skills, attitudes, motivation, and using group dynamics (Table 10).

	Clusters (Ward)			**Total**
	Cluster 1 Comprehensive evaluation N= 4	**Cluster 2 APO N= 5**	**Cluster 3 Competencies focused N= 1**	
Personality	100.0%	100.0%	0.0%	90.0%
Intelligence	100.0%	100.0%	0.0%	90.0%
Motivation	100.0%	100.0%	100.0%	100.0%
Attitude	100.0%	40.0%	100.0%	70.0%
Specific skills	75.0%	20.0%	100.0%	50.0%
Knowledge	100.0%	0.0%	0.0%	40.0%
MMPI-2	0.0%	40.0%	0.0%	20.0%
Personal History Questionnaire	100.0%	40.0%	0.0%	60.0%
Clinical Interview	0.0%	40.0%	0.0%	20.0%
16 PF	0.0%	0.0%	0.0%	0.0%
California Psy Inventory	0.0%	0.0%	0.0%	0.0%
Eysenck Pers Questionnaire	0.0%	0.0%	0.0%	0.0%
Inwald Pers Inventory	0.0%	0.0%	0.0%	0.0%
Hilson Safety/Security Risk Inventory	0.0%	0.0%	0.0%	0.0%
Mental Status Exam	0.0%	0.0%	0.0%	0.0%
Rorschach / Inkblot	0.0%	20.0%	0.0%	10.0%
Group dynamics	0.0%	0.0%	100.0%	10.0%
Situational interview	0.0%	20.0%	0.0%	10.0%

Table 10 – Officers' psychological instruments

Section 2.5.2 - Extent of Psychology training

Crossing officials' selection clusters with the extent of Psychology in initial courses (Table 11) reveals no discernible pattern of association between clinical focus or

competencies focus and exposure to psychology subject matter in initial training for officials.

		Clusters				Total
		Cluster 1 APOs & Clinical focus N= 3	Cluster 2 APOs N= 2	Cluster 3 Competencies focused N= 1	Cluster 4 Comprehensive evaluation N= 3	
Extent of Psychology training in Officials' initial course	Yes, a course	66.7%	100.0%	100.0%	33.3%	66,7%
	Yes, a module	33.3%			33.3%	22,2%
	No, nothing				33.3%	11,1%
Total		100,0%	100.0%	100.0%	100.0%	100.0%

Table 11 – Extent of Psychology training in Officials' initial course

A required complementary analysis for a full comprehension of psychology training in use in European police concerns the number of hours in all cases in which at least one module in Psychology has been reported (Table 12). Cluster 3 is suppressed, as it is a single case.

Officials' psychology training contact hours per cluster	Mean (h)	Std. Error
Cluster 1 - APOs & Clinical focus	33.33	6.7
Cluster 2 - APOs	116.00	92.0
Cluster 4 - Comprehensive evaluation	94.50	85.5

Table 12 – Number of hours of officials' psychology training

Individual cases analysis (not shown due to anonymity restriction) indicates that contact hours with Psychology varies considerably, ranging from 9 to 208 hours, with clusters showing variable levels of heterogeneity (Cluster 1=33h/se=6.7 while Cluster 4=94.5h/se=85.5). This strengthens the belief that clusters are not sufficiently homogeneous to suggest any noticeable pattern.

Crossing officer selection clusters with the extent of Psychology in initial training (Table 13) shows no discernible pattern of association between cognitive focus or competencies focus and exposure to psychology subject matter in initial training for officers.

		Clusters			Total
		Cluster 1 Comprehensive evaluation N= 4	Cluster 2 APO N= 5	Cluster 3 Competencies focused N= 1	
Extent of Psychology taught in Officers' initial course	Yes, a course	75.0%	80.0%		70,0%
	Yes, a module		20.0%		10,0%
	No, nothing	25.0%		100.0%	20,0%
Total		100,0%	100.0%	100.0%	100.0%

Table 13 – Extent of Psychology training in Officers' initial course

The complementary analysis applied earlier shows (Table 14) that for officer's contact hours with Psychology varies considerably, ranging from 6 to 52 hours, with clusters showing variable levels of heterogeneity (Cluster 1=13h/se=5.6 while Cluster 4=36.8h/se=6.4). This again strengthens the belief that clusters are not sufficiently homogeneous to suggest any sort of pattern.

Officers' psychology training contact hours per cluster	Mean (h)	Std. Error
Cluster 1 - Comprehensive evaluation	13.00	5.6
Cluster 2 - APO	36.80	6.4

Table 14 – Number of hours of officers' psychology training

Section 2.5.3 - Future trends

Counting on respondents' expertise in recruitment and selection and on official and officer training, we asked about future trends and found the following (Tables 15 and 16):

Category	Stated selection trends
Technical-scientific foundation	"We have started to create competency profiles for several positions"
Selection criteria	"Likely to be more emphasis on written communication skills such as statement writing"
	"Enhance performances and competencies to select better police officers"
	"A more targeted recruitment"
Regularity of use	"Selections procedures will be used for more cases"
	"More psychological testing for specific areas"

Category	Stated selection trends
General policy	"Increase the number of women and focus on diversity"
	"The ambition is to attract more women and more people of immigrant background to apply for a police career"
Process modernization	"e-recruitment"

Table 15 – Selection trends

Statement analysis indicates five categories that organize the vocabulary employed by respondents: technical-scientific foundation, selection criteria, regularity of use, general policy, and process modernization. Statements suggest that competency profiling is seen to be at an early stage regarding technical-scientific foundation. Selection criteria and its regularity of use are seen as needed in order to raise the bar regarding both procedures and skills. Likewise, an opportunity equality concern is addressed as a future issue. Lastly, efficiency concerns translate into process modernization.

Category	Stated training trends
Training needs assessment	Check if psychological contents meets daily police work
Social focused subjects	Social competence Improvement of "human" formation Human rights
Technical subjects	Technological skills
Learning methods	Less theory and more practice (pragmatic approach) Case based learning methods with progression as a function of time More written work in the basic training More integrated cross-subject teaching performed by teams of teachers with different professional backgrounds "one shot" didactic modules focused on issues
Evaluation methods	A probationary initial training

Table 16 – Training trends

Regarding training there are five categories: training needs assessment, social focused subjects, technical subjects, learning methods, and evaluation methods. Statements suggest that respondents acknowledge room for improvement due to a mismatch between needs and offer, a still suboptimal focus on social and technical issues, and especially, unsuitable learning and evaluation methods in use.

Overall, the trends (in selection and training) analyzed with MCA, show a two-dimensional space in which selection trends prevail in discriminating between the axes (Tables 17, 18 and Figure 7). Both axes explain on average 28% of variance with acceptable Cronbach's alphas.

Dimension	Cronbach's Alpha	Variance Accounted For	
		Total (Eigenvalue)	Inertia
1	.730	2.912	.291
2	.662	2.476	.248
Total		5.387	.539
Mean	.699[a]	2.694	.269

a. Mean Cronbach's Alpha is based on the mean Eigenvalue.

Table 17 – Model summary

	Dimension		Mean
	1 Routine use	2 Policy fulfilment	
Needs assessment	.487	.095	.291
Social focused	.286	.173	.230
Technical subject	.371	.181	.276
Learning methods	.256	.188	.222
Evaluation methods	.013	.174	.093
Tech. subj. foundation	.023	.117	.070
Selection criteria	.524	.487	.505
Regular use	.909	.187	.548
General policy	.024	.838	.431
Modernization	.019	.035	.027
Active Total	2.912	2.476	2.694

Table 18 – Discrimination Measures

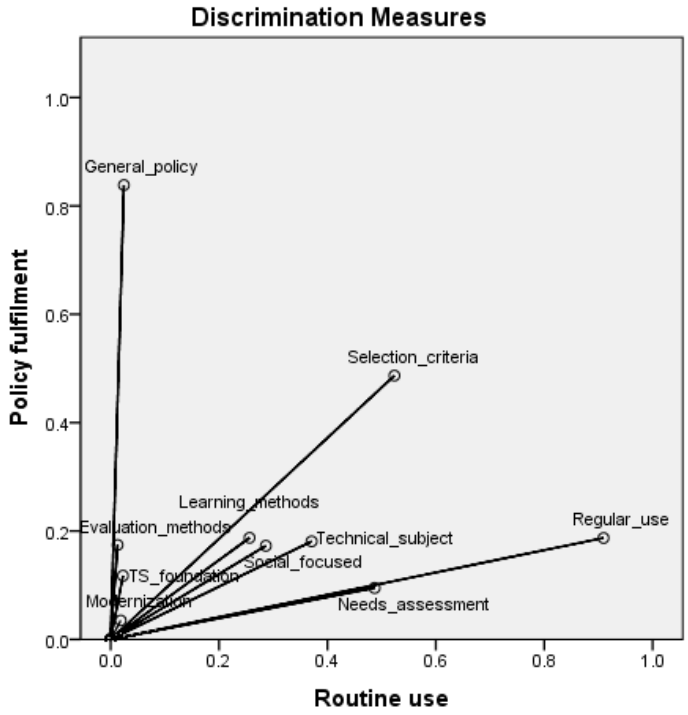


Figure 7 – Dimensions

The two axes pertain to the routine use and policy fulfilment respectively, thus indicating that future trends fall upon these issues more than on content and criteria. Taking into consideration that the broad-range issues such as the routine use of procedures and the fulfilment of overall Human Resources (HR) policy are the critical ones in estimated future trends (instead of selection criteria or training contents) we must conclude that the current situation is still one of endeavoring to set the fundamentals for critical HR areas in officials' and officers' careers.

Section 2.6 - Discussion and conclusions

It is generally accepted that the requirements of police work imply certain personal features that translate into greater person-job fit. Desirable candidates for this profession are those who are assertive and decisive, yet compassionate and empathic (Roland, Greene, Hampton, & Wihera, 2014), and represent the community they serve (Sanders et al., 1995). Most of these features seem to be linked with emotions at work, which according to Thomas (2014) is one of the topics that should be addressed in research,

adding to many topics traditionally studied such as policing strategies, organization, and evidence-based policing.

Amongst the Human Resources Management (HRM) practices, those that have received more attention from researchers focused on police matters are training and hiring (Mazeika et al., 2010). These are two of the HRM practices in which emotions play a central role, namely in selection process and specific psychological training. It is thus worthwhile to conduct research crossing emotions and these HRM practices within the context of police workforce.

Findings from this study should be interpreted while acknowledging its limitations. Although the geographical origins of respondents cover much of Europe, the small response rate prevents any generalization to all of the European police forces. Likewise, a single organizational respondent poses a threat regarding biases, and requires further triangulation to check for representativeness. Notwithstanding, the subject under examination is not prone to social desirability responses and findings largely converge.

Overcoming these limitations is a challenge *per se* considering the institutional heterogeneity and policies. However, further research on emotions in police work is much needed and may bring novelty to research techniques and methods in the field. For example, Slaski (2002) defended the heuristic value of an organizational approach to understanding organizational dynamics and promoting opportunities for new techniques and research methods.

A first conclusion concerns the differing axes that structure the official and officer dimensions in selection. Although one can find similar cluster profiles from crossing these axes, it is important to keep in mind that the axes themselves are not coincident and that the clusters do not comprise the same countries. It is also worth stressing that no methods of selection are perfect (Decker & Huckabee 1999), but one should recommend that the ideal instrument would be a test that is specifically built for police selection, rather than a test that has been adapted for use in the police environment (Lough & Von Treuer, 2013). It is also worth emphasizing that a successful recruitment campaign must use a fine-tuned mixture of components to ensure strong informational output (Wilson, Wilson, Luthar, & Bridges, 2013).

The varying number of training hours in psychology subjects (a 1:23 difference in officials' training and 1:9 in officers') is adding to the belief that practices taken together do not reveal a trend toward a common policy (Winterton, 2009).

All in all, a pattern between selection dimensions and psychology subjects in initial courses could indicate a strategic alignment between selection and training regarding psychological focus. No such pattern is discernible from findings in this study for either official or officer careers. We may therefore state that such a phenomenon might be an organizational-wide product and not simply a professional group feature. If this is true, the source of such invariance might reside in institutional culture assumptions or simply that there is not yet an explicit strategy to favor such alignment.

As for future trends in police selection and training in all categories found, there is a recurring tacit acknowledgement of a long way to go for improvement in the overall process.

Considering the literature and this study's findings, we cannot but repeat Daus and Brown's (2012) call for more research on emotion in police work. With this call it is worth remembering Denkers' (1986) *caveat* on the false belief that through selection and training one can guarantee higher police workforce quality. Structure, culture, policy, and leadership play the major roles in shaping police behavior and therefore, an organizational embedded research framework must emerge in order to tackle these issues.

Chapter 3 - Addressing emotions in criminal investigators at PSP – Theoretical framework

In this chapter, we will address the core role emotions play in criminal investigators daily work within the specific institutional context of PSP.

The emotion literature is vast on definitions and terms, some of them even overlap, failing to include basic distinctions (Gooty et al., 2009). This caused some frustration with the interchangeable usage by some authors (Ashkanasy, 2003; Oatley & Jenkins, 1992), that Cacioppo and Gardner (1999, p. 194) so well depicted: "emotion is a very short label for a broad category of experimental, behavioral, socio-developmental, and biological phenomena". This problem is extensive as Briner and Kiefer (2005) estimate that only less than 40 per cent of the research published in major organizational psychology journals show a clear definition of emotion. This might have conducted around emotions as a specific field of study (Brief & Weiss, 2002). Barsade et al. (2003) point out some advances in several domains and the need to indoctrinate the definition of emotion. Ashkanasy (2003) also considered that the study of emotions in organizations has been hindered by the nature of emotions itself.

Russell (1991) had an earlier approach to emotion from the prototypes as a heuristic for the documentation of occasions, although other parts of the theoretical depiction backed cognitive and elucidation processes (Clore & Ortony, 1991). Analyzing 5 topics - superordinate concept of emotion; basic-level emotion concepts; internal structure of the concept; evidence of unclear cases; and classical definitions for emotion terms - Russell (1991) affirms that although concepts can be shaped they are characteristically well-defined and therefore anticipates its relevance in the psychology of emotion. Additionally, this approach from prototypes allowed Wierzbicka (1992) to conceive emotions in terms of feelings, wants and thoughts, providing laborious specifications of conditions required to a small set of universal semantic primitives, demonstrating that seemingly synonyms are actually representing diverse constructs.

The circumplex model (Posner, Russell, & Peterson, 2005; Russell, 1980) offers an alternative approach by proposing a parsimonious model organized around bipolar axes (crossing arousal with pleasure) where emotions are distributed on a continuous manner but compose areas qualitatively distinct among each other, thus integrating the

continuous and discrete views on emotions. According to Haslam (1995) within the discrete segments, emotions have weak discriminability. Additionally, across adjacent segments, emotions have strong discriminability. This is not compatible with the logic integration of a sound framework.

Motivated by the lack of an integrated multi-level model of emotions Ashkanasy (2003) conducted a comprehensive review of the construct of emotion congregating five levels: biological, evolutionary, physiological, neurobiological phenomenon and cognitive appraisals. Notwithstanding the perspective one could assume, the central issue the author highlights is the recommendation to define emotions in harmony with those theories, preferably an established theoretical framework.

Recently Ekman (2005) updated his concept of basic emotions from his initial research (Ekman, 1957). Cross-cultural studies of facial expressions led to the assumption that basic can mean one of three conceptual approaches: positive, negative, or the intensity or pleasantness of emotions. Some basic emotions can be strong characterized as short emotional responses to daily events (Griffiths, 2010), which could be related to complex emotions, and linked to their interpersonal and intrapersonal functions, respectively.

Departing from the concept of emotions based in six components - appraisal of events, psycho-physiological changes, motor expressions, action tendencies, subjective experiences, and emotion regulation - Fontaine et al. (2007) identified four dimensions to interpret the meaning of emotion words: evaluation - pleasantness, potency - control, activation - arousal, and unpredictability.

Another approach to the topic relied on the similarity network and hierarchical clustering of emotion concepts (Toivonen et al., 2012) departing from the idea that emotional categories are not mutually exclusive and revising the meaning of some categories of emotions.

But emotions could also be considered relevant to organizational settings on several levels and in diverse circumstances (Hareli, Rafaeli, & Parkinson, 2008), either between individuals (Rafaeli & Worline, 2001) or within or between groups (Kelly & Barsade, 2001) and organizations (Huy, 1999).

From a societal approach, emotions are linked to and perceived by others in a social interface setting (Hareli et al., 2008), where the following basic social goals underlie emotions (Oatley, 2000): affiliation, protection, and dominance. Emotional responses

are intended to uphold these goals. Social influence is also another field of discussion in emotions, especially when used as a strategic and sometimes deceptive means (Fridlund, 1994), shaping and structuring social interactions even resorting to nonverbal communication (Hareli et al., 2008). People's perceptions and responses can be influenced by individual emotional display at work (Rafaeli & Sutton 1987) which is in line with one of Hochschild's (2003) topic within emotional labor research (e.g. how to influence co-workers in order to encourage organizational achievements). The use of surface or deep acting has also deserved attention by researchers interested in emotional expression (Grandey, 2003) alongside with the social consequences of emotion display (Côté, 2005).

Research on emotions in organizations encouraged Ashkanasy (2003) to develop an integrated and interactive five-level model of emotions: within-person, between persons, interpersonal interactions, groups, and organization-wide level. The lower level includes the affective events experienced (high / low and positive / negative affect), and the model also approach the neurophysiological processes (and the amygdala role) that trigger the experience, awareness, and communication of emotion.

After an interregnum of more than 60 years (Rafaeli, Semmer, & Tschan, 2009), organizational psychology research resumed the focus on emotional dynamics and its relevance to several dimensions in organizational settings (Brief & Weiss, 2002). Organizational research have been hampered by confined approaches to emotions (Ashkanasy & Ashton-James 2005). Emotions, affect, temperament, moods and other concepts are usually associated with feelings (N. Frijda, 2000) and all these concepts are generally related with affective states or trait affect, attitudes, cognitions, and behaviors. Nevertheless Ashkanasy and Ashton-James (2005) consider that workplace behavior is implicitly influenced by emotions which may be a common denominator.

The idea that organizational behavior followed a balanced set of rules was vastly presumed by Academia in the same manner that actions or thoughts were mostly taken as being empty of emotion leading to performance (Shipman et al., 2010). Cognitive tasks and social behavior affected by emotions are being investigated conducting to a more focused attention on the impact that emotion has on different professions and under different conditions (Isen & Labroo, 2003). Emotional intelligence, emotional regulation and emotion-related capacities are also on the research agenda, suggesting

that some skills and strategies connected to capacities can be trained or learned. This training can foster self-awareness, the understanding of other's or own emotions, and the regulation of emotional responses to some specific kind of events, thus leading to a model of emotion management under a training program (Shipman et al., 2010).

Some theories of emotion regulation were offered two decades ago (e.g. Gross & John 1998; Larsen 2000) diverging on conceptual definition as well as emotional experiences characteristics, strategies and aspects. This conceptual divergence encouraged training programs with a clear lack of theoretical foundations (Riggio & Lee, 2007). Assuming that emotion management skills and knowledge can be learned and even developed, trait affect, personality, empathy and other dispositional features could moderate or mediate the individual level of learning and growth of those skills, thus leading to different levels of emotion management amongst a specific population. External (e.g. organizational or societal) characteristics could also influence the learning of and the practice of emotions management skills, which opens a broad field for research (Shipman et al., 2010).

Still in the organizational environment, even in various levels and in numerous contexts the impact of the exposure to other's emotions was stressed out by Hareli et al. (2008), leading to responses based on their specific quality and valence. The issue addressed was the determination of the exact origin of people's replies to different emotions and what lead to different consequences. The informational meaning and the story that emotions could tell are the answers that Hareli et al. (2008) presented and that echoed Lazarus (1991) ideas when defining core relational themes.

Kirouac and Hess (1999) identified three sorts of denotations in an emotional message: 'symbolic', 'symptomatic', and 'appeal'. The symbolic concerns the semantic information focused on the observer while the symptomatic concerns the information about the individual feeling or displaying of the emotion. The appeal is linked to pragmatic information about the future actions of the perceiver. Nevertheless, interpreting emotional messages can be less simple than this classification due to the environment: the same emotional expression can have different interpretations depending on the circumstances under which they are observed or experienced. Culture, judgment perspective, and the specific type of relationship people have, are contextual factors that outline the interpretation, disavowing specific inference. But the contact to

others' emotions in an organizational environment seems to play a relevant role in defining the way such interactions unfold. The touchstone that takes emotions as something that occurs in a social interaction and as something that happens in a person's mind, opens new venues for research on emotions in organizations.

Emotions in organizational behavior recently became one of the central topics within work performance research, mainly due to its epistemological and political exploitation, leading to some impoverish understandings, where people are tagged with an emotional number (Fineman, 2004). Even accepting that what people do, think and feel in work context can be considered in many layers of emotion's criteria and definitions (Fineman, 1996; Forgas, 2000), this path could negatively influence human resources management strategies. Different intonations of voice and facial expressions can be correlated to same emotions, or not (Sturdy, 2003), leading to describing with more or less difficulty what one's emotions are, whereas others attempt to estimate what one should feel and express (Mangham, 1998), especially when one disregards that the painful emotions are defensively hidden and thus out of awareness (Gabriel, 1999).

Emotions are nor a unitary academic topic neither the sole domain of sciences. Music, ballet, poetry and painting are long term explorations areas of emotions fading out their centrality on the human matters, regardless of whether some are measurable (Fineman, 2004). Besides their many possible representations, measurement led to some sort of privilege of one form of emotion knowledge (e.g. statistics) in detriment of others (Sturdy, 2003).

The psychometric method induces emotion research into a specific format that is suitable and politically defensible for the positivist research strategies, excluding or putting into the background alternative methods. One can feel dominated by an emotion, but more often they are diverse, uncertain, short-lived or dull (Pratt & Doucet, 2000), providing simples scales with low methodological relevance and results lacking scientific robustness (Csikszentmihalyi, 2002).

The social construction of emotions was addressed by Frewin et al. (2006), assuming its evolution from old-style theories of emotions as tangible psychological objects (Gergen, 1995) to a comprehension of emotions as personified processes established through a social context (Armon-Jones, 1986). Social constructionists recognize emotions are produced through discourse that is structured and identified in the daily social

phenomena, rather than some kind of expression of affective experience ''inside'' each one. Individual emotion is not something intrinsic to each person, apart from the interpersonal manifestations and cultures (Parkinson, 1995). Armon-Jones (1986) suggested that emotions have a social purpose in supporting and confirming the moral order. All in all, as Walton et al. (2003) stands for, emotions are conversational constructions established through cultural practices, with social functions, that are distinguishable in conversations.

Hall et al. (2010) present the association between stress and police work, demonstrated by the several psychological and physiological problems amongst police officers: marital problems, drug and alcohol abuse, burnout, suicide, stomach and heart problems. Bakker et al. (2008) analyzed the effects of police job demands and emotional exhaustion, concluding that they can be persistent, negatively affecting personal lives and family, sometimes inducing work–family conflict (Anshel, 2000). Frontline police officers from the state of Victoria, Australia, provided Hall et al. (2010) information about emotional exhaustion, taking a two times self-reported Maslach Burnout Inventory (Maslach, Jackson, & Leiter, 1996). Results led to a comprehensive process whereby job demands simultaneously lead to emotional exhaustion and work–family conflict in police officers, indicating reciprocal directions between both issues.

To Daus and Brown (2012) police is a stressful profession. On a daily basis police officers are both confronted with emotionally draining events, and with controlling negative emotions while struggling to perform their jobs effectively. The emotional labor of this profession is another topic under investigation, e.g., to understand the role emotional expression and suppression plays on the job. The daily confrontation with emotionally charged and/or confrontational episodes with different victims and criminals can drive to occupational burnout (Bakker & Heuven, 2006). These different issues around police emotions at work led Daus and Brown (2012) state that police work, normally, is very emotionally arduous. Considering what Toch (2002) stated about the nature or the operational factors of work as sources of stress, one can say that they are very similar to those of burnout and usually ask for suppression of emotions to deal effectively with different work scenarios. But police officers are also expected to show compassion and understanding towards crime victims. This cocktail of emotions

and constant control without negative emotional demonstration can debilitate police officers and foster unhealthy situations (Daus & Brown, 2012).

The concept of emotion, according with the interpretation of police constructs was addressed by Howard et al. (2000) as empowering cultural and professional competence. They also suggested that police emotion talk follows explicit rules about emotional demonstration and experience, not allowing, for example, one to express personal feelings (Pogrebin & Poole, 1991), which Lumb and Breazeale (2002) label as ''police culture of silence'' (p. 91). This can lead to psychological problems and negatively impact effective policing. Howard et al. (2000) advise that this specific cultural behavior can be a self-preservation strategy, which reinforces police culture. Innes (2002) and Wood (2004) stress out the various types of socialization that police officers are daily subjected to when interacting between them and with all the other people, defending that there are some unique features on the police culture. All in all, Rafaeli & Sutton (1987) had already suggested a conceptual framework focused on causes and consequences of emotions at work, which could led to some specific research on police culture, a topic that will be addressed later on this thesis.

For the present research, this study, a definition of emotion may be - or not - necessary. Even if we lean towards accepting that we know an emotion when we see it, a dual approach can be set: emotions as adaptive outcomes to the demands of the situation (Elfenbein, 2007b) or, as Fridlund (1994, p. 144) said, there is no formal definition of emotion that is not "tautological" in some means. Also, it may refer to Frijda's (1988, p. 351) conceptual approach where emotions are "responses to events that are important to the individual". Despite such divergent views, fundamentally, emotions may be taken as an expression of the configuration of three neurotransmitters: dopamine, serotonin, and noradrenaline (Lövheim, 2012).

To address, situate and theorize the emotions in criminal investigators we opted to review several topics around the core, with a framework approach strategy (Elfenbein, 2007b).

Section 3.1 - Emotional labor and Emotions management

We can introduce emotional labor as an umbrella term encircling reappraisal, experience regulation, and expression regulation (Elfenbein, 2007b) although research usually takes the three concepts to fall into reappraisal and display regulation (Berking et al., 2010).

Emotional labor was defined by Grandey (2000, p. 97) as ''the process of regulating both feelings and expressions for organizational goals", which has been already related to emotional exhaustion (Bono & Vey, 2005), making it a significant research topic (Ashkanasy, Härtel, & Daus, 2002).

The research of emotional labor addresses the stress of managing emotions when the job demands the expression of firm expressions in front of customers (Grandey, 2000). Although situational specificities could contribute to the emotional labor, if the interaction with customers remains for long periods and if the employees experience emotional episodes, they are more likely to emotionally regulate. Hence, emotional labor may result in good organizational performance. Nevertheless, individual and organizational characteristics may influence or moderate the level of emotional labor displayed.

Police officers are no exception to emotional labor. Exposed on a daily basis to circumstances that produce intense negative emotions, police officers need to cope with effective methods in regulating those emotions. This has been addressed through training, in order to improve the emotion-regulation skills of police officers. Tolerating negative emotions, as well as dealing with emotionally challenging situations and supporting themselves in distressing situations is something police officers have difficulties to accept. Through training the skill application is significantly enhanced, suggesting that a focus on emotion-regulation skills may be an important component for syllabi (Berking et al., 2010).

The work–family relation is another current topic under emotional labor at work research (Yanchus, Eby, Lance, & Drollinger, 2010). This domain looks at the possible conflict as well as the improvement outcomes, which relay in affective responses to each specific approach, but is also consistent with satisfaction and health outcomes.

Another topic of research concerns the association between emotional exhaustion and emotional labor (Kiffin-Petersen, Jordan, & Soutar, 2011) leading to findings about emotionally unstable individuals, whom tended to surface acting that is facilitated by emotional exhaustion. On the other side, agreeable and extraverted individuals engage in deep acting resulting in a positive association with self-reported behaviors. Wang et al. (2011) state that recurrent contacts with customers, high levels of job demands, and deficiency of autonomy and support are meaningfully related to surface acting. On the other side, occasions to demonstrate emotions and frequent or long contacts with customers are meaningfully related to deep acting. They also concluded that people high on neuroticism and undesirable affectivity are near to surface act; people high on positive affectivity and extraversion are nearest to deep act; surface acting is largely related with undesirable work results; and conversely deep acting is mostly related to desirable work outcomes. This is very well pointed out when related to public service by Vigoda-Gadot and Meisler (2010). The proposed model to explore the relationship between emotional intelligence, organizational politics, and employees' performance in public service led to the suggestion that "emotions in management and the management of emotions play a significant role in the outcomes of public administration personnel" (Vigoda-Gadot & Meisler, 2010, p. 72).

Gross (1998) presented the research topic of emotion regulation in which emotion is characterized in terms of response tendencies. This topic cuts across previous boundaries and provides common ground, distinguishing it from defense, coping, affect or mood regulation. The emotion generative process comprehends five arguments in which emotion is defined: "(a) selection of the situation, (b) modification of the situation, (c) deployment of attention, (d) change of cognitions, and (e) modulation of responses" (Gross 1998, p. 271).

Following Gross's process-based framework of emotion regulation (Gross, 1998) as a guiding structure, Diefendorff et al. (2008) studied the use of explicit forms of emotion regulation at work, achieving a relationship between emotion regulation strategies, discrete negative emotions and affective events, which could increase understanding of how people manage their emotions at work. Even in the leadership perspective the topic is under research, as Thiel et al. (2012) assume when they state that leaders need to

consider subordinates' discrete emotions management, to be able to understand the gap effects of discrete emotions, and to help others manage their own emotions.

Considering the emotions management topic, as strongly related to emotional labor, Daus & Brown (2012) pointed out the lack of studies focused on emotions management within policemen especially if one takes in consideration the police "criminological work'' (Pickering, 2001, p. 485). Research on managing emotions frequently focuses on emotional regulation strategies for presenting positive emotions (Barber, Grawitch, & Trares, 2009). However, police daily work enforces the need for negative emotional expression for use of forceful interventions (force oriented callings) in addition to positive emotional expression for community service (service oriented callings). Negative emotional expression seems to be more dominant, and even expected, in daily work contacts, although policemen use significantly more surface acting strategies to display negative emotions (Glomb & Tews, 2004), leading to the requirement of a combination of positive and negative display rules (Martin, 1999).

This permanent need of expression and suppression of a wide variety of emotions is a central element in the routine of police daily work, almost imposing the expression of socially desired emotions, usually linked to a suitable service (B. van Gelderen et al., 2007). This exchange between different types of emotional expressions depending on the circumstances (Rafaeli & Sutton, 1991) leads to a relevant citizen evaluation about police daily work (Tsai & Huang, 2002). The demanding situations may increase emotional exhaustion, an element of burnout (Leiter & Maslach, 1988).

All in all, Ashkanasy & Humphrey (2011) conclude that emotions in organizations is a major field of research, and that it seems to fit in the five-level model of emotion in organizations. This implies, in the organizational setting, that context must be understood in order to comprehensively grasp emotional phenomena. In the police institution, we chose the following context features: police culture, police criminal investigation function (that is more prone to emotional issues), PSP as criminal investigation institution, and its practices of recruiting, selecting and providing specialized training to criminal investigators. These topics follow the principle of moving from a larger, deep rooted dimension, to narrow focus on HRM practices.

Section 3.2 - Police institutional theoretical framework

As stated, this section introduces and describes, in the light of the theory, the terms and the research problems that motivated the present study.

Section 3.2.1 - Police Culture and emotions

Frewin et al. (2006) referred the concept of an informal culture amongst police organizations that influences police conduct (Pogrebin & Poole, 1991). An unusually high degree of social cohesiveness has been shown among police officers as well as a speedy and powerful socialization process (Frewin et al., 2006). According to Shields & Koster (1989) the specific activities of police develop an unique ''emotion culture'' (p. 44) with specific vocabulary, rules and practices of group (Shearing & Ericson, 1991), leading Howard et al. (2000) to put forward the idea that police speech has rules about emotional display and practice, where the expression of personal feelings is culturally rejected (Pogrebin & Poole, 1991). The silence code is another group issue that Lumb & Breazeale (2002) highlighted as a key cultural aspect impacting psychological health. Innes (2002) and Wood (2004) distinguished some unique features of police profession, due to the informal socialization amongst policemen during daily work.

According to Fischbach (2009) culture meaningfully influences the emotion process. Consequently, cross-cultural correspondences and differences in emotion can be described by cultural factors. Theoretical frameworks for assessing emotion in a work context might be culture specific and challenged by bias and equivalence constraints.

Organizational cultures are emotionally imbued which makes policemen emotions the element that shapes their police institutional culture, where cultural ceremonies reinforce members' commitment. But the strong identification with a specific subculture can also lead to ethnocentric feelings of group power that could explain protecting group members from sanctions (Payne, 2001).

Indoctrinating the preferred form of emotional expressiveness is assumed as a formal feature of performance control in organizations, whereas some decisively suppress emotions that threaten the hierarchy power (Stearns & Stearns, 1986). But there are less obvious forms by which emotions are controlled in or through organizations. One of

these is the initial training period which is intended to inculcate traditions, although police culture could also emerge from collective efficacy and street culture (Ingram, Paoline III, & Terrill, 2013). Such institutional culture could be taken, according to the National Research Council (2004), as an obstacle to police accountability. Other justifications for police culture have been put forward and addressed in several works (e.g. Paoline III & Terrill 2005; Ingram, Paoline III & Terrill 2013; Paoline III 2004; Paoline III & Terrill 2004; Skolnick & Fyfe 1993; Skogan 2008). Nevertheless, and despite criticism (Mastrofski, 2004) around the concept, Doty and Glick (1994) found that shared understandings and collectiveness among police officers result from their relations and exposure to joint situations in the street or in police facilities. Still, police culture is assumed not to be a precise concept for researchers, policemen, and public alike, although, according to Kozlowski and Klein (2000) it can be studied under an organizational system theory.

Alongside police culture, police personality as attracted researchers, mainly its definition and development. According to Twersky-Glasner (2005) one approach can be in the recruitment and selection process, when trying to get the baseline for most candidates as regards personality constructs; or around the acculturation process during the initial training. Nevertheless, this concept seems to have fixed and flexible characteristics and is influenced by cultural roles inside police organizations (Harper, Evans, Thornton, Sullenberger, & Kelly, 1999).

Section 3.2.2 - The criminal investigator

According to our objectives, we will address the empirical object of this research: the criminal investigator.

To Kalifa and Flynn (2005) the criminal investigators are decisive in (re)constructing the criminal episodes. To be able to do so, they need to have the required skills and abilities (Evans & Kebbell, 2012) such as good interpersonal and communications skills (Henry, 2004). Miller (2009) stresses out the negative stereotypes around this function which often has chronic diseases that go underrecognized and undertreated due to societal and departmental pressures to solve criminal investigations (Sewell 1993). Even stress and self-recrimination can be magnified due to disappointment to reach the

expected investigation results (Sewell, 1994). All of these reactions are increased by a cumulative escalation of fatigue and cognitive decline, producing messy errors, less work quality, and potential weakening of home and workplace relationships (Rossmo, 2009b). In several police institutions and for several functions, policemen are appointed to be criminal investigators considering seniority and career promotion, rather than a process of specific recruitment and selection, and specific training, as Lanning and Hazelwood (1988) pointed out.

According to Sewell (2003), a number of traits and behaviors, as well as essential knowledge, skills, and abilities, characterizes the most successful criminal investigators. Alongside with a basic understanding of the law and the legal system to guide their labors, a wide knowledge of investigative and forensic techniques and procedures, due to their continued study and training (Henry, 2004) criminal investigators are requested to take a broad and deep perspective on their cases (Rossmo, 2009a).

Criminal investigation is a hard and long work, sometimes endless, exhausting, frustrating and ungratifying, whereas only investigators that keep motivation and persistence will be able to solve cases (L. Miller, 2009). Curiosity and an inquisitive posture with the attention to detail are some of the typical traits of criminal investigators, complemented with effective and flexible communication skills. Overall the intention is to create a trustful relation amongst all subjects under the criminal investigation process, to produce relevant information (Henry, 2004). Lanning and Hazelwood (1988) also considered that some coping strategies are tools used by criminal investigators to help them on their daily work, some of which spontaneously used, others encouraged or even taught or trained in the organization (L. Miller, 2006, 2008). Still, and considering the daily exposure to various sources of stress and their successful management, Sewell (1994) identified short-term responses and long-term strategies for the policeman and the organization, respectively, as requirements for successful criminal investigations. As regards short-term responses, Lanning and Hazelwood (1988) identified proper humor, good physical fitness and peer support as some of the answers to manage stress, even when criminal investigators need to control their emotions to convey empathy and understanding to others, regardless of their role in the process. It is important to highlight that some specific types of crimes (sexual, hate, racial) or some victims age groups (children) impose certain special criminal

investigation cautions, which Burns et al. (2008) point out alongside with the higher risk of secondary traumatic stress. This activates the strategies referred as the coping solution for criminal investigators. To perform successfully, some criminal investigators try to remain professional and focused by locking away their emotions during investigations (Pogrebin & Poole, 1991; Sewell, 1994; Violanti, 1999). Nevertheless constant exposure to such situations may lead to a crisis in coping, thus putting criminal investigators to higher risk of developing secondary traumatic stress (Haisch & Meyers, 2004). These specificities, among others, led Garbarino et al. (2012) to the idea of specific personality profiles according with different psychological and organizational work.

Acknowledging the specificities of police work The United Nations and The Council of Europe both published formal norms of police conduct and ethics: Code of Conduct for Law Enforcement Officials (United Nations General Assembly, 1979) and European Code of Police Ethics (Council of Europe, 2001). The prevention, detection and combating of crime (including full range of prohibitions under penal statutes) are generally considered as one of the main purposes of police organizations in democratic societies governed by the rule of law. Only at the European level we can identify some rules about qualifications, recruitment and training of police personnel (Council of Europe 2001, pp. 9-10). The recruitment should be based on personal qualifications and experience, and candidates should be able to demonstrate, for example, maturity, fairness, and communication skills. The recruitment process abides by specific principles about non-discrimination and the screening of candidates. The police training rules have some specific norms linked to the rule of law and fundamental rights. All in all, there is no specific reference to emotions or emotions management in both the United Nations and Council of Europe documents which, in our opinion, would be expectable when the specificities of their mission are taken into consideration.

Section 3.2.3 - The PSP as a criminal investigation institution

Today PSP has a broad range of statutory duties. The Law 53/2007 identifies several, of which we highlight:

- To ensure the safety conditions allowing the exercise of rights and freedoms and respect for guarantees of citizens and the full functioning of democratic institutions, respect for legality and the rule of law;
- To ensure public order, peace and security, and the protection of persons and property;
- To prevent crime in general, in coordination with other forces and security services;
- To develop the criminal investigation actions delegated by the judicial authorities;
- To prevent and detect situations of trafficking and consumption of drugs or other prohibited substances by means of surveillance and patrolling the areas referred to as traffic or local consumption;

Until 1995 PSP did not dispose of any relevant legal or internal regulation about criminal investigation or any other criminal processual step. The PSP performed police daily activities, now considered of criminal investigation nature, but at that time conducted only in conjunction with the judicial authorities in accordance with their skills as criminal police institutions.

The Decree-Law 81/95, of 22nd April, on its 5th article presented for the first time the formal organization in PSP of the anti-crime brigades. These were special units with the responsibility in the prevention and investigation of trafficking of narcotic drugs or psychotropic substances.

The accumulated experience over the next five years granted to PSP the formal strengthening of its criminal investigation competences, in the first law of organization of criminal investigation in Portugal, the Law 21/2000 of 10th August. This Law had several actualizations and was repealed by the Law 49/2008, of 27th August. Even this Law had several actualizations (the last one was made in June 2015). Formally the criminal investigation in Portugal includes a set of steps that, under criminal processual law, are intended to ascertain the existence of a crime, determine their agents and their responsibility, and find and gather evidence as part of the process. The PSP, as a criminal investigation institution, develops the set of steps referred, gives assistance to judicial authorities in the investigation, and the actions destined to prevent and investigate crimes under its competence or those committed by judicial authorities.

The Law 53/2007 and the Ordinance 383/2008 refer that the Criminal Investigation Department (CID) of PSP is under the operations and security organic unit of the national Direction. The CID has the legal competence to:

- Coordinate the processual and operational aspects of the criminal investigation activity of the PSP;
- Provide technical support, proposing and disseminating instructions, in particular for the most serious, complex or territorially dispersed crimes;
- Participate in training and specialization of criminal investigators and forensics;
- Propose the specific doctrine and set technical standards to criminal investigation and forensics activities;
- Provide technical and forensic national support; and
- Ensure the coordination with other criminal investigation institutions, including in the field of forensic science.

Since 2000 PSP established some internal regulations (procedural standards) on the criminal investigation competence, namely concerning its internal organization, crime scene inspection, and forensics.[9]

The organizational maturity, consolidation of procedures and productivity of PSP correspond to those of a Police institution with an extended nature into criminal investigation profession (specialization). According to Schneider (2009) a profession can be defined as any vocation, occupation, career, or passion which requires formal and specialized training. A profession is indeed seen in many qualities and degrees, with one common denominator – an expert occupation. So, we may conclude that being a criminal investigator at PSP is considered a profession, demanding specialized skills and training. The several doctrines of "serve and protect", legal and institutional norms, values, training, and status qualify it as a profession, alongside with the generic policial duties.

Professionalism is the daily exercise of some profession but also describes the practitioners of that profession. This includes attitudes and behaviors. It is not only what every professional does but also what he/she feels, thinks and wishes in such job. It is

[9] We opted not to cite the internal regulations due to specific issues of their content.

the style and method of executing such tasks. It is "what we do, how we do it, and the spirit of that commitment" (Schneider 2009, p. 134).

The professionalism in police work was seen as a strategy for improving the purpose of policing in delivering service to guarantee the most efficient and effective police work. It integrates the condition of integrity, continuous training, specialized knowledge, ethics, technical and technology tools into work.

In 2008 Elsner et al. presented the police work maturity in the investigative stage in several criminal justice systems and the correlation with each national prosecution service. The police role varies meaningfully from country to country. According to its legal competences and criminal processual possibilities, these authors identified some differences but also similarities, on a national basis. In this study, we opted not to make another international approach. We will stay focused on the criminal investigation duties on PSP.

Section 3.2.4 - Recruitment, Selection and specialization training in criminal investigation at PSP

The 2000 referred procedural standards contained the first formal statement about recruitment, selection and syllabi of the criminal investigation function. At that time, the policeman was required to cumulatively have at least 2 years of actual service, exemplary behavior or belonging to the first class of behavior, and a demonstrated readiness for service. Additionally: good judgment and thoughtfulness, discipline and self-control, absence of psychic, physiological, social vulnerability, and no situations that might question integrity, besides showing emotional stability, a sense of responsibility, sociability, verbal comprehension, expression and verbal fluency, memory and physical resistance.

The recruitment process started with an internal invitation at the district level, with a hierarchical "validation" of the referred characteristics. The district commander designated those whom went to the specialization training.

The specialization training comprehended 120 hours, and was composed by four main courses: Law, Police techniques, Investigation techniques, and Intelligence. At the end of the specialization training, a final phase of evaluation took place with an eliminatory

nature, covering physical tests, practical shooting, technical tests, and psychological tests, all defined by an internal regulation.

The recruitment and selection processes remained until today, with some specific but minor adjustments. The syllabi of the specialization training (in criminal investigation) evolved and it is on its third version, with 180 hours. All in all, the training in Psychology issues remained the same - 6 hours of Criminal Psychology, with no specific topic on emotions and their management.

Section 3.3 - Discussion and conclusions

The absence of emotion related subjects from curricula or explicit selection criteria might be due to the unclear definition of emotions (Cacioppo & Gardner, 1999) which is not always supported in literature as most of published research fails to clearly define emotion (Briner & Kiefer, 2005).

From the individual perspective, and considering the different approaches to the concept, alongside with the lack of an integrated multi-level model of emotions (Ashkanasy 2003), emotions are a potential field of future discussion as regards their conceptual research and consequent empirical grounding. From the organizational or societal perspectives emotions are also a vast field of different conceptual approaches. And specifically under the police daily work related topics – such as stress or other unhealthy situations (Daus & Brown, 2012) – although we cited some research, we cannot adopt a specific and definite concept of emotions.

Literature review also suggests that there is a myriad of general approaches to emotional labor and emotions management under the police culture lacking a specific focus, with no sound empirical and theoretical background as regards the concept of emotions. Within the police context, even if we assume that criminal investigators need to control (Lanning & Hazelwood 1988) or to lock away (Violanti 1999) their emotions, neither the international guidelines of conduct, ethics and recruitment, nor the specific processes and norms in PSP consider emotions as an explicit core topic of concern.

Facing this *state of the art* we will opt to further develop the research by considering that emotions could be mapped under the performance agenda (at the individual level), where competences can be taken as predictors of best results while being influenced by

the emotional dynamics. Our research plan considered the recruitment and selection phases, and also the initial training (for police and for criminal investigation roles). The competence model approach is thus the next step of the thesis, as regards the emotions role in police and criminal investigation daily performance.

Chapter 4 - Competences models

The purpose of this research implies an exploration of models of competencies as a core issue for recruitment and selection.

Traditionally, job analysis has been the formal procedure underlying the identification of the required knowledge, skills and abilities (KSA) for professional success (Cunningham et al. 2011). Such dimensions for professional selection purposes are apparently considered insufficient as, in Police, much effort has been put into measuring other key dimensions such as personality [e.g. Inwald Personality Inventory (Detrick & Chibnall, 2002), the MMPI-2™ (W. U. Weiss et al., 2003) and the Reid Public Safety Report (Jones, Cunningham, & Dages, 2010) among others] as reported by Weiss and Inwald (2010).

However, even with the addition of "other" characteristics (KSAOs, as used in Shipmann et al. 2000) there is a lack of structure that links these concepts into a functional whole explaining the process of any competency building. Roe's competence model (Robert A. Roe, 2002a, 2002b) offers an integrated framework where KSA have a place while better detailing some of the dimensions subsumed under the "other" label. Additionally, Roe included the concept of attitude in a central position which converges with its widely acknowledged importance in professional performance. Personality also gained a distinctive position although Roe opted to preserve a ground level named "others". Due to its comprehensiveness, we opted to use Roe's proposal as a guiding model to address emotions within the competence model of criminal investigators in PSP. Beforehand, due to polissemic nature of competency we will start by clarifying its conceptual nature and boundaries.

Section 4.1 - Competence

The first topic in this section regards the distinction between competency and competence. Different denotations have been assigned to competence (Robert A. Roe, 2002b). There are two main approaches: the first concerning any characteristic relating to superior performance – competency – and the second concerning the learned capacity to perform – competence – (Roe, 2006). In the first approach, Spencer and Spencer

(1993) introduced the iceberg model, later addressed. Mansfield (1996) presented a multiple-job approach to competency modeling with a set of common building block competencies and with defined levels of performance for each competency. Another distinction was made by Vazirani (2010), where competency is related to behavior and competence is related to work tasks or job outputs. Despite both approaches can be defined at the group and organization level (Roe, 2006) we opted to use the second one – competence –, due to its context specificity, which is related to tasks to be performed in a particular type of setting – criminal investigation in our work.

The concept of competence has many definitions transversely used in several topics of research (Shipmann et al., 2000). Brown and McCleary (1974) attempted to identify what is meant by competence in education. Lane and Ross (1998, p. 231), in the field of medicine, define competence as "the ability to perform a complex task or function" and to "transfer skills and knowledge to new situations". Bartram (2005) relates competences with professional performance. Derouen and Kleiner (1994) split competence into technical, human and conceptual components – the last one includes mental competence, as the ability to identify and solve problems, to memorize and produce. Nordhaug (1998) presented a framework for competences classification that utilizes three levels of scrutiny: specifically related to task, to the firm and to the industry. Such definitions leave room for some confusion as knowledge itself can be confused with competences (Wijnhoven, 2006). Nevertheless we must refer Barrett and Depinet (1991) conclusion where intelligence and competence (through aptitude tests) are positively related to job performance, leading us to opt to follow the concept of competence as defined by Roe (2002a) because, to our knowledge, it is the most integrative and up-to-date review on competences: "a learned ability to adequately perform a task, duty or role" (Roe 2002b, p. 195). His model is termed architectonic due to the graphics in which he depicted the several components of competences. In fact, this is a hierarchical model with competences toping the structure that at its bottom has personality and aptitudes upon which knowledge, skills and attitudes are built.

According to Lindberg and Rantatalo (2015, p. 562) competence can be generally identified as "either entity-based (rationalistic, positivist) or interpretative-relational (pragmatic, constructionist, phenomenological)" concept. On the first approach, competences can be defined by specific resources that include traits, skills, or

knowledge that are applied during work and are usually linked to performance. On the second approach, current processual and relational perceptions based on interpretative, pragmatic and constructionist theories, competences are defined throughout "individuals themselves script competence constructions that support the sense of their working life through effective performance" (Kosmala 2013, p. 591). But under their specific research, with two samples (one with policemen from a specific police unit, other with medical interns), Lindberg and Rantatalo (2015) opted to balance the concept in two general constituents of competence: performance orientation (built from qualities regarding an active mindset of on-the-job performance) and social orientation (built exclusively with traits, abilities and dispositions considered as important when interacting with others).

Even the European legislation has a definition of competence, meaning the "proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy" (European Parliament and Council of the European Union 2008, p. 4). In Portugal, the Portuguese Classification of Professions 2010 (Instituto Nacional de Estatística, 2011) is the most recent official reference on professions. It has also a definition of competence: the ability to perform the tasks and functions inherent to a given job. It comprehends two dimensions: skill level and specialized competence. The level of competencies is defined in terms of the complexity of the tasks and functions to be performed in a profession. The specialized competence is characterized by four concepts: knowledge required, used tools and machines, the materials worked, and the products and services produced.

Competences may also be linked to a specific type of work in a particular work setting (Robert A. Roe, 2002a). That means that competences can be learned and assimilated through work experience and learning-by-doing in real work circumstances (Bartram & Roe, 2005). In Bartram and Roe's model there is a distinction between two main groups of competences: those concerning to the psychological content of the professional procedure – professional or primary competences – and those empowering the practitioners to perform their services effectively - enabling or secondary competences (Bartram & Roe, 2005).

This model brought light to a conceptually disputed field of knowledge where competences were taken as being a motive, a trait, an aspect of the person's social role, a skill or even a body of knowledge used at work (Boyatzis, 1982). Assuming its relativity as a concept, Franklin (1997) stressed out, under the standardization umbrella, the variation and the change over time of competences' nature. This lead Bartram (2005) to state that competences need to be continually reviewed against the requirements of jobs.

Considering that the learning of competences is influenced by abilities, personality traits and other characteristics (and hence is different from these), Roe (2006) presented a methodology to help identify "competence X", as follows:

- Step 1: Can X be described by means of a verb, or only by a noun?
    - No -> KSA or disposition
    - yes -> move to next Step
- Step 2: Is X something that can be learned or changed through learning?
    - No -> Disposition
    - Yes -> move to next Step
- Step 3: Can X be conceived as an activity that has a beginning and an end?
    - No -> KSA,
    - Yes -> move to next Step
- Step 4: Is this activity an important part of the job, i.e. something people are paid for?
    - No -> Subcompetence (or basic competence in Bartram & Roe's 2005 terminology),
    - Yes -> Competence

X is a competence if cumulatively is definable through a verb, modifiable by learning, an activity with a beginning and an end, and important for performance at work.

Brekelmans et al. (2005) presented some differences in historical backgrounds and scientific orientations as the cause for divergent definitions of the competence concept. They also proposed a competence framework that used the definitions presented in the Q-13 document – an accepted CEPOL standard, which is considered as complementary to the nationally required competences for senior police officers in the field of international co-operation (especially involved in combating crime and related public

order issues). In this document, competence is "the integrated application of knowledge, skills, attitudes, experience, responsibilities and personal traits in order to perform a job successfully" (p. 5). They assumed that competences evolve continuously, and may disappear or become irrelevant, and that they have to be learned, created and developed. This led to advocate a constant need to keep up or update the acquired competences, presented in four categories: professional (directly linked to methods and body of knowledge of policing), contextual (highly qualified performance of policing with high ethical standards officially required by the public, representing authority, being able to cope with problematic situations and influences of media), social (understand and manage the key contemporary role of police, with understanding of social, cultural and minority as well as community matters) and individual (acquiring leadership capacities, operational management, flexibility, self-reflection and analytical, communicative and interpersonal skills).

All in all, the specific way of comprehending work defines certain attributes as being crucial and systematizes them into a distinctive structure of competence at work (Sandberg, 2000), somewhat apart from expertise (Germain, 2012). This echoed Herling (2000) statement that expertise and competence are evidently connected and undeniably similar in nature, but are clearly different: competence can be pictured as a subset of expertise. This might arguably be accepted as such.

Section 4.2 - Bartram and Roe´s model

Roe (2002b) conceptual definition of competence is based on the consensus in the literature that it should be defined as "een verworven vermogen om een taak, rol of missie adequaat uit te voeren" (Roe 2002a, p. 206): an acquired ability to perform a task, roll or mission adequately.

Roe's competence model emphasizes the characteristics of the workers and the required competences to exercise their job. Competences are explained by focusing on building blocks i.e. knowledge, skills, and attitudes (Roe 2002b). Therefore, the model also takes into consideration the context-dependency of competences. This model can be a central tool to build up a comprehensive "competence profile" of an occupation, constituted by competences, sub-competences, knowledge, skills, attitudes, abilities, personality traits

and other characteristics such as values, physical traits, biographical characteristics, and personal interests (Roe 2002b).

Bartram and Roe (2005) detailed the competence model. Keeping its previous definition for competences as they (1) integrate knowledge, skills, personal values, and attitudes, and that they (2) build on knowledge and skills and (3) are learned through work experience and learning by doing. The associations between these three aspects of the model are showed in the architectural model of competences (Figure 8).

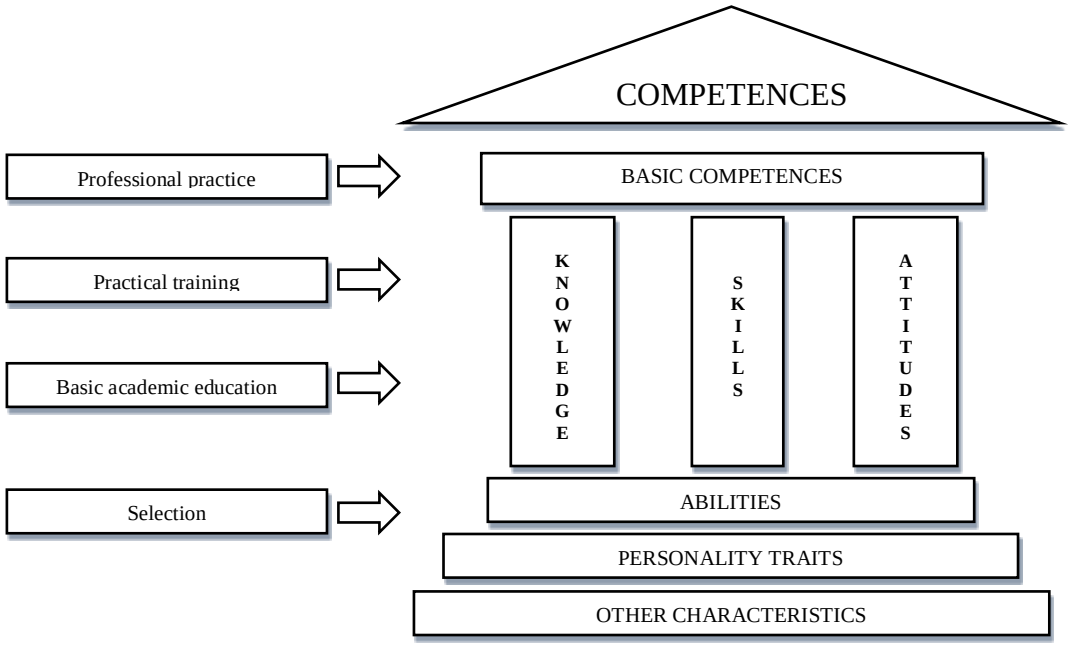


Figure 8 – Bartram and Roe´s Competence Model (2005)

Bartram and Roe's insight to structure KSAs and APO into an architectonic structure was a *tour de force* that refined theory on competency modelling although parsimony may be doubted as to the choice of keeping in the "other characteristics" layer many distinct concepts that fail to observe the hierarchical functioning of the model and that do not share a conceptual identity (i.e. physical traits against personal values).

Section 4.3 - O*NET Content Model

O*NET was established using research on-the-job and on organizational analysis. It represents a view that mirrors, via job-oriented descriptors, the character of occupations; and, via worker-oriented descriptors, people at work (O*NET Development, 2007). As a wide-ranging system designed to describe occupations, O*NET subsumes the last 60 years of knowledge in the United States of America, about the nature of jobs and work (Peterson et al., 2001). O*NET used multiple descriptors and cross-job descriptors to provide a common language to feature diverse jobs, and used an ordered taxonomic approach to occupational descriptors. The O*NET model comprises several domains (i.e., worker characteristics, worker requirements, occupational requirements, experience requirements, occupation characteristics, and occupation-specific requirements) and their potential uses. Multiple descriptor domains were required, such as abilities, skills and knowledge areas. O*NET is uninterruptedly updated by surveying a comprehensive set of workers from each job (O*NET Development, 2007). It also comprehends cross-occupational descriptors (for different jobs).

The O*NET model is worker-oriented and job-oriented, with six major domains:

- Worker-oriented
    - Worker characteristics: can be abilities, occupational interests, work values, and work styles.
    - Worker requirements: can be work-related knowledge and skills that are developed through experience and education.
    - Experience requirements: can include certification, licensure, and training data.
- Job-oriented
    - Occupational requirements: for example, particular job behaviors and tasks.
    - Workforce characteristics: for example, labor market information.
    - Occupation-specific information: for example, tasks to be executed and the tools and the technology available to do it.

Browsing the model online[10] we did not find any specific domain of professional competences in any occupation, i.e. no occupation domain is ever labelled as "competence".

Section 4.4 - Iceberg model

The iceberg model was presented by Spencer and Spencer (1993) and previously used, amongst others professions, in advocacy (Cort & Sammons, 1980), engineering education (Walther & Radcliffe, 2007), middle-level management (Xu & Wang, 2009) and adult learning (Salleh et al., 2015). Cort and Sammons (1980) were especially insightful by stating that "major and specific competencies can be analogized to the tips of icebergs" (p. 410). Antal and Friedman (2008) also used the iceberg schematic approach to refer to the model of cultures and how they influence thinking and behavior.

In the iceberg model, competence is presented as a characteristic of an individual that is causally related with performance at work (Spencer & Spencer 1993), where skills and knowledge are the visible characteristics, and self-concept, traits and motives are the invisible ones (Roe, 2006). This model illustrates the observable (knowledge and skills) and non-observable (e.g. traits and motives) elements of competence, with significant implications for professional learning or training (Mcguire & Garavan, 2001). As shown in Figure 9, the first elements, "above the water", are, according to Cerinsek and Dolinsek (2009), easier to develop and training in the most effective way to secure worker capabilities. "Under the water", the elements are more veiled, profound and central to personality, thus more hard to assess and develop the characteristics that form the base of the personality - assuming personality can show nuances across life span (Roberts & Mroczek, 2008; Roberts, Walton, & Viechtbauer, 2006).

[10] http://www.onetcenter.org/overview.html

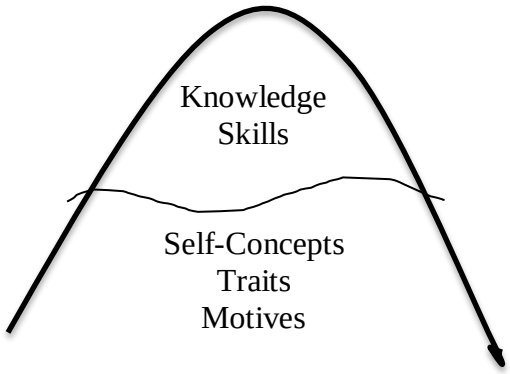


Figure 9 – Iceberg Model

Section 4.5 - European Qualifications Framework (EQF)

The European Qualifications Framework (EQF) is a meta-framework (Méhaut & Winch, 2012) that helps share and compare qualifications systems in Europe (European Commission, 2015), based on the results of education and training systems rather than on their inputs (Méhaut & Winch, 2012). It leads to eight common European reference levels, defined in terms of learning outcomes: knowledge, skills, and competences[11]. This helps any national qualifications system or national framework in Europe to relate with EQF levels. These levels are used to understand and compare qualifications in different countries and in different educational and training systems.

Each of the eight levels is defined by a set of descriptors indicating the learning outcomes relevant to qualifications at the respective level in any system of qualifications.

[11] In the context of EQF, knowledge is described as theoretical and/or factual; skills are described as cognitive (involving the use of logical, intuitive and creative thinking), and practical (involving manual dexterity and the use of methods, materials, tools and instruments); competence is described in terms of responsibility and autonomy.

EQF Level	Knowledge	Skills	Competence
Level 1	Basic general knowledge	Basic skills required to carry out simple tasks	Work or study under direct supervision in a structured context
Level 2	Basic factual knowledge of a field of work or study	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy
Level 3	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	Take responsibility for completion of tasks in work or study; adapt own behavior to circumstances in solving problems
Level 4	Factual and theoretical knowledge in broad contexts within a field of work or study	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities
Level 5	Comprehensive, specialized, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others

EQF Level	Knowledge	Skills	Competence
Level 6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialized field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups
Level 7	Highly specialized knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research Critical awareness of knowledge issues in a field and at the interface between different fields	Specialized problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8	Knowledge at the most advanced frontier of a field of work or study and at the interface between fields	The most advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

Table 19 – Descriptors defining levels in the European Qualifications Framework (EQF)

These levels of qualification were brought to the Portuguese legislation by the ordinance 782/2009, of 23rd July. Through the Ordinance 781/2009, of the same day,

the National Qualifications Catalog[12] was structured and organized with a model composed by competences-based qualifications. This framework is composed by a set of competences required to obtain a qualification, organized in coherent units of competence with economic and social value for the labor market. The qualification framework has two levels – basic (Alonso et al., 2004) and secondary (Pureza et al., 2006) - and core areas inside each level:

- Basic level core areas
    - Language and Communication
    - Information and Communication Technologies
    - Mathematics for Life, Citizenship and Employability.
- Secondary level core areas
    - Citizenship and Professionalism
    - Society, Technology and Science
    - Culture, Language, Communication

Winterton (2009) explored the diversity in competence models across Europe and to what extent there was sufficient common ground for an European approach to reinforce the European Qualifications Framework. The study found out that, despite the fundamental role of competence, there was no consensual conceptual approaches to competence and neither consensus for adopting a common competence framework nor policies.

Section 4.6 - European Skills, Competences, Qualifications and Occupations (ESCO)

The European Skills, Competences, Qualifications and Occupations framework (ESCO) was developed both by the Employment, Social Affairs and Inclusion Directorate-General and Education and Culture Directorate-General, of the European Commission, in collaboration with stakeholders and with the European Centre for the Development of Vocational Training (Cedefop). Being part of the Europe 2020 strategy[13] ESCO is the standard classification of European Skills, Competences, Qualifications and

[12] http://www.catalogo.anqep.gov.pt/Home/Index

[13] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

Occupations, using standard terminology in all EU languages, a dominant building block for a system of semantic assets on the labor market (De Smedt, le Vrang, & Papantoniou, 2015).

ESCO is organized in three pillars, structured hierarchically and interrelated with each other: occupations, skills and competences, and qualifications (le Vrang et al., 2014). The skills and competences pillar contains knowledge, skills and competences, as well as skills and competence group concepts. The pillar makes a distinction between four categories of knowledge, skills and competences: transversal skills and competences, cross-sector skills and competences, sector-specific skills and competences, and occupation-specific skills and competences.

According to the single information available in the ESCO website, transversal skills and competences are often referred to as core skills, basic skills or soft skills, the foundation for the personal development of a person. Transversal skills and competences are the building blocks for the development of the "hard" skills and competences required to succeed at work. Cross-sector skills and competences are organized in a hierarchical structure with the following five headers: thinking, language, application of knowledge, social interaction, and attitudes and values. Nevertheless le Vrang et al. (2014) characterized ESCO as an enabler for competence-based job matching, using 5,096 skills and competences, which are divided into occupation-specific and transversal (cross-occupational).

The qualifications pillar contains qualification groups and qualifications. A distinction is made between four types of qualifications. Three of them are directly included in ESCO: (1) qualifications awarded at national level but regulated at European level, (2) (International) qualifications, certificates and licenses linked to tasks, technologies, (3) (International) qualifications and certificates linked to occupations and sectors. Additionally, a fourth type: (4) national qualifications, with information being collected at the national level of European Qualification Framework (EQF).

The ESCO version available (ESCO 0.1) has the following data model (Figure 10):

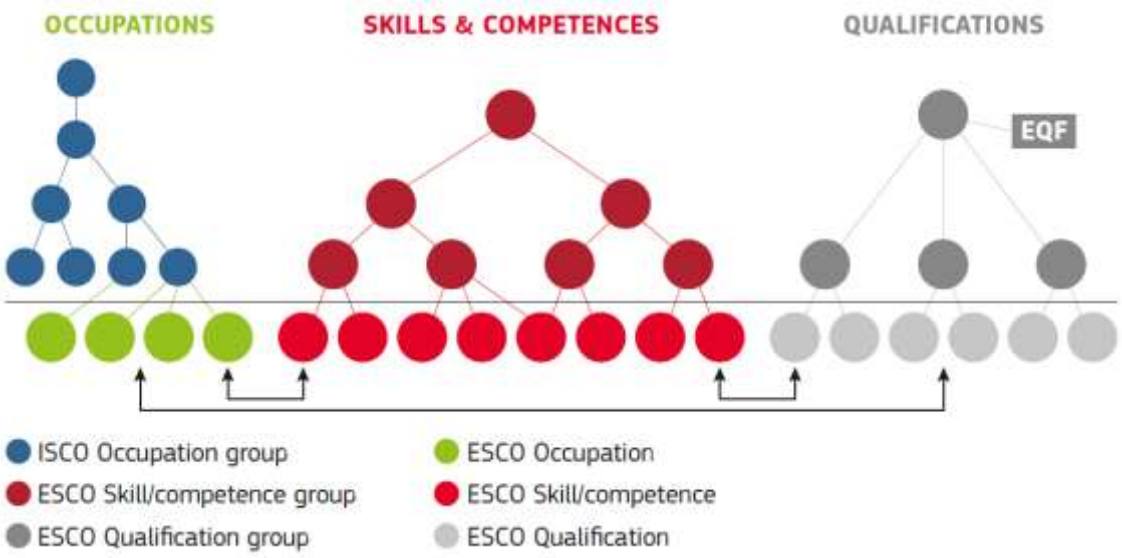


Figure 10 – ESCO v0.1 data model

The European Union (2010) assumed ESCO and Match and Map as the tools developed to increase the efficiency of job seeking, supported by the EURES – the European Job Mobility Portal[14] - a framework for collaboration to simplify the self-determination of mobility for workers inside the European Union.

ESCO portal shows the occupation group "Police inspectors and detectives" as comprehending the following occupations: Chief inspector, Detective inspector, Inspector (criminal investigations), Police inspector, Detective superintendent, Financial crime investigator, Investigator (public administration), Detective sergeant. In the language comparison tool (Table 20) we could not find any direct relation to PSP's criminal investigators occupation.

Occupation (EN)	Occupation (PT)
Chief inspector	Comissário
Detective inspector	Inspector da polícia judiciária
Inspector (criminal investigations)	Inspector (polícia judiciária)
Police inspector	Inspector de polícia
Detective superintendent	Inspector-chefe da polícia judiciária

[14] https://ec.europa.eu/eures/public/en/homepage

Occupation (EN)	Occupation (PT)
Financial crime investigator	Investigador da criminalidade económica e financeira
Investigator (public administration)	Investigador (administração pública)
Detective sergeant	Agente da polícia judiciária

Table 20 – ESCO Police inspectors and detective's occupations (EN/PT)

Browsing for their competences in ESCO (Table 21) we could identify three skills/competences: Criminology, Police helicopter flying, and Operations management.

Occupation	Related skills/competences
Chief inspector	Criminology Police helicopter flying Operations management
Detective inspector	Criminology Police helicopter flying Operations management
Inspector (criminal investigations)	Criminology Police helicopter flying Operations management
Police inspector	Criminology Police helicopter flying Operations management Patrolling on horseback (police)
Detective superintendent	Criminology Police helicopter flying Operations management
Financial crime investigator	Criminology Operations management

Occupation	Related skills/competences
Investigator (public administration)	Taxes and tariffs Trade union organizing Budget monitoring Preparation of annual accounts SAS (statistics software) Consumer issues Investigations Budget responsibility SPSS Book-keeping
Detective sergeant	Reception desk Criminology Police helicopter flying Operations management

Table 21 – ESCO Police inspectors and detectives related skills/competences

Section 4.7 - Portuguese National Classification of Professions (NCP)

The Portuguese National Classification of Professions (NCP) establishes the framework of the most relevant professions, tasks and functions in the Portuguese labor market. The NCP is reported as not being a framework for job seeking but a key instrument for statistics on professions, in terms of observation, analysis, series consolidation, international comparability and technical statistical coordination (Instituto Nacional de Estatística, 2011). It was the only structured source in Portugal where we found the "Inspector and police detective" (EQF level 5) profession. It includes, *inter alia*, police officer, judicial police inspector, investigative police officer, and police detective[15].

The NCP also comprehends some detailed information about inspector and police detective tasks: to establish contacts with human sources of information about planned

[15] Agente da polícia judiciária, inspector da polícia judiciária, agente da polícia de investigação e detective da polícia.

or committed crimes, to identify suspects and to prevent the occurrence of crimes; to perform or collaborate in recognizing and inspecting crime or accident scenes, to collect traces or instruments of crimes, to interview witnesses and suspects, to analyze documents and computer files; to analyze evidence in order to solve crimes, identify criminal activities and obtain information for criminal processes; search for contacts and sources of information not immediately available or circumstances and behavior of suspects with the intent to prevent crime; make arrests; to witness in court or report to superiors on circumstances and results of investigations.

Section 4.8 - Policing Professional Framework (PPF) and Competency and Values Framework (CVF)

London Metropolitan Police Service (MPS) developed its own Performance Framework (MPF) to replace the Integrated Competence Framework (ICF) as it lacked national background considerations (Metropolitan Police, n.d.). The National Policing Improvement Agency (NPIA) and Skills for Justice was the entity responsible to conduct such development. ICF became the standardization referential of everything a police officer does, specifying the knowledge and skill required to undertake it, while defining the level of expected performance (White, 2006) ever since 2003. A rising need to review the ICF in order to keep it up to date with modern policing, and to diminish some of the bureaucracy that was created by several lists of behaviors, activities and indicators motivated MPF. This behavioral competences framework applies the rationale of quality in the training of probationer officers (White, 2006) and led to the actual national framework: the Policing Professional Framework (PPF)[16]. It consists of National Occupational Standards (NOS) and Behaviors, labeled as Personal Qualities.

The Review of Policing Final Report (Flanagan, 2008) tasked NPIA, in partnership with Skills for Justice, to assume an essential review of the ICF to guarantee it can endure to support police forces across the UK (Justice, 2016). The PPF provides National Rank Profiles and Level Profiles, with supplementary skills, constructed under the NOS[17], for

[16] http://www.skillsforjustice-ppf.com/

[17] http://www.ukstandards.org.uk/Pages/index.aspx

the following national roles of police officer ranks: Chief Constable, Deputy Chief Constable, Assistant Chief Constable, Chief Superintendent, Superintendent, Chief Inspector, Inspector, Sergeant, and Constable.

In the investigation branch of the PPF only Chief Superintendent, Superintendent, Chief Inspector, Inspector, Sergeant and Constable roles sets professional skills, as shown in Table 22.

Roles	**Professional skills**	
	National Occupational Standards	**Personal Qualities**
Chief Superintendent	Investigator - Specialist / Major Crime	
Superintendent	Investigator - Specialist / Major Crime	
Chief Inspector	Senior Investigation Officer: must be able to manage major investigations	Decision making Leadership Professionalism Public service Working with others
Inspector	Detective Inspector: must be able to manage investigations in your area of responsibility, and develop and evaluate strategies to manage investigations	Decision making Leadership Professionalism Public service Working with others
Sergeant	Detective Sergeant: must be able to manage the initial response to major investigations	Decision making Leadership Professionalism Public service Working with others
Constable	Detective Constable: must be able to: conduct serious and complex investigations; interview victims and witnesses in relation to serious and complex investigations, and interview suspects in relation to serious and complex investigations	Decision making Leadership Professionalism Public service Working with others

Table 22 – PPF investigation branch roles and professional skills

The College of Policing (2016) announced that in 2017/2018 the PPF Personal Qualities will be replaced by the Competency and Values Framework (CVF) setting out

nationally acknowledged behaviors and values. The framework has six competencies grouped into three clusters: we are emotionally aware; we take ownership; we are collaborative; we deliver, support and inspire; we analyze critically and we are innovative and open-minded. Each competency match three levels that display what behaviors should look like in daily work, e.g. inclusive, enabling, and visionary leadership (College of Policing, 2016). All competencies are supported by four values underlying police service (Figure 11).

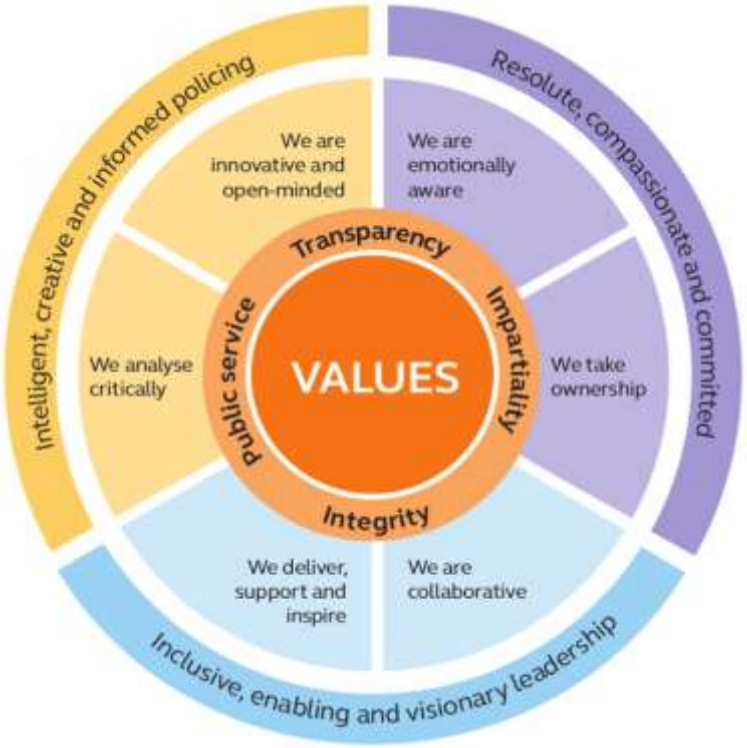


Figure 11 – Competency and Values Framework

The reviewed models all share a common purpose of ordering the required features for an effective professional conduct. However, they differ in the focus and scope while offering some added value to the literature and professional practice in HRM. O*NET, due to a two-decade development is acknowledged as an encompassing database putting together elements usable for selection, training, and job seeking. The Iceberg model contributed by structuring these elements on the basis of the visibility of features thus stating they might not operate in parallel. EQF (and the Portuguese national counterpart, NCP) sets levels of learning outcomes differentiating competence levels on terms of

autonomy and responsibility while the ESCO bridges with a glossary and structures occupations, skills and competences, and qualifications. Concerning police focused frameworks, both NCP and PPF/CVF detail the tasks, roles and individual features required to perform policing functions. Some scarce efforts of joining some of these models have been made (e.g. Markowitsch & Plaimauer 2009) in order to reach common ground to an international standard, however judging by citations, these have neither received much support from Academia nor from governmental agencies.

Taking Bartram and Roe's model as referential, one must acknowledge that, alongside with important contributes, all these models or frameworks have intrinsic limitations. O*NET omits competence as a key-concept in organizing the standards. Also, the Iceberg model is still at an incipient form because competence is lacking on the top of the model while the lower part is mostly individual psychologically-based. EQF overlooks personality traits, values and attitudes while not overlapping with Roe's concept of competence. ESCO comprehensiveness and glossary-equivalence function turns it into a repository of competence-related terminology rather than a model, which would require hierarchical or relational connections between constructs. Both PPF and CVF police focused models might be criticized as the former (PPF) surprisingly sets the precise same "personal qualities" to all the roles from Inspector up to Chief superintendent and additionally leaves out all Constable roles. Likewise, the designation "personal qualities" can be subject to criticism due to lack of conceptual clarity. CVF is intended to overcome such limitations but it is mostly value-centered, missing the point regarding competences and subsidiary features such as Knowledge, Skills, Attitudes, Abilities, and Personality. All of these must be inferred and subsumed, with the probable subjectivity bias in professional application. ROE's model, despite questions pertaining the "Other" layer, does offer a more integrated, conceptually distinctive and comprehensive framework to work on.

Section 4.9 - Skills, Attitudes, Aptitudes and Abilities

Keeping Bartram and Roe's model as background, we stress out the skill, attitude, aptitude and ability definitions, whose distinctions are not always clear (Dunnette, 1991). Assuming that all represent some behavioral classification, we will use the

O*NET Development (2007) approach about skills (which are considered, alongside with knowledge as individual requirements) where they are presented as "work-related attributes acquired and/or developed through experience and education" (p. 8).

Although attitudes were and have been the subject of extensive research, its conceptual frontiers are not as crystal clear as one would infer from such lengthy body of knowledge. It is rather dismaying that one finds definitions on attitudes that are as distinct as the one from Petty, Wegener, and Fabrigar (1997:611) "Summary evaluations of objects (e.g. oneself, other people, issues, etc.) along a dimension ranging from positive to negative)" or another one from Breckler and Wiggins (2014) "mental and neural representations, organized through experience, exerting a directive or dynamic influence on behavior.". However, considering the acceptance that Hollander's (1971) definition of attitudes received by (Roe & Ester 1999: 3) as "people's beliefs about specific objects or situations" we opted to go no further in the discussion of this issue and take this perspective on attitudes.

Aptitude was a concept deeply researched by Snow (1989) and later presented by Shavelson et al. (2002) as a set of cognitive, affective and conative[18] processes – the aptitude complex – that individuals engage to perform at work, and depends on their psychological characteristics and biography, as well as of the limitations of the work (Roeser et al., 2002). This concept was not used by Roe (2002) who adopted "ability" as a key concept in the model. We were not able to find any explanation for this option but, judging by some literature that puts together aptitudes and abilities (e.g. Robertson 2007) there might be some conceptual confusion as aptitudes seem to be treated as a product of abilities interacting with environment, thus getting a close connotation with competence.

Abilities are assumed to be the wider and more molar category thus differentiating from personality which is at higher level (Austin, Deary, & Gibson, 1997). The reference to Thurstone's work around ability concept made by Vernon (2014) shows the diverse approaches to the concept and its definition. Being a term that is often used in common and scientific scope, ability is linked to other expressions such as *able* and *can* (Carroll, 1993). It is also used to identify human attributes like musical ability or to express a

[18] Processo mental de formação da vontade e da intenção. Esforço consciente.

potential (Scheffler, 1985). The intelligence/personality associations led Austin et al. (2002) to the positive correlations between general ability and traits in terms of personal and social adjustments, largely in agreement with the findings from Ackerman and Heggestad (1997). Later, Baker and Bichsel (2006) identified Openness and Extraversion as predictors of cognitive abilities.

Still, and according to Colman's Dictionary of Psychology (Colman, 2015) aptitude is taken as the "potential rather than the existing capacity to perform some function, whether physical, mental, or a combination of the two, given the necessary education or training" (p.51). In the same dictionary, ability is defined as "existing capacity to perform some function, whether physical, mental, or a combination of the two, without further education or training" (p.1). The keystone lies in deciding whether the concept requires education or training to translate into performance or not. Considering Roe's decision to place "abilities" at a previous level of "basic education" (Bartram & Roe, 2005) we opt to follow Carroll's (1993) approach of ability as potential to perform, regardless of the specific domain of work, and without need for education and training.

Section 4.10 - Personality

According to DeYoung et al. (2005) trait-descriptive adjectives and sentence-based questionnaires have indicated that the mainstream of personality descriptions can be classified using five broad domains, or superordinate constructs (Digman, 1990), often called the Big Five or Five-Factor Model (FFM): Extraversion / Introversion, Agreeableness, Conscientiousness, Neuroticism / Emotional Stability, and Intellect / Openness to experience (Hofstee, de Raad, & Goldberg, 1992). Nevertheless, the theoretical conceptualization of this taxonomy was criticized (John & Srivastava, 1999). Several models could be addressed as developed around this five-factor approach – e.g. Sixteen Personality Factor (16PF) Questionnaire (Cattell, Maxwell, Light, & Unger, 1949), Zuckerman - Kuhlman Personality Questionnaire – ZKPQ (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993), Ten-Item Personality Inventory – TIPI (Gosling, Rentfrow, & Swann, 2003), Minnesota Multiphasic Personality Inventory–2–Restructured Form – MMPI-2-RF (Ben-Porath & Tellegen, 2011).

Comprehending previous research on personality and its relation to intelligence (Ackerman & Heggestad, 1997; Moutafi, Furnham, & Paltiel, 2005), both the one that belongs to the psychometric approach (Furnham, Moutafi, & Chamorro-Premuzic, 2005) and cognitive science approach (Zeidner & Matthews, 2000), up to the work of Moutafi et al. (2006) on intelligence and Openness and Conscientiousness traits, we opted to operationally address the conceptual approach to personality to clarify our views of the construct. The measures that better express our view of personality are the Affective Neuroscience Personality Scales (ANPS-S), the International Personality Item Pool (Mini-IPIP), complemented by one of the Hexaco Framework's dimension: Honesty / Humility. This, taking into consideration previous reference to the recruitment and selection process for criminal investigators in PSP.

As regards to ANPS-S, Davis et al. (2003) stress up the influence of emotional strengths and weaknesses in the potential for psychological disturbances and aptitudes for particular skills or jobs, considering ANPS scale as their initial approach to develop an emotional personality scale that is based on a modern reading of the neuroscience marks.

In ANPS, seeking, rage, fear, care, grief, and play are presented as six of the primary-process subcortical brain emotion systems presented by Davis et al. (2003). These systems are considered as initial for human personality development and as a template for personality assessment (Davis & Panksepp, 2011) and very much match Damasio´s (1995) conceptual approach to emotions as related with feelings (i.e. the interpretation of bodily reactions to emotions, which imply cognitive evaluation[19]). In an earlier

[19] For clarity sake, and to avoid interrupting the flow of thought, we opt to formally cite Damasio's (1995: 20) clarification on his own words: "The process begins with the conscious and deliberate considerations you entertain about the situation. These considerations are expressed as mental images organized in thoughts, and they concern myriad aspects of your relationship with, say, a given person and the reflections on the current situation and its consequences for you and others-in short, a cognitive evaluation. Some of the images you conjure up are nonverbal (e.g., the likeness of a person or place), others are verbal (e.g., words and sentences that comment on the person's attributes or a person's name, etc.). The neural substrate for such images is a collection of several widely distributed, topographically organized representations, occurring in varied early sensory

version there were seven primary-processes, with "lust" included and "grief" often mentioned as "panic" (Panksepp, 2005). Replicating previous studies on ANPS, Geir et al. (2014) included the ANPS-S, a short version of ANPS by Pingault et al. (2012).

The international personality item pool (IPIP) is intended to provide public domain measures of individual differences as developed jointly by researchers worldwide (Goldberg, 1999). A short form of the International Personality Item Pool - Five-Factor Model measure (Mini-IPIP) (Goldberg, 1999) was validated across several studies and its psychometric properties were considered acceptable and practically useful as a short measure of the Big Five factors of personality (Donnellan, Oswald, Baird, & Lucas, 2006).

A parallel proposal in personality is expressed in the HEXACO framework (Ashton & Lee, 2007). According with these authors, this six-dimensional framework appeared frequently in lexically-based studies of personality structure conducted in various languages, and surpasses the Five-Factor structure observed in early researches. The HEXACO personality measure has two principal instruments (Meurs, 2008): the HEXACO-PI (Lee & Ashton, 2004) and the IPIP-HEXACO (Ashton, Lee, & Goldberg, 2007). The first one is a copyrighted solution with a 192 to 204 item full-length questionnaire and a half-length questionnaire of nearly 100 items. The second one has been built to provide researchers with a public domain instrument that can be applied as the researcher considers suitable. Its psychometric properties (Lee & Ashton, 2004) and incremental validity (Ashton & Lee, 2008) were examined which allowed us to consider the Honesty / Humility "new dimension" in personality assessment. This dimension is strikingly in contrast with the five-factor structure and, considering the profession of criminal investigator, we deemed it as valuable for current research. Honesty/Humility refers to individual differences in the predisposition to be interpersonally genuine, to avoid fraud and corruption, to be unconcerned about status and prosperity, to be modest and humble, and the reluctance to take advantage of others to satisfy one's needs (van Gelder & De Vries, 2012) and could be a unique correlate of job performance (Johnson, Rowatt, & Petrini, 2011).

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cortices (e.g., visual, auditory). These representations, in turn, are constructed under the guidance of dispositional representations held in a distributed manner over a large number of higher order association cortices.

Section 4.11 - "Other characteristics" layer in Roe's Model

Roe's model places several concepts (e.g. biographical characteristics, physical traits and values) in a "Other characteristics" umbrella layer. According to PSP's specific culture we opted to consider "honor" and "values" as conceptual relevant topics.

Addressing honor cultures, Mosquera et al. (2002) refer to a set of values, principles and rules that focus on the establishment of social bonds and the preservation of interpersonal harmony, such as generosity and honesty. These can also be linked to personal integrity and loyalty, which could be the referred as a relevant concern in cultures of honor (Cohen & Nisbett, 1997).

Stewart (1994) approached de concept of honor as a right, as a reward of virtue, but also addressed the issues around honor and its relation to reputation. In the Mediterranean region, its "bipartite theory of honor" (Mosquera et al., 2002, p. 17) sees honor as one's worth in one's own eyes and in the eyes of others. It is centered on the maintenance of an overall and social interdependence and good reputation. As Miller (2014) points out about criminal investigator's moral responsibility, there is also a dual approach – the collective and the individual – concerning their success (or failure) in getting the expected results in criminal investigations. This dual approach covers also the judicial and societal focuses, which might not always be aligned. The misalignment may occur from criminal investigation outcomes being differentially valued by several actors – judge, public prosecutor witness, victim, victim's parents, among others.

For our research, we will follow Mosquera's (1999) conceptual approach of honor, with its two interdependent components: the inner honor (integrity, value of a person in own eyes) and the outer honor (social reputation). Under this approach, we will use the concern for integrity in social relations[20] of Mosquera et al. (2002b).

We will address values both from the individual and societal point of views (Braithwaite & Scott, 1991) as a form of aspirational achievement of what is desirable, even during the organizational socialization process.

[20] ''Betraying other people'', ''Not keeping up one's word'', ''Lying to others'', ''Not being loyal to one's values and principles'', ''Having the reputation of being dishonest with others'', ''Having the reputation of being someone who is not to be trusted'', and ''Being hypocritical''

Updating Kelley's (1976) opinion on previous work (i.e. Rokeach, 1973), where he reach the "heart of values dimension of personal and social change" (Kelley, 1976, p. 166), Rokeach (1979) continued his research considering values as above the individual (societal, institutional, organizational and ideological) and individual, but defined as "standards that are to a large extent derived, learned, and internalized from society and its institutions" (p. 6).

Starting from previous research (Schwartz & Bilsky, 1987, 1990) Schwartz (1992) presented a consistent approach to values, exploring the importance of values in a widespread variety of contexts. Considering values as "(1) concepts or beliefs, (2) pertain to desirable end states or behaviors, (3) transcend specific situations, (4) guide selection or evaluation of behavior and events, and (5) are ordered by relative importance" (p. 4), Schwartz (1992) embodies three universal requirements to which all persons and societies must be receptive: "needs of individuals as biological organisms, requisites of coordinated social interaction, and survival and welfare needs of groups" (*ibidem)*. These requirements led to a revision of the typology. Leaving *spirituality* aside, Schwartz (1992) presented *power, achievement, hedonism, stimulation* and *self-direction* – from the individual perspective –, *benevolence, tradition* and *conformity* – from the collective perspective –, and universalism and security – serving both types of interests, located on the boundaries between perspectives as shown in Figure 12. The survey derived from this new theoretical set comprised fifty six values – fifty two in the ten main universal values, four in *spirituality* (Schwartz, 1994).

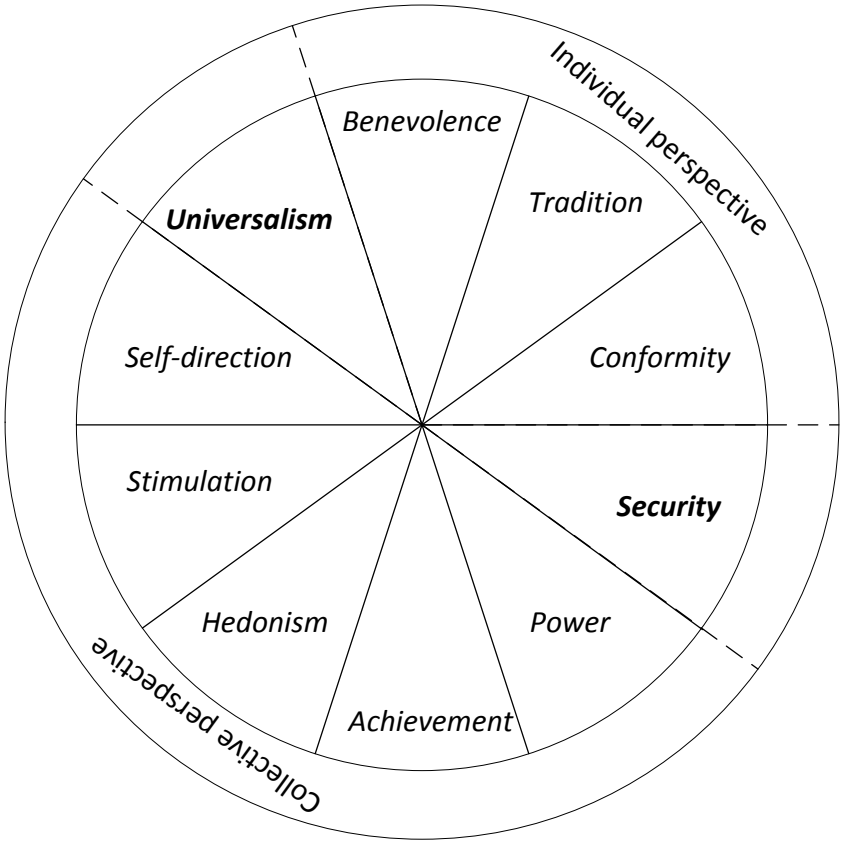


Figure 12 – Theoretical structure of relations among motivational types of values (Source Schwartz, 1992)

Another approach about values was the one presented by Schwartz and Bilsky (1987) where values represented either terminal goals (end states, identified as nouns, e.g. loyal) or instrumental goals (conducts, identified as adjectives, e.g. loyal). The 18 terminal values of the Rokeach Value Survey (Rokeach, 1973) were clearly separated from the 18 instrumental values, a distinction on which people organize their values. Schwartz (1994) organized the fifty six values in thirty terminal values (nouns) and twenty six instrumental values (adjectives). The results raised concern on previous classification, where there was no evidence for this division in the structure of values. Nevertheless, it is worth retaining as background in our empirical work. Later Smith and Schwartz (1997) presented a different classification of values in work environment: individual and culture-level value dimensions. Schwartz (1999) updated the theoretical approach with another classification, defining seven types of values structured along three polar dimensions: Conservatism versus Intellectual and Affective Autonomy; Hierarchy versus Egalitarianism; and Mastery versus Harmony. The theory of seven

cultural value orientations that form three cultural value dimensions (Autonomy *vs* Embeddedness, Egalitarianism *vs* Hierarchy and Harmony *vs* Mastery) was again revised and presented by Schwartz (2006), as shown in Figure 13.

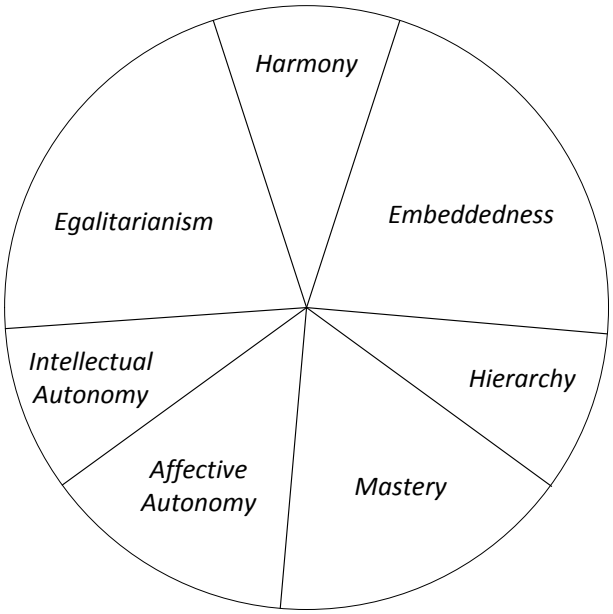


Figure 13 – Theoretical structure of cultural values
(Source Schwartz, 2006)

As guiding principles in life, individual values are ordered by importance and are trans-situational criteria or goals, depending on the specific situation (Schwartz, 1999). Cultural values represent the implicitly or explicitly shared ideas about what is good, right, and desirable in a society, defining what is appropriate in most of the situations. This was later discussed by Sagiv and Schwartz (2007) when analyzing the direct influence of the societal values on organizational values, and their indirect influence on members' values and on the nature of organizational daily work.

All in all, work values reflect the goals or rewards that employees seek through their work, which can be set as an important predictor of work satisfaction (Dawis, 2002). Work values were investigated throughout a meta-analysis of longitudinal studies by Jin and Rounds (2012) under Ros et al. (1999) classification of values. Considering them relevant in the forecast of an eclectic variety of work-related results the research concluded that work values are fairly constant, albeit showing some variations according to the classification approach and generational difference.

As regards career adjustment and the importance of work values in the process (Dawis, 2002), Leuty and Hansen (2011) criticized the construct validity of work values. Through the application of several statistical methods, several measures of work values were examined to understand the domains represented within the construct. Findings suggested six transversal domains in the analyzed measures of work values: environment, competence, status, autonomy, organizational culture, and relationships.

Schwartz and Bardi (2001) presented a widespread consensus regarding the hierarchical order of values, where "benevolence, self-direction, and universalism values are consistently most important, power, tradition, and stimulation values least important, and security, conformity, achievement and hedonism in between" (p. 269).

Schwartz and Boehnke (2004) statistically tested the structure of the ten human values (Schwartz, 1992) which form a quasi-circumplex structure based on the intrinsic conflict or compatibility between motivational goals. The results support the proposal that these values are not independent, they form a continuum, and the best statistical result recommends a modified quasi-circumplex model, with tradition values peripheral to conformity values, and four higher-order value types, as shown in Figure 14. Vecchione et al. (2009) statistically corroborated the distinctiveness of the ten value types and their quasicircular presentation.

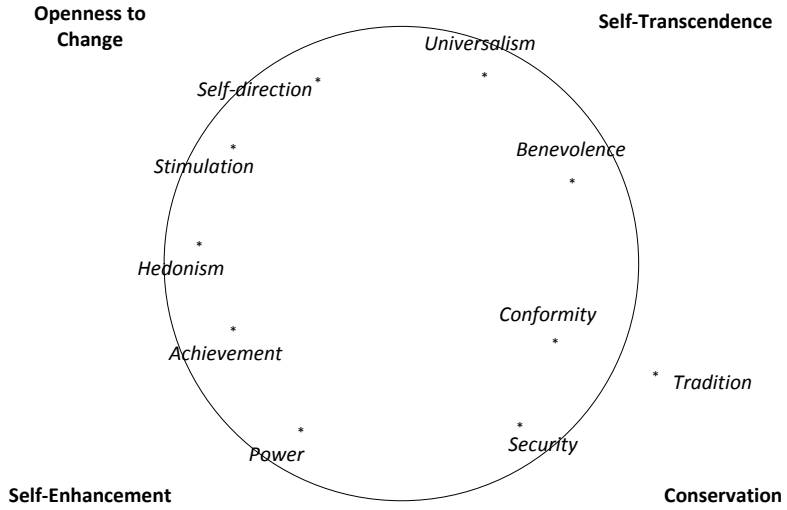


Figure 14 – Theoretical structure of relations among ten motivational types of values

(Source Schwartz & Boehnke, 2004)

Value is a concept that is distinct but related with attitudes to the point of possible semantic overlap. Roe (2002) placed values in the "other characteristics" category, that is, in the lowest layer on the architectonic model. This is inconsistent with the split between inertial-dispositional versus learned-behavioral blocks that Roe himself offered in the model. Values cannot logically fit into a genetic-linked feature as they are subjected to social learning especially in the early periods of life (Meglino & Ravlin, 1998). Defined as "trans-situational goals that serve as guiding principles in the life of a person" (Schwartz 1994, p. 21) or as "abstract ideals, positive or negative, not tied to any specific object of situation, representing a person's beliefs about modes of conduct and ideal terminal goals" (Rokeach, 1968, p. 124) values should be approached distinguishing between terminal and instrumental ones. Simply put, terminal values are those that justify the purpose of social action (desirable end-states of existence), while instrumental values are the means to achieve these purposes (the desirable modes of conduct). As Meglino and Ravlin (1998) discussed, between end-state values (terminal) and instrumental ones, lie "specific organization values" which correspond to work organizational acculturation processes, thus bridging the general societal end-state values and those of a more individual nature, the instrumental ones. Therefore, values can be conceived according to their inertia and level of action, namely, "societal or terminal values", "organizational terminal or intermediate values" and "individual or instrumental values".

Judging by definitions, values and attitudes share the cognitive and affective dimensions. This is in line with the consensual idea that they are closely connected as conceptualized by Rokeach (1968) in the "value-attitude system", namely by considering values as conditioning attitude (Feather, 1995; Petty et al., 1997). Values have no specific object while attitudes do. Nevertheless, and according to Cozma (2011), instrumental values are more closely related with attitudes as they have a lesser degree of abstraction and are more anchored on individual's positioning rather than on collective positioning. Therefore, terminal values should be more inertial than instrumental ones, harder to change and more closely prone to be taken as dispositional-like in nature rather than instrumental ones. Both categories share the relative inertial nature of values, but contrasted, terminal values are more deeply rooted in the fundamentals of the society.

In sum, if none of these variables could adequately fit in the lowest layer, is it still theoretically sustainable? The most suitable concept that should migrate to this layer, as even more inertial and deep rooted in human dispositions, is precisely Panksepp (1998) emotion command systems (that corresponds to dispositional emotions) as they are conceived as operating below cortical level at the mammalian brain (Panksepp, 2005). For laymen, it could be presented as emotional personality.

Section 4.12 - Discussion and conclusions

The research approach to competence is vast in methodologies, frameworks and theoretical discussions. In the literature review, there are several models of competence: from USA to European countries – even from Portugal. Besides some common characteristics (e.g. knowledge, skills, and personality), one can state that there are still some misconceptions about some features that need further and deeper research for better conceptual ground – e.g. attitudes, aptitudes and abilities.

The Big Five or Five-Factor Model (FFM, Digman, 1990) of personality is the most common approach as regards it's research and conceptual definition. Nevertheless, and concerning police work, the literature review presents several research projects around personality and some topics linked to it (e.g. intelligence, honesty) which led us to consider the IPIP-HEXACO (Ashton et al., 2007) Honesty / Humility measurement as a "new dimension" in personality assessment.

The ground layer of Bartram and Roe's model was labelled as "other characteristics". This decision lacks empirical explicit argumentation, suggesting further research to better define this ground layer. So, we opted to consider "honor" and "values" as conceptual relevant topics, considering PSP's specific culture.[21]

Shipmann et al. (2000) defined and explained competence modelling comparing and contrasting it to job analysis using a conceptual framework of ten evaluative criteria. All in all, in our research we opt to develop a syncretic model derived from the articulation of Bartram and Roe's model with several scales, to address emotions in criminal investigators at PSP, under the competence modelling methodology.

[21] Due to our knowledge and vivid experience.

For our goal we opted to keep the focus on Bartram and Roe's (2005) model with some specific tools that we will address next, leaving aside less theoretically consolidated frameworks (e.g. ESCO framework, Portuguese Classification of Professions).

Chapter 5 - Profiling Competences

This chapter is intended to offer a structured competence model of PSP criminal investigators following Lane and Ross (1998), Shipmann *et al.*, (2000) and Roe's (2002) definition of competence. The structure is an approximation of Bartram and Roe's (2005) and the data sources used for this purpose are O*NET Development (2007), primary data from PSP criminal investigators, nationwide survey, and content analysis of the body of Law and related statutory norms. The main goal is to identify which elements underlying competences are established in each layer of the model.

Section 5.1 - Method

Section 5.1.1 - Sample and Procedure

Criminal investigators headcount at PSP was, at the time of the empirical study deployment, 2.270 policemen. This is the target of the study.

Due to the geographical dispersion of the PSP police units, we opted to build an online survey hosted in Qualtrics, which was the subject of an internal e-mail message addressed to all the 2.270 policemen in October 2015, after due formal authorization. The survey was available until the end of December 2015. Due to the specificity of the questions, we opted to anonymize the survey and stressed the voluntary participation.

From this invitation, we received an automatic undeliverable message of 243 mailboxes, meaning that only 2.027 policemen received the message. We collected 983 answers of which 703 are usable corresponding to an initial response rate of 48.5% that turned into 34.7%, which, according to Baruch (1999) and Baruch and Holtom (2008) match the usual figures (35.7%, sd=18.8) found in published empirical studies targeting organizational representatives. This sample size, although not necessarily random in nature, allows for an extrapolation with 95% confidence interval at an error margin of 2.99% (or 99% confidence, 3.93% margin of error).

The sample comprises mostly officers (78%) with about half respondents placed in Lisboa and Porto, with PSP average tenure of 19.4 years and operating as criminal

investigators at 11.2 years on the average. The average age in the sample is 42 years-old and the largest majority of the sample is male (93%).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	452	64.3	92.8	92.8
	Female	35	5.0	7.2	100.0
	Total	487	69.3	100.0	
Missing	System	216	30.7		
Total		703	100.0		

Table 23 – Sample Gender

	N	Minimum	Maximum	Mean	Std. Deviation
Age	487	27.00	59.00	42.2936	6.35685
Valid N (listwise)	487				

Table 24 – Sample Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Official	53	7.5	7.5	7.5
	Chief/Sergeant	105	14.9	14.9	22.5
	Officer	545	77.5	77.5	100.0
	Total	703	100.0	100.0	

Table 25 – Sample Career

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Açores	38	5.4	5.4	5.4
	Madeira	31	4.4	4.4	9.8
	Aveiro	22	3.1	3.1	12.9
	Beja	8	1.1	1.1	14.1
	Braga	19	2.7	2.7	16.8
	Bragança	6	.9	.9	17.6
	Castelo Branco	5	.7	.7	18.3
	Coimbra	30	4.3	4.3	22.6
	Évora	9	1.3	1.3	23.9
	Faro	25	3.6	3.6	27.5
	Guarda	8	1.1	1.1	28.6
	Leiria	29	4.1	4.1	32.7
	Lisboa	272	38.7	38.7	71.4
	Portalegre	12	1.7	1.7	73.1
	Porto	94	13.4	13.4	86.5
	Santarém	25	3.6	3.6	90.0
	Setúbal	50	7.1	7.1	97.2
	Viana do Castelo	3	.4	.4	97.6
	Vila Real	4	.6	.6	98.2

	Frequency	Percent	Valid Percent	Cumulative Percent
Viseu	13	1.8	1.8	100.0
Total	703	100.0	100.0	

Table 26 – Administrative District / Region where placed

	N	Minimum	Maximum	Mean	Std. Deviation
Tenure in PSP (without time majoration)	703	2.00	35.00	19.4282	6.29160
Tenure as PSP criminal investigator	703	.00	32.00	11.2447	5.73164
Valid N (listwise)	703				

Table 27 – Sample Tenure

Due to confidentiality and high sensitivity of the target population we opted not to collect any further personal data (e.g. contact) to prevent any nominal identification of respondents.

Section 5.1.2 - Measures

The survey comprehends seven sections:

- A biographical section, with questions about individual and professional characteristics;
- A section on competences, with several questions answerable in a 6-point scale answer (1=unimportant, to 6=totally important), built from the content analysis of O*NET criminal investigators alike profiles and the body of Law and related statutory norms;
- Geir et al. (2014) and Pingault et al. (2012) 36 item Affective Neuroscience Personality Scale (ANPS) with a 6 point Likert scale answer (1=Totally disagree, 6=Totally agree);
- A section about abilities, built from content analysis of O*NET criminal investigators alike profiles, with 6-point scale answer (1=unimportant, to 6=totally important);
    - A section about virtues, duties and values, with honor – concern-for-integrity, from Mosquera et al. (2002) concern-for-integrity (in social relations) items, with a 7 point scale answer (1= not at all; 7= to very much); plus Schwartz's (2001) values (to the exception of Hedonism, due to the specifications of police work); plus 10 duties extracted from the "disciplinary duties" stated on the

Disciplinary Regulation (e.g. assiduity, loyalty); plus 12 items built from content analysis of the body of Law and related statutory norms (e.g. Dignity / Honorability / Respectability, Comradeship) all answerable in a 6-point scale (1=unimportant, to 6=totally important);

- A section on personality, comprehending Donnellan et al. (2006) 20-Item Mini-IPIP scale measured in a 6 point scale (1=nothing like me; 6=exactly like me) and HEXACO–60 honesty-humility scale (Ashton & Lee, 2009) measured in a 6 point Likert scale (1=Totally disagree, 6=Totally agree). These scales were put together takin into consideration Gubler et al. (2014) call for improvement in these measures.
- A section containing 10 items concerning Knowledge, built from content analyzing O*NET criminal investigators alike profiles and the body of Law and related statutory norms (e.g. Communication and media, Public security and prevention, Civil Law) measured with a 6-point scale (1=unimportant, to 6=totally important).

Section 5.1.3 - Data analysis strategy

Profiling competences requires context embeddedness (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004) which, in a Police organization, entails its institutional nature and praxis. In the present study, the body of Law and related statutory norms gain a central role in structuring the rationale for competence profiling. Therefore, we have opted to build a corpus for content analysis (Krippendorff, 2004) on the basis of such body of Law.

The first step comprehended collecting and compiling all relevant legislation underpinning the legitimacy and authority of the institution and its actors. The second step proceeded with the content analysis with *a priori* categories from Roe (2002b) using Tropes software.

The selected software to assist the process of treatment of interviews, the cognitive Tropes discursive, falls within the paradigm of psycholinguistics (Wolff, 2002). The internal processing carried out by Tropes consists of two phases: the analysis, and the semantic analysis (Ghiglione, Landré, Bromberg, & Molette, 1998). The automated analysis that Tropes presents goes beyond a mere lexicometry analysis (Jenny, 1997)

which would not take into account the language and functionalities of the transactions which underlie the cognitive-discursive speech. Tropes software was conceived as a tool of analysis with the aim of identifying key elements to access the traces of the transactions (Ghiglione et al., 1998).

The use of Tropes offers the main advantage of being able to analyze a body of words with a more objective assessment than the traditional analysis would (Ramos, 2010). By automating the process of item categorization, Tropes reduces the subjectivity and biases due to the intervention of the encoder in establishing the meaning of the text, which are the main limitations linked with methods of content analysis (Vala, 1986). However, it would be unsuitable to argue that the automatic consideration is sufficient, since traditional approaches conduct a more in-depth analysis in order to supplement and put the ambiguities that resist 'blindness' and are limited to the semantic capacity of the software applications (Ramos, 2010). The interpretation is always assigned to the researcher, to provide meaning and background for the usefulness of the analysis.

On the basis of findings in Tropes reports and considering the previous statement, we included in the software category dictionary the most representative categories covering Roe's revised model strata.

As regards statistical analysis, we used both IBM SPSS Statistics, ver. 20 and IBM SPSS Amos, ver. 23. The quality of both confirmatory factor analyses (CFA) and structural equation models (SEM) will be judged on the basis of goodness-of-fit indices. There is no single criterion to set a definitive cutoff value to make decisions about fit despite the long history of research specialized in this matter (e.g. Bentler & Bonett, 1980; Kenneth A. Bollen, 1989; Browne & Cudeck, 1993; Hu & Bentler, 1999; Kaplan, 2000; Marsh, Hau, & Wen, 2004; Sharma, Mukherjee, Kumar, & Dillon, 2005; Tabachnick & Fidell, 2007). All in all, Hu and Bentler (1999) is plausibly the most cited source for deciding cutoff criteria (namely CFI & TLI>.95; RMSEA<.06 & SRMR<.08) but such universal prescription has been challenged by ulterior research that showed the need to take into consideration sample size (which is well known to exert important effects in some statistics) and model complexity (i.e. the number of estimated parameters). Hair *et al.* (2010) reviewed these cumulative findings and integrated in a single table the contingent values (Table 28). One should note this is intended solely for the use of maximum likelihood (ML) method.

N.º of Stat.vars. (*m*)	N < 250			N > 250		
	m ≤ 12	12 < *m* < 30	*m* ≥ 30	*m* ≤ 12	12 < *m* < 30	*m* ≥ 30
x^2	Insignificant *p*-values expected	Significant *p*-values even with good fit	Significant *p*-values expected	Insignificant *p*-values even with good fit	Significant *p*-values expected	Significant *p*-values expected
CFI or TLI	.97 or better	.95 or better	Above .92	.95 or better	Above .92	Above .90
RNI	May not diagnose misspecification well	.95 or better	Above .92	.95 or better, not used with N > 1000	Above .92, not used with N > 1000	Above .90, note used with N > 1000
SRMR	Biased upward; use other indices	.08 or less (with CFI of .95 or higher)	Less than .09 (with CFI above .92)	Biased upward; use other indices	.08 or less (with CFI above .92)	.08 or less (with CFI above .92)
RMSEA	Values < .08 with CFI = .97 or higher	Values < .08 with CFI of .95 or higher	Values < .08 with CFI above .92	Values .07 with CFI .97 or higher	Values < .07 with CFI of .92 or higher	Values < .07 with CFI of .90 or higher

Note: m – number of observed variables; N applies to number of observations per gr; p when applying CFA to multiple groups at the same time

Table 28 – GoF indices contingent to sample size and complexity
Source: Hair et al. (2010)

For the present study, we shall take into consideration these comprehensive criteria. However, Hair et al. (2010) add that goodness of fit report must cover a range of indices and thus one should state X^2 and DF (CMIN/DF), one absolute fit index (i.e. GFI, RMSEA, or SRMR), one incremental fit index (i.e. CFI or TLI), one goodness-of-fit index (e.g. GFI, CFI, or TLI), and one badness-of-fit index (e.g. RMSEA or SRMR). This somehow matches Hu and Bentler (1999) configurational perspective adopted to mitigate tradeoffs between fit indices (Table 29).

Fit Index Combination	Combinational Rules
RMSEA and SRMR	RMSEA of .06 or lower and SRMR of .09 or lower
CFI and SRMR	CFI of .96 or higher and SRMR of .09 or lower

Table 29 – Hu & Bentler's (1999) Two-index presentation strategy

This implies we may adopt two levels of strictness in setting the cutoff criteria for subsequent analyses. Firstly, we will consider Hair et al. (2010) recommendations for adjusting to each "sample size - model complexity" pair. Secondly, we shall use the more conservative possibility (configurational) whenever we believe the model requires that level of assurance i.e. CMIN/DF<3.0 plus CFI>.90-.95 (according to the sample

size-model complexity situation) plus RMSEA<.06 plus SRMR<.08. Additionally, due to the innovative nature of some variables, we also think a parsimony index is welcomed in order to control for redundant items and hence we shall also report Parsimony Comparative Fit Index (PCFI, James, Mulaik, & Brett, 1982) which has no cutoff but is recommended to be closest to 1 for indication of maximum parsimony. Although most published research does a less demanding validation, due to the complexity involved in Bartram and Roe's model (mainly the interfaces and streams) we opted to take a higher type II error (false negatives) instead of a type I (false positives).

A sensible issue in statistical testing concerns the cutoff for p-value which is "the probability, under the assumption of no effect (the null hypothesis H_0), of obtaining a result equal to or more extreme than what was actually observed" (Held, 2010). AMOS software sets by default .001 as the p-value. However, on the basis of Sellke et al. (2016) p-value calibration options we opted to use .001<p-values<.01 range in order to reach more reliable decision.

Section 5.2 - Results

Section 5.2.1 - Competences

The 17 competences were selected from content analyzing both O*NET criminal investigators alike profiles and the body of Law plus related statutory norms, thus assuming their relevance for the job performance. If such set of competences is indeed relevant we would expect to find averages for each above the first point of the scale (1=unimportant, to 6=totally important) after the central mathematical point, i.e. 3.5. In this case, the first natural value is 4. The one sample t statistics tests showed that all competences significantly differed 3.5, thus corroborating the initial expectation that all selected competences are relevant (Table 30).

N=703	Test Value = 4								
	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	99% Confidence Interval of the Difference	
								Lower	Upper
C1_To analyze the information and make critical sense	5.09	.800	.030	36.396	715	.000	1.088	1.01	1.17
C2_To evaluate	5.11	.713	.027	41.754	715	.000	1.113	1.04	1.18
C3_Oratory	4.61	.829	.031	19.574	715	.000	.606	.53	.69
C4_To consider the other	4.94	.783	.029	32.206	715	.000	.943	.87	1.02
C5_To coordinate	5.09	.829	.031	35.218	715	.000	1.091	1.01	1.17
C6_To create personal networks of contacts	5.15	.779	.029	39.400	715	.000	1.147	1.07	1.22
C7_To interact appropriately with people with different characteristics	4.97	.742	.028	34.874	715	.000	.966	.89	1.04
C8_To evidence adaptability	4.85	.746	.028	30.621	715	.000	.853	.78	.93
C9_To influence	4.14	1.002	.037	3.694	715	.000	.138	.04	.23
C10_To deal with pressure	5.37	.738	.028	49.709	715	.000	1.370	1.30	1.44
C11_To lead and persuade	4.71	.905	.034	21.027	715	.000	.711	.62	.80
C12_To negotiate and manage conflicts	4.89	.814	.030	29.299	715	.000	.891	.81	.97
C13_To optimize resources	4.53	.943	.035	15.094	715	.000	.532	.44	.62
C14_To plan and organize	5.12	.722	.027	41.581	715	.000	1.122	1.05	1.19
C15_Problem Solving	5.12	.718	.027	41.674	715	.000	1.119	1.05	1.19
C16_Team work	5.48	.674	.025	58.679	715	.000	1.478	1.41	1.54
C17_To communicate effectively	5.18	.718	.027	43.885	715	.000	1.177	1.11	1.25

Table 30 – One-Sample Test

With the purpose of ranking the competences we conducted a sequenced t-student test with the first test-value set at 5.5 and lowering one decimal point until reaching 4. The rationale of this set of analyses is to group together the competences that do not get a significant t-test value when compared with other competences. The findings are shown in Table 31 in rank order.

N=703	Test value	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	99% Confidence Interval of the Difference	
									Lower	Upper
C16_Team work	5.5	5.48	.674	.025	-.887	715	.375	-.022	-.09	.04
C10_To deal with pressure	5.4	5.37	.738	.028	-1.084	715	.279	-.030	-.10	.04
C17_To communicate effectively	5.2	5.18	.718	.027	-.843	715	.399	-.023	-.09	.05
C6_To create personal networks of contacts		5.15	.779	.029	-1.833	715	.067	-.053	-.13	.02
C5_To coordinate	5.1	5.09	.829	.031	-.298	715	.766	-.009	-.09	.07
C1_To analyze the information and make critical sense		5.09	.800	.030	-.402	715	.688	-.012	-.09	.07
C2_To evaluate		5.11	.713	.027	.492	715	.623	.013	-.06	.08
C15_Problem Solving		5.12	.718	.027	.697	715	.486	.019	-.05	.09
C14_To plan and organize		5.12	.722	.027	.797	715	.425	.022	-.05	.09
C7_To interact appropriately with people with different characteristics	5.0	4.97	.742	.028	-1.209	715	.227	-.034	-.11	.04
C4_To consider the other		4.94	.783	.029	-1.956	715	.051	-.057	-.13	.02
C12_To negotiate and manage conflicts	4.9	4.89	.814	.030	-.294	715	.769	-.009	-.09	.07
C8_To evidence adaptability		4.85	.746	.028	-1.674	715	.095	-.047	-.12	.03
C11_To lead and persuade	4.7	4.71	.905	.034	.322	715	.747	.011	-.08	.10
C3_Oratory	4.6	4.61	.829	.031	.198	715	.843	.006	-.07	.09
C13_To optimize resources		4.53	.943	.035	-1.925	715	.055	-.068	-.16	.02
C9_To influence	4.2	4.14	1.002	.037	-1.649	715	.100	-.062	-.16	.03

Table 31 – Sequenced t-student test

Having been derived both theoretically and on a pragmatic basis (by content analyzing official documents) we opted to conduct a confirmatory factor analysis to the set of 17 competences. Such analysis is required to validate the underlying rationale of subjectively building the content analysis categories. This categorization procedure requires intrinsic facial validation of the competences extracted. The aggregation of competences on the basis of facial validity suggested four families of competences: 1) Interpersonal relations (4 items: C4, C6, C7 & C17), 2) Teamwork (5 items: C5, C8, C10, C14 & C16), 3) Analytical capacity (3 items: C1, C2 & C15), and 4) Persuasion (5 items: C3, C9, C11, C12 & C13).

Goodness of fit for this construct's CFA with a sample of 703 and 17 observed variables is the following (J. F. Hair et al., 2010): CFI>.92, plus RMSEA<.07 plus SRMR<.08 and we may tolerate the significant p-value for X^2. The CFA for this four factor structure showed unacceptable fit (CMIN/DF=4.647, p<.01; CFI=.900 PCFI=.748; RMSEA=.071; SRMR=.0532). Because this model presents some low standardized loadings as well as high modification indices, we opted for robustness sake to exclude two items that substantially harmed the quality of the factor model, namely C3_Oratory and C15_Problem Solving. The ensuing CFA shows fully acceptable fit indices (CMIN/DF=2.505, p<.01; CFI=.962 PCFI=.779; RMSEA=.046; SRMR=.0338) with average lambdas reaching .638 but average AVEs below Fornell and Larcker (1981) recommended value of .500. In such cases Fornell and Larcker (1981, p.46) warn against the conservative nature of AVE formula which should be contrasted with composite reliability. This indicator can then be used *per se* as sufficient criterion to judge convergent validity. The composite reliability for all the factors reached the critical threshold of 0.7 to the exception of the first one which is roundable up to this threshold (.694). Therefore, we considered all factors to show acceptable convergent validity.

	Items	λ	CR	AVE	Fit indices
Interpersonal relations	C17_To communicate effectively C6_To create personal networks of contacts C7_To interact appropriately with people with different characteristics C4_To consider the other	0.634 0.513 0.639 0.618	.694	.364	CMIN/DF=2.505 p<.001 CFI=.962 PCFI=.779 RMSEA=.046 SRMR=.0338
Team work	C10_To deal with pressure C5_To coordinate C14_To plan and organize C8_To evidence adaptability C16_Team work	0.662 0.657 0.576 0.647 0.533	.753	.381	
Analytical capacity	C2_To evaluate C1_To analyze the information and make critical sense	0.725 0.845	.764	.620	
Persuasion	C13_To optimize resources C12_To negotiate and manage conflicts C11_To lead and persuade C9_To influence	0.747 0.730 0.574 0.465	.728	.409	

Table 32 – Competences Fit indices

Discriminant validity is judged on the basis of Fornell and Larcker (1981) criterion, where the squared root of each construct's AVE is required to be higher that any bivariate correlation of that construct with any other construct. The correlation between both scales is .487 which is clearly below both squared roots AVEs (.663 and .782, respectively). Therefore, the scales have both convergent and divergent validity.

	1	2	3	4
1. Interpersonal relations	.603			
2. Team work	.934	.617		
3. Analytical capacity	.737	.669	.787	
4. Persuasion	.773	.901	.501	.640

Table 33 – Discriminant validity analysis via AVE[a]

[a] Diagonals show the square root of AVE for each construct

Considering the expectable overlap amongst akin families of competences, e.g. interpersonal relations and team work, it is no surprise that discriminant validity analysis is compromised. However, no single factor emerged (CMIN/DF=5.468, p<.01; CFI=.881 PCFI=.755; RMSEA=.079; SRMR=.0516) and no second order factor showed acceptable solution (due to the emergence of a Heywood case, Dillon, Kumar,

& Mulani, 1987). The tentative nature of the model allows us to accept on a provisory basis the four theory-driven solution although care must be taken if such factors are to be used as predictors due to multicollinearity (Figure 15). However, in the case of this research, they are positioned solely as criterion variables, and therefore, this problem cannot reasonable hold and we ruled it out.

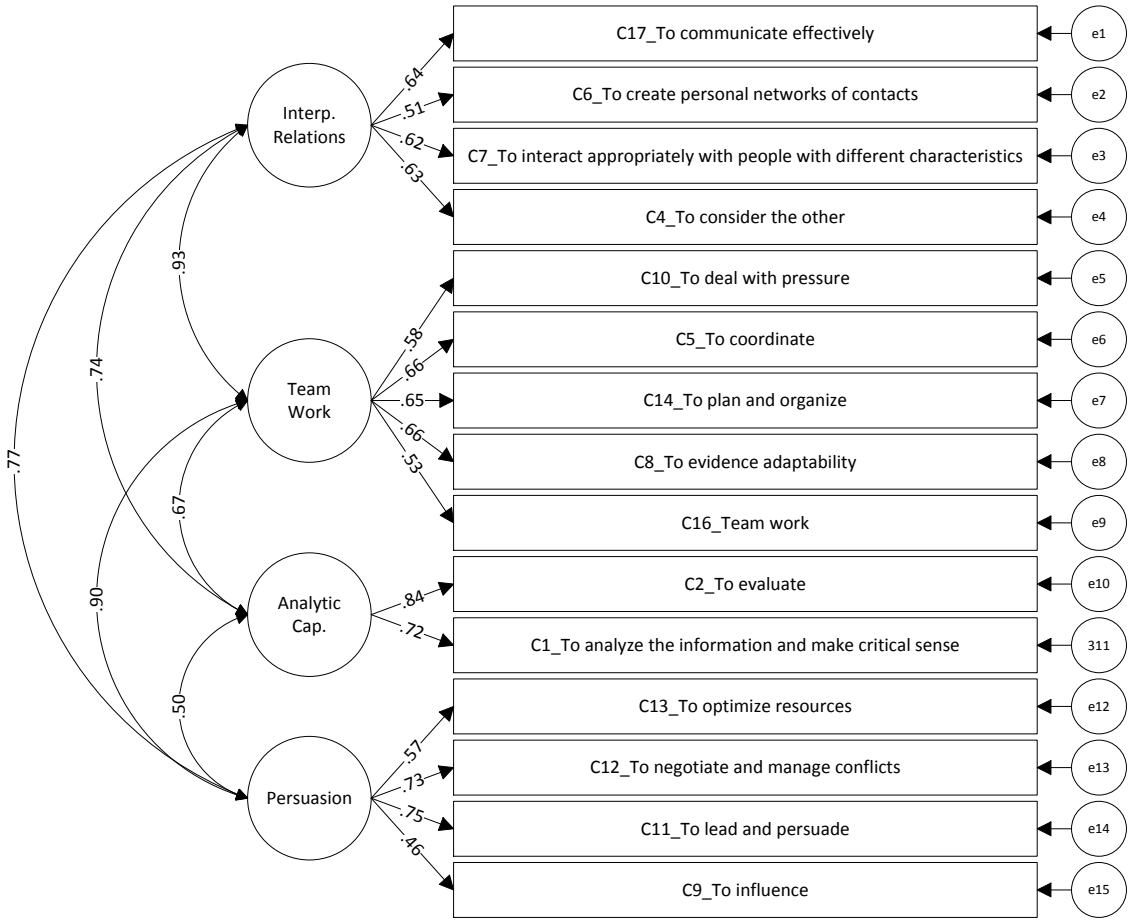


Figure 15 – Four families of competence

Section 5.2.2 - Knowledge

As the knowledge items were *ad hoc* generated from the qualitative analyses of documental sources, we opted to test a model that aggregated the 10 items by subject affinity. Namely, Psychology+Sociology, Administrative+Regulations, Law Civil / Criminal / Fundamental, Communication+Language, and Public security prevention.

This tentative model returned unacceptable fit indices and therefore an exploratory factor analysis was conducted. It showed a two factor solution where Law related items

were separated from a general factor. The CFA of this solution showed unacceptable fit indices (CMIN/DF=8.844, p<.001; CFI=.903; PCFI=.683; RMSEA=.106; SRMR=.0549). By analyzing Modification Indices, we found a biasing covariance operating between Psychology and Sociology errors which we interpreted as enacting the same Behavior-focused knowledge. Judging from the functional description of Criminal Investigators, we opted to keep Psychology as it incorporates both Psycho-social and Individual behavioral dimensions. By excluding Sociology, we found a mediocre but acceptable two factor solutions (CMIN/DF=5.321, p<.001; CFI=.956; PCFI=.649; RMSEA=.078; SRMR=.0409). While the first factor reached the convergent validity threshold (AVE=.466, CR=.838), the second one (Law) failed to do so (AVE=.408, CR=.669). Therefore, we excluded all Law related items and conducted a new CFA for a single factor composed of all previous items. The 6-item single factor CFA showed acceptable fit indices (CMIN/DF=2.295, p=.014; CFI=.992; PCFI=.595; RMSEA=.043; SRMR=.0204). We therefore consider that these operate semantically as aggregated and all the remaining ones are dealt with on an individual basis (Figure 16).

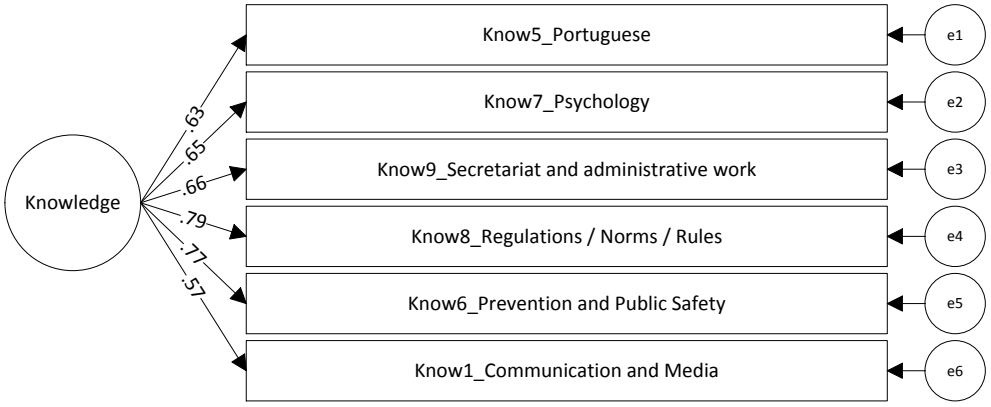


Figure 16 – Knowledge Items Validity

Section 5.2.3 - Skills

No *a priori* skill classification was found in the sources of criminal investigator literature review and the same applies for the sources which were used to collect this data (e.g. O*Net Standard Occupation Classification). Literature often semantically fuses the concept of skill with that of competence which hampers the goal of sorting out a reasonable skill classification system. Therefore, skills were grouped on the basis of

facial validity resulting in four factors: a first one concerning "communication skills", the second one concerning "resources management skills", the third "cognitive skills" and the last one "social skills".

Goodness of fit for this construct's CFA with a sample of 703 and 16 observed variables is the following (J. F. Hair et al., 2010): CFI>.92, plus RMSEA<.07 plus SRMR<.08 and we may tolerate a significant p-value for X^2. The CFA of this intuitively derived solution showed unacceptable fit indices (CMIN/DF=5.058, p<.01; CFI=.899; PCFI=.648; RMSEA=.076; SRMR=.0507). The very high covariances found between factors as well as a Heywood case within a factor led us to suspect of a single common factor structuring this data. The CFA for this factor also showed unacceptable fit indices (CMIN/DF=6.901, p<.01; CFI=.870; PCFI=.754; RMSEA=.092; SRMR=.0543) but by analyzing Modification Indices we found a 7-item valid model (CMIN/DF=1.747, p=.04; CFI=.994; PCFI=.497; RMSEA=.033). The factor reached the convergent validity threshold (AVE=.493, CR=.871) and therefore we considered the model as useful for further analyses (Figure 17).

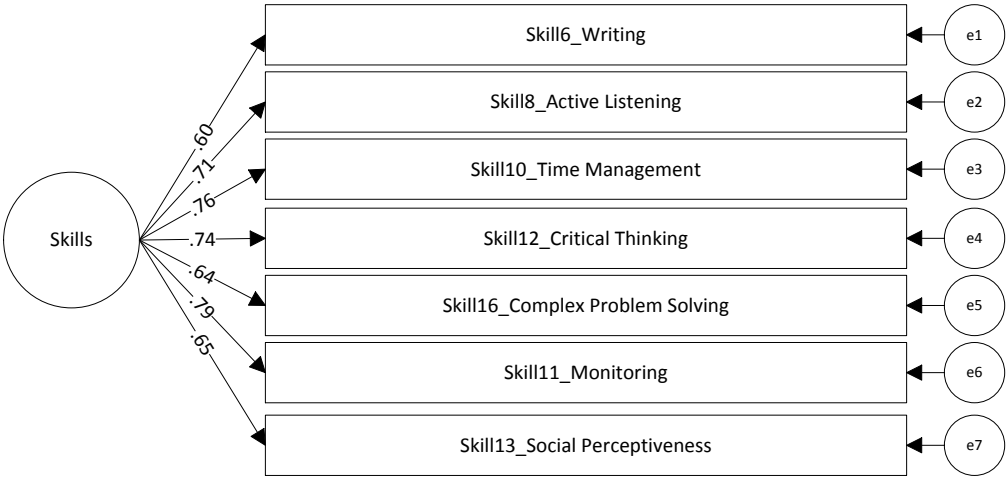


Figure 17 – Skills Validity

Section 5.2.4 - Value-Attitudes System

Section 5.2.4.1 - Theoretical framework

On the basis of Roe and Ester (1999:3) definition of attitude as "people's beliefs about specific objects or situations" and considering the semantically nature of "values" as defined by Schwartz (1992: 4) as "concepts or beliefs [that] pertain to desirable end states or behaviors, transcend specific situations, guide selection or evaluation of behavior and events, and are ordered by relative importance" we recovered Rokeach, (1968a) concept of "Value-Attitudes System" (VAS) as "a hierarchically connected system of attitudes and values… [where] … attitudes within a person's total belief system are all in the service of and cognitively connected with (…) instrumental values, and …[these are]… functionally and cognitively connected with (…) terminal values. Also, on the basis of Crossan, Mazutis and Seijts (2013) we considered virtues as being integrated with values due to their common axiological nature. Consistently, we built an integrated solution by using three empirical sources covering these attitude-related dimensions (Marshall, n.d.): tropes-virtues, duties, and values (distinguishing between terminal, intermediate, and instrumental values).

The design of the final model followed a progressive inclusive strategy where each of the three dimensions was firstly tested with a CFA, then adjusted whenever advisable and theoretically sound. Lastly, the three valid dimensions were analyzed separating instrumental value, intermediate terminal values, and honor.

The *instrumental values* model comprehends all those that were classifiable, according with Rokeach's (1968a) typology, as a means to terminal values, namely Schwartz's Benevolence, Self-direction, Conformity, and Universalism. We took into consideration the items themselves to judge if the operational measure stressed a terminal or instrumental classification. Whenever any given dimension (e.g. Universalism) was measured with a mix, we opted to classify it as "instrumental" reflecting its relative lower inertia in Bartram and Roe's model (2005).

	(Rokeach, 1968a)	**Schwartz (2001)**
It's very important to him/her to help the people around him/her. He/she wants to care for their well-being	Instrumental	Benevolence (Helpful)
It is important to him/her to be loyal to his/her friends. He/she wants to devote herself to people close to him/her	Instrumental	Benevolence (Loyal)
He/she thinks it is important that every person in the world be treated equally. He/she believes everyone should have equal opportunities in life.	Terminal	Universalism (Equality)
It is important to him/her to listen to people who are different from him/her. Even when he/she disagrees with them, he/she still wants to understand them	Instrumental	Universalism (Broadminded)
Thinking up new ideas and being creative is important to him/her. He/she likes to do things in her own original way	Instrumental	Self-Direction (Creativity)
It is important to him/her to make his/her own decisions about what he/she does. He/she likes to be free and not depend on others.	Instrumental	Self-Direction (Choosing own goals)
It's very important to him/her to show his/her abilities. He/she wants people to admire what he/she does.	Instrumental	Achievement (Capable)
Being very successful is important to him/her. He/she hopes people will recognize his/her achievements.	Terminal	Achievement (Successful)
He/she believes that people should do what they're told. He/she thinks people should follow rules at all times, even when no-one is watching.	Instrumental	Conformity (Obedient)
It is important to him/her always to behave properly. He/she wants to avoid doing anything people would say is wrong.	Instrumental	Conformity (Self-Discipline)
It is important to him/her to be humble and modest. He/she tries not to draw attention to his/herself.	Instrumental	Tradition (Accepting my portion in life)
Tradition is important to him/her. He/she tries to follow the customs handed down by his/her family.	Instrumental	Tradition (Respect for tradition)

Table 34 – Instrumental Values

Carrying out a hinge function between terminal and instrumental values, *intermediate values* (at the organizational level of acculturation) are formalized into regulations that organizations use to convey baseline values (virtues) as well as prescribed codes of conduct (duties), usually with a disciplinary sanction counterpart.

	(Rokeach, 1968a)
Att28_Autonomy / Independence / Initiative	Intermediate
Att29_Comradeship / Cohesion / Solidarity / Esprit de corps	Intermediate
Att30_Courtesy / Deference / Lack of respect / Consideration / Esteem / Sociability / Client orientation	Intermediate
Att31_Devotion / Zeal / Involvement / Stance / Example / Readiness / Commitment / Concern / Enthusiasm	Intermediate
Att32_Professional ethics / Integrity / Honesty / Probity / Seriousness / Transparency / Truth / Responsibility	Intermediate
Att33_Determination / Tenacity / Steadiness / Perseverance / Assertiveness	Intermediate
Att34_Dignity / Honorability / Respectability	Intermediate
Att35_Discipline / Sobriety / Work method / Compliance / Urbanity / Confidentiality/ Reliability / Professional secrecy	Intermediate
Att36_Dominion and submission / Moderation / Use of force / Serenity / Prudence	Intermediate
Att37_Equality / Humanism / No discrimination / Tolerance / Neutrality / Objectivity / Rigor/ Thorough / Openness to criticism	Intermediate
Att38_Goal orientation / Efficiency	Intermediate

Table 35 – Intermediate Values

The *terminal values* model comprehends all those that were classifiable, according with (Rokeach, 1968a) typology, as societal in nature (Schwartz's power, stimulation & security).

	(Rokeach, 1968a)	**Schwartz (2001)**
He/she likes surprises and is always looking for new things to do. He/she thinks it is important to do lots of different things in life.	Terminal	Stimulation (Variation in Life)
He/she looks for adventures and likes to take risks. He/she wants to have an exciting life.	Terminal	Stimulation (Excitement in life)
It is important to him/her to be rich. He/she wants to have a lot of money and expensive things.	Terminal	Power (Wealth)
It is important to him/her to be in charge and tell others what to do. He/She wants people to do what he/she says.	Terminal	Power (Authority)
It is important to him/her to live in secure surroundings. He/she avoids anything that might endanger his/her safety.	Terminal	Security (Family security)
It is important to him/her that the government insure his/her safety against all threats. He/she wants the state to be strong so it can defend its citizens.	Terminal	Security (National security)

Table 36 – Terminal Values

Honor has a central place in traditional institutions, especially those linked with security. Therefore, we opted to treat terminal values together with honor. All of these are deeply ingrained in societal level socialization.

From Schwartz's dimensions we kept two terminal values (stimulation and power) while we split Mosquera et al. (2002b) honor scale into two factors (honor as seen from own eyes, and honor as seen by other's eyes).

Section 5.2.4.2 - Instrumental values

Goodness of fit for this construct's CFA with a sample of 703 and 8 observed variables is the following (Hair et al., 2010): CFI>.95, plus RMSEA<.07 and we expect a non-significant p-value for X^2. The CFA of this solution showed acceptable fit indices (CMIN/DF=2.055, p=.005; CFI=.987; PCFI=.493; RMSEA=.039) with average lambdas of .790 and all AVEs above .500. All composite reliabilities vary between .737 and .781.

	Items	λ	CR	AVE	Fit indices
Benevolence	To be loyal to friends To help the people around	.829 .771	.781	.641	CMIN/DF=2.055 p=.005 CFI=.987 PCFI=.493 RMSEA=.039
Self-direction	Thinking up new ideas and being creative To make own decisions about what to do	.848 .751	.781	.642	
Conformity	People should do what they're told To behave properly	.777 .750	.737	.583	
Universalism	Every person in the world be treated equally Listen to people who are different	.788 .812	.781	.640	

Table 37 – Terminal Values Fit Indices

The factor solution found has also discriminant validity on the basis of Fornell and Larcker (1981) criterion, as the correlations between factors fall below all respective squared root AVEs (Table 38)

	1	2	3	4
1. Benevolence	(.801)			
2. Self-direction	.305	(.801)		
3. Conformity	.481	.151	(.764)	
4. Universalism	.695	.355	.480	(.800)

Table 38 – Terminal Values Discriminant Validity

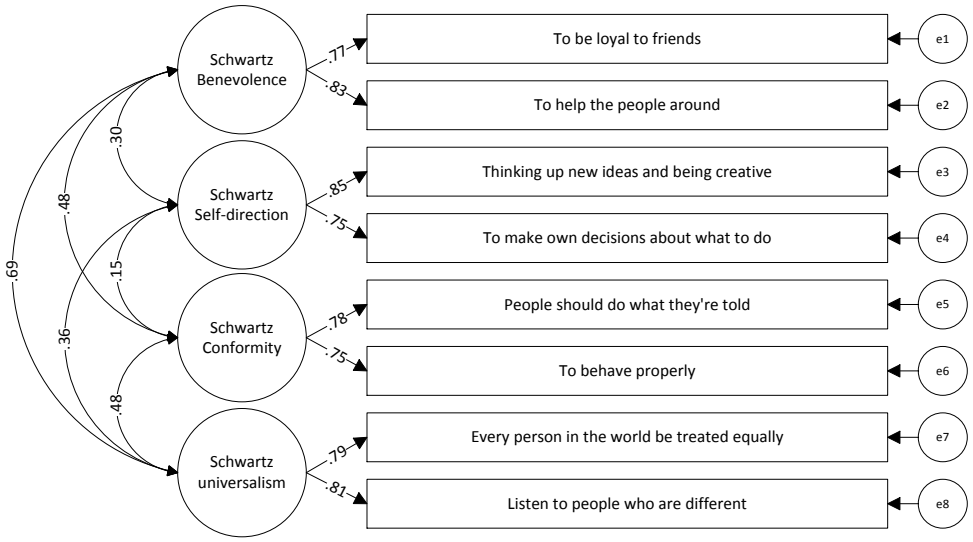


Figure 18 - Terminal Values Validity

Section 5.2.4.3 - Intermediate Values

Duties split in two factors: organizational and judiciary duties, while virtues fell into a single factor.

Goodness of fit for this construct's CFA with a sample of 703 and 12 observed variables is the following (Hair et al., 2010): CFI>.95, plus RMSEA<.07 plus SRMR<.08 and X^2 is expect to be non-significant. The model comprehended one second order factor and showed valid fit indices (CMIN/DF=2.668, p<.001; CFI=.981; PCFI=.672; RMSEA=.049; SRMR=.0301) with average lambdas reaching .884 and AVE=.785. The construct is also reliable (CR=.916). Taking into consideration the high factor loadings on the second order factor, we conducted a single factor analysis which showed invalid fit indices (CMIN/DF=17.907, p<.001; CFI=.844; PCFI=.691; RMSEA=.155; SRMR=.0688) thus reassuring our first option.

	Items	λ	CR	AVE	Fit indices
Intermediate values	Organization duties Judiciary duties Virtues	.876 .959 .817	.916	.785	CMIN/DF=2.668, p<.001 CFI=.981 PCFI=.672 RMSEA=.049 SRMR=.0301

Table 39 – Intermediate Values Fit indices

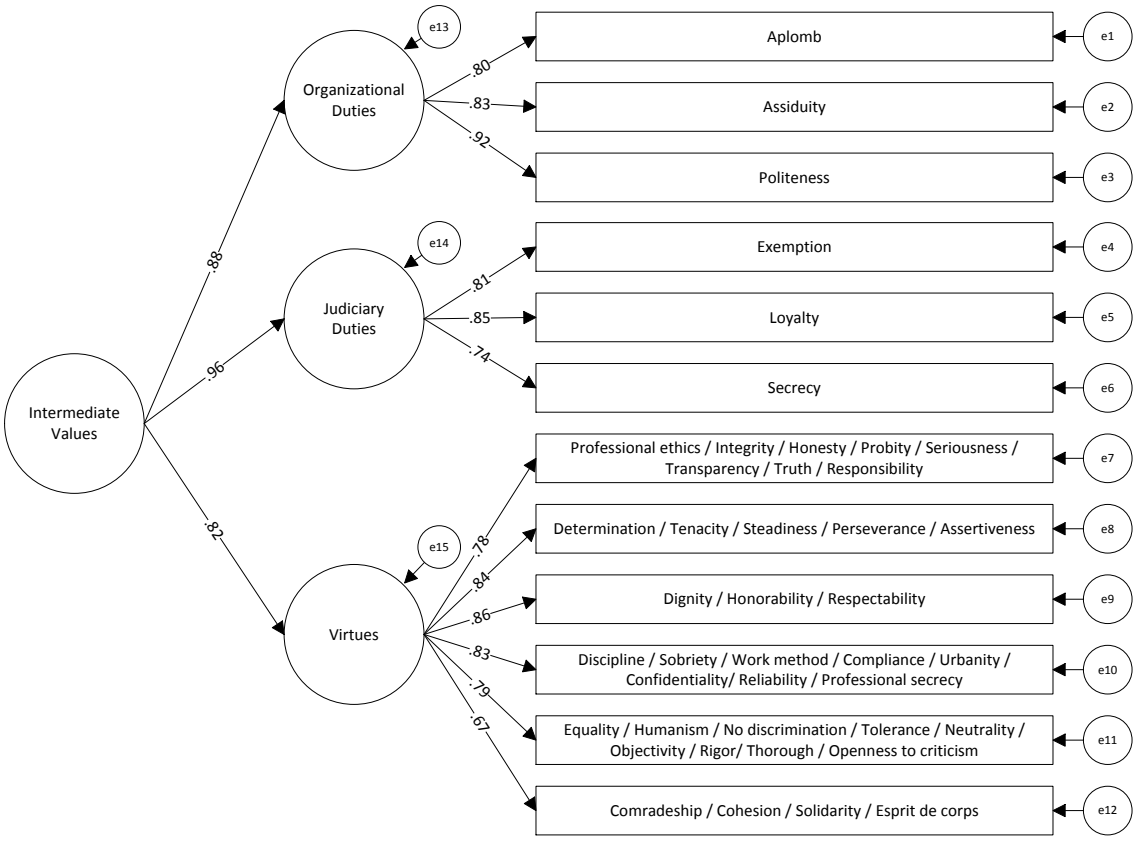


Figure 19 – Intermediate Values Validity

Section 5.2.4.4 - Terminal Values

Honor was measured with Mosquera et al. (2002) 7-item Concern for Integrity (in social relations) scale with a 7 Likert point (1= not at all; 7= to very much). The single factor originally proposed was not found in the confirmatory factor analysis (CMIN/DF=50.072, p<.01; CFI=.800; PCFI=.533; RMSEA=.264; SRMR=.0874). The EFA screeplot analysis indicated the existence of one or two factors that would fit with the bipartite theory of honor used by Stewart (1994) and mentioned by Mosquera et al. (2002) as theoretic ground for the original scale. Hence, we have split the scale accordingly and, after removal of one item with weak loadings (i.e. Being hypocritical), we found (Figure 20) a two-factor valid solution (CMIN/DF=4.912, p<.01; CFI=.988; PCFI=.593; RMSEA=.075; SRMR=.0218).

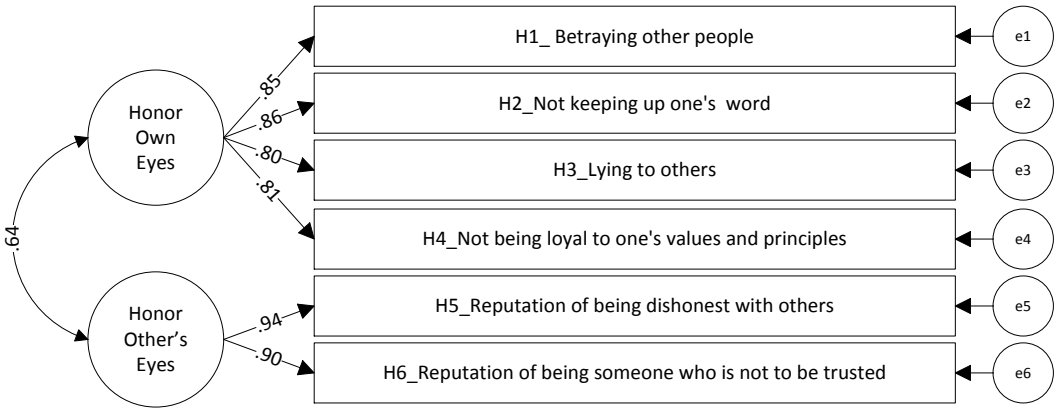


Figure 20 – Honor Validity

Honor	(Rokeach, 1968a)
H1_Betraying other people	Terminal
H2_Not keeping up one's word	Terminal
H3_Lying to others	Terminal
H4_Not being loyal to one's values and principles	Terminal
H5_Reputation of being dishonest with others	Terminal
H6_Reputation of being someone who is not to be trusted	Terminal
H7_Being hypocritical	Terminal

Table 40 – Honor Values

We aggregated the honor scale with two Schwartz's terminal values (stimulation and power) and named it **Terminal-Values System (TVS)**. The CFA goodness of fit for TVS with a sample of 703 and 10 observed variables, is expected to (Hair et al., 2010) be: CFI>.95, plus RMSEA<.07 plus SRMR<.08 and X^2 is expect to be non-significant. The model comprehended 4 factors and showed valid fit indices (CMIN/DF=2.735, p<.001; CFI=.985; PCFI=.678; RMSEA=.050; SRMR=.0294) with average lambdas reaching .811 and all AVEs above .500 to the exception of Power. All composite reliabilities vary between .776 and .916 to the exception of Power that although showing subliminal values (both AVE and CR) add meaning to the model by isolating an important variable for individual embeddedness in institutional context (Table 41).

	Items	λ	CR	AVE	Fit indices
Honor own	H1_Betraying other people H2_Not keeping up one's word H3_Lying to others H4_Not being loyal to one's values and principles	.857 .858 .799 .803	.898	.688	CMIN/DF=2.735 p<.001 CFI=.985 PCFI=.678 RMSEA=.050 SRMR=.0294
Honor others	H5_Reputation of being dishonest with others H6_Reputation of being someone who is not to be trusted	.934 .904	.916	.845	
Stimulation	Likes surprises and is always looking for new things to do Looks for adventures and likes to take risks	.826 .749	.776	.622	
Power	To be rich To be in charge and tell others what to do	.696 .688	.648	.479	

Table 41 – Terminal Values System Fit indices

The factor solution found has discriminant validity on the basis of Fornell and Larcker (1981) criterion, as the correlations between factors fall below all respective squared root AVEs (Table 42).

	1	2	3	4
1. Honor own	(.829)			
2. Honor others	.638	(.919)		
3. Stimulation	.017	.027	(.789)	
4. Power	-.109	.000	.461	(.692)

Table 42 – Discriminant analysis via AVE[a]

[a] Diagonals show the square root of AVE for each construct

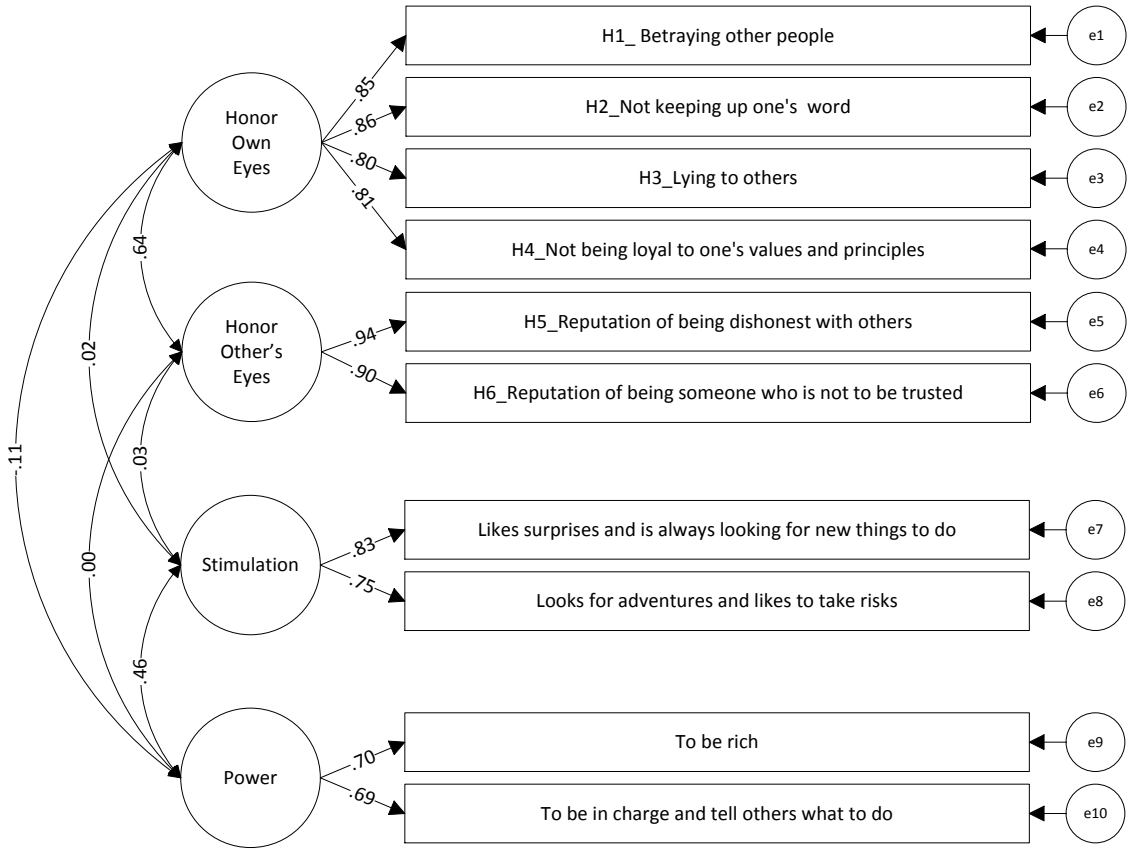


Figure 21 – Terminal Values System Validity

Section 5.2.5 - Abilities

A CFA conducted with the original three factor structure used by O*Net (Cognitive, Psychomotor, and Sensory abilities) on the 19 abilities listed showed unacceptable fit indices (CMIN/DF=7.330, p<.001; CFI=.888; PCFI=.779; RMSEA=.095; SRMR=.0668). After removal of both sensory items (Near / Far vision and Visual color discrimination), as well as two cognitive (Flexibility and Control precision) the exploratory factor analysis showed a valid two factor solution (KMO=.941, .810<MSAs<.978, Bartlett's X^2=6225.633, 105, p<.001) that explains 61.9% of total variance after rotation (varimax). Both factors show good reliability (cognitive abilities, 12 items, e.g. "Inductive/Deductive reasoning" or "Speed of closure", Cronbach alpha=.932; and psychomotor abilities, 3 items, e.g. "Arm-Hand Steadiness" or "Multilimb Coordination", Cronbach alpha=.839). The factors loaded as follows.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.941
Bartlett's Test of Sphericity	Approx. Chi-Square	6225.633
	df	105
	Sig.	.000

Table 43 – KMO and Bartlett's Test

	Component	
	Cognitive	**Psychomotor**
Reasoning	.836	.102
Speed of closure	.807	.103
Problem Sensitivity	.797	.082
Selective attention	.787	.122
Information ordering	.785	.230
Fluency of ideas	.765	.196
Oral / Verbal comprehension	.738	.171
Time sharing	.720	.185
Flexibility of closure	.652	.207
Originality	.651	.247
Visualization	.645	.323
Mathematical reasoning	.611	.314
Multilimb coordination	.208	.882
Manual dexterity	.272	.839
Arm-Hand steadiness	.091	.819
Cronbach's alpha	.932	.839
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		

Table 44 – Rotated Component Matrix

[a] Rotation converged in 3 iterations.

The ensuing CFA of this factor solution showed liminally acceptable fit indices (CMIN/DF=4.552, p<.001; CFI=.949; PCFI=.804; RMSEA=.071; SRMR=.0427) with average lambdas reaching .747 and both AVEs above .500 (i.e. $AVE_{Cognitive}$=.508 and $AVE_{Psychomotor}$=.718). Their composite reliability is also good reaching .934 and .884 respectively.

	Items	λ	CR	AVE	Fit indices
Cognitive abilities	Flexibility of closure	.652	.934	.508	CMIN/DF=4.552 p<.001 CFI=.949 PCFI=.804 RMSEA=.071 SRMR=.0427
	Oral / Verbal comprehension	.734			
	Fluency of ideas	.769			
	Selective attention	.771			
	Information ordering	.802			
	Originality	.664			
	Reasoning	.818			
	Mathematical reasoning	.642			
	Time sharing	.711			
	Problem Sensitivity	.762			
	Speed of closure	.784			
	Visualization	.679			
Psychomotor abilities	Arm-Hand steadiness	.654	.884	.718	
	Multilimb coordination	.902			
	Manual dexterity	.861			

Table 45 – Abilities Fit Indices

The factor solution found also shows discriminant validity on the basis of Fornell and Larcker (1981) criterion, as the correlation between factors falls below both squared root AVEs (.491 against .744 and .844, respectively).

	1	2
1. Cognitive abilities	.712	
2. Psychomotor abilities	.491	. 847

Table 46 – Discriminant analysis via AVE[a]

[a] Diagonals show the square root of AVE for each construct

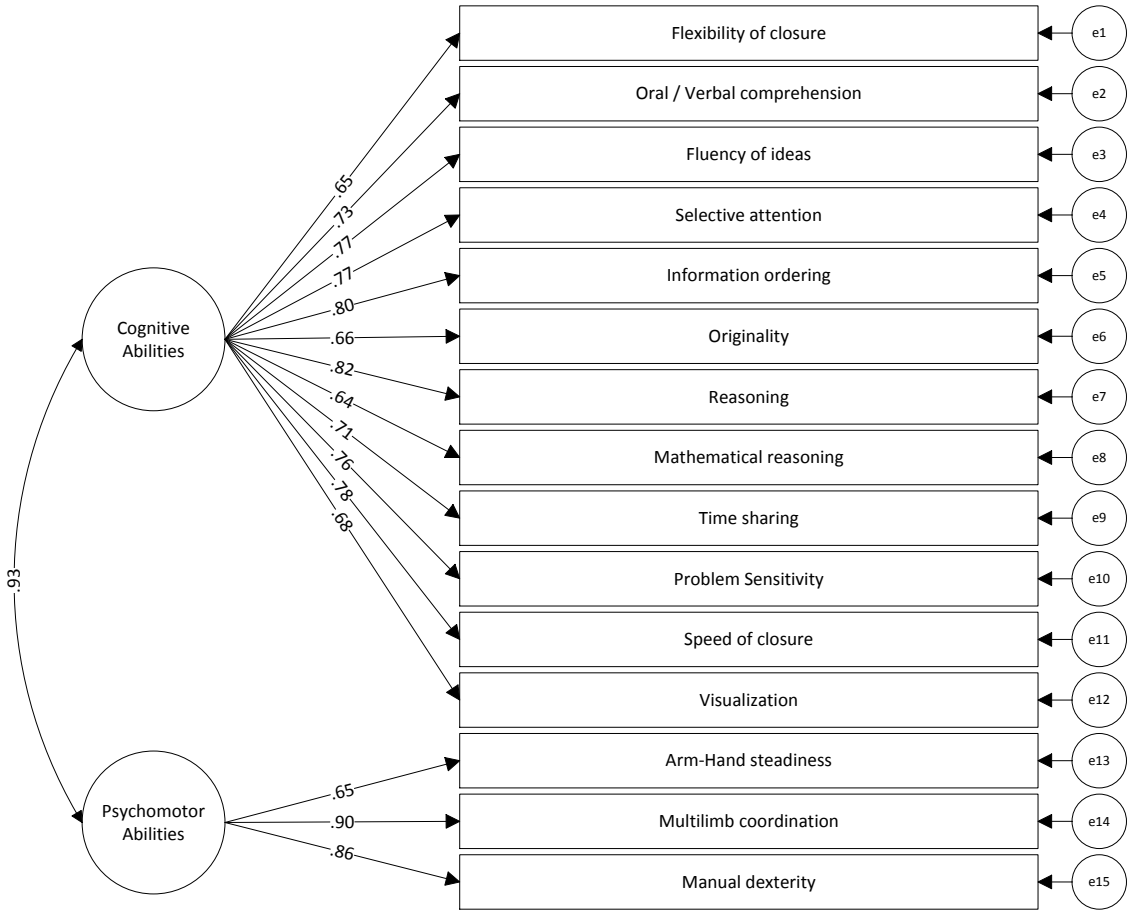


Figure 22 – Abilities Validity

Section 5.2.6 - Personality

Personality traits were operationalized via Donnellan et al. (2006) 20-Item Mini-IPIP scale, and with HEXACO–60 honesty-humility scale (Ashton & Lee, 2009) offering a sixth trait that is relevant for law enforcement agents.

Humility-honesty scale comprises four factors: sincerity, fairness, greed avoidance, and modesty. These factors all relate with a valuable construct in applied Psychology, especially for Law enforcement: the dark triad (Paulhus & Williams, 2002): "the three socially aversive traits of Machiavellianism, narcissism, and psychopathy" (O'Boyle *et al.*, 2013, p. 789). This construct was reviewed by Furnham, Richards and Paulhus (2013), and by O'Boyle *et al.* (2013) who made a meta-analytic review where one unpublished master thesis and one unpublished doctoral dissertation refer to police officers. Nevertheless Paulhus (2014) covers the issue of dark personalities within police officers and possible consequences.

As regards Donnellan et al. (2006) 20-Item Mini-IPIP scale, goodness of fit for this construct's CFA with a sample of 703 and 20 observed variables is the following (Hair et al., 2010): CFI>.92, plus RMSEA<.07 plus SRMR<.08 and we may tolerate a significant p-value for X^2. A CFA of the original five factor model showed unacceptable fit (CMIN/DF=7.516, p<.01; CFI=.678 PCFI=.571; RMSEA=.096; SRMR=.0916). By analyzing Modification Indices, we found a 10-item model that preserved four factors (openness to experience was excluded) with valid fit (CMIN/DF=2.467, p<.01; CFI=.961; PCFI=.559; RMSEA=.046; SRMR=.0495). However, AVEs and CR values for both extroversion and consciousness failed to meet minimum criteria (AVE=.442, CR=.613, and AVE=.473, CR=.641, respectively). Hence, we have excluded both factors and redo the CFA. The emerging fit indices show a valid model (CMIN/DF=3.220, p<.01; CFI=.977; PCFI=.372; RMSEA=.056; SRMR=.0381) with convergent validity ($AVE_{aggreableness}$=.641 / $CR_{aggreableness}$=.781 and $AVE_{neuroticism}$=.416 /$CR_{neuroticism}$=.713). The correlation between both scales is .37 which is clearly below both squared roots AVEs (.800 and .644, respectively). Therefore, the subscales have both convergent and divergent validity (Figure 23).

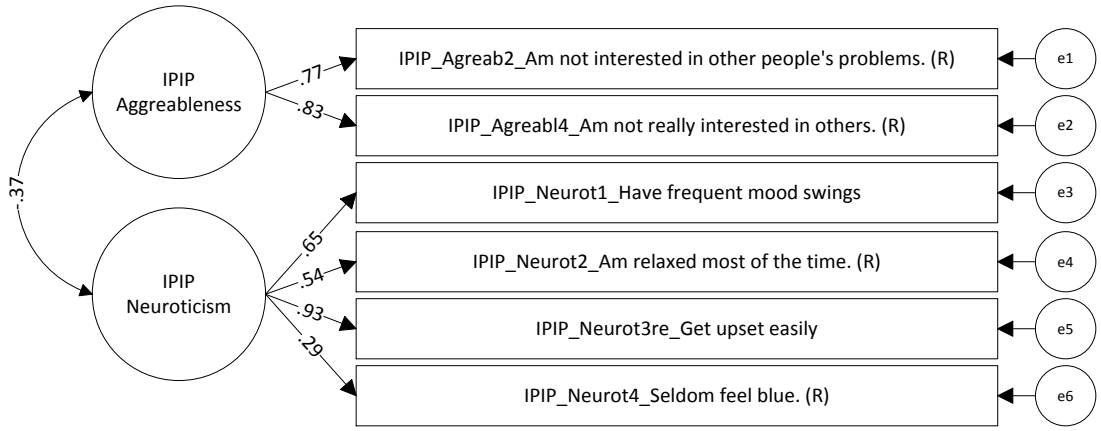


Figure 23 – Aggreableness and Neuroticism Validity

Regarding HEXACO–60 honesty-humility scale (HEXACO-HH, Ashton & Lee, 2009), goodness of fit for this construct's CFA with a sample of 703 and 12 observed variables is the following (Hair et al., 2010): CFI>.92, plus RMSEA<.07 plus SRMR<.08 and we may tolerate a significant p-value for X^2. A CFA on the original four factor structure of

HEXACO-HH scale showed unacceptable fit (CMIN/DF=5.589, p<.01; CFI=.750 PCFI=.481; RMSEA=.081; SRMR=.0784).

After iterative removal of items in observation of data analysis strategy section, we found a 9-item solution that preserved the four factors under a second order factor (CMIN/DF=2.136, p<.001; CFI=.953; PCFI=.551; RMSEA=.041; SRMR=.0470). Adjusting thresholds to this 9-item solution changes CFI to .95, and an expectable non-significant chi-square. This gave us mixed indication as CFI was indeed above .95 but Chi-Square was significant. Also, AVE is below critical threshold and so is composite reliability which adds to rejecting this model.

However relying on a larger than 250 sample (e.g. 251) is not the same as relying on a 700 sample. Hair *et al.* (2010) indication of an asymptotic functionality of some comparative indices nearing the 1000 cases supports this view in the same manner as Tabachnick and Fidell (2014) or Hu and Bentler (1999a) underlined the higher type I error (rejecting the null hypothesis being it true) associated with chi-square with large samples. So we have extracted a random sample of 300 and redo the analysis on the basis of Tabachnick and Fidell (2014) recommendations for minimum sample size to conduct a CFA. Fit indices slightly changed and showed a full valid model (CMIN/DF=1.267, p=.163; CFI=.969; PCFI=.560; RMSEA=.030; SRMR=.0509).

Therefore, although realizing these findings have to be dealt with caution, we believe the respecified model is sufficiently good to be accepted on a provisory basis because it is embedded in a larger Bartram and Roe's model layer of personality where the Big-5 could be amassed (Figure 24).

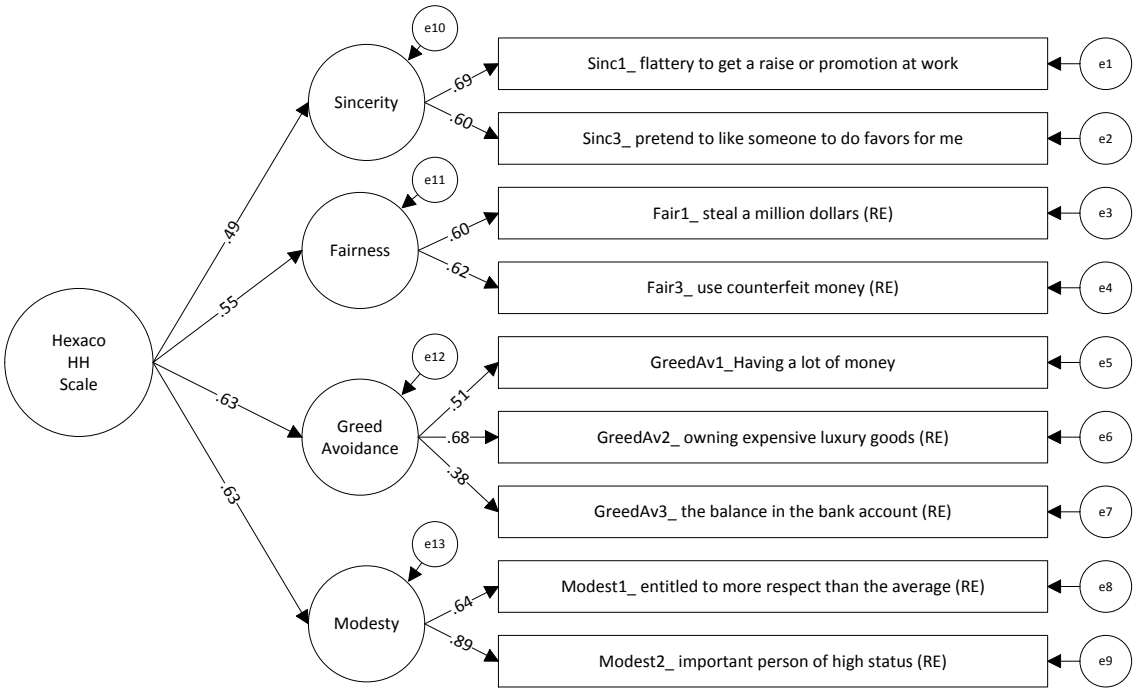


Figure 24 – Honesty-Humility Validity

It might be advantageous to combine these personality dimensions as Hexaco offers an important dimension for Criminal Investigators that the Big-5 does not explicitly offer: honesty-humility. As regards Donnellan et al. (2006) 20-Item Mini-IPIP scale and HEXACO–60 honesty-humility scale (Ashton & Lee, 2009) construct, goodness of fit for this construct's CFA with a sample of 703 and 32 observed variables is the following (Hair et al., 2010): CFI>.90, plus RMSEA<.07 plus SRMR<.08 and we may tolerate a significant p-value for X^2. A CFA of the amalgamated Big-5+1 scales where Honesty-Humility scale from Hexaco (HH) configured a second order factor showed unacceptable fit indices (CMIN/DF=3.439, p<.01; CFI=.691; PCFI=.582; RMSEA=.059; SRMR=.0762).

Joining previous respecified factor solutions for Agreeableness, Neuroticism and HH scale showed valid fit (CMIN/DF=2.626, p<.001; CFI=.932; PCFI=.772; RMSEA=.048; SRMR=.0476). However, the joined model lowered HH scale loadings to an unacceptable AVE level which, judging by the covariances found between IPIP and HH lead us to further explore the status of these variables. From previous research HH alone emerged as an important indicator configuring the dark triad (Furnham et al., 2013). Theoretically, the dark triad is intimately linked to emotional stability issues

(Ashton & Lee, 2007) which suggested an accommodation of neuroticism (recoded to express emotional stability) within the same second order factor of HH.

Goodness of fit for this amassed construct's CFA with a sample of 703 and 13 observed variables is the following (Hair et al., 2010): CFI>.92, plus RMSEA<.07 plus SRMR<.08 and we may tolerate a significant p-value for X^2. The CFA of this second order factor solution showed, after removal of a single item from neuroticism (due to indication of covariance between errors) valid fit indices (CMIN/DF=2.180, p<.001; CFI=.932; PCFI=.622; RMSEA=.041; SRMR=.0490) with second order factor lambdas averaging .564. Although the AVE fell short from .500, the composite reliability reached the threshold level of .700. Therefore, we renamed this scale to HHS – honesty-humility-stability scale which complies with psychometric minimal requirements (Figure 25).

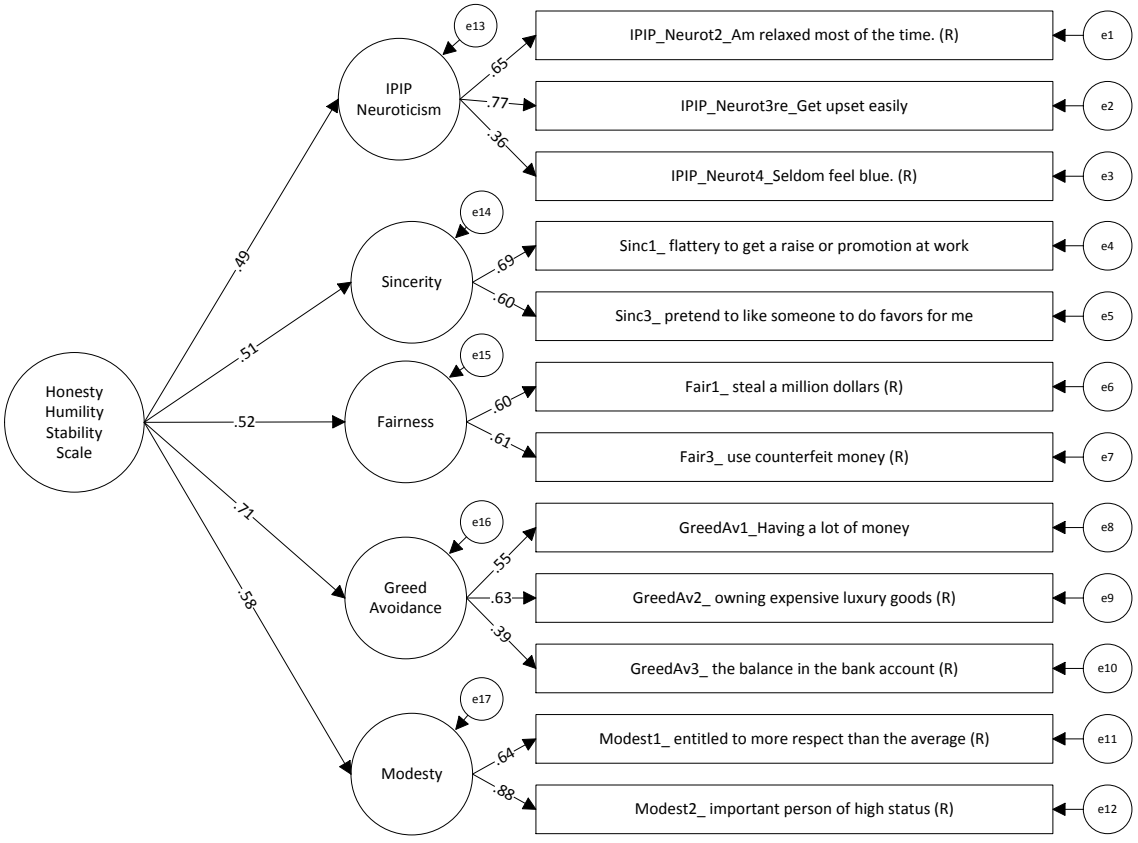


Figure 25 – Honesty-Humility-Stability Validity

Although this is a statistically functional model it would be theoretically poor to relinquish one of the few surviving Big-5 dimensions (Agreeableness) to accommodate

an aggregated solution. Thus, we shall not use this combined model in future analyses (namely interface analysis).

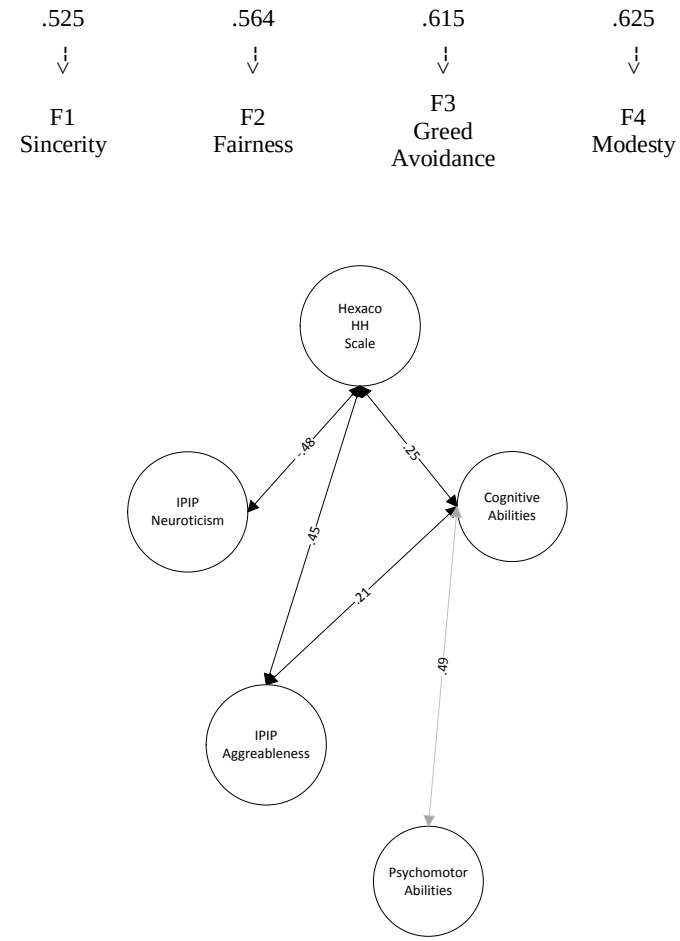
Section 5.2.7 - The Personality-Abilities Complex

Taking into consideration the literature review on the relations between personality traits and abilities there is no theoretic foundation to reasonably hypothesize a one-way predictor relation from personality to abilities or vice-versa, as seen. Both arguments and empirical findings offer sufficiently strong support to these perspectives which either means there is circular causality (which we will not be able to test due to design and correlational nature of the study) or a third construct conditioning both personality and abilities. For this reason, we opted to treat both construct within Bartram and Roe's model as a complex.

Complex might be used to name a set of elements in interaction that lead to a determined outcome but without any assumption about its functionality. Unlike the term "system", "complex" discards the assumed functionality underlining the heterogeneity of the elements operating in the same ground.

The personality-abilities complex (PAComplex) model is built by establishing correlations between all composing elements: FFM, Hexaco-Honesty Humility Factor, Cognitive abilities, and Psychomotor abilities. The model has valid fit indices (CMIN/DF=2.512; CFI=.929; PCFI=.842; RMSEA=.046; SRMR=.0491).

IPIP_Neurot1_Have frequent mood swings	<--	.537
IPIP_Neurot2_Am relaxed most of the time. (R)	<--	.640
IPIP_Neurot3re_Get upset easily	<--	.748
IPIP_Neurot4_Seldom feel blue. (R)	<--	.403
IPIP_Agreab2_Am not interested in other people's problems. (R)	<--	.764
IPIP_Agreabl4_Am not really interested in others. (R)	<--	.838



Flexibility of closure	<--	.735
Oral / Verbal comprehension	<--	.769
Fluency of ideas	<--	.771
Selective attention	<--	.801
Information ordering	<--	.663
Originality	<--	.818
Reasoning	<--	.641
Mathematical reasoning	<--	.710
Time sharing	<--	.763
Problem Sensitivity	<--	.784
Speed of closure	<--	.678
Visualization	<--	.653
Arm-Hand steadiness	<--	.655
Multilimb coordination	<--	.903
Manual dexterity	<--	.860

Table 47 – Personality-Abilities Complex (PAComplex) Valdity

			Estimate	S.E.	C.R.	P
Cognitive	<-->	Psychomotor	.125	.014	8.935	***
Cognitive	<-->	HH	.041	.010	4.027	***
HH	<-->	IPIP_N	-.106	.020	-5.263	***
IPIP_A	<-->	HH	.134	.023	5.777	***
IPIP_A	<-->	Psychomotor	-.031	.021	-1.463	.143
Psychomotor	<-->	IPIP_N	-.005	.016	-.307	.759
Cognitive	<-->	IPIP_N	-.035	.012	-3.013	.003
IPIP_A	<-->	Cognitive	.068	.015	4.518	***
Psychomotor	<-->	HH	.018	.013	1.366	.172

Table 48 - Personality-Abilities Complex

Section 5.2.8 - Emotion Command Systems (ANPS)

Goodness of fit for this construct's CFA with a sample of 703 and 36 observed variables is the following (Hair et al., 2010): CFI>.90/.92, plus RMSEA<.07 plus SRMR<.08 and we may tolerate a significant p-value for X^2. The CFA conducted with the original six factor solution of the 36-item ANPS (Geir et al., 2014; Pingault et al., 2012) did not found acceptable fit indices (CMIN/DF=6.100, p<.001; CFI=.661; PCFI=.608; RMSEA=.085; SRMR=. 0814). The EFA, with Kaiser's criterion, after iterative removal of items as stated in the data analysis strategy section, showed (see Table 48) a valid 6 factor solution (KMO=.772, .678<MSAs<.873, Bartlett's X^2=3626.162, 171, p<.001) explaining 63.8% of total variance after rotation (varimax) and with good reliability in all the factors to the exception of Seek and Care which reached mediocre reliability (Davis et al., 2003; Pascazio et al., 2015; Pingault et al., 2012) and must therefore be dealt with cautiousness.

Rotated Component Matrix[a]						
	Component					
	1	2	3	4	5	6
SAD2_I often have the feeling that I am going to cry	.857	-.019	.157	.071	-.022	-.130
SAD1_I often feel sad	.817	-.125	.234	.162	-.053	-.074
SAD4_I often feel lonely	.765	-.048	.072	.051	-.175	-.089
PLAY3_I am very playful	.038	.849	-.068	.008	.111	.024
PLAY1_I am a person who is easily amused and laughs a lot	-.132	.815	-.088	-.051	.186	-.044
PLAY2_I do not particularly enjoy kidding around and exchanging "wisecracks." (RE)	-.071	.713	-.018	.031	.005	.216
FEAR3_I would not describe myself as a worrier. (RE)	.161	-.088	.821	.127	.019	.025
FEAR2_I am not frequently jittery and nervous. (RE)	.135	-.009	.796	.123	-.058	-.071
FEAR6_There are very few things that make me anxious. (RE)	.111	-.056	.728	.224	-.007	.006
ANGER6_ When people irritate me, I rarely feel the urge to say nasty things to them. (RE)	.112	.013	.127	.839	-.077	-.018
ANGER5_I hardly ever become so angry at someone that I feel like yelling at them. (RE)	.062	.021	.113	.811	-.052	.040
ANGER4_People who know me well would say I almost never become angry. (RE)	.072	-.052	.222	.708	-.050	.046
CARE2_I like taking care of children.	.021	.164	-.044	-.111	.767	.021
CARE4_I do not especially like being around children. (RE)	-.149	.018	-.015	.069	.758	-.008
CARE3_Caring for a sick person would be a burden for me. (RE)	-.013	-.010	-.053	-.077	.667	.203
CARE6_I am not particularly affectionate. (RE)	-.184	.321	.108	-.117	.517	.103
SEEK2_I am usually not highly curious. (RE)	-.014	-.018	-.015	.018	.056	.788
SEEK6_I am not an extremely inquisitive person. (RE)	-.074	.058	-.024	-.019	.089	.761
SEEK4_I rarely feel the need just to get out and explore things. (RE)	-.196	.176	.006	.076	.107	.677
Cronbach's alpha	.804	.716	.747	.740	.653	.641
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 6 iterations.						

Table 49 – Emotion Command Systems (ANPS) EFA

The CFA of this solution showed valid fit indices (CMIN/DF=2.373, p<.001; CFI=.946; PCFI=.758; RMSEA=.044; SRMR=.0433) with average lambdas reaching .674 (see Table 49) but some AVEs below .500 (i.e. Seek=.375 and Care=.338). Their composite reliability reached the minimal level of 0.643 and 0.669, respectively in line with previous findings by Pingault *et al.* (2012).

	Items	λ	CR	AVE	Fit indices
Play	PLAY1_easily amused and laughs a lot PLAY2_kidding around and exchanging "wisecracks." (R) PLAY3_very playful	0.805 0.545 0.767	.753	.511	
Seek	SEEK2_highly curious. (R) SEEK4_get out and explore things. (R) SEEK6_extremely inquisitive person (R)	0.586 0.625 0.626	.643	.375	
Care	CARE2_taking care of children CARE3_Caring sick person would be a burden(R) CARE4_being around children. (R) CARE6_particularly affectionate (R)	0.673 0.521 0.578 0.542	.669	.338	CMIN/DF=2.373 p<.001 CFI=.946 PCFI=.758 RMSEA=.044 SRMR=.0433
Fear	FEAR2_jittery and nervous. (R) FEAR3_myself as a worrier. (R) FEAR6_make me anxious. (R)	0.701 0.786 0.636	.752	.505	
Anger	ANGER4_almost never become angry. (R) ANGER5_so angry feel like yelling at them (R) ANGER6_people irritate me. the urge to say nasty things (R)	0.602 0.703 0.810	.750	.504	
Sad	SAD1_I often feel sad SAD2_I often have the feeling that I am going to cry SAD4_I often feel lonely	0.874 0.808 0.620	.816	.600	

Table 50 – Emotion Command Systems (ANPS) Fit indices

The factor solution found has also discriminant validity on the basis of Fornell and Larcker (1981) criterion, as shown in Table 51.

	1	2	3	4	5	6
1. Play	.715					
2. Seek	.221	. 612				
3. Care	.427	.337	. 581			
4. Fear	-.193	-.068	-.099	. 711		
5. Anger	-.065	.026	-.223	.465	. 710	
6. Sad	-.226	-.311	-.268	.468	.319	. 775

Table 51 – Emotion Command Systems (ANPS) Discriminant analysis via AVE[a]

[a] Diagonals show the square root of AVE for each construct

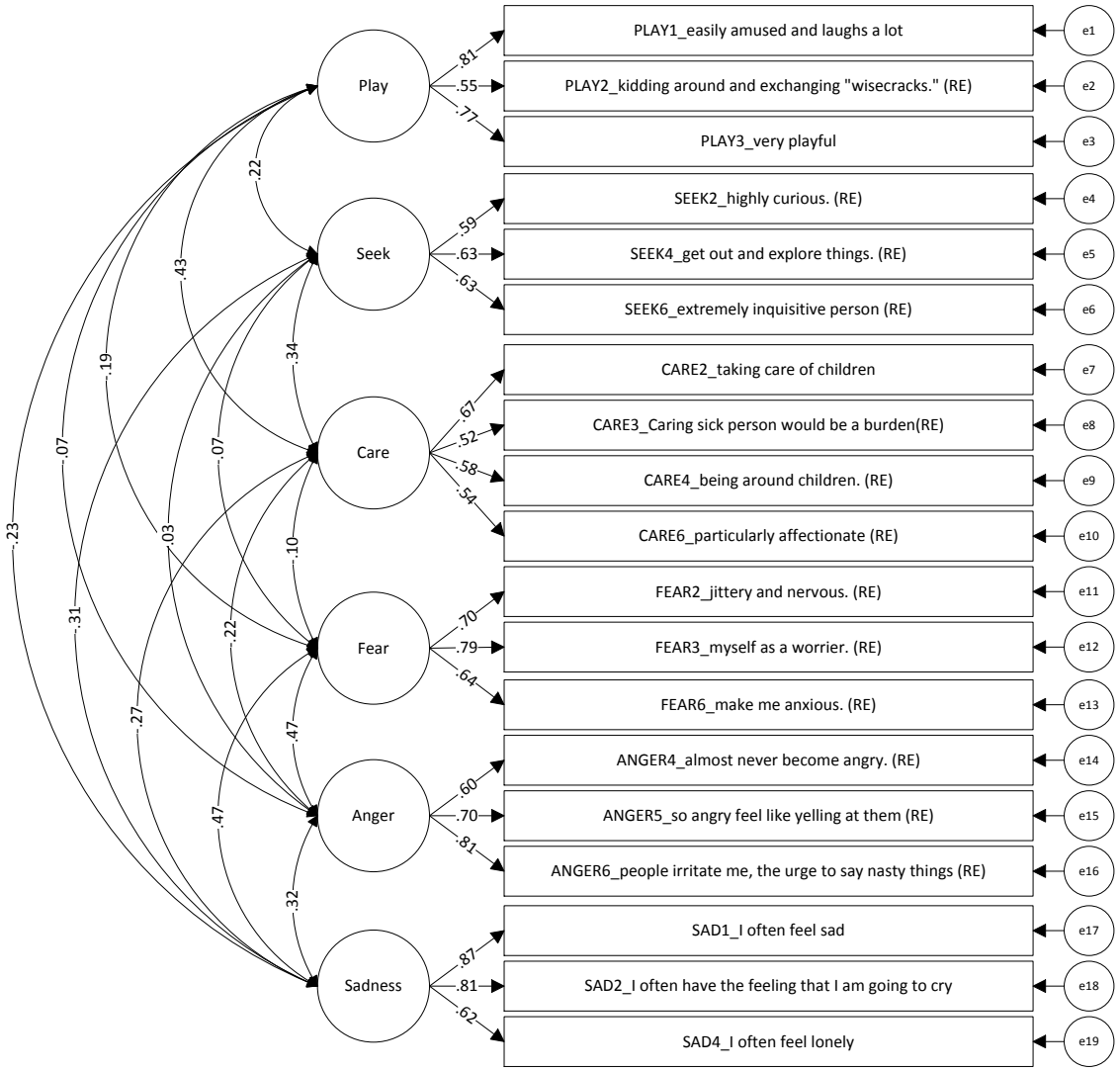


Figure 26 – Emotion Command Systems Validity

ANPS has received some attention by researchers ever since its publication by Davis, Panksepp, and Normansell (2003). Although the pioneer study did not conduct a confirmatory factor analysis, subsequent empirical studies reported its psychometric properties. Abella, Panksepp, Manga, Bárcena, and Iglesias (2011) tested a CFA for the 6+1 dimensions (spirituality) with a Spanish version and sample, and report fit indices that meet criteria (CMIN/DF=2.998, p<.001; CFI=.91; RMSEA=.071; SRMR=.075) but did not report lambda values for all items as well as convergent and divergent validity values. The same occurred with the French validation by Pahlavan, Mouchiroud, Zenasni, and Panksepp (2008) where fit indices fall within the acceptable range but no lambdas or AVEs are reported. These are the most sophisticated reports on ANPS

psychometrics we could locate as some other studies, e.g. the Italian validation by Pascazio et al. (2015) opted to conduct an exploratory principal component analysis and did not found the six factors as their factor loadings were quite weak, thus ruling out expectations of construct validity in this sample and translation.

Chapter 6 - Streams – interface analysis

In order to build a true model of competence, it is required that the elements comprehended in each layer are functionally articulated, i.e. to show how they interface between layers. This implies the empirical demonstration of their associations and extracting a set of streams that flow theoretically in a bottom-up fashion.

Section 6.1 - Technical notes

The structure implied in Bartram and Roe's architectural model (Bartram & Roe, 2005) favors multicollinearity problems resulting from the concomitant inclusion of parallel variables (e.g. KSA) in the upstream layer. Although it is possible to include a common factor (as a method factor) to check for multicollinearity, in certain cases, e.g. KSA, the expected association between these interdependent variables would be confused with a second order factor, that is void of meaning from the theoretic point of view. Therefore, we opted to conduct an analysis in SPSS with the precise same composite variables and analyzing VIF as a commonly accepted indicator of multicollinearity. From the technical point of view, and despite the liberal approach of O'Brien (2007) that questions traditional rules to diagnose multicollinearity (VIF<5 or VIF<10), we have opted for the conservative rule of thumb of VIF<5 as indicating inconsequential multicollinearity (Hair et al., 2010) in the case of KSA due to theoretically reasons to sustain multiple interdependencies.

On interface analyses, Roe's architectural model (Roe, 2002b) is built upon five horizontal layers where the first is competence level, the second is KSAs, the third is abilities, the fourth is personality, and the last is "others". As previously explained, this model requires revision and in this study, it is extended to six layers: first being competence, second KSAs, third Terminal-values System TVS, fourth abilities, fifth personality, and sixth dispositional emotions (emotional-command systems). This functional model assumes there is an asymmetry between upper and lower layers where upper layers tend to be more reactive to learning and dependent on lower layers. This dependency is one-way upstream (from lower to upper layers), in what we have named "interface". So, interface is each of the inter-layer connections where e.g. a given

competence is explained by the combined action of KSAs. There is no bi-univocal assumption about these relations; the same knowledge can be underlying different competences.

From a systematic analysis of the interfaces (five in the whole model) we expect uncover the lines that go through layers from the basic dispositional emotions up to each competence. The continuous lines are called "full streams" while discontinuous ones will simply be named "streams".

Section 6.2 - Results

Section 6.2.1 - Stream KSA – Competences

Section 6.2.1.1 - KSA-Interpersonal relationship competences

A SEM on the combined group of Knowledge, Skills and Attitudes (VAS) as predictors of **interpersonal relationship competences** showed a valid model (CMIN/DF=2.058; CFI=.959; PCFI=.825; RMSEA=.039; SRMR=.0341) explaining 53% of interpersonal relationship competence variance, with no changes made to previous factor structures found. Multicollinearity was ruled out as VIF ranged from 1.103 to 1.852 which applies to all ensuing analyses comprehending these KSA variables as joint predictors.

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.655	.197		8.394	.000		
	Knowledge	.132	.043	.119	3.099	.002	.651	1.535
	Skills	.446	.045	.415	9.856	.000	.540	1.852
	VAS_Benevol	.093	.034	.107	2.716	.007	.621	1.610
	VAS_SelfDir	.015	.024	.020	.619	.536	.907	1.103
	VAS_Conform	-.066	.027	-.088	-2.495	.013	.776	1.289
	VAS_Univers	.077	.034	.093	2.267	.024	.574	1.742
a. Dependent Variable: C_Interpers								

Table 52 – Interpersonal Relationship Competences Coefficients

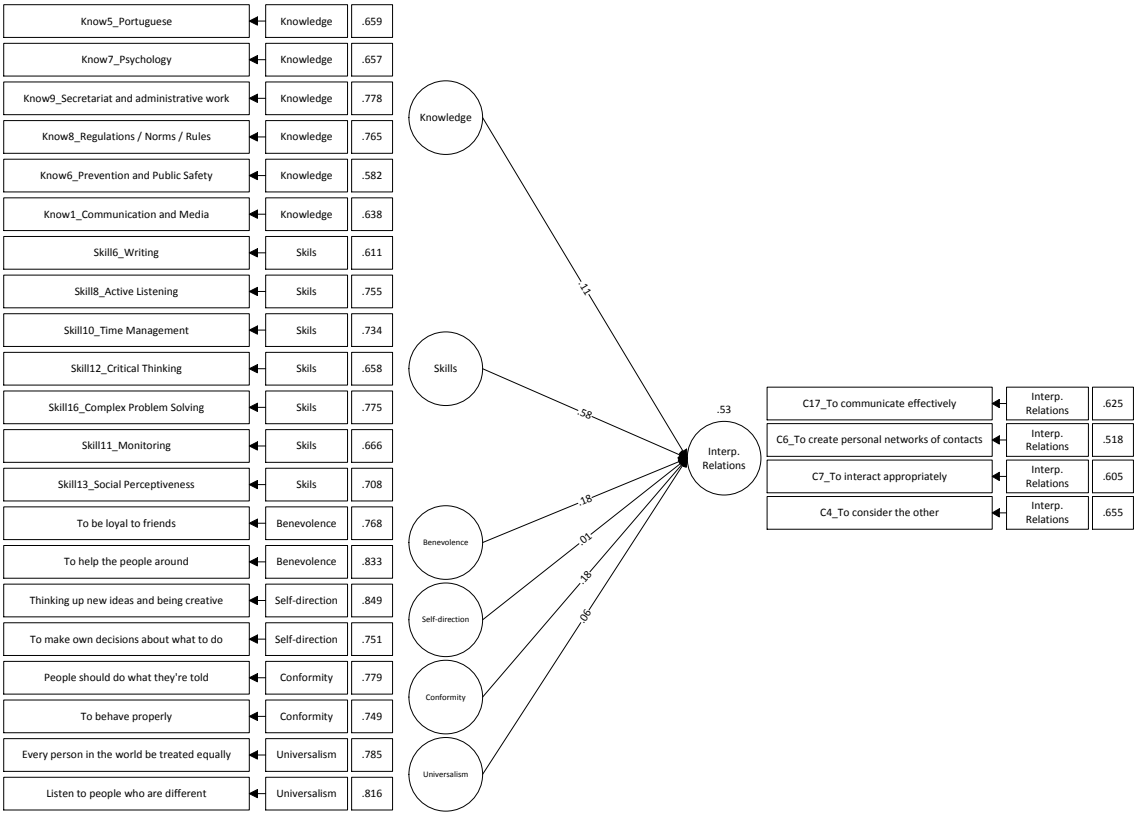


Figure 27 - Interpersonal Relationship Competences Validity

			Unstandardized Estimate	S.E.	C.R.	P
Interpersonal relationship	<---	Knowledge	,119	,064	1,871	,061
Interpersonal relationship	<---	Skills	,621	,087	7,116	***
Interpersonal relationship	<---	Benevolence	,146	,061	2,391	,017
Interpersonal relationship	<---	Self-direction	,003	,032	,109	,913
Interpersonal relationship	<---	Conformity	-,129	,042	-3,053	,002
Interpersonal relationship	<---	Universalism	,046	,064	,720	,471

Table 53 – Interpersonal Relationship Indices

Section 6.2.1.2 - KSA-Teamwork competences

A SEM on the combined group of Knowledge, Skills and Attitudes (VAS) as predictors of **Teamwork competences** showed a valid model (CMIN/DF=1.875; CFI=.965; PCFI=.837; RMSEA=.035; SRMR=.0329) explaining 56% of teamwork competence variance, with no changes made to previous factor structures found.

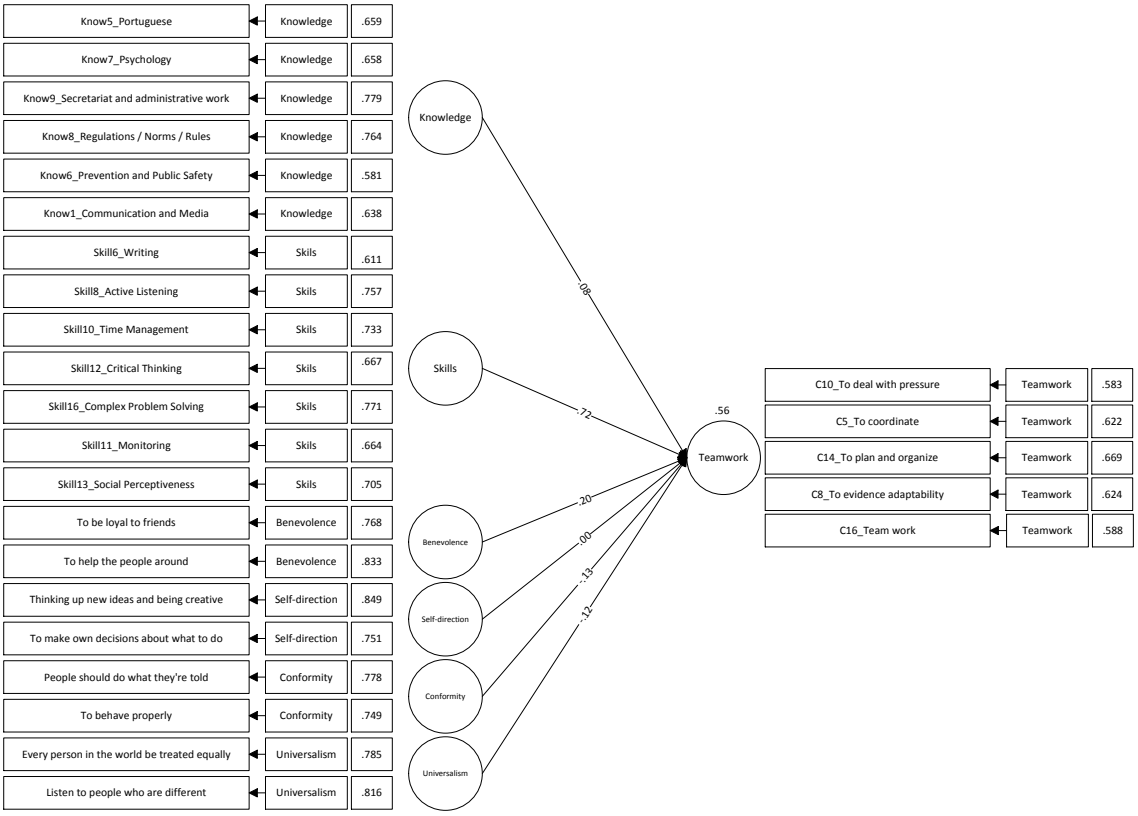


Figure 28 – Teamwork Competences Validity

	Estimate	S.E.	C.R.	P
Teamwork <--- Knowledge	.094	.069	1.370	.171
Teamwork <--- Skills	.890	.104	8.587	***
Teamwork <--- Benevolence	.188	.067	2.823	.005
Teamwork <--- Self-direction	-.003	.034	-.084	.933
Teamwork <--- Conformity	-.110	.045	-2.437	.015
Teamwork <--- Universalism	-.105	.070	-1.499	.134

Table 54 – Teamwork Indices

Section 6.2.1.3 - KSA-Analytical competences

A SEM on the combined group of Knowledge, Skills and Attitudes (VAS) as predictors of **Analytical Capacity competences** showed a valid model (CMIN/DF=2.147; CFI=.962; PCFI=.814; RMSEA=.040; SRMR=.0341) explaining 32% of analytical capacity competence variance, with no changes made to previous factor structures found.

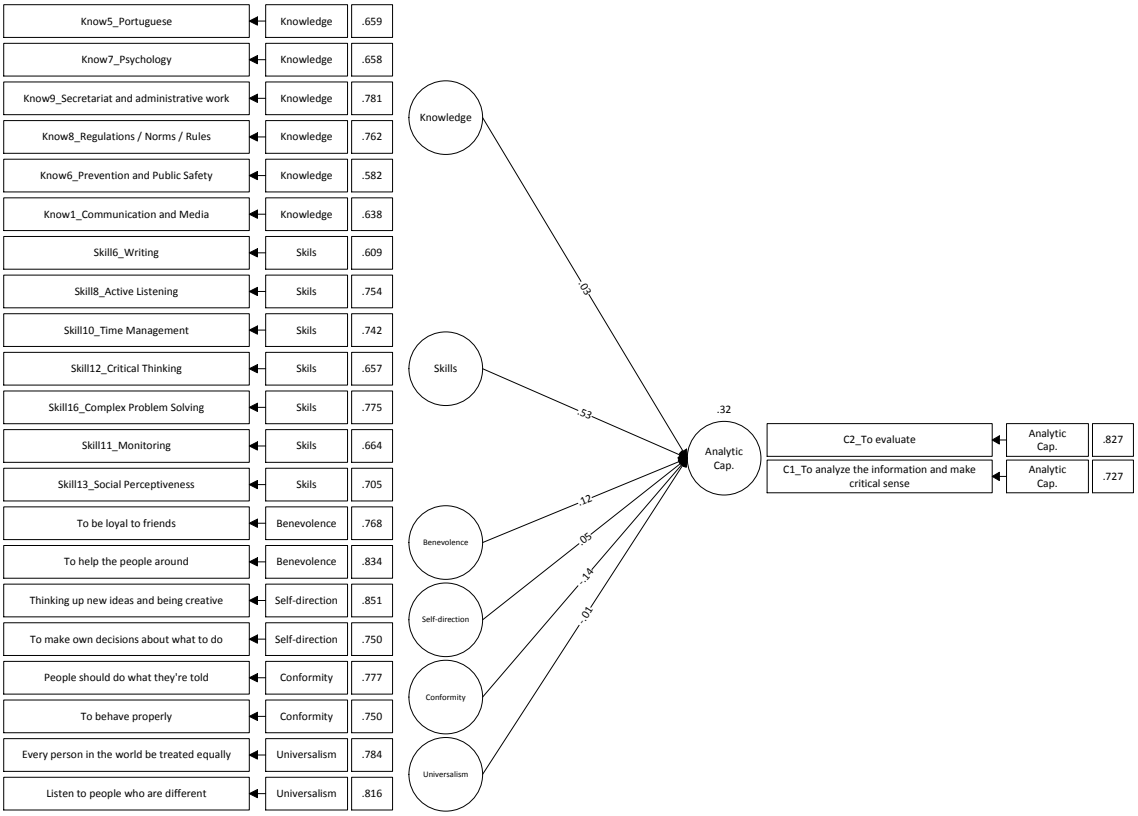


Figure 29- Analytical Capacity Competences Validity

			Estimate	S.E.	C.R.	P
Analytical capacity	<---	Knowledge	,036	,085	,427	,670
Analytical capacity	<---	Skills	,751	,109	6,885	***
Analytical capacity	<---	Benevolence	,127	,082	1,557	,120
Analytical capacity	<---	Self-direction	,043	,043	,998	,318
Analytical capacity	<---	Conformity	-,131	,056	-2,340	,019
Analytical capacity	<---	Universalism	-,013	,087	-,155	,877

Table 55 – Analytical capacity Indices

Section 6.2.1.4 - KSA-Persuasion competences

A SEM on the combined group of Knowledge, Skills and Attitudes (VAS) as predictors of **Persuasion competences** showed a valid model (CMIN/DF=2.104; CFI=.958; PCFI=.824; RMSEA=.040; SRMR=.0363) explaining 36% of persuasion competence variance, with no changes made to previous factor structures found.

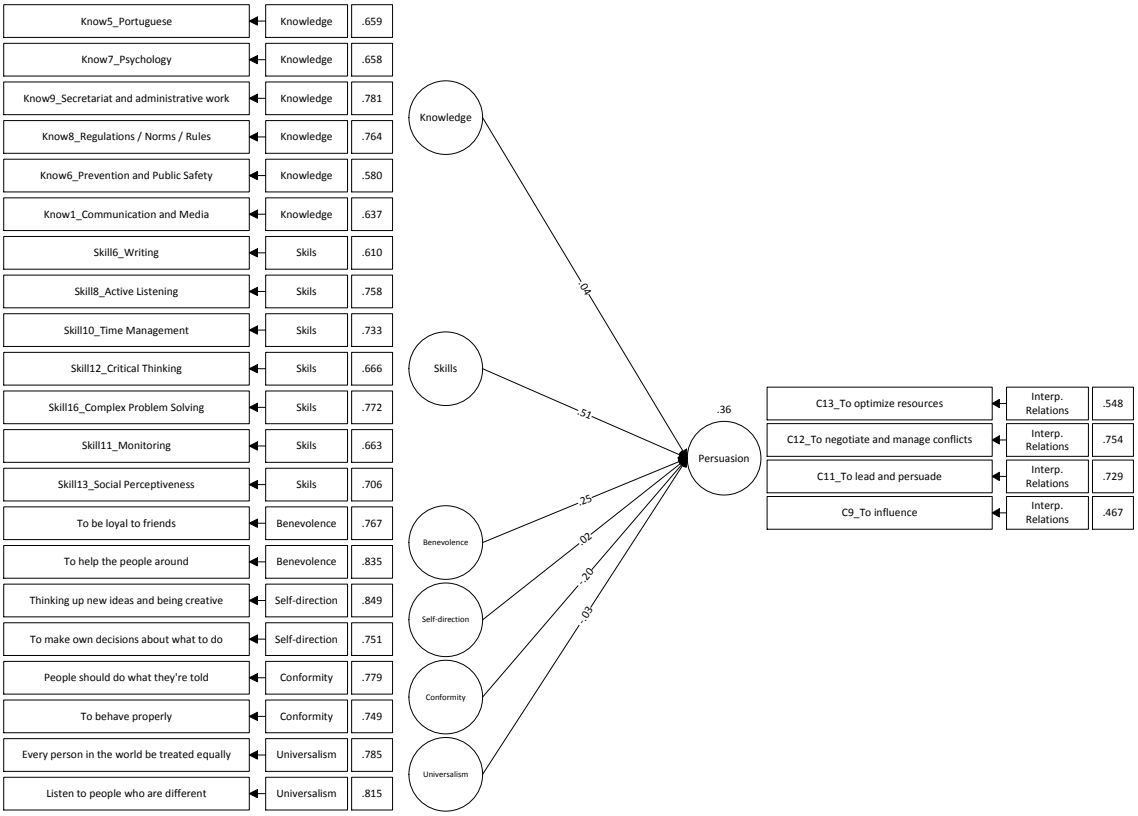


Figure 30 - Persuasion Competences Validity

	Estimate	S.E.	C.R.	P
Persuasion <--- Knowledge	.060	.089	.676	.499
Persuasion <--- Skills	.746	.116	6.434	***
Persuasion <--- Benevolence	.276	.086	3.214	.001
Persuasion <--- Self-direction	.017	.044	.392	.695
Persuasion <--- Conformity	-.195	.059	-3.305	***
Persuasion <--- Universalism	-.028	.091	-.310	.757

Table 56 – Persuasion Indices

Section 6.2.2 - Stream Terminal Values System –> KSA

The second interface of the architectural model of competences concerns the relation between Terminal Values System (TVS) and KSAs. Because in this specific configuration there are seven latent TVS variables (Honor-own, Honor-other, Duties-Org, Duties-Judic, Virtues, Stimulation, and Power) and six KSAs (knowledge, Skills, and four VAS), the resulting combination for an explanative model generates 36

possible paths. This lends the model hard to interpret and eventually increases in such a way its complexity that may pose threats to its validity. Therefore, we opted to firstly conduct the full second interface model and then to conduct three different ones targeting firstly Knowledge as a criterion variable, then Skills and finally VAS.

For the full second interface model, the SEM showed valid fit indices (CMIN/DF=2.280; CFI=.939; PCFI=.836; RMSEA=.043; SRMR=.0428) explaining 49% of K variance, 59% of Skills, and ranging from 44 to 67% of VAS variance.

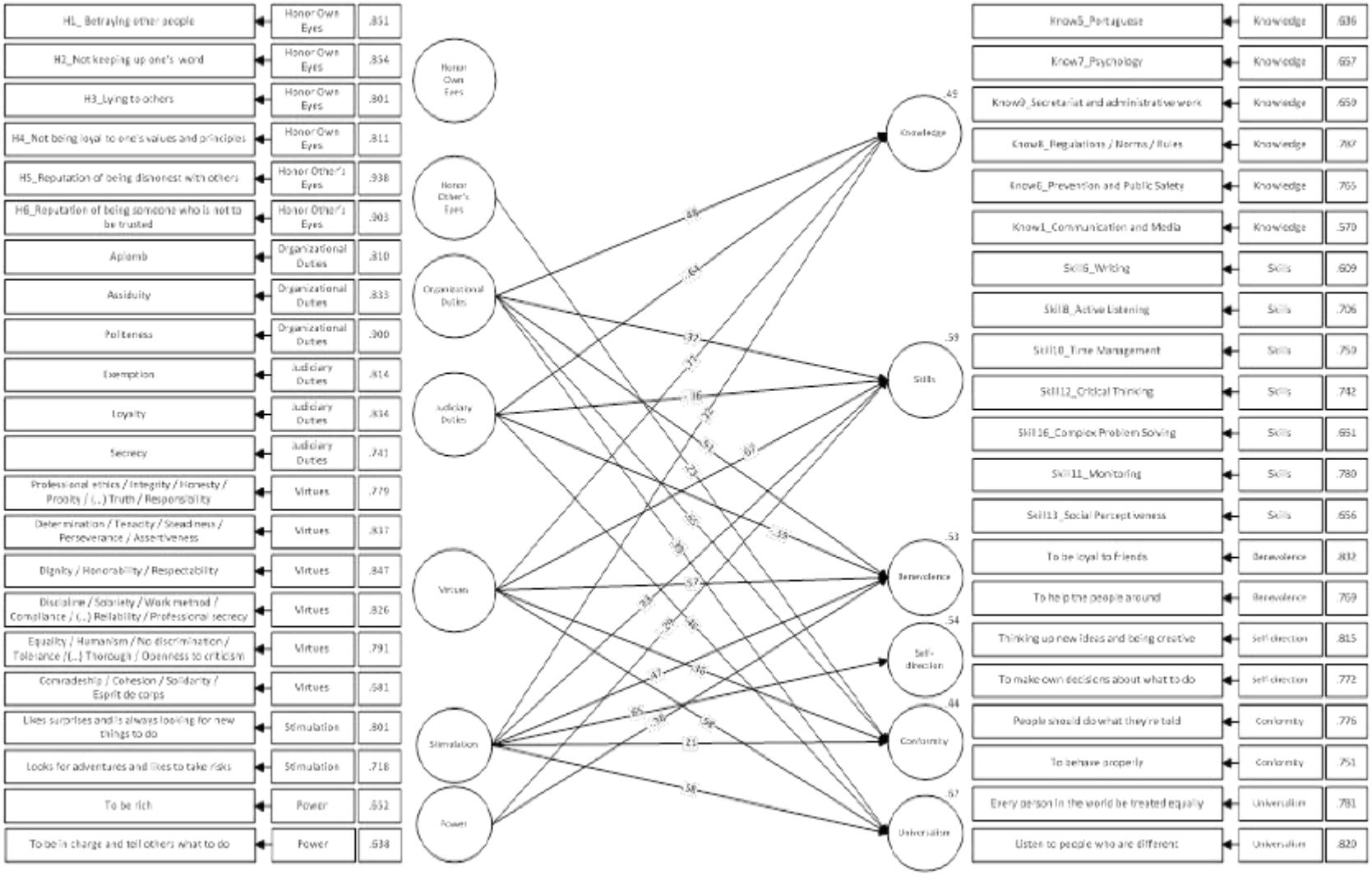


Figure 31 – Stream Terminal Values System –> KSA Validity

			Estimate	S.E.	C.R.	P
Knowledge	<--	Honor own eyes	.014	.026	.556	.578
Knowledge	<--	Honor other's eyes	.028	.020	1.382	.167
Knowledge	<--	Organiz. Duties	.351	.072	4.896	***
Knowledge	<--	Judiciary Duties	-.537	.107	-5.042	***
Knowledge	<--	Virtues	.576	.066	8.713	***
Knowledge	<--	Stimulation	.131	.033	3.972	***
Knowledge	<--	Power	-.059	.042	-1.400	.161
Skills	<--	Honor own eyes	.013	.024	.546	.585
Skills	<--	Organiz. Duties	.234	.063	3.699	***
Skills	<--	Judiciary Duties	-.301	.092	-3.266	.001
Skills	<--	Virtues	.543	.061	8.840	***
Skills	<--	Stimulation	.195	.032	6.132	***
Skills	<--	Power	-.195	.041	-4.747	***
Skills	<--	Honor other's eyes	.021	.018	1.150	.250
Benevolence	<--	Honor own eyes	-.026	.037	-.706	.480
Benevolence	<--	Honor other's eyes	.072	.029	2.492	.013
Benevolence	<--	Organiz. Duties	.483	.100	4.808	***
Benevolence	<--	Judiciary Duties	-.659	.148	-4.470	***
Benevolence	<--	Virtues	.607	.085	7.108	***
Benevolence	<--	Stimulation	.364	.049	7.490	***
Benevolence	<--	Power	-.340	.064	-5.274	***

			Estimate	S.E.	C.R.	P
Self-direction	<--	Power	.100	.067	1.481	.138
Self-direction	<--	Stimulation	.600	.054	11.143	***
Self-direction	<--	Virtues	.243	.091	2.656	.008
Self-direction	<--	Judiciary Duties	.017	.156	.110	.913
Self-direction	<--	Organiz. Duties	-.088	.108	-.816	.415
Self-direction	<--	Honor other's eyes	.011	.032	.344	.731
Self-direction	<--	Honor own eyes	.012	.041	.297	.766
Conformity	<--	Power	-.144	.069	-2.083	.037
Conformity	<--	Stimulation	.185	.053	3.488	***
Conformity	<--	Virtues	.415	.094	4.401	***
Conformity	<--	Judiciary Duties	-.506	.163	-3.099	.002
Conformity	<--	Organiz. Duties	.695	.114	6.116	***
Conformity	<--	Honor other's eyes	.132	.033	4.035	***
Conformity	<--	Honor own eyes	-.109	.042	-2.574	.010
Universalism	<--	Power	-.525	.074	-7.046	***
Universalism	<--	Stimulation	.481	.055	8.809	***
Universalism	<--	Virtues	.655	.089	7.322	***
Universalism	<--	Judiciary Duties	-.535	.152	-3.511	***
Universalism	<--	Organiz. Duties	.388	.104	3.736	***
Universalism	<--	Honor other's eyes	.076	.030	2.512	.012
Universalism	<--	Honor own eyes	-.037	.039	-.945	.345

Table 57 – Stream Terminal Values System –> KSA Indices

Section 6.2.2.1 - Stream Terminal Values System -> Knowledge (KSA)

For the second interface model with a focus on Knowledge only, the SEM showed valid fit indices (CMIN/DF=2.287; CFI=.963; PCFI=.828; RMSEA=.043; SRMR=.0394) explaining 43% of variance.

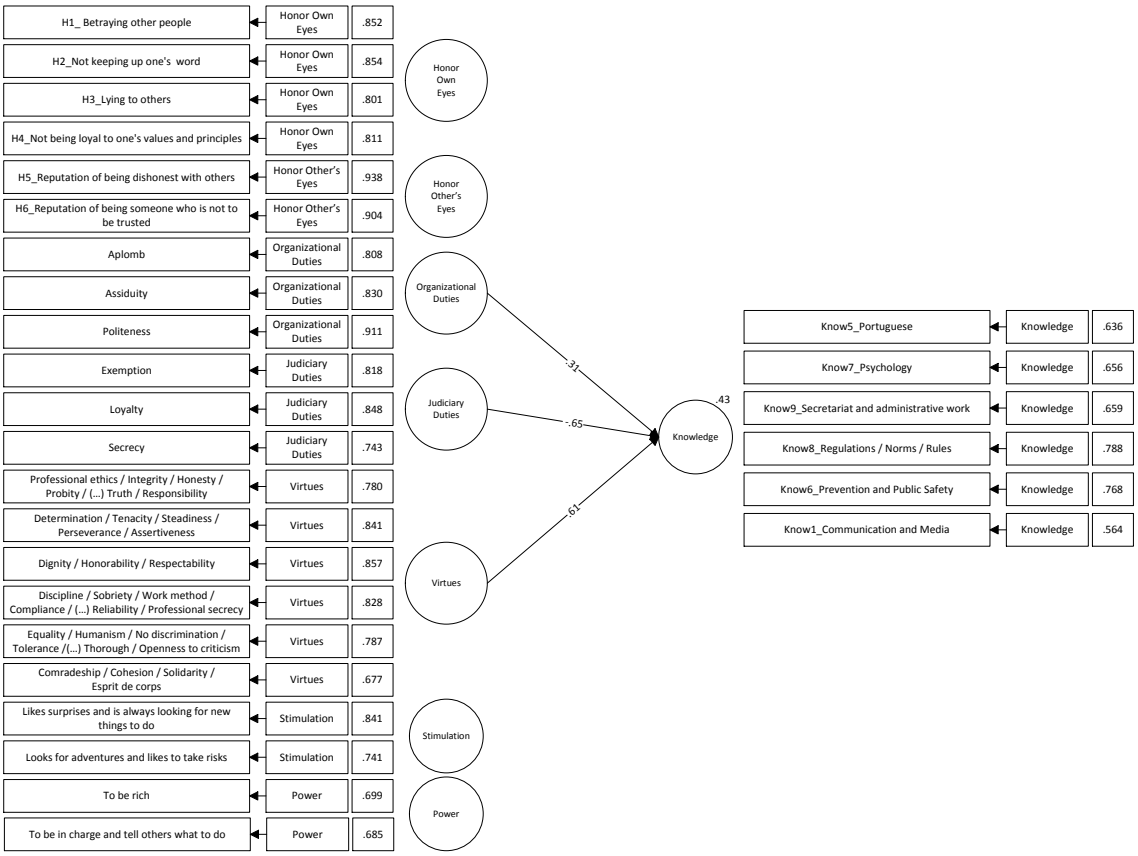


Figure 32 – Stream Terminal Values System -> Knowledge (KSA) Validity

		Estimate	S.E.	C.R.	P
Knowledge	<--- Honor own eyes	.031	.025	1.239	.215
Knowledge	<--- Honor other's eyes	.015	.019	.789	.430
Knowledge	<--- Organiz. Duties	.228	.064	3.569	***
Knowledge	<--- Judiciary Duties	-.291	.090	-3.229	.001
Knowledge	<--- Virtues	.490	.061	8.038	***
Knowledge	<--- Stimulation	.068	.028	2.446	.014
Knowledge	<--- Power	.047	.034	1.401	.161

Table 58 – Stream Terminal Values System -> Knowledge (KSA) Indices

Section 6.2.2.2 - Stream Terminal Values System -> Skills (KSA)

For the second interface model with a focus on Skills only, the SEM showed valid fit indices (CMIN/DF=2.412; CFI=.959; PCFI=.831; RMSEA=.045; SRMR=.0413) explaining 51% of variance.

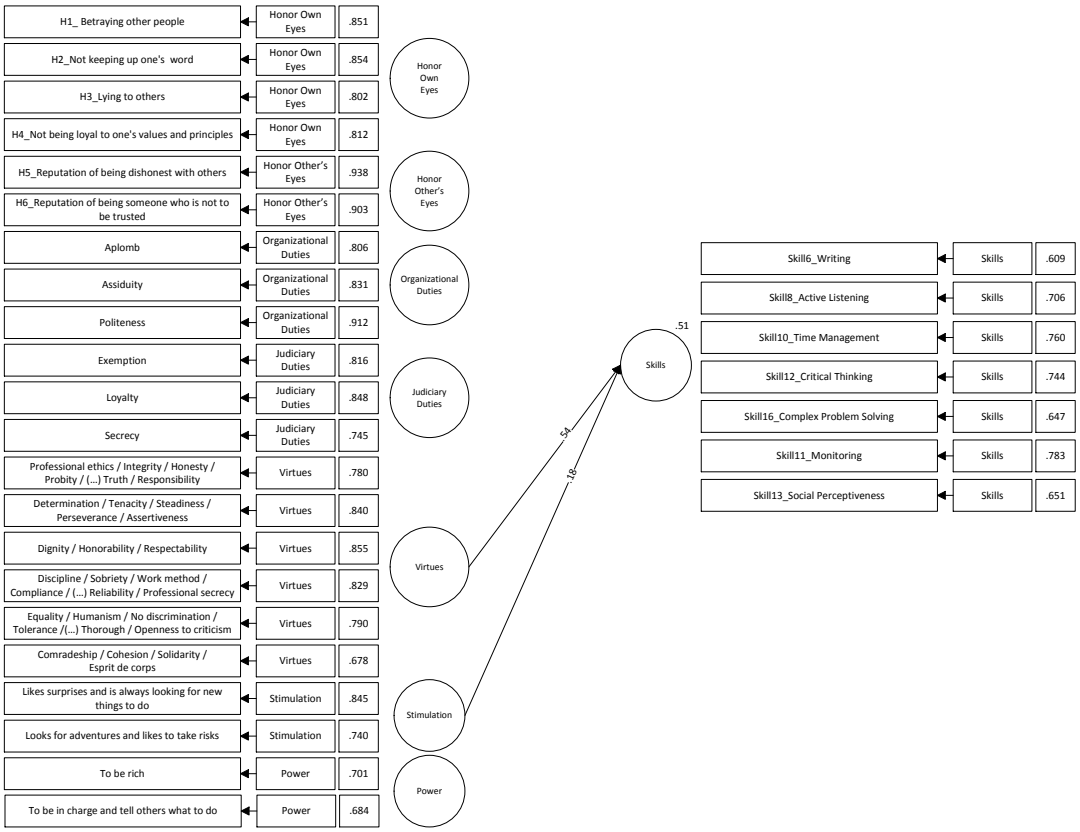


Figure 33 – Stream Terminal Values System -> Skills (KSA) Validity

		Estimate	S.E.	C.R.	P
Skills	<--- Honor own eyes	.037	.023	1.647	.100
Skills	<--- Honor other's eyes	.003	.017	.158	.874
Skills	<--- Organiz. Duties	.061	.056	1.075	.282
Skills	<--- Judiciary Duties	.031	.080	.391	.696
Skills	<--- Virtues	.436	.056	7.820	***
Skills	<--- Stimulation	.103	.026	4.030	***
Skills	<--- Power	-.049	.031	-1.603	.109

Table 59 – Stream Terminal Values System -> Skills (KSA) Indices

Section 6.2.2.3 - Stream Terminal Values System -> Value-Attitudes System (KSA)

For the second interface model with a focus on Value-Attitudes System (VAS) only, the SEM showed valid fit indices (CMIN/DF=2.680; CFI=.950; PCFI=.793; RMSEA=.049; SRMR=.0409) explaining 46% of Benevolence variance, 54% of Self-direction, 42% of Conformity and 57% of Universalism.

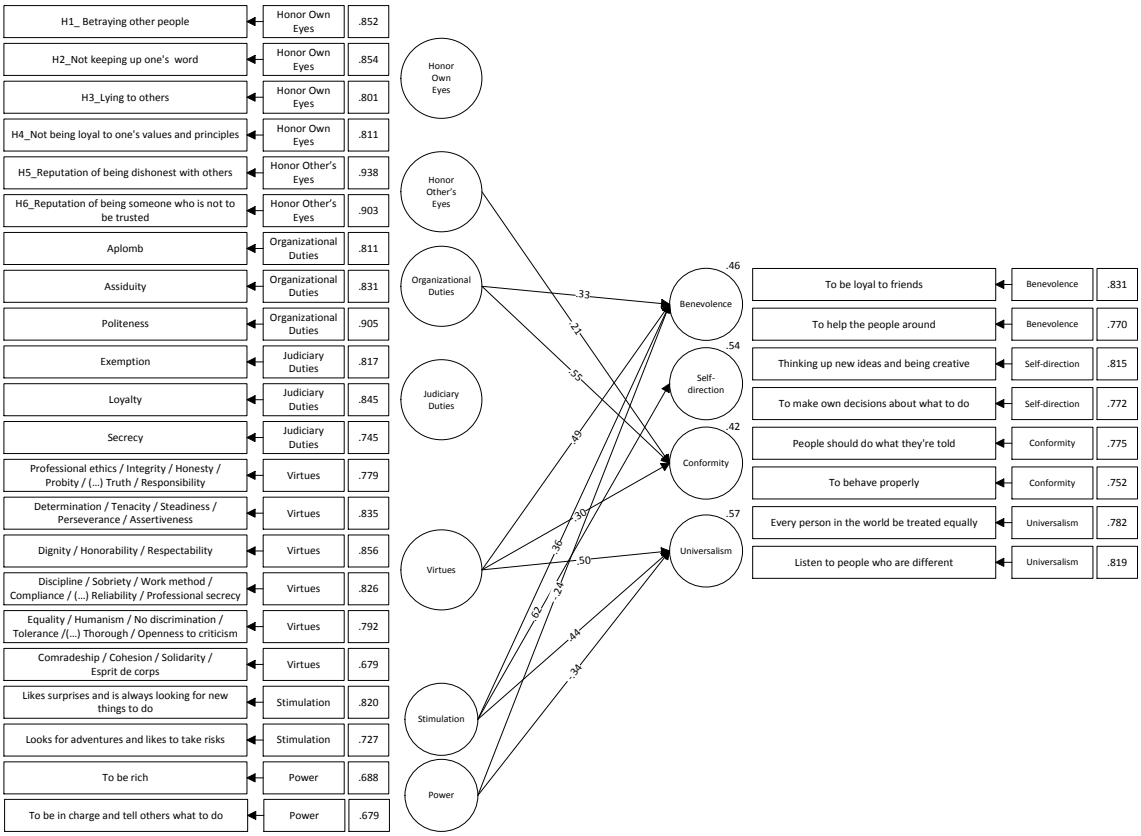


Figure 34 – Stream Terminal Values System -> Value-Attitudes System (KSA) Validity

			Estimate	S.E.	C.R.	P
Benevolence	<---	Honor own eyes	-.003	.035	-.081	.936
Benevolence	<---	Honor other's eyes	.054	.027	2.010	.044
Benevolence	<---	Organiz. Duties	.315	.089	3.548	***
Benevolence	<---	Judiciary Duties	-.340	.127	-2.687	.007
Benevolence	<---	Virtues	.519	.079	6.582	***
Benevolence	<---	Stimulation	.273	.041	6.625	***

			Estimate	S.E.	C.R.	P
Benevolence	<---	Power	-.178	.050	-3.552	***
Self-Direction	<---	Power	.150	.057	2.635	.008
Self-Direction	<---	Stimulation	.561	.049	11.438	***
Self-Direction	<---	Virtues	.236	.089	2.641	.008
Self-Direction	<---	Judiciary Duties	.063	.144	.438	.661
Self-Direction	<---	Organiz. Duties	-.112	.102	-1.103	.270
Self-Direction	<---	Honor other's eyes	.007	.031	.223	.824
Self-Direction	<---	Honor own eyes	.018	.040	.455	.649
Conformity	<---	Power	-.046	.057	-.810	.418
Conformity	<---	Stimulation	.132	.047	2.794	.005
Conformity	<---	Virtues	.359	.091	3.945	***
Conformity	<---	Judiciary Duties	-.310	.148	-2.093	.036
Conformity	<---	Organiz. Duties	.592	.106	5.588	***
Conformity	<---	Honor other's eyes	.121	.032	3.804	***
Conformity	<---	Honor own eyes	-.094	.041	-2.288	.022
Universalism	<---	Power	-.307	.054	-5.677	***
Universalism	<---	Stimulation	.352	.044	8.067	***
Universalism	<---	Virtues	.565	.081	7.004	***
Universalism	<---	Judiciary Duties	-.209	.128	-1.636	.102
Universalism	<---	Organiz. Duties	.225	.090	2.504	.012
Universalism	<---	Honor other's eyes	.056	.028	2.008	.045
Universalism	<---	Honor own eyes	-.008	.036	-.210	.833

Table 60 – Stream Terminal Values System -> Value-Attitudes System (KSA) Indices

Section 6.2.3 - Stream PAComplex-Knowledge

For the Complex-Knowledge interface model, the SEM showed valid fit indices (CMIN/DF=2.572; CFI=.912; PCFI=.847; RMSEA=.047; SRMR=.0703) explaining 59% of Knowledge variance.

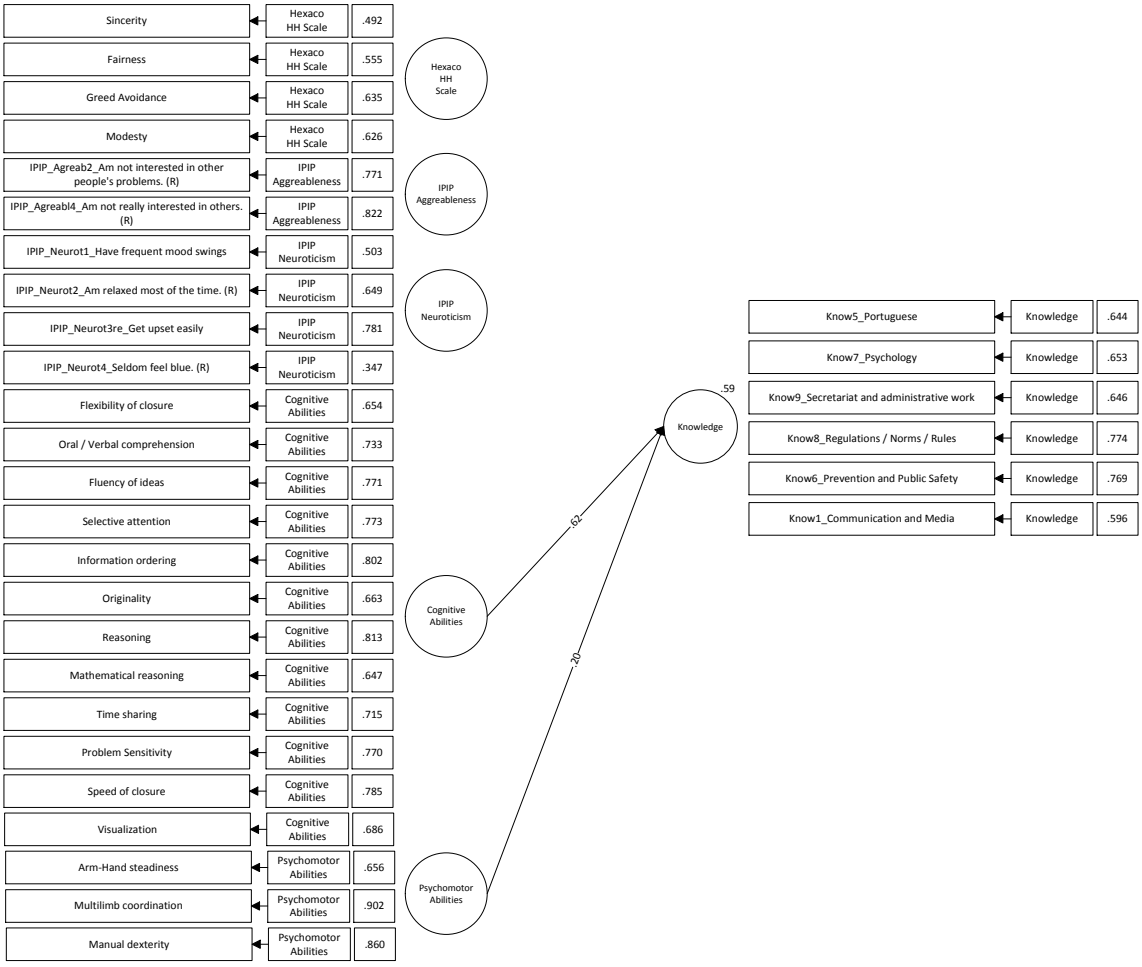


Figure 35 – Stream PAComplex-Knowledge Validity

	Estimate	S.E.	C.R.	P
Knowledge <--- HH	.016	.047	.350	.726
Knowledge <--- IPIP_N	-.018	.030	-.609	.543
Knowledge <--- IPIP_A	.054	.022	2.487	.013
Knowledge <--- Cognitive	.604	.053	11.376	***
Knowledge <--- Psychomotor	.137	.028	4.935	***

Table 61 – Stream PAComplex-Knowledge Indices

Section 6.2.4 - Stream PAComplex-Skills

For the Complex-Skills interface model, the SEM showed valid fit indices (CMIN/DF=2.364; CFI=.922; PCFI=.858; RMSEA=.044; SRMR=.0700) explaining 49% of Skills variance.

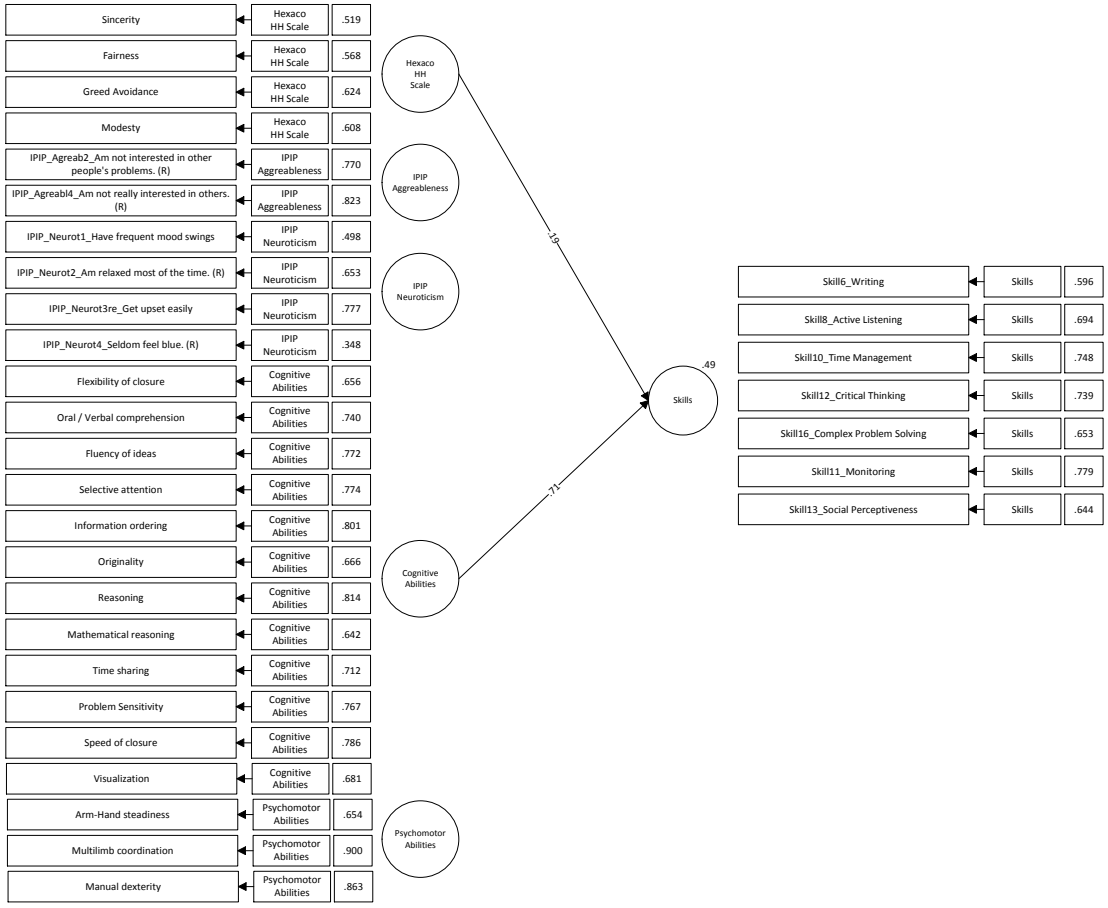


Figure 36 – Stream PAComplex-Skills Validity

	Estimate	S.E.	C.R.	P
Skills <--- HH	.197	.054	3.665	***
Skills <--- IPIP_N	-.032	.032	-1.004	.315
Skills <--- IPIP_A	.020	.022	.908	.364
Skills <--- Cognitive	.673	.060	11.220	***
Skills <--- Psychomotor	-.074	.028	-2.635	.008

Table 62 – Stream PAComplex-Skills Indices

Section 6.2.5 - Stream PAComplex-VAS

For the PAComplex-VAS interface model, the SEM showed valid fit indices (CMIN/DF=2.608; CFI=.903; PCFI=.830; RMSEA=.048; SRMR=.0724) explaining 61% of Benevolence variance, 21% of Self-direction, 34% of Conformity and 78% of Universalism.

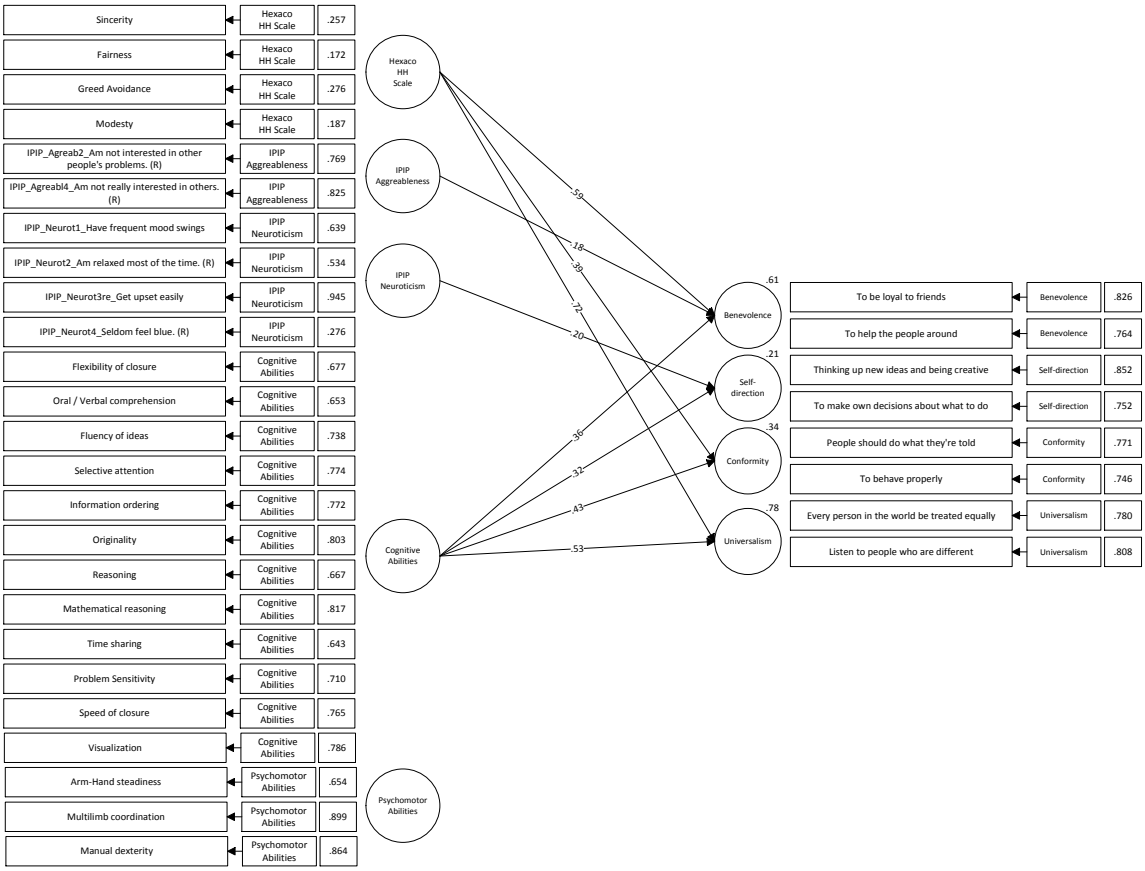


Figure 37 – Stream PAComplex-VAS Validity

			Estimate	S.E.	C.R.	P
Benevolence	<---	HH	1.690	.422	4.001	***
Benevolence	<---	IPIP_N	.057	.034	1.684	.092
Benevolence	<---	IPIP_A	.124	.034	3.612	***
Benevolence	<---	Cognitive	.454	.065	7.042	***
Benevolence	<---	Psychomotor	.135	.044	3.082	.002
Universalism	<---	Cognitive	.701	.071	9.824	***

			Estimate	S.E.	C.R.	P
Universalism	<---	Psychomotor	-.082	.046	-1.796	.072
Conformity	<---	Cognitive	.609	.080	7.637	***
Self_Direction	<---	Cognitive	.491	.082	6.005	***
Conformity	<---	IPIP_A	-.049	.042	-1.176	.239
Self_Direction	<---	IPIP_A	-.008	.044	-.188	.851
Universalism	<---	IPIP_A	.055	.036	1.522	.128
Self_Direction	<---	IPIP_N	.193	.044	4.341	***
Conformity	<---	IPIP_N	-.092	.042	-2.213	.027
Universalism	<---	IPIP_N	.047	.035	1.321	.187
Universalism	<---	HH	2.181	.550	3.965	***
Conformity	<---	HH	1.253	.338	3.712	***
Self_Direction	<---	HH	.805	.257	3.133	.002
Self_Direction	<---	Psychomotor	.033	.056	.596	.551
Conformity	<---	Psychomotor	.013	.053	.253	.800

Table 63 – Stream PAComplex-VAS Indices

Section 6.2.6 - Stream Emotion Command Systems-PAComplex

For this interface model with a focus on the relation between emotion command systems and personality-ability complex (PAComplex), the SEM showed valid fit indices (CMIN/DF=2.449; CFI=.929; PCFI=.768; RMSEA=.045; SRMR=.0451) explaining respectively 41% (HH), 14% (Cognitive), 6% (Psychomotor), 71% (Neuroticism), and 27% (Agreeableness) variance.

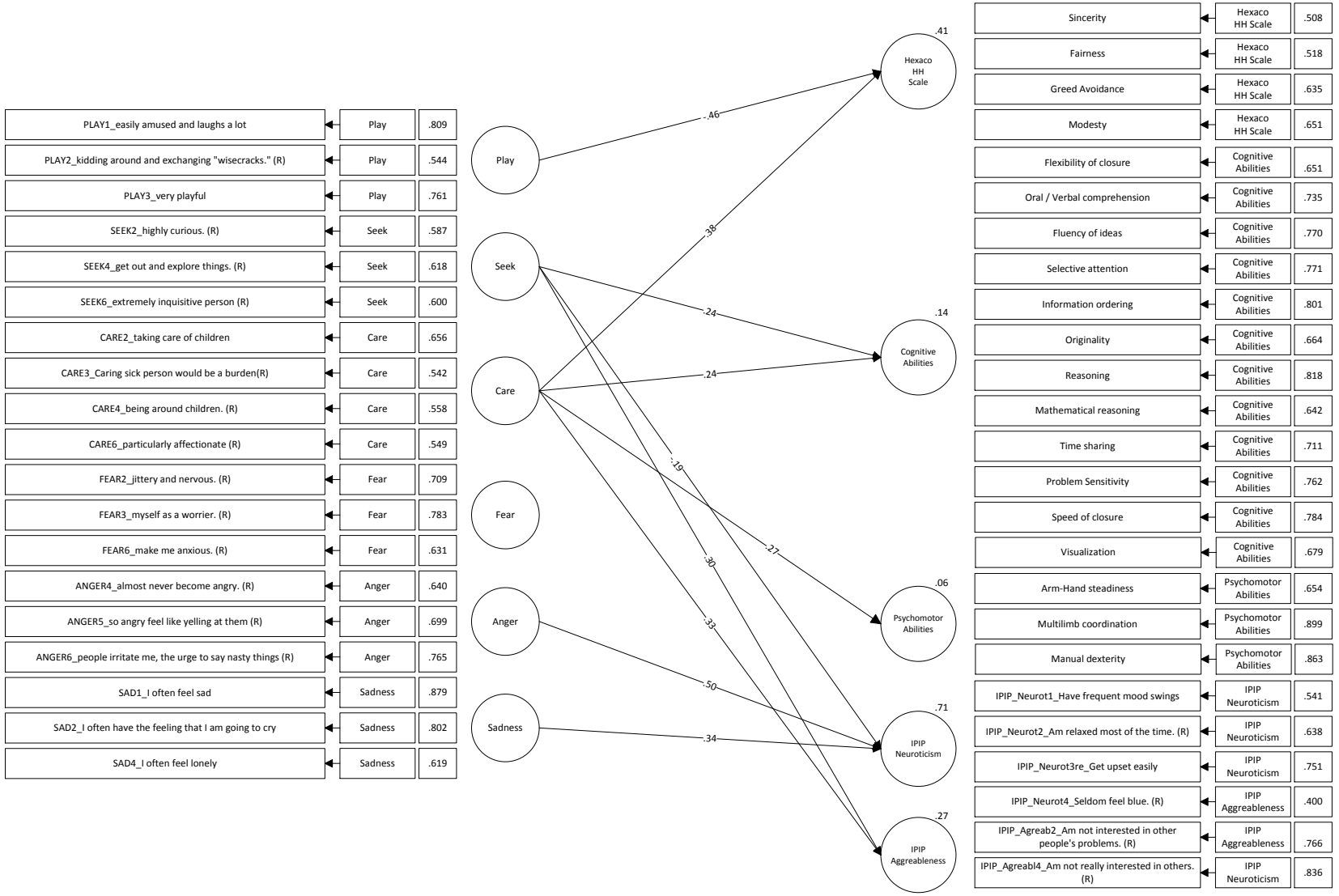


Figure 38 – Stream Emotion Command Systems-PAComplex Validity

			Estimate	S.E.	C.R.	P
HH	<---	Play	-.239	.045	-5.339	***
HH	<---	Sad	-.064	.027	-2.428	.015
HH	<---	Anger	-.072	.036	-2.022	.043
HH	<---	Fear	-.067	.036	-1.847	.065
HH	<---	Care	.218	.053	4.140	***
HH	<---	Seek	.107	.039	2.726	.006
Cognitive	<---	Play	-.076	.031	-2.445	.014
Psychomotor	<---	Play	-.021	.045	-.472	.637
IPIP_N	<---	Play	-.006	.039	-.148	.883
IPIP_A	<---	Play	-.151	.059	-2.542	.011
IPIP_A	<---	Sad	-.018	.044	-.401	.689
IPIP_N	<---	Sad	.196	.033	5.999	***
Psychomotor	<---	Sad	-.011	.034	-.331	.741
Cognitive	<---	Sad	.005	.023	.219	.827
IPIP_A	<---	Anger	-.181	.061	-2.988	.003
IPIP_N	<---	Anger	.382	.051	7.440	***
Psychomotor	<---	Anger	.061	.046	1.317	.188
Cognitive	<---	Anger	-.042	.031	-1.340	.180
IPIP_N	<---	Fear	.113	.042	2.697	.007
Psychomotor	<---	Fear	-.002	.047	-.051	.959
Cognitive	<---	Fear	.005	.031	.152	.879
IPIP_A	<---	Fear	.067	.061	1.108	.268
Cognitive	<---	Care	.162	.042	3.877	***
Psychomotor	<---	Care	.255	.062	4.078	***
IPIP_N	<---	Care	-.020	.052	-.382	.702
IPIP_A	<---	Care	.399	.080	4.975	***
Psychomotor	<---	Seek	-.034	.049	-.687	.492
IPIP_N	<---	Seek	-.153	.045	-3.373	***
IPIP_A	<---	Seek	.319	.067	4.745	***
Cognitive	<---	Seek	.140	.035	3.985	***

Table 64 – Stream Emotion Command Systems-PAComplex Indices

Section 6.2.7 - Stream Emotion Command Systems -> Personality (FFM)

For the fifth interface model with a focus on the relation between the emotion command systems and the personality five factor model, the SEM showed valid fit indices (CMIN/DF=2.449; CFI=.929; PCFI=.768; RMSEA=.045; SRMR=.0451) explaining 23% and 69% of variance of agreeableness and neuroticism respectively.

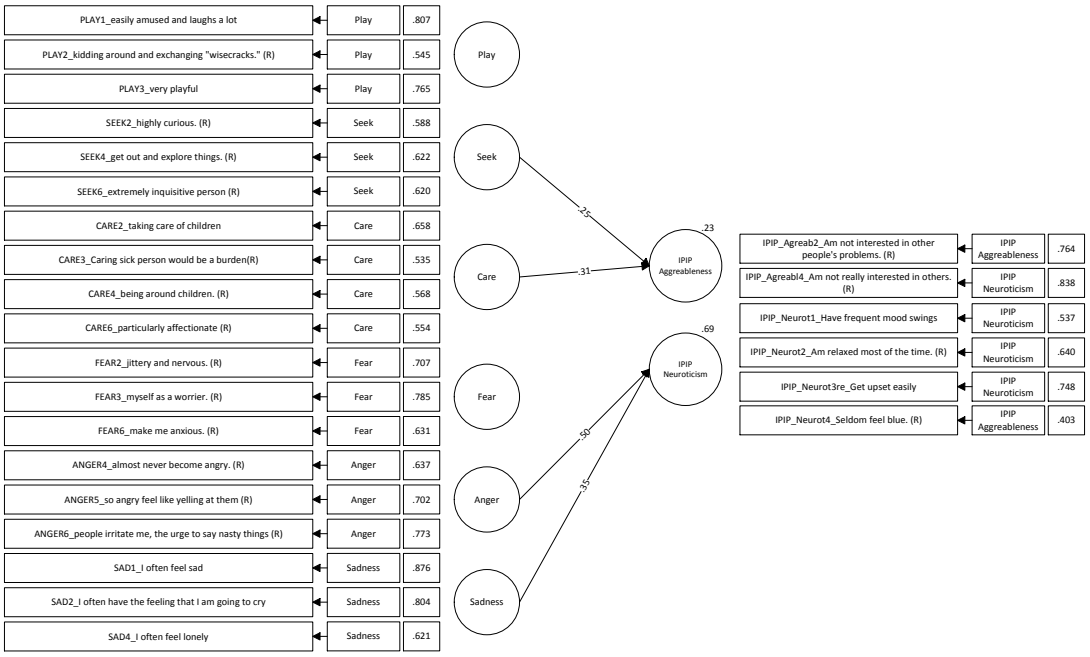


Figure 39 – Stream Emotion Command Systems -> Personality (FFM) Validity

			Estimate	S.E.	C.R.	P
IPIP_A	<---	Play	-.103	.060	-1.706	.088
IPIP_A	<---	Seek	.264	.067	3.963	***
IPIP_A	<---	Care	.373	.082	4.578	***
IPIP_A	<---	Fear	.076	.061	1.238	.216
IPIP_A	<---	Anger	-.163	.061	-2.677	.007
IPIP_A	<---	Sad	-.034	.044	-.760	.447
IPIP_N	<---	Sad	.201	.033	6.111	***
IPIP_N	<---	Anger	.376	.051	7.319	***
IPIP_N	<---	Fear	.108	.042	2.590	.010
IPIP_N	<---	Care	.003	.053	.049	.961
IPIP_N	<---	Seek	-.133	.045	-2.962	.003
IPIP_N	<---	Play	-.032	.040	-.799	.424

Table 65 – Stream Emotion Command Systems -> Personality (FFM)

Section 6.2.8 - Stream Emotion Command Systems -> Personality (Hexaco)

For the fifth interface model with a focus on the relation between the emotion command systems and the Hexaco personality Honesty-Humility factor, the SEM showed valid fit indices (CMIN/DF=2.060; CFI=.924; PCFI=.802; RMSEA=.039; SRMR=.0453) explaining 33% variance.

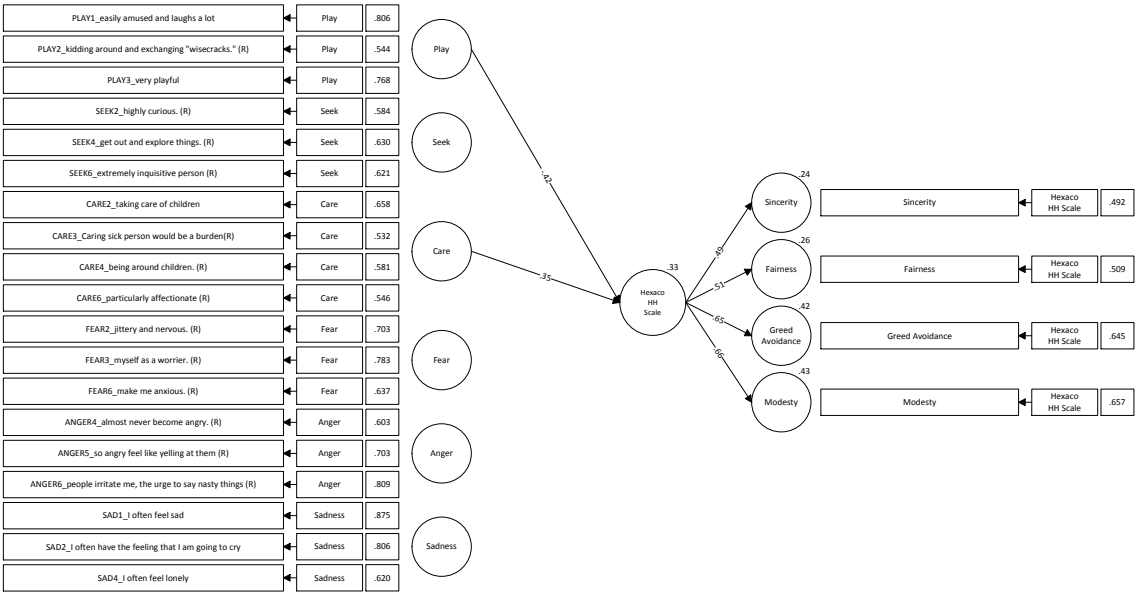


Figure 40 – Stream Emotion Command Systems -> Personality (Hexaco) Validity

			Estimate	S.E.	C.R.	P
HH	<---	Play	-.212	.043	-4.912	***
HH	<---	Seek	.061	.037	1.649	.099
HH	<---	Care	.196	.051	3.817	***
HH	<---	Fear	-.072	.035	-2.026	.043
HH	<---	Anger	-.040	.036	-1.116	.264
HH	<---	Sad	-.073	.027	-2.750	.006

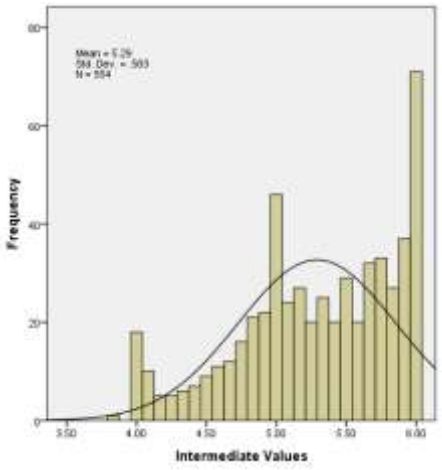
Table 66 – Stream Emotion Command Systems -> Personality (Hexaco) Indices

Chapter 7 - Moderation analysis

Section 7.1 - Intermediate Values

The status of some variables matches that of a moderator, i.e. a variable that is typically of a contextual nature and interacts with a determined relationship in a given interface. This means, the variable is not conceived as being in a stream flux but rather as a conditioning factor that influences the stream. Such is the case of intermediate values, which epistemic status suggests an interaction at the PAComplex-KSA interface level.

Pragmatically, we opted to study the intermediate values distribution and features in order to define ex ante if the variable was suited for moderation SEM analysis. The 2nd order factor was computed on SPSS as the simple means of all composing items (twelve). The variable has a non-normal distribution (Kolmogorov-Smirnov Z=2.557, p<.001) with average 5.29 (.56 s.d.), skewed rightwards (skewness = -.568) and negative Kurtosis (-.510). The minimum value is 3.83 and the highest value (also, the mode) is 6.00. This indicates the moderator should be used as a multigroup comparison variable. The most important decision then concerns the cutoff point criterion to ensure sufficient contrast as well as comparability between groups. We have opted to recode the variable by using the median (5.33) as the critical point within this group of respondents. This cuts the group in half and so, technically both groups still remain sufficiently large to allow SEM analyses. The left segment group will be named "moderate-high intermediate values" (MH) while the right segment group is the "high-top intermediate values" (HT).



Graphic 1 – Intermediate Values

By using multiple group comparison SEM analysis (MSEM) we estimated separately coefficients (lambdas and betas) for both groups and used critical ratios z test (Byrne, 2013) to identify significant differences due to moderation. Similarly, to SEM procedures, MSEM goodness of fit is judged on the basis of CMIN, CFI, PCFI, and RMSEA using previously stated criteria. MSEM requires that one reports the null model (independence), the unconstrained model, the constrained for same factor loadings, the constrained for same regression weights and lastly the constrained for both factor loadings and regression weights. Fit indices are shown in Table 66 and betas are depicted in Figure 40.

For clarity sake, we shall conduct the moderation tests with a single criterion variable at a time, in this case, **knowledge** from KSA.

Model	CMIN/DF	p	CFI	PCFI	RMSEA [LO90-HI90] PCLOSE
Null	6.493	<.001	.000	.000	.100 [.098-.102] .000
Unconstrained	1.559	<.001	.905	.841	.032 [.029-.035] 1.000
Same factor loadings	1.745	<.001	.868	.846	.037 [.034-.039] 1.000

Table 67 – Fit indices of the additive models (Multi-group analysis)

Only the unconstrained and the structural invariant model have direct comparability judging on CFI below the threshold for factor loadings (measurement invariance). This would advise not to proceed to direct comparisons. However, taking into consideration RMSEA high fit values and that SRMR is also below the rejection threshold for the model with both measurement and structural invariances constrained (SRMR=.0739),

and that Hu and Bentler (1999) advocate for the sufficiency of these two indicators to judge on model fit, we opted to move forward but with caution regarding direct comparability.

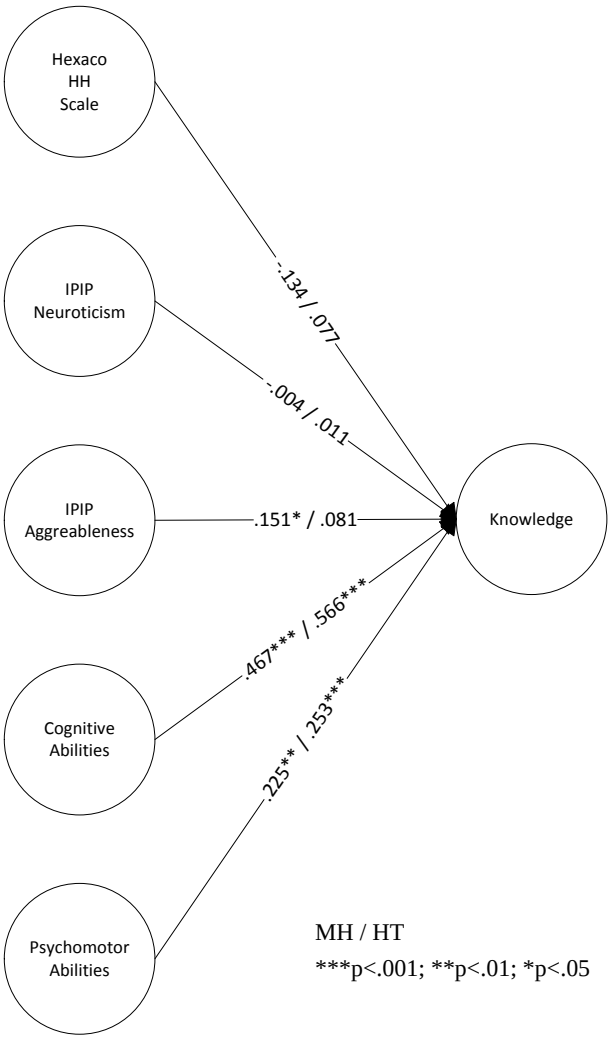


Figure 41 – PAComplex - Knowledge Moderation Validity

			MH				HT				Z-score
			Estimate	S.E.	C.R.	P	Estimate	S.E.	C.R.	P	
Knowledge	<---	HH	-.225	.146	-1.538	.124	.085	.069	1.231	.218	1.917
Knowledge	<---	IPIP_N	-.002	.036	-.063	.950	.009	.056	.156	.876	0.037
Knowledge	<---	IPIP_A	.065	.030	2.198	.028	.041	.036	1.149	.251	-0.496
Knowledge	<---	Cognitive	.420	.078	5.414	***	.544	.089	6.119	***	1.044
Knowledge	<---	Psychom	.129	.041	3.167	.002	.157	.045	3.518	***	0.560

Table 68 – Z-score PAComplex - Knowledge

Note: Although HH-Knowledge z-score reached sufficient value for a significant difference, the fact that both MH and HT estimates are non-significant renders the Z-score non-significant.

The z-score shows no moderation of intermediate values between the PA complex and knowledge.

Regarding the moderation test for **Skills** we found the following fit indices (Table 69).

Model	CMIN/DF	p	CFI	PCFI	RMSEA [LO90-HI90] PCLOSE
Null	6.209	<.001	.000	.000	.097 [.095-.099] .000
Unconstrained	1.464	<.001	.917	.854	.029 [.026-.032] 1.000
M3 Same regression weights	1.460	<.001	.917	.859	.029 [.026-.032] 1.000
M2 Same factor loadings	1.663	<.001	.876	.855	.035 [.032-.037] 1.000
M4 Same factor loadings and regression weights	1.658	<.001	.876	.861	.035 [.032-.037] 1.000

Table 69 – Fit indices of the additive models (Multi-group analysis)

Once again, judging on CFI below the threshold for factor loadings (measurement invariance), only the unconstrained and the structural invariant model have direct comparability. As before, taking into consideration both RMSEA high fit values and SRMR for the model with both measurement and structural invariances constrained (SRMR=.0717) we opted to take the same caution as mentioned but proceed with the comparison.

			MH				HT				Z-score
			Estimate	S.E.	C.R.	P	Estimate	S.E.	C.R.	P	
Skills	<---	HH	.084	.114	.737	.461	.098	.058	1.680	.093	0.107
Skills	<---	IPIP_N	-.021	.039	-.544	.586	-.045	.046	-.969	.333	-0.389
Skills	<---	IPIP_A	.042	.031	1.362	.173	.011	.029	.382	.702	-0.724
Skills	<---	Cognitive	.582	.099	5.891	***	.423	.079	5.369	***	-1.261
Skills	<---	Psychom	-.079	.041	-1.912	.056	-.033	.034	-.960	.337	0.870

Table 70 – Z-score PAComplex - Skills

The z-score shows no moderation of intermediate values between the PA complex and skills.

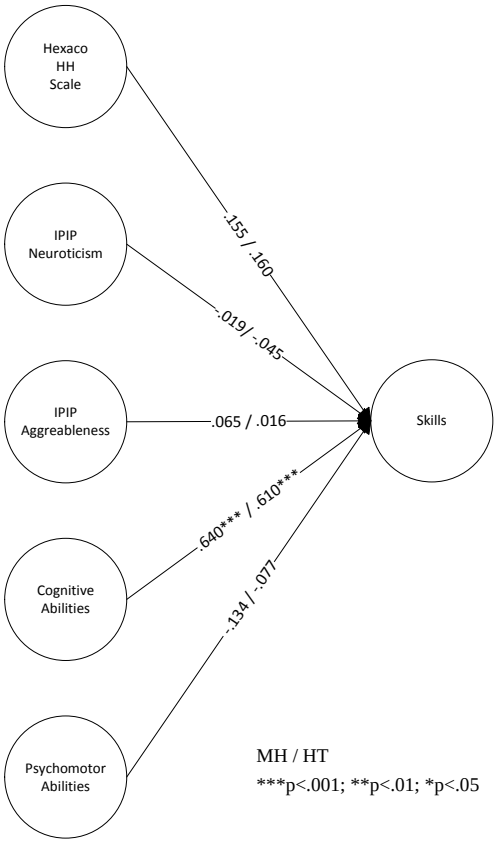


Figure 42 – PAComplex – Skills Validity

Regarding the moderation test for **VAS** we found the following fit indices (Table 71).

Model	CMIN/DF	p	CFI	PCFI	RMSEA [LO90-HI90] PCLOSE
Null	6.007	<.001	.000	.000	.095 [.093-.097] .000
Unconstrained	1.548	<.001	.900	.825	.032 [.029-.034] 1.000
M3 Same regression weights	1.577	<.001	.892	.833	.032 [.030-.035] 1.000
M2 Same factor loadings	1.772	<.001	.852	.816	.037 [.035-.040] 1.000
M4 Same factor loadings and regression weights	1.775	<.001	.849	.827	.037 [.035-.040] 1.000

Table 71 – Fit indices of the additive models (Multi-group analysis)

In this case only the unconstrained model has direct comparability judging on CFI below the threshold both for same factor loadings (measurement invariance) and same betas (structural invariance). Nevertheless, RMSEA as well as SRMR (.0778) both advise contrarily. Therefore, we opted to move on with the direct comparisons but with the same caveat as before.

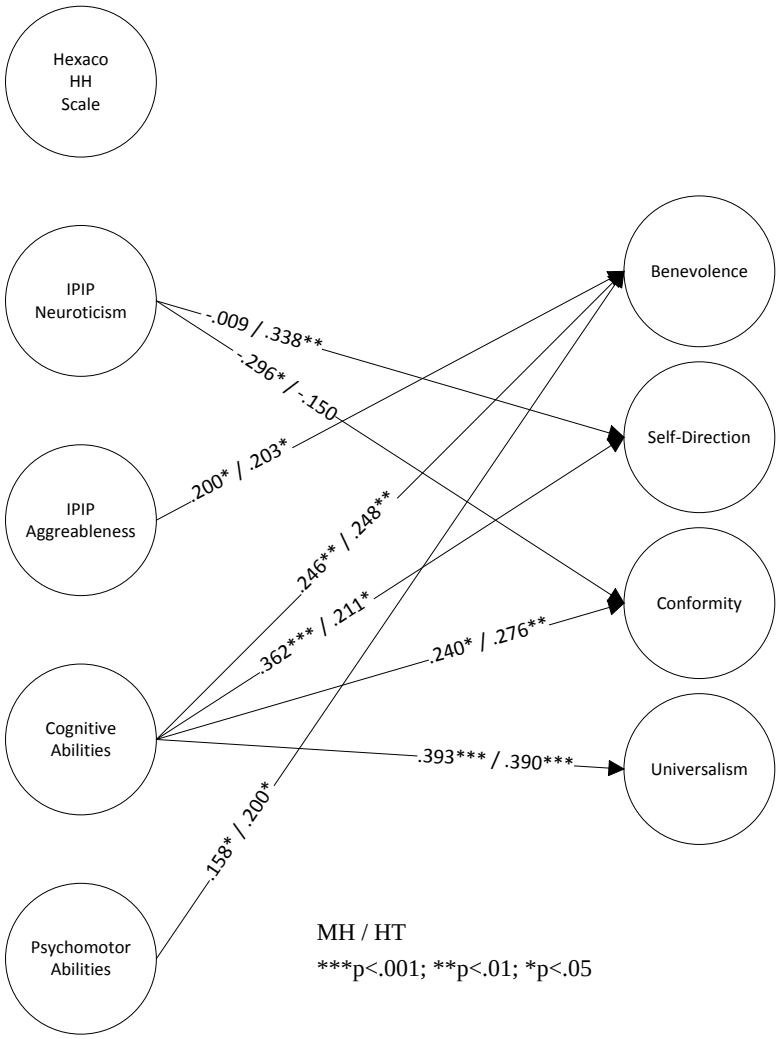


Figure 43 – PAComplex – VAS Validity

			MH				HT				Z-score
			Estimate	S.E.	C.R.	P	Estimate	S.E.	C.R.	P	
Benev	<---	HH	-.169	.190	-.893	.372	-.160	.125	-1.283	.200	0.040
Benev	<---	IPIP_N	-.060	.086	-.698	.485	-.005	.096	-.054	.957	1.247
Benev	<---	IPIP_A	.102	.048	2.141	.032	.146	.062	2.354	.019	0.324
Benev	<---	Cognitive	.280	.099	2.821	.005	.334	.115	2.906	.004	0.179
Benev	<---	Psychomotor	.130	.064	2.034	.042	.174	.072	2.395	.017	0.489
Sdir	<---	Psychomotor	-.024	.076	-.317	.751	.111	.097	1.151	.250	1.019
Sdir	<---	Cognitive	.554	.125	4.441	***	.391	.154	2.537	.011	-0.910
Sdir	<---	IPIP_A	.060	.057	1.054	.292	.051	.084	.601	.548	-0.316
Sdir	<---	IPIP_N	.044	.103	.429	.668	.442	.152	2.911	.004	2.627***
Sdir	<---	HH	-.065	.213	-.305	.760	-.357	.182	-1.960	.050	-1.040
Conf	<---	IPIP_N	-.276	.116	-2.383	.017	-.197	.121	-1.629	.103	0.871
Conf	<---	IPIP_A	.006	.055	.116	.908	-.116	.075	-1.552	.121	-1.404
Conf	<---	HH	-.187	.218	-.857	.392	-.137	.147	-.934	.350	0.190

			MH				HT				Z-score
			Estimate	S.E.	C.R.	P	Estimate	S.E.	C.R.	P	
Conf	<---	Cognitive	.294	.114	2.570	.010	.415	.139	2.993	.003	0.652
Conf	<---	Psychomotor	-.045	.073	-.618	.537	.087	.086	1.012	.312	1.188
Univ	<---	Psychomotor	.013	.068	.196	.845	-.076	.072	-1.057	.290	-0.921
Univ	<---	Cognitive	.510	.111	4.574	***	.490	.118	4.137	***	-0.283
Univ	<---	IPIP_A	.024	.051	.481	.631	.101	.062	1.631	.103	0.313
Univ	<---	IPIP_N	-.007	.092	-.080	.936	.005	.096	.054	.957	0.965
Univ	<---	HH	.246	.216	1.135	.256	-.012	.119	-.105	.916	-1.046

Table 72 – Z-score PAComplex - VAS

The z-score shows a moderation effect of intermediate values between the PAComplex and VAS in the case of neuroticism. Where for MH group there is no significant relation between Neuroticism and Self-Direction whereas for HT group it becomes positive, i.e., the higher neuroticism individuals have the higher self-direction they will show under the condition of having high-top intermediate values.

Section 7.2 - Stream Terminal Values – Intermediate Values

Intermediate values arguably fall within a category of its own, as literature mostly previews the terminal and instrumental categories. Theoretically, terminal values are achieved by means of instrumental values. However, within the context of a value-driven organization, the intermediate values (namely, organizational duties, judiciary duties, and virtues) should emanate from terminal ones, assuming the institutional values are aligned with the societal ones.

In order to test this, we conducted a SEM where terminal values are predictors of intermediate ones. The SEM had valid fit indices (CMIN/DF=2.645, p<.001; CFI=.963; PCFI=.846; RMSEA=.050; SRMR=.0435) explaining 11% of intermediate values variance, with no changes made to previous factor structures. Multicollinearity was ruled out as VIF ranged from 1.137 to 1.568.

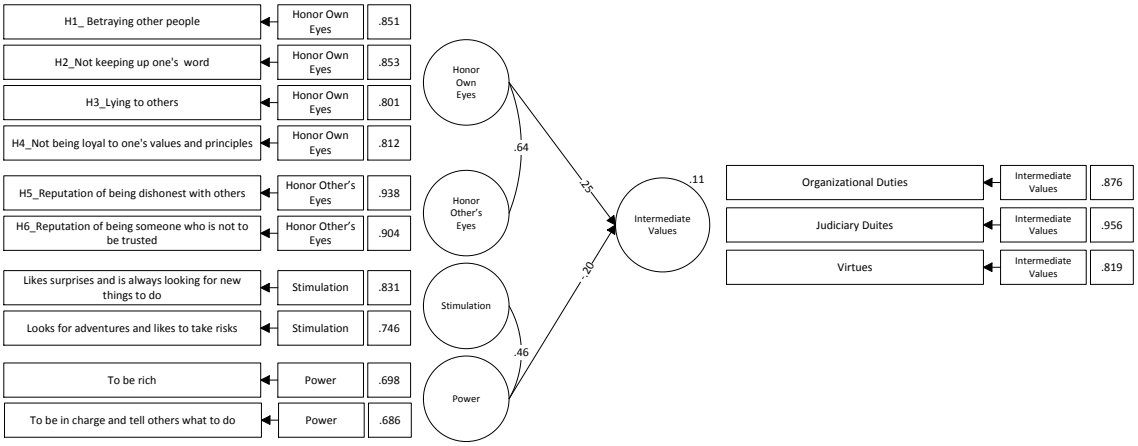


Figure 44 – Stream Terminal Values – Intermediate Values Validity

			Unstandardized Estimate	S.E.	C.R.	P
Intermed	<---	honorown	,142	,033	4,297	***
Intermed	<---	honorother	,016	,026	,612	,541
Intermed	<---	stimul	,112	,037	3,005	,003
Intermed	<---	power	-,149	,045	-3,313	***

Table 73 – Stream Terminal Values – Intermediate Values Indices

Chapter 8 - The ultimate model: discussion, conclusions and emotions

Bartram and Roe's (2005) model was the anchor of the profiling competences research conducted with criminal investigators from PSP. We opted for using different measures in order to support the empirical analysis of the construct linked to the scope of the thesis: emotion-based model of competences. The syncretic model we generated on the basis of empirical findings addressed both competences and emotions (at the lowest layer), following a modelling methodology in sequenced layers (interfaces) which rendered it a different composition and relation between layers.

The *other characteristics* layer became, in our research, *emotion command systems*. *Personality traits* corresponds to our *Personality-Abilities Complex*. We did not conceive a singled-out *Abilities* layer. The *Knowledge – Skills – Attitudes* columns layer was partially adapted so that the composition became *Knowledge – Skills – Value-Attitudes System*. On the top, we kept the *Competences* layer.

The introduction of the distinction between *Intermediate values* and *Terminal values* was a first move we deemed necessary in order to clarify the role that values could play in such a model. Secondly, these values were theoretically more suited as moderators rather than predictors, especially considering the original proposal placing them under the umbrella of *other characteristics* layer. Its moderation role made more sense to occur between *Personality-Abilities Complex* and *Knowledge – Skills – Value-Attitudes System* layers. This is, to our view, a theoretically sustained proposition that found some empirical support – see Figure 45.

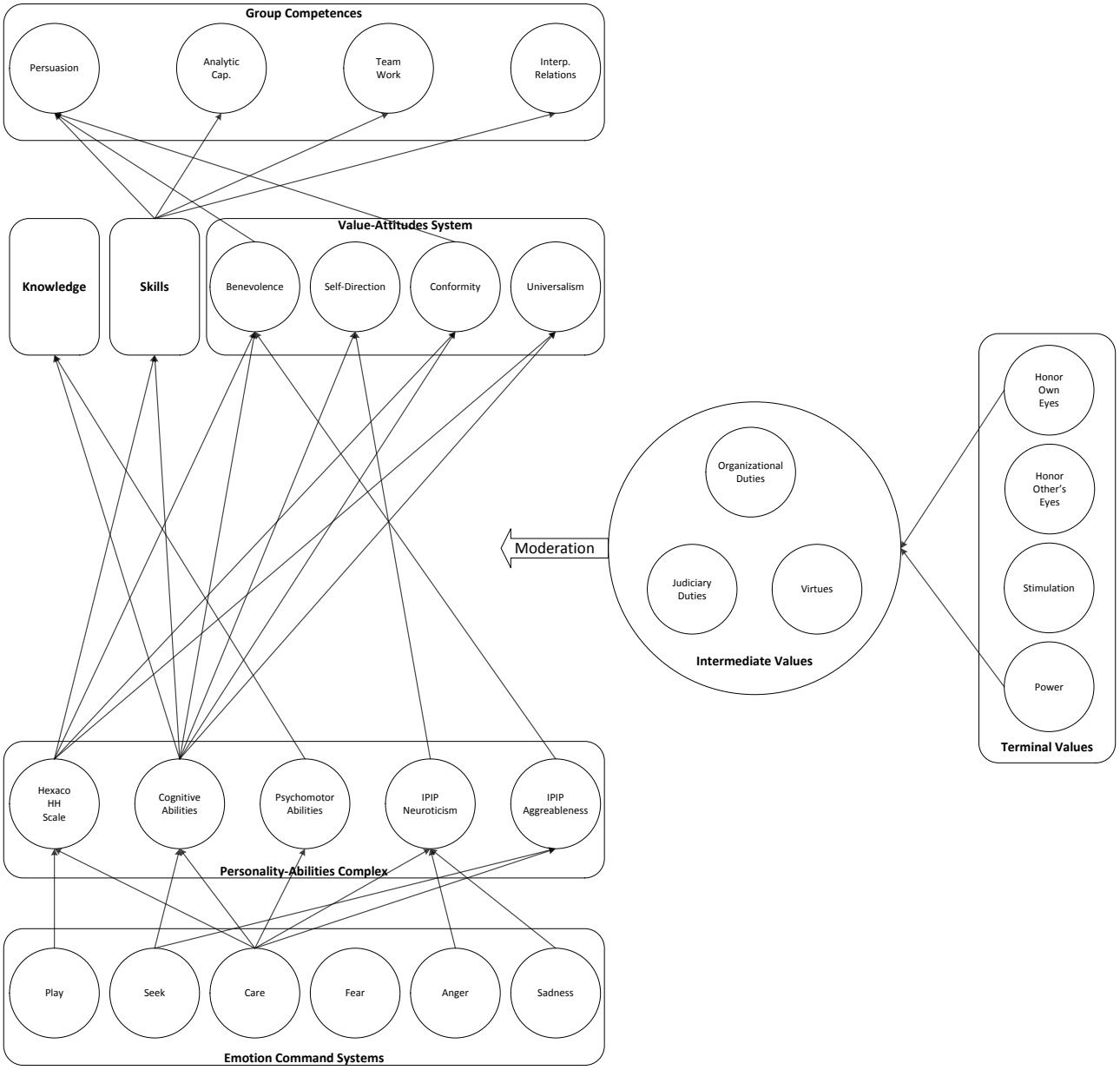


Figure 45 – The Ultimate Model

Findings suggest that it is possible to structure a competence model for criminal investigators following the logic of Bartram and Roe's (2005) model. In our model, emotions are considered at the ground layer, the emotional foundations of human personality (Davis & Panksepp, 2011) expressed as the Emotion Command Systems.

Criminal investigator's personality traits and abilities research led us to a *composite construct* we acknowledged as a *complex*, built from correlations between Hexaco-Honesty-Humility Factor, Cognitive abilities, Psychomotor abilities and Five-Factor Model. The revised model complexified the personality layer, as theoretically Hexaco and Big-5 model do not entirely overlap and specifically for criminal investigators it made sense to include the Honesty-Humility Factor. This option was not demotivated by empirical findings and we believe this adds both to extant theory and applied value to this model.

Intermediate Values and Terminal Values are the *moderation* factors of the model. Values, virtues, professional duties, and honor are all expressions of an axiological dimension that modulates the relation between *Personality-Abilities Complex* layer and *Knowledge – Skills – Value-Attitudes System* layer.

Keeping the focus on values, and considering that terminal and intermediate ones play a relevant role, we can assume that the core concept *Value* as a distinct factor is eventually linked either to criminal investigators culture or to institutional culture which is, to our best judgment, one of the future research topics.

Our model raises some issues that, retrospectively, we would like to have addressed in the research.

Firstly, we kept the focus on knowledge. The empirical findings concerning the relation between knowledge and competences are void and thus counterintuitive. Meaningful conclusions or even proposals would require a set of studies destined to replicate the study and then, if concurrent, rule out possible extraneous variables that may have suppressed the expected relation. But theoretically we can assume that some other competences could be related to knowledge itself and *vice versa* although it is possible that a direct relationship could be over simplistic. The same absence of significant paths raises questions about the relation between knowledge and skills, or between knowledge and the *Value-Attitudes System*. It is theoretically assumed that knowledge is mobilized for effectiveness in the action, also by means of skills. For example, the mastery of the

Portuguese language (K) facilitates good written communication skills (S) or knowledge of Psychology (K), all potentially to be mobilized for good social perception (S) or active listening skills (S). However, Bartram and Roe's (2005) model treats them as parallel processes, without envisaging relationships of interdependence, which it equally does not exclude. Nevertheless, in view of the complexity of the model shaped, we understand that the specific relationship between KSA (VAS) will be better worked as a dedicated theoretical object in future studies.

Secondly, and keeping the focus on *Fear*, one question we could address is why fear has no relation with any of the *Personality-Abilities Complex* layer component. Could it be due to police culture – policemen should have no fear? The self-reported nature of ANPS reifies the nature of the emotions that, in order to be reported, must pass through the evaluation screen (Damásio, 1995). In this sense, the responses to the ANPS can be understood as a report of feelings and not of emotions, that is, cognitions about emotions. This favors biases consistent with social desirability.

Thirdly, concerning *Value-Attitudes System*, the single relation we found took place with the persuasion group competences. However, if we consider another police daily work task, rather than criminal investigation, competences could theoretically be of other kind, which could lead to different relations with *Value-Attitudes System*.

Lastly, and about *emotion*s: are emotions playing a transversal role in our model? That is, could emotions somehow be related to knowledge (e.g. Stephens & Carmeli, 2016), skills (e.g. Fehlinger, Stumpenhorst, Stenzel, & Rief, 2013; Rowsell, Ciarrochi, Deane, & Heaven, 2016), attitudes (e.g. Heddy, Danielson, Sinatra, & Graham, 2016) or values (e.g. Torres, Schwartz, & Tamir, 2016a, 2016b)? We believe there is ground to motivate these propositions and that it may add explanative power to this model.

Conclusion

Police work faces emotional strong events on a daily basis (e.g. Brown & Campbell, 1990), is a demanding job regarding management of emotions (van Gelderen et al., 2007) and requires continuous professionalization (Green & Gates, 2014). These issues are of especial relevance for HRM policies for police organizations such as the Public Security Police (PSP). Namely all options pertaining recruitment and selection processes, as well as initial training both for police officers and officials impact the profile and emotional dimensions related to police performance.

Putting emotions under the spotlight implies resourcing to Psychology and related topics. The first analysis of the documental sources formalizing recruitment and selection as well as initial training in PSP suggested that the legal and regulatory framework is void of explicit focus on emotional subjects, giving instead primacy to reason in line with Weber's view of *zweckrational* action (Albrow, 1992). This may found partial explanation in the Portuguese delayed bloom that Psychology as a university discipline had only in the late 1960s (Borges, 1986). This should be put into context considering the existence of officer and official careers.

Departing from a literature review covering research of emotions in organizations, we addressed emotions in police recruitment and selection, and in initial training, with the support of an empirical study focused on the wider institutional context of European police institutions. Despite its limitations – small response rate and single organizational respondent – which are a challenge *per se* considering the institutional heterogeneity and policies, results of the study show that official and officer dimensions in selection are structured in differing axes (clinical and competences for officials, cognitive and competences for officers). This, we believe, is a finding with greater relevance as it suggests lack of homogeneity in criteria used.

Accepting that no method of selection is perfect (Decker & Huckabee 1999) but also that the police functions will not vary deeply between countries, in line with Lough and Von Treuer (2013), we recommend to build processes for police selection, instead of adapting existing ones for this specific environment. The study also suggested that the initial training in Psychological subjects had no common ground, leading to the idea of a possible future common policy at least at the European Union level. We could not find

a pattern of strategic alignment between selection and training regarding psychological focus. This might be explained by the institutional culture assumptions pertaining what should and should not be exposed (due to security reasons) or in the inexistence of an explicit strategy to favor such alignment.

The absence of emotion-related subjects alongside with the unclear definition of emotions (Cacioppo & Gardner, 1999) led us to reexamine some general approaches to emotional topics under the police culture, where we could not find a specific focus on the concept of emotions treated as neither an explicit nor core topic of concern. However, we infer there is a consensus in police literature, albeit implicit, that emotions act as a conditioning factor of performance (e.g. van Gelderen, Konijn, & Bakker, 2017).

An inescapable concept linked with performance is that of "competence". Considering that competences can be taken as predictors of best results while being influenced by the emotional dynamics (Bernal & Ibarrola, 2014; Doe, Ndinguri, & Phipps, 2015) we developed a competence model approach about the role of emotions in criminal investigation performance.

Literature review showed a panoply of methodologies, frameworks and models about competences. This myriad of approaches has its translation in a set of misconceptions about features such as attitudes, aptitudes, and abilities as well as in the Big Five or Five-Factor Model (FFM, Digman, 1990) of personality. Judging on the progressive integration that has been observed, we opted to explore Bartram and Roe's (2005) model in criminal investigation at PSP.

Due to missing empirical explicit argumentation about the "other characteristics" ground layer in the model, considering PSP's unique culture and that emotions could be consistent with values (Tamir et al., 2016), we elected "honor" and "values" as conceptual relevant topics of research.

To address emotions in criminal investigators at PSP, under the competence modelling methodology, we developed a syncretic model resulting from the articulation of Bartram and Roe's model with several scales. This was done intending to explore a possible emotion-based model of competences. Empirical findings addressed both competences (highest layer) and emotions (lowest layer), by applying a modelling methodology in sequenced layers (interfaces). This rendered the model a different

composition and relation between layers compared with Bartram and Roe's (2005) original model.

We trust this model can better integrate core constructs such as Panksepp (1998) *emotion command systems* by giving it a status compatible with Bartram and Roe's (2005) reasoning. Such emotion command systems were thus placed at the very bottom of the model. Another conceptual novelty we believe should be considered was the fusion between the original personality and abilities layers into a parallel structure that we named the *Personality-Abilities Complex*. Also, we recovered Rokeach´s (1968a) concept of the *Value-Attitudes System* (VAS) in changing Bartram and Roe's (2005) KSA layer into K-S-VAS. On the top, we kept the *Competences* layer. An axiomatic idea on competence literature overall is that of the importance of values linked to competence (Pohling, Bzdok, Eigenstetter, Stumpf, & Strobel, 2016). However Bartram and Roe's (2005) model fits values into the encompassing layer of "others" which casts doubts on the integrity of the reasoning underlying the structural model.

By introducing *Intermediate* and *Terminal values* we believe that the role values play could become clearer in the model. Also, due to its inertial nature, these values are theoretically more akin to the status of moderators rather than that of predictors. As Bartram and Roe's (2005) model puts the hinge between what is innate and acquired in the interface between abilities and KSAs, we reason that values could operate precisely at this level. In our model, we placed them as moderators between *Personality-Abilities Complex* and *Knowledge – Skills-Value-Attitudes System* layers.

Findings suggest that it is possible to structure a competence model for criminal investigators following the logic of Bartram and Roe's (2005) model. In our model, emotions are considered at the ground layer, the emotional foundations of human personality (Davis & Panksepp, 2011) expressed as the Emotion Command Systems.

Criminal investigator's personality traits and abilities findings led us to a *composite construct* we acknowledged as a *complex*, built from correlations between Hexaco-Honesty-Humility Factor, Cognitive abilities, Psychomotor abilities and Five-Factor Model. The revised model reorganized the personality layer, as theoretically Hexaco and Big-5 models do not entirely overlap. In the present case, for criminal investigators it made sense to highlight the Honesty-Humility Factor. This option was not

demotivated by empirical findings and we believe it adds both to extant theory and applied value to the model.

Intermediate Values and Terminal Values operate as *moderation* factors. Values, virtues, professional duties, and honor are all expressions of an axiological dimension that modulates the relation between *Personality-Abilities Complex* layer and *Knowledge – Skills – Value-Attitudes System* layer.

Keeping the focus on values, and considering that terminal and intermediate ones play a significant role, we can assume that the core concept *Value* as a distinct factor is eventually linked either to criminal investigators culture or to institutional culture which is, to our best judgment, a promising future research topic.

Our model raises some issues that, retrospectively, we would like to have addressed in the research.

Firstly, we kept the focus on knowledge. No relation between knowledge and competences was found. This went against our expectation. At this stage, we cannot ascertain the meaning of such findings, as more research is required to explore the possible role of third variables interfering in this relation. However, it would be surprising to find future research concluding that competences would not require knowledge. It is possible that K-S-VAS operate together either as a configuration or as a process to build competence. Bartram and Roe's (2005) model do not preview such lateral relations but it also does not rule them out. This might also become a promising research subject in future studies.

Secondly, and keeping the focus on *Fear*, it was rather unexpected to find no relation between fear with any of the *Personality-Abilities Complex* layer component. We entrust Damásio (1995) view that emotions are expressed as feelings through a cognitive filter and that within an organization, feelings expression are regulated via its culture. Additionally, as a survey, ANPS will not be able to register emotions but rather feelings, which will incorporate any cultural bias.

Thirdly, *Value-Attitudes System* is merely related with the persuasion group competences. This might reflect the nature itself of criminal investigation where it would be admissible to expect other pattern of relations if the function was different.

Lastly, we believe it is worth questioning if emotions are playing a transversal role in our model. Will they be related with knowledge? With skills? Attitudes? Or Values?

Extant literature (Fehlinger et al., 2013; Heddy et al., 2016; Rowsell et al., 2016; Stephens & Carmeli, 2016; Torres et al., 2016) would support such propositions. This is, to our understanding, a rich field of research opportunities within a possible class of emotion-based competence models.

No research design is without limitations. Acknowledging such limitations is not only an expectable attitude in scientific research as it is helpful in further developing research as well as to have a more suitable understanding of the implications from findings. A striking feature of this study is the cross-sectional design that builds models comprehending self-reported variables. This has been a weakness that came to be knowned as Common Method / Source Bias (Podsakoff et al., 2003). Although there are authors such as Spector (2006) or Fuller et al. (2016) sustaining that common method bias has been exaggerated in literature, we endeavored to anticipate such problem. Firstly, the percepts in use are not of the same nature (e.g. knowledge and PAComplex) and the respondents would hardly have an implicit theory on the variables underlying Bartram and Roe's (2005) competence level due to its complexity. Altogether we are confident these findings do not express variance emerging from common method / source especially as many of expectable paths were not found to be significant. Additionally, the existence of moderation offers reassurance that such phenomenon is not a matter for concern in this study.

Despite limitations that any research usually faces, especially those of a correlational nature, certain lines of research may arise as complementary answers to the many questions previous studies raise.

Why is there a recurrent tacit acknowledgement that improvement in police selection and training faces a long way to go? This may encourage research on organizational inertia when dealing with emotion-related issues implied in both selection and training.

As a development of deeper emotion-focused research on police selection and training, would it be expectable to work on Paulhus and Williams (2002) dark triad construct? As personality is a more stable feature any disorder would have higher potential to affect police function.

If indeed police culture is averse to emotion expression, especially those emotions that go against the grain of values that characterize law enforcement, it would be a

promising line of research to uncover the behavioral reactions towards contradictory experiences between values and emotions within police institutions.

In line with this it would be interesting to investigate multiplex relationships (Methot et al., 2016) in police organization as friendship workplace relations align with the assumptions of comradeship.

Another line of research concerns the relative lack of tools available to empirically manage (and do organizational development) in specific police roles. Some steps have already been taken in this direction, e.g. Semrad et al. (2014) Behavioral Observation Scale (BOS) to select witness protection police officers, or Secareanu´s (2015) new measures in recruitment process for criminal investigators.

Age plays an important role today as a key feature that is requiring revision of traditional HRM models especially as active population is growing older (Ramos, 2010). The ageing effect of such workforce as well as generational differences (Jin & Rounds, 2012) calls for value-centered research in police institutions. This might be of especial relevance as inertia may be an asset rather than a liability in such sort of institutions.

The criticality of police function in societies gives it the fundamental status of an institution, i.e. something that could not cease to exist if the society is to remain as we know. Such criticality imposes great pressures on individuals not only due to the specificity of the institutional mission but also due to the requirement to relinquish much of taken-for-granted rights in the society at large. Departing from a stable society where providing security and ensuring law enforcement was routine to a new social state where emergent and hybrid threats require continuous adaptation and innovation in policing, emotions play an increasingly central role. Hence, to provide a secure and peaceful society, police as a profession must rely on the most advanced practices in attracting, selecting, and developing policemen whose performance and wellbeing lies on emotion-based competences.

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