Psicothema

Enterprising personality profile in youth:
Components and assessment

José Muñiz[1], Javier Suárez-Álvarez[1], Ignacio Pedrosa[1], Eduardo Fonseca-Pedrero[2] and Eduardo García-Cueto[1]
[1] Universidad de Oviedo and [2] Universidad de La Rioja

Abstract

Background: In the study of enterprising personality, there are two main approaches, the utilization of general personality traits, such as Big Five, and the use of more specific traits. The aim of the present work is to develop and validate a new measurement instrument that will permit a rigorous assessment of the basic traits of enterprising personality in young people. **Method:** A sample of 2,693 students (51% males) from different regions in northern Spain was used. Mean age was 16.52 years (SD = 1.38), with an age range of 16 to 23. Eight principal dimensions of enterprising personality were identified, and a new battery of tests was developed for their assessment. **Results:** The reliability coefficients of the battery scales were over .80. Common variance among the eight specific personality dimensions and the Big Five factors was 24%, and with three emotional intelligence dimensions, it was 16%. The enterprising personality traits show a very low correlation with socio-economic status (r = .126), and a moderate correlation with estimations of entrepreneurial spirit by teachers (r = .385). **Conclusions:** Eight specific dimensions of enterprising personality in youth have been identified, and a new battery for their assessment, with adequate psychometric properties, was developed.

Keywords: Personality, entrepreneurs, youth, big five factors.

Resumen

***Perfil de personalidad emprendedora en jóvenes: componentes y evaluación.* Antecedentes:** en el estudio de la personalidad de los emprendedores destacan dos enfoques principales, uno centrado en los rasgos generales tipo big five y otro en rasgos más específicos. El objetivo del presente trabajo es el desarrollo y validación de un nuevo instrumento de medida que permita evaluar los rasgos fundamentales de la personalidad emprendedora de los jóvenes. **Método:** se utilizó una muestra de 2.693 estudiantes (51% hombres) de distintas regiones del norte de España. La media de las edades fue de 16,52 (DT= 1,38), con un rango entre 16 y 23 años. Se identificaron ocho dimensiones principales de la personalidad emprendedora. **Resultados:** los coeficientes de fiabilidad de las escalas de la batería están por encima de .80. La varianza común entre las ocho dimensiones de personalidad y los big five factors fue del 24%, y con tres dimensiones de inteligencia emocional fue del 16%. La personalidad emprendedora tiene una correlación muy baja con el nivel socioeconómico (r = .126) y moderada con el espíritu emprendedor estimado por los profesores (r = .385). **Conclusiones:** se han identificado ocho dimensiones específicas de la personalidad emprendedora de los jóvenes, y se desarrolló una nueva batería para su evaluación, con unas propiedades psicométricas adecuadas.

Palabras clave: personalidad, emprendedores, jóvenes, cinco grandes factores de personalidad.

The early part of the twentieth century saw more technological changes than almost any other period in the history of humankind, and classic authors in the field of economics, such as Schumpeter (1911), Taussig (1915) or Knight (1921) set about analyzing the role of people in these changes. It was in this context of economic development that there first emerged the concept of entrepreneurship to define the individual capable of changing the direction of society thanks to an ability to identify aspects of the technological market, to innovate, and to extend its boundaries (Baum, Frese, Baron, & Katz, 2007). Today, international initiatives such as the Global Entrepreneurship Monitor (2013) assess the entrepreneurial

activity, aspirations and attitudes of individuals across a wide range of countries. As pointed out by the *Organization for Economic Cooperation and Development* (OECD), fostering entrepreneurial spirit is fundamental to the development of market economies (OECD/The European Commission, 2013). A recent meta-analysis carried out by Zhao, Seibert, and Lumpkin (2010) highlights the crucial role of entrepreneurial spirit in modern economies. These authors argue that the failure of an entrepreneur involves a cost to society in terms of lost opportunities and resources, and is detrimental to the individual, both economically and psychologically (Zhao et al., 2010).

Various approaches and models have been proposed to explain the concept of entrepreneurial spirit, some of the most notable being the *Theory of Entrepreneurship* (Kirzner, 1973), the *Entrepreneurial Event Model* (Shapero & Sokol, 1982), the *Theory of Planned Behaviour* (Ajzen, 1991), or Veciana's Model (1999). These models differ in the variables they include, but to date, no measurement instruments have been developed that would permit a

rigorous empirical assessment of the characteristics of enterprising individuals. The most commonly used measurement instrument is the Measure of Entrepreneurial Tendencies and Abilities (META; Almeida, Ahmetoglu, & Chamorro-Premuzic, 2014). In recent years, there has been a considerable amount of research from a psychological perspective, which has attempted to include in the models some aspects that were absent from the classic studies carried out from a more economic perspective (Brandstätter, 2011; Chell, 2008; Covin & Wales, 2012; Hisrich, Langan-Fox, & Grant, 2007; Rauch & Frese, 2007a, 2007b; Suárez-Álvarez, Pedrosa, García-Cueto, & Muñiz, 2014; Zhao et al., 2010). The development of comprehensive models and explanations of entrepreneurial spirit requires taking into account psychological variables, from both the cognitive field (Abilities) and that of personality (Rauch & Frese, 2007a, 2007b). The study of enterprising personality has taken on great vigour in the last few years, and within this body of research, we can identify two main approaches. On the one hand are those authors who prefer to work with broad personality traits, such as the Big Five (Brandstätter, 2011; Obschonka, Schmitt-Rodermund, Silbereisen, Goslin, & Potter, 2013; Zhao et al., 2010), and on the other are those who propose the use of traits that are more specific, and more closely linked to entrepreneurial activity (Rauch & Frese, 2007a, 2007b; Suárez-Álvarez et al., 2014). Those who favour the use of broad personality traits of the Big Five type argue that these factors (Extraversion, Emotional Stability, Conscientiousness, Agreeableness, and Openness to Experience) explain a substantial portion of the variance of entrepreneurial activity (around 13%) and entrepreneurial success (around 10%; Zhao et al., 2010), and correlate strongly with the activity of entrepreneurs and managers (Brandstätter, 2011). Moreover, this perspective on personality has a long tradition in Psychology, and there is a great deal of data on the correlates of these broad factors with different aspects of behaviour (Jang et al., 2006). The core argument endorsing the use of models based on specific personality traits instead of more general ones is that such traits would be capable of taking into account more specific aspects of the enterprising personality, so that the predictions made from them would be more accurate. This is a plausible hypothesis about which initial data have already been collected, reflecting moderate relations between specific personality traits, entrepreneurial creation and business success (Rauch & Frese, 2007a, 2007b). Comparisons between entrepreneurs and other populations reveal that the former score higher on specific traits such as achievement motivation, risk-taking, innovativeness, and internal locus of control (Collins, Hanges, & Locke, 2004; Rauch & Frese, 2007a; Stewart & Roth, 2004). Innovativeness, self-efficacy, and proactive personality show significant and positive relationships with entrepreneurial success, whereas internal locus of control and autonomy have been established as valid predictors of both entrepreneurial creation and success in business (Rauch & Frese, 2007a). According to the research results to date, the specific personality traits most closely linked to enterprising personality would be achievement motivation, risk-taking, innovativeness, autonomy, self-efficacy, stress tolerance, internal locus of control, and optimism (Baum et al., 2007; Rauch & Frese, 2007a, 2007b; Suárez-Álvarez et al., 2014).

Apart from these two principal lines of work, within the psychological approach to the study of enterprising individuals, many other variables have been studied that could be related to entrepreneurial behaviour. Worthy of special mention are the works that address the concept of Emotional Intelligence (EI)

(Ahmetoglu, Leutner, & Chamorro-Premuzic, 2011; Mayer & Salovery, 1997). Various studies have highlighted the relationship between EI and personality traits such as innovation (Suliman & Al-Shaikh, 2007), proactivity (Sunindijo, Hadikusumo, & Ogunlana, 2007) or the tendency to take risks (Hadizade, Raminmehr, & Hosseini, 2009); associations have also been found between EI and entrepreneurial attitude (Neqabi & Bahadori, 2012; Pradhan & Nath, 2012) and business results (Ahmetoglu et al., 2011).

The present work is based on the approach that sets out to use specific traits to assess the personality dimensions of enterprising individuals. As already mentioned, this approach has certain advantages over those that use more general, Big-Five-type traits. Moreover, we work with a young population, given the potential benefits of the early detection of entrepreneurial spirit, which can be of help, for example, in relation to academic and careers guidance for students (Athayde, 2009; Geldhof, Weiner, Agans, Mueller, & Lerner, 2014; Peterman & Kennedy, 2003; Souitaris, Zerbinati, & Al-Laham, 2007). The specific objective of our study is the development and validation of a new measurement instrument that would permit a rigorous assessment of the fundamental traits of enterprising personality in young people. The data available so far allow fairly accurate identification of the specific traits of the enterprising personality, such as achievement motivation, risk-taking, innovativeness, autonomy, self-efficacy, stress tolerance, internal locus of control, and optimism (Baum et al., 2007; Rauch & Frese, 2007a, 2007b; Suárez-Álvarez et al., 2014), and there is a clear need for an instrument that can thoroughly assess all the dimensions proposed (Almeida et al., 2014; Lim & Envick, 2013; Liñán & Chen, 2006; Sánchez, 2010; Stormer, Kline, & Goldenberg, 1999). Even though there are instruments designed to evaluate some of the mentioned dimensions (Aguado, Rubio, & Lucia, 2011; Janssen, 2000; Moriano, Palací, & Morales, 2006; Schuler, Thornton, Frintrup, & Mueller-Hanson, 2004), there is as yet no methodologically coherent tool for assessing them all at the same time, and which would permit the formulation of a reliable profile that included all the essential components of the enterprising personality. The majority of the existing instruments have been developed for particular educational or occupational contexts, and were mainly designed for adults (Almeida et al., 2014; Kreiser, Marino, & Weaver, 2002; Lim & Envick, 2013; Liñán & Chen, 2006; Stormer, Kline, & Goldenberg, 1999), whilst the aim of the present work is to develop an invariant instrument, applicable to all types of population and contexts. Furthermore, the data related to the specific personality traits assessed by the new measurement instrument will be analyzed jointly with (a) those obtained for general personality traits (Big Five), and (b) three dimensions of EI. This will allow us to gather sources of validity evidence and to learn more about the relations between specific-trait models and general-trait models, as well as exploring the role of EI with regard to these models. Sources of validity evidence will also be provided in relation to academic performance, socio-economic status and teachers' external ratings of enterprising personality in their students.

Method

Participants

The sample was obtained using a stratified sampling method, and was made up of 2,693 students (51% males) from different

regions in northern Spain (92.8% Asturias, 3.2% Cantabria, and 4% Leon). The strata were created on the basis of geographical area (21.1% rural, 9.1% coastal, and 69.7% urban), type of secondary school (60.8% public, 35.7% state-subsidized private, and 3.5% private), and educational stage (34.2% compulsory, 57.6% post-compulsory, and 8.2% vocational training). Mean age was 16.52 years (SD=1.38), with an age range of 16 to 23 (55% aged 14 to 16, 38% aged 17 to 18, and 7% aged 19 to 23).

Instruments

Battery for the Assessment of the Enterprising Personality (BEPE). The BEPE questionnaire assesses the eight specific personality traits identified in the literature as most promising for the description of the enterprising personality: achievement motivation, risk-taking, innovativeness, autonomy, self-efficacy, stress tolerance, internal locus of control, and optimism (Baum et al., 2007; Rauch & Frese, 2007a, 2007b; Suárez-Álvarez et al., 2014). The battery was originally made up of 115 items with 5-point Likert-type response scales, where 1 represented being *completely in disagreement* with the statement and 5 *completely in agreement*. A five-category response system was chosen, given that the psychometric literature indicates that it is with 4 to 6 categories that the best estimates of psychometric test parameters are obtained (Lozano, García-Cueto, & Muñiz, 2008). Apart from this, the recommendations for test construction provided in the current psychometric literature were followed (American Educational Research Association, American Psychological Association & National Council on Measurement in Education, 2014; Downing, 2006; Downing & Haladyna, 2006; Evers et al., 2013; Kane, 2006; Moreno, Martínez, & Muñiz, 2006; Muñiz, Elosua, & Hambleton, 2013; Schmeiser & Welch, 2006; Wilson, 2005). The items were developed so that they could be easily understood by the young people, using vocabulary in accord with their ability to understand and content suitable for their age group. Previous studies (Suárez-Álvarez et al., 2014) have shown that the young people understood the items perfectly, after removal of those items that caused problems with comprehension and/or interpretation.

We now briefly define each of the battery components; for a more detailed description of the dimensions and their construction process, see Suárez-Álvarez et al. (2014). *Achievement motivation* (15 items) can be defined as the desire to achieve standards of excellence (Rauch & Frese, 2007b; Suárez-Álvarez, Campillo-Álvarez, Fonseca-Pedrero, García-Cueto, & Muñiz, 2013). *Risk-taking* (15 items) refers to people's tendency and willingness to take on certain levels of insecurity that will allow them to achieve a goal that presents greater benefits than the possible negative consequences (Moore & Gullone, 1996). *Autonomy* (14 items) refers to the motivation for entrepreneurial creation as an attempt to achieve a certain individual freedom (Van Gelderen & Jansen, 2006). *Self-efficacy* (20 items) denotes the conviction that one can efficiently organize and execute actions, as well as persisting when faced with obstacles, to produce the desired results (Costa et al., 2013). *Stress tolerance* (14 items) is defined as the resistance to perceive environmental stimuli as stressful thanks to the adequate use of coping strategies (Lazarus & Folkman, 1986). *Innovativeness* (15 items) refers to willingness and interest as regards seeking new ways of doing things (Rauch & Frese, 2007b). *Internal locus of control* (11 items) concerns the

causal attribution that the consequences of a behaviour depend on oneself (Chell, 2008; Rauch & Frese, 2007b; Suárez-Álvarez et al., 2013). *Optimism* (11 items) is defined as a person's belief regarding the occurrence of positive events in his or her life rather than negative ones (Shepperd, Carrol, Grace, & Terry, 2002). The psychometric properties of the battery are shown in the results section. A previous version of the battery (Suárez-Álvarez et al., 2014) yielded adequate reliability, with alpha coefficients for the subscales ranging from .81 (Stress tolerance) to .98 (Self-efficacy). Likewise, all the subscales present an essentially one-dimensional structure, with percentages of variance explained by the first factor ranging from 27% (Stress tolerance) to 43% (Optimism). A second-order factor analysis revealed that all the subscales conform a single dimension, which permits us to speak of a general factor of enterprising personality.

Big-Five personality questionnaire (OPERAS). General personality traits were measured with the Overall Personality Assessment Scale (OPERAS; Vigil-Colet, Morales-Vives, Camps, Tous, & Lorenzo-Seva, 2013). This questionnaire assesses the Big Five personality traits (Extraversion, Emotional Stability, Conscientiousness, Agreeableness, and Openness to Experience), with seven items on each subscale. The instrument was validated in Spanish population, yielding reliability coefficients for the subscales ranging from .71 to .86, while its convergent validity is adequate (Vigil-Colet et al., 2013)

Emotional intelligence scale (TMMS-24). Emotional Intelligence was assessed with the Spanish adaption of the Trait Meta-Mood Scale (TMMS-24; Fernández-Berrocal, Extremera, & Ramos, 2004; Extremera & Fernández-Berrocal, 2005). This questionnaire consists of three subscales: *Attention* (8 items), which assesses people's tendency to observe and think about their feelings and emotional states, *Clarity* (8 items), which assesses the degree to which people understand their emotional states, and *Repair* (8 items), which evaluates the perception that one can regulate one's own feelings. The Spanish adaption shows reliability coefficients for the subscales ranging from .79 to .86 in adolescents (Extremera, Durán, & Rey, 2007; Fernández-Berrocal, Alcaide, Extremera, & Pizarro, 2006; Salguero, Fernández-Berrocal, Balluerka, & Aritzeta, 2010).

Socio-economic status scale. Participants' socio-economic status was assessed by means of a 9-item questionnaire that rates aspects related to their socio-economic status as indicated by features of their home: number of bathrooms/toilets, studies, living rooms, cars, bicycles, telephones, televisions, camera, and books. The questionnaire was validated in Spanish population, and yielded an essentially one-dimensional structure and a reliability coefficient of .80 (García-Cueto, Pedrosa, Suárez-Álvarez, & Robles, 2013).

Infrequency scale. This scale is made up of 10 items with 5-point Likert response format (1 = *completely disagree*, to 5 = *completely agree*). The main objective of this questionnaire is to detect those participants who respond in a random, pseudo-random or dishonest fashion. Examples of items would be: *I think rich people have more money than poor people,* or *When I'm very tired, I feel like resting.* The answers to this kind of items are obvious, so that we would expect people who respond rigorously to score high (4 or 5). It is a question of eliminating those respondents who assign values to these types of item of 3 or less. Fitting this criterion to the empirical distribution of the scale scores, the cut-off point was finally set at a score of 34, ruling

out those participants who scored below this value. In accordance with this criterion, 171 participants (5.79%) were removed from the analysis.

Procedure

The instruments were administered in group format in the classrooms provided by the schools, and were applied by psychologists trained in the use of these tools. Participation was voluntary, and consent for running the study was obtained from the head teachers of all the schools. Participants did not receive any kind of compensation or reward for taking part. The Ethics Committee of the Psychology Faculty at the University of Oviedo gave its approval for the research.

Data analyses

First of all, to determine the psychometric properties of the eight subscales of the BEPE, we carried out an analysis of the items for each scale separately. To this end, the discrimination indexes were calculated, the differential item functioning by gender was estimated through logistic regression (Gómez-Benito, Hidalgo, & Zumbo, 2013; Zumbo, 1999), and Exploratory Factor Analyses were carried out, using the tetrachoric correlation matrix. The unweighted least squares method was used because it showed the best fit of the data to the model. For determining the dimensionality of each subscale the parallel analysis (PA) method was used (Horn, 1965), with 10,000 resamplings in accordance with Timmerman and Lorenzo-Seva's (2011) optimization. The percentage of explained variance, the goodness-of-fit index (GFI) and the root mean square residuals (RMSR) were taken into account. Finally, the reliability of the subscales by means of Cronbach's alpha coefficient for ordinal data was calculated (Elosua & Zumbo, 2008).

To estimate the psychometric properties of the BEPE scores, an Exploratory Factor Analysis was carried out, using as input the Pearson correlations matrix between the eight subscales. The extraction method used was Maximum Likelihood. For determining the number of factors, we took into account the percentage of explained variance, the GFI and the RMSR, together with the PA method optimized by Timmerman and Lorenzo-Seva (2011). Fit is considered adequate when the GFI value is .90 or more, and those of the RMSR are .08 or less (Kline, 2011). For estimating the Information Function of the battery the Graded Response Model was used (Samejima, 1969, 1997).

Pearson correlations matrix between the eight dimensions of the BEPE and the Big Five personality factors were calculated, together with the canonical correlation between the two sets of variables. Moreover, to estimate the common variance between the two groups of variables the redundancy coefficient was calculated. We proceeded in the same way for studying the relations between the eight components of enterprising personality and the three dimensions of Emotional Intelligence. We also calculated the multiple correlations between the eight dimensions of the questionnaire with four criteria: a) participants' scores on the socio-economic status scale, b) students' grades in Mathematics and in Spanish Language and Literature, c) scores assigned to the students by their teachers for entrepreneurial spirit, and d) students' self-rating of their capacity for running a business in the future. The data were analyzed with SPSS 19 (IBM Corp., 2010),

MULTILOG-MG 7.03 (Zimowski, Muraki, Mislevy, & Bock, 1996), and FACTOR 9.2 (Lorenzo-Seva & Ferrando, 2006).

Results

Psychometric properties of the BEPE questionnaire

The item analysis was carried out for each of the eight scales separately. First of all those items with low discrimination indexes were removed (Muñiz, Fidalgo, García-Cueto, Martínez, & Moreno, 2005). All the scales were made up of items with discrimination indexes ranging from .25 to .65. Following the procedure set out by Gómez-Benito et al. (2013), four items that presented Differential Item Functioning (DIF) by gender were eliminated.

The results obtained in the exploratory factor analysis (EFA) showed Kaiser-Meyer-Olkin (KMO) indexes above .80, as well as a statistically significant Bartlett's sphericity index ($p<.001$). All the factor loadings were in the range .32 to .77. Table 1 shows the number of items in the scales, the discrimination indexes, the reliability, and the internal structure of the scores on the scale items, after removal of the items whose psychometric properties were inadequate. As it can be seen, the GFI is above .95, the RMSR is under .08 and the percentage of variance explained by the factor is over 30% in all cases. In line with these criteria it can be stated that each of the scales has an essentially one-dimensional structure (Kline, 2011). The alpha coefficients of the scales are adequate, with values between .81 and .91.

The results obtained in the second order EFA showed KMO indexes above .80, as well as a statistically significant Bartlett's sphericity index ($p<.001$). The correlations matrix between the scores on the battery's subscales (Table 2) indicates that the eight personality traits are highly related among themselves ($p<.001$). As can be seen in Table 3, a single factor explains 50.32% of the variance, the GFI is over .95 and the RMSR is under .08. According to these data, it would seem reasonable to maintain the hypothesis of essential one-dimensionality and accept the existence of a second-order factor called Enterprising Personality, which would be made up of the eight facets assessed by the scales developed. The alpha coefficient of the complete battery was .92.

Table 1
Items discrimination indexes, reliability and factorial validity of the BEPE subscales

	n	DI	α	Factor loadings	GFI	RMSR	Exp. Var.
Self-Efficacy	17	.38-.63	.91	.44-.72	.99	.048	39%
Risk-Taking	9	.42-.56	.80	.45-.65	.99	.040	38%
Innovativeness	12	.34-.49	.81	.42-.61	.97	.073	32%
Achievement motivation	11	.36-.57	.81	.39-.66	.98	.051	33%
Autonomy	11	.32-.58	.85	.32-.58	.99	.051	37%
Internal locus of control	8	.29-.55	.83	.36-.73	.99	.058	42%
Optimism	9	.38-.61	.83	.42-.68	.98	.068	53%
Stress tolerance	10	.34-.65	.87	.39-.77	.98	.067	42%

Note: n: Number of items; DI: Discrimination index; α: Reliability coefficient; GFI: Goodness-of-fit Index; RMSR: Root-Mean-Square Residual; Exp. Var.: Percentage of Explained Variance for the first factor

Table 2
Correlations between the BEPE subscales

	AU	ST	IN	IL	AM	OP	RT
Self-Efficacy (SE)	.497	.518	.597	.373	.784	.642	.483
Autonomy (AU)		.222	.451	.330	.532	.324	.337
Stress Tolerance (ST)			.257	.160	.370	.529	.255
Innovativeness (IN)				.311	.554	.430	.395
Internal Loc. Con. (IL)					.383	.370	.283
Achiev. Motiv. (AM)						.521	.438
Optimism (OP)							.388
Risk-taking (RT)							

Table 3
Second-order exploratory factor analysis of the BEPE subscales

	Enterprising Personality
Self-Efficacy	.92
Achievement motivation	.84
Optimism	.69
Innovativeness	.65
Autonomy	.57
Risk-taking	.54
Stress tolerance	.53
Internal locus	.44
Explained variance	50.32%
GFI	.98
RMSR	.057

Note: GFI: Goodness of Fit Index; RMSR: Root-Mean-Square Residuals

Information Function

The Information Function (Figure 1) indicates the degree of accuracy with which the battery measures for the different levels of the variable being assessed. As can be seen in Figure 1, the BEPE measures quite accurately for the majority of the values (Θ between -3 and +2), with accuracy falling slightly from the value $\Theta = 2$ onwards. Note that if the scores are distributed according to the normal curve, it means that the BEPE shows an appropriate level of accuracy for over 95% of respondents assessed.

Specific personality traits versus general traits (Big Five)

Table 4 shows the Pearson correlations between the eight specific dimensions of the BEPE and the OPERAS subscales. The highest correlations were found between Stress tolerance and Emotional stability ($r = .626$), Optimism and Emotional stability ($r = .620$), and Achievement motivation and Conscientiousness ($r = .608$). The canonical correlation between the eight dimensions of the BEPE and the Big Five factors was .76. The redundancy coefficient for the first set of variables was .24.

Emotional Intelligence

Table 5 shows the Pearson correlations between the eight dimensions of the BEPE questionnaire and the three dimensions of the TMMS-24. The dimensions most strongly related to those of the BEPE questionnaire were Clarity and Emotional repair; on the other hand, there was practically no relationship with the Attention dimension. The canonical correlation between the eight BEPE scales and the TMMS-24 was .70, and the redundancy coefficient for the first set of variables was .16.
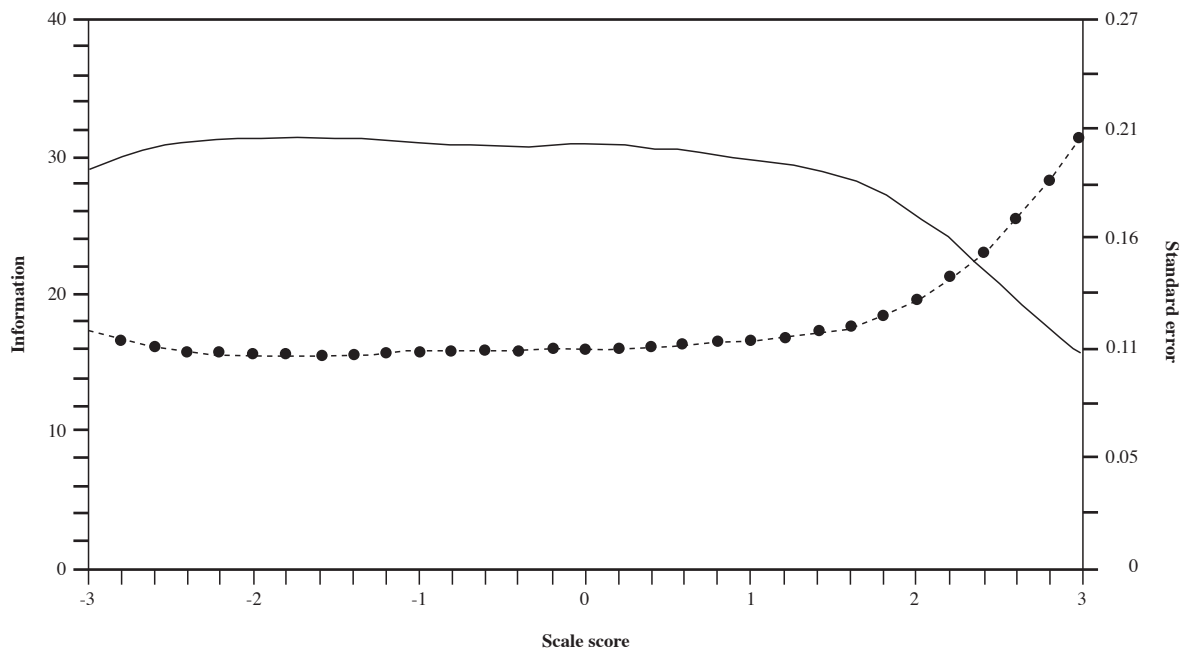

Figure 1. *Information Function of the BEPE questionnaire*

Table 4

Correlations between enterprising personality traits and the Big Five factors of personality

Enterprising personality traits	Openness	Extraversion	Agreeableness	Emotional stability	Conscientiousness
Self-efficacy	.236	.256	.096	.397	.462
Autonomy	.308	.102	.081	.167	.355
Stress tolerance	.081	.163	.148	.626	.247
Innovativeness	.413	.264	.226	.198	.294
Internal locus	.161	.081	.203	.176	.265
Achievement motivation	.301	.180	.168	.273	.608
Optimism	.147	.309	.261	.620	.327
Risk-Taking	.137	.328	.006	.217	.141

Table 5

Correlations between enterprising personality traits (BEPE) and Emotional Intelligence (TMMS-24)

	Attention	Clarity	Repair
Self-efficacy	-.054	.287	.377
Autonomy	.037	.180	.188
Stress tolerance	-.289	.196	.319
Innovativeness	.132	.318	.376
Internal locus	.054	.179	.286
Achievement motivation	.017	.224	.296
Optimism	-.063	.341	.615
Risk-Taking	.059	.216	.265

Socioeconomic Status, academic grades, teacher rating and student self-rating

We calculated the multiple correlation between the eight traits assessed through the BEPE and Socioeconomic Status (R = .126), students' grades in Mathematics (R = .362), and Spanish Language and Literature (R = .513). Furthermore, teachers rated a subsample of 623 students on a scale of 1 to 10 with regard to their entrepreneurial spirit. The multiple correlation between the eight BEPE dimensions and teachers' ratings was .385. Finally, all participants responded on a 5-point Likert-type scale to the following item: *I think I have the necessary ability to run a business in the future*. The multiple correlation between the eight traits of the BEPE and scores on this item was .44

Discussion and conclusions

Entrepreneurial behaviour, like the majority of human activity, is multidimensional in nature and depends on both contextual factors (society, culture, economic situation, etc.) and personal characteristics (abilities, attitudes and personality), as well as on the interaction between these two aspects. Thus, a full understanding of what makes a successful entrepreneur requires in-depth knowledge of all the relevant dimensions. In the present work, we concentrated on the psychological aspects of enterprising people, and more specifically, on personality characteristics. We set out to identify the personality traits most characteristic of enterprising people and to develop a battery of tests for their objective assessment. This perspective focusing on the analysis of the personality traits of enterprising individuals has become

consolidated in recent years as one of the foremost psychological approaches to the study of entrepreneurial spirit (Chell, 2008; Hisrich et al., 2007; Rauch & Frese, 2007a, 2007b). Recent reviews in this area (Brandstätter, 2011; Rauch & Frese, 2007a; Zhao et al., 2010) have identified two complementary research lines: on the one hand are those authors who opt to work with classic general personality traits, of the Big Five type; on the other are those who prefer to use traits more closely linked to entrepreneurial behaviour. The two approaches are necessarily complementary, the ultimate goal being to accurately determine the predictive capacity of each one and to analyze the degree of convergence between them. In our study, in an attempt to focus precisely on how the two models intersect, on the one hand, we developed a new battery to assess the specific traits of enterprising personality, and on the other, we assessed the more general traits, contributing fresh data on the relations between the two types of traits.

The first important finding from the study concerns the identification and subsequent empirical confirmation that eight personality traits can be reasonably considered to make up a personality profile of enterprising individuals: achievement motivation, risk-taking, autonomy, self-efficacy, stress tolerance, innovativeness, internal locus of control, and optimism. Both the different scales designed to measure these dimensions, and the BEPE as a whole, show adequate psychometric properties. The reliability coefficients of the scales are over .80, and all present an essentially one-dimensional internal structure. The full battery has a high reliability coefficient (α = .92), and the eight scales make up a single second-order factor that explains 50.32% of the variance. These data support the hypothesis that the enterprising personality constitutes a unitary and consistent dimension, articulated in eight interdependent axes or facets.

One of the important questions to be addressed is the following: to what extent are the specific dimensions we assessed related to the approaches based on general personality dimensions of the Big Five type? The data point to a moderate degree of convergence, given that if the canonical correlation between the two groups is .76, the redundancy coefficient is .24, which indicates that the two perspectives present 24% of common variance. When the variables from the two blocks correlate with each other, the highest correlations are found between optimism and emotional stability (r = .620), stress tolerance and emotional stability (r = .626), and achievement motivation and conscientiousness (r = .608). In the light of these data it can be stated that the two approaches (specific traits and general traits) correlate moderately. More research is needed to continue exploring the predictive capacity of each approach and the extent to which they are complementary.

As regards Emotional Intelligence (EI), the scores on the eight specific dimensions of the BEPE questionnaire tend to converge moderately with the three EI dimensions assessed (Clarity, Repair, Attention). The canonical correlation between the two blocks of variables is .70 and the redundancy coefficient is .16, which would indicate that the two types of variables share just 16% of variance. The highest correlations were found between Optimism and Repair (r = .615), Innovativeness and Repair (r = .376), Self-Efficacy and Repair (r = .377), and Optimism and Clarity (r = .341). As was the case for the general personality traits, EI presents a moderate relationship with the specific personality traits proposed. It would be interesting in future studies to develop a model of enterprising personality that took into account all three types of variables: general traits, specific traits and EI.

As far as socio-economic status is concerned, the eight traits proposed for assessing enterprising personality present a small percentage of common variance with this variable (1.6%). It would not appear, therefore, that socio-economic status is a determining factor in the development of the enterprising personality. These results are in line with those obtained by Stewart, May, and Kalia (2008), who found no relationships between socio-economic variables and entrepreneurial behaviour. Nevertheless, and as various authors have suggested, growing up in an enterprising family context can reinforce personal and social development oriented towards entrepreneurial behaviour (Altinay, Madanoglu, Daniele, & Lashley, 2012; Schroder, Schmitt-Rodermund, & Arnaud, 2011). Nor did we find very high correlations between the eight dimensions of enterprising personality and academic performance: the multiple correlation between these eight dimensions and Mathematics performance was .362, whilst it was .513 for the case of Spanish Language and Literature. The personality dimensions most closely related to academic performance were achievement motivation ($r = .23$ with Mathematics and $r = .24$ with Spanish Language and Literature) and autonomy ($r = .32$ with Mathematics and $r = .37$ with Spanish Language and Literature). These data point in the direction that the enterprising personality cannot be clearly linked to academic performance, since even though the correlations are positive, they are not high. This aspect is of considerable applied importance, and knowledge about it can help in the design of programmes for education and training in entrepreneurial skills for young people. Another relevant question is whether or not teachers are able to identify those students who show entrepreneurial inclinations. The data seem to suggest that teachers are not very effective when it comes to detecting entrepreneurial students, since the multiple correlation between the eight enterprising personality dimensions and teachers' ratings yielded a value of .385, meaning that teachers only predicted around 13% of enterprising personality in their students. This finding highlights the need for objective measurement instruments to assess enterprising personality, such as the BEPE described in the present study, which could be of help to teachers and counsellors aiming to boost and train their students' entrepreneurial capacity. Finally, students' self-ratings also showed only a modest correlation with the eight personality dimensions assessed, as the associated percentage of variance between the BEPE and the overall self-ratings was just 19%.

To summarize, eight specific personality traits (achievement motivation, risk-taking, autonomy, self-efficacy, stress tolerance, innovativeness, internal locus of control, and optimism) have been identified, allowing us to establish an enterprising personality profile in young people. The BEPE instrument for the reliable measurement of these dimensions was developed, and a range of validity evidence provided. The availability of a measurement instrument of this type will help in the detection of young people with an entrepreneurial bent, and in the design of training initiatives for improving their entrepreneurial abilities, in the line of some programmes that are already up and running (Chandler, DeTienne, McKelvie, & Mumford, 2011; Peterman & Kennedy, 2003; Souitaris, Zerbinati, & Al-Laham, 2007). The data on enterprising personality presented here constitute a small aspect of a much broader research line that attempts to understand entrepreneurial behaviour, and in which variables of a contextual, biographical and cognitive nature play a fundamental role, as well as those related to personality addressed in our study. Notable among the contextual aspects are those associated with culture (Cheng, Cheung, Chio, & Chan, 2012; Lim & Envick, 2013): are there, for example, cultures that reinforce entrepreneurial spirit more than others? From the biographical point of view: how does the family context or atmosphere influence entrepreneurial attitude? And as regards the cognitive domain, there is a need to clarify the role of variables such as intelligence and creativity in entrepreneurial behaviour. There is a great deal still to do in this field, and our challenge for the future is to put all the pieces together and develop comprehensive models that account for entrepreneurial activity, in the line of those proposed by Rauch and Frese (2007a, 2007b).

In appraising the results reported herein, some limitations of the study should be taken into account. First, it must be stressed that the data were obtained via self-reports; in the future, it would be advisable to complement this type of data with information from sources other than the individual him/herself, neurobiological indicators, and/or implicit association instruments, to mention a few possibilities. Furthermore, there is a need to gather more validity evidence (Lane, 2014; Padilla & Benítez, 2014; Ríos & Wells, 2014; Sireci & Faulkner-Bond, 2014) in support of the predictive capacity of the BEPE, and this will be a long process.

Acknowledgments

References

Aguado, D., Rubio, V. J., & Lucia, B. (2011). The risk propensity task (PTR): A proposal for a behavioral performance-based computer test for assessing risk propensity. *Anales de Psicología, 27*(3), 862-870.

Ahmetoglu, G., Leutner, F., & Chamorro-Premuzic, T. (2011). EQ-nomics: Understanding the relationship between individual differences in trait emotional intelligence and entrepreneurship. *Personality and Individual Differences, 51*(8), 1028-1033. doi: 10.1016/j.paid.2011.08.016.

Ajzen, I. (1991).The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi: 10.1016/0749-5978(91)90020-t.

Almeida, P.I.L., Ahmetoglu, G., & Chamorro-Premuzic, T. (2014). Who wants to be an entrepreneur? The relationship between vocational interests and individual differences in entrepreneurship. *Journal of Career Assessment, 22*(1), 102-112. doi: 10.1177/1069072713492923.

Altinay, L., Madanoglu, M., Daniele, R., & Lashley, C. (2012). The influence of family tradition and psychological traits on entrepreneurial intention. *International Journal of Hospitality Management, 31*(2), 489-499. doi: 10.1016/j.ijhm.2011.07.007.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (2014). *Standards for educational and psychological testing.* Washington, DC: Author.

Athayde, R. (2009). Measuring enterprise potential in young people. *Entrepreneurship Theory and Practice, 33*(2), 481-500. doi: 10.1111/j.1540-6520.2009.00300.x.

Baum, J.R., Frese, M., Baron, R.A., & Katz, J.A. (2007). Entrepreneurship as an area of psychology study: An introduction. In J.R. Baum, M. Frese, & R.J. Baron (Eds.), *The psychology of entrepreneurship* (pp. 41-65). Mahwah, NJ: Erlbaum.

Brandstätter, H. (2011). Personality aspects of entrepreneurship: A look at five meta-analyses. *Personality and Individual Differences, 51*, 222-230. doi: http://dx.doi.org/10.1016/j.paid.2010.07.007.

Chandler, G.N., DeTienne, D.R., McKelvie, A., & Mumford, T.V. (2011). Causation and effectuation processes: A validation study. *Journal of Business Venturing, 26*, 375-390. doi:10.1016/j.jbusvent.2009.10.006.

Chell, E. (2008). *The entrepreneurial personality: A social construction*. New York: Routledge.

Cheng, C., Cheung, S.F., Chio, J.H., & Chan, M.P (2012). Cultural meaning of perceived control: A meta-analysis of locus of control and psychological symptoms across 18 cultural regions. *Psychological Bulletin, 39*(1), 152-88. doi:10.1037/a0028596.

Collins, C.J., Hanges, P.J., & Locke, E.A. (2004). The relationship of achievement motivation to entrepreneurial behavior: A meta-analysis. *Human Performance, 17*(1), 95-117. doi: 10.1207/s15327043hup1701_5.

Costa, H., Ripoll, P., Sánchez, M., & Carvalho, C. (2013). Emotional intelligence and self-efficacy: Effects on psychological well-being in college students. *The Spanish Journal of Psychology, 16*, E50. doi: http://dx.doi.org/10.1017/sjp.2013.39.

Covin, J.G., & Wales, W.J. (2012). The measurement of entrepreneurial orientation. *Entrepreneurship Theory and Practice, 36*(4), 677-702. doi: http://dx.doi.org/10.1111/j.1540-6520.2010.00432.x.

Downing, S.M. (2006). Twelve steps for effective test development. In S.M. Downing & T.M. Haladyna (Eds.), *Handbook of test development* (pp. 3-25). Mahwah, NJ: Lawrence Erlbaum Associates.

Downing, S.M., & Haladyna, T.M. (2006). *Handbook of test development*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Elosua, P., & Zumbo, B.D. (2008). Reliability coefficients for ordinal response scales. *Psicothema, 20*(4), 896-901.

Evers, A., Muñiz, J., Hagemeister, C., Hostmaelingen, A., Lindley, P., Sjoberg, A., & Bartram, D. (2013). Assessing the quality of tests: Revision of the EFPA review model. *Psicothema, 25*(3), 293-201.

Extremera, N., Durán, A., & Rey, L. (2007). Perceived emotional intelligence and dispositional optimism-pessimism: Analyzing their role in predicting psychological adjustment among adolescents. *Personality and Individual Differences, 42*(6), 1069-1079. doi: 10.1016/j.paid.2006.09.014.

Extremera, N., & Fernández-Berrocal, P. (2005). Perceived emotional intelligence and life satisfaction: Predictive and incremental validity using the Trait Meta-Mood Scale. *Personality and Individual Differences, 39*, 937-948. doi:10.1016/j.paid.2005.03.012.

Fernández-Berrocal, P., Alcaide, R., Extremera, N., & Pizarro, D. (2006). The role of emotional intelligence in anxiety and depression among adolescents. *Individual Differences Research, 4*(1), 16-27.

Fernández-Berrocal, P., Extremera, N., & Ramos, N. (2004). Validity and reliability of the Spanish modified version of the Trait Meta-Mood Scale. *Psychological Reports, 94*, 751-755.

García-Cueto, E., Pedrosa, I., Suárez-Álvarez, J., & Robles, A. (2013). Evaluación del nivel social en población española: creación de un instrumento de medida [Assessment of socioeconomic status in Spanish population: Development of a new measurement instrument]. *Revista Electrónica de Metodología Aplicada, 18*(2), 1-11.

Geldhof, G.J., Weiner, M., Agans, J.P., Mueller, M.K., & Lerner, R.M. (2014). Understanding entrepreneurial intent in late adolescence: The role of intentional self-regulation and innovation. *Journal of Youth and Adolescence, 43*, 81-91. doi: 10.1007/s10964-013-9930-8.

Global Entrepreneurship Monitor (2013, October 8th). Retrieved from: www.gemconsortium.org.

Gómez-Benito, J., Hidalgo, M.D., & Zumbo, B.D. (2013). Effectiveness of combining statistical tests and effect sizes when using logistic discriminant function regression to detect differential item functioning for polytomous items. *Educational and Psychological Measurement, 73*(5), 875-897. doi: 10.1177/0013164413492419.

Hadizade, M.A., Raminmehr, H., & Hosseini, S.S. (2009). Relationship between emotional intelligence and entrepreneurial orientation among the employees of oil company-affiliated organizations. *Journal of Entrepreneurship Development, 1*(4), 139-162.

Hisrich, R., Langan-Fox, J., & Grant, S. (2007). Entrepreneurship research and practice: A call to action for psychology. *American Psychologist, 62*(6), 575-589.

Horn, J.L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179-185.

IBM Corp. (2010). *IBM SPSS Statistics for Windows, Version 19.0 [Computer software]*. Armonk, NY: IBM Corp.

Jang, K.L., Livesley, W.J., Ando, J., Yamagata, S., Suzuki, A., Angleitner, A., Ostendorf, F., Riemann, R., & Spinath, F. (2006). Behavioral genetics of the higher-order factors of the Big Five. *Personality and Individual Differences, 41*, 261-272. doi:10.1016/j.paid.2005.11.033.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovation work behaviour. *Journal of Occupational and Organizational Psychology, 73*, 287-302.

Kane, M.T. (2006). Validation. In R.L. Brennan (Ed.), *Educational measurement (4th ed.)* (pp. 17-64). Westport, CT: American Council on Education/Praeger.

Kirzner, I. (1973). *Competition and entrepreneurship*. Chicago: Chicago University Press.

Kline, R.B. (2011). *Principles and practice of structural equation modeling*. New York: Guilford Press.

Knight, F. (1921). *Risk, uncertainty and profit*. New York: Augustus Kelly.

Kreiser, P.M., Marino, L.D., & Weaver, K.M. (2002). Assessing the psychometric properties of the entrepreneurial orientation scale: A multi-country analysis. *Entrepreneurship Theory and Practice, 26*, 71-92.

Lane, S. (2014). Validity evidence based on testing consequences. *Psicothema, 26*, 127-135.

Lazarus, R.S., & Folkman, S. (1986). *Estrés y procesos cognitivos* [Stress and cognitive processes]. Barcelona: Martínez Roca.

Lim, S., & Envick, B.R. (2013). Gender and entrepreneurial orientation: A multi-country study.*International Entrepreneurship and Management Journal, 9*(3), 465-482. doi: 10.1007/s11365-011-0183-2.

Liñán, F., & Chen, Y.W. (2006). *Testing the entrepreneurial intention model on a two-country sample*. Bellaterra: Universitat Autònoma de Barcelona.

Lorenzo-Seva, U., & Ferrando, P.J. (2006). FACTOR: A computer program to fit the exploratory factor analysis model. *Behavior Research Methods, Instruments and Computers, 38*, 88-91. http://dx.doi.org/10.3758/BF03192753.

Lozano, L.M., García-Cueto, E., & Muñiz, J. (2008). Effect of the number of response categories on the reliability and validity of rating scales. *Methodology, 4*(2), 73-79. doi: http://dx.doi.org/10.1027/1614-2241.4.2.73.

Mayer, J.D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Implications for educators* (pp. 3-31). New York: Basic Books.

Moriano, J.A., Palací, J.F., & Morales, J.F. (2006). Adaptación y validación en España de la Escala de Autoeficacia Emprendedora [Adaptation and validation for Spanish population of the Entrepreneurial Self-Efficacy Scale]. *Revista de Psicología Social, 21*(1), 51-64.

Moore, S., & Gullone, E. (1996). Predicting adolescent risk behavior using a personalized cost benefit analysis. *Journal of Youth and Adolescence, 15*, 343-359. doi: http://dx.doi.org/10.1007/BF01537389.

Moreno, R., Martínez, R., & Muñiz, J. (2006). New guidelines for developing multiple-choice items. *Methodology, 2*, 65-72.

Muñiz, J., Elosua, P., & Hambleton, R.K. (2013). Directrices para la traducción y adaptación de los tests: segunda edición [International Test Commision guidelines for test translation and adaptation: Second edition]. *Psicothema, 25*(2), 151-157.

Muñiz, J., Fidalgo, A.M., García-Cueto, E., Martínez, R., & Moreno, R. (2005). *Análisis de los ítems [Item analysis]*. Madrid: La Muralla.

Neqabi, S., & Bahadori, M. (2012). Relationship between emotional intelligence and entrepreneurial behavior. *Journal of Military Medicine, 14*(2), 123-128.

Obschonka, M., Schmitt-Rodermund, E., Silbereisen, R.K., Gosling, S.D., & Potter, J. (2013). The regional distribution and correlates of

an entrepreneurship-prone personality profile in the United States, Germany, and the United Kingdom: A socioecological perspective. *Journal of Personality and Social Psychology*, *105*(1), 104-122. doi: 10.1037/a0032275.

OECD/The European Commission (2013). *The missing entrepreneurs: Policies for inclusive entrepreneurship in Europe*. Brussels: OECD Publishing. doi: 10.1787/9789264188167-en.

Padilla, J.L., & Benítez, I. (2014). Validity evidence based on response processes. *Psicothema, 26*, 136-144.

Peterman, N.E., & Kennedy, J. (2003). Enterprise Education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice, 28*(2), 129-144.

Pradhan, R., & Nath, P. (2012). Perception of entrepreneurial orientation and emotional intelligence. *Global Business Review, 13*(1), 89-108.

Rauch, A., & Frese, M. (2007a). Born to be an entrepreneur? Revisiting the personality approach to entrepreneurship. In J.R. Baum, M. Frese, & R.J. Baron (Eds.), *The psychology of entrepreneurship* (pp. 41-65). Mahwah, NJ: Erlbaum.

Rauch, A., & Frese, M. (2007b). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology 16,* 353-385. doi: http://dx.doi.org/10.1080/13594320701595438.

Rios, J., & Wells, C. (2014). Validity evidence based on internal structure. *Psicothema, 26*, 108-116.

Salguero, J.M., Fernández-Berrocal, P., Balluerka, N., & Aritzeta, A. (2010). Measuring perceived emotional intelligence in the adolescent population: Psychometric properties of the Trait Meta-Mood Scale. *Social Behavior and Personality: An International Journal, 38*(9), 1197-1209.

Samejima, F. (1969). Estimation of latent ability using a response pattern of graded scores. *Psychometrika Monograph No. 17.*

Samejima, F. (1997). Graded response model. In W.J. van der Linden & R.K. Hambleton (Eds.), *Handbook of modern item response theory* (pp. 85-100). New York: Springer.

Sánchez, J.C. (2010). Evaluación de la personalidad emprendedora: validez factorial del Cuestionario de Orientación Emprendedora (COE) [Assessment of the enterprising personality: Factor validity of the Entrepreneurial Orientation Questionnaire]. *Revista Latinoamericana de Psicología, 42*(1), 41-52.

Schmeiser, C.B., & Welch, C. (2006). Test development. In R.L. Brennan (Ed.), *Educational measurement (4th ed.)* (pp. 307-353). Westport, CT: American Council on Education/Praeger.

Schroder, E., Schmitt-Rodermund, E., & Arnaud, N. (2011). Career choice intentions of adolescents with a family business background. *Family Business Review, 24*(4), 305-321. doi: 10.1177/0894486511416977.

Schuler, H., Thornton, G.C.I., Frintrup, A., & Mueller-Hanson, R.A. (2004). *Achievement motivation inventory test manual*. Goettingen, Germany: Hogrefe.

Schumpeter, J. (1911). *The theory of economic development*. Cambridge, MA: Harvard University Press.

Shapero, A., & Sokol, L. (1982). In C.A. Kent, D.L. Sexton, & K.H. Vesper (Eds.), The social dimensions of entrepreneurship. *Encyclopedia of entrepreneurship* (pp. 72-90). Englewood Cliffs, NJ: Prentice-Hall, Inc.

Shepperd, J.A., Carroll, P., Grace, J., & Terry, M. (2002). Exploring the causes of comparative optimism. *Psychologica Belgica, 42*, 65-98.

Sireci, S., & Faulkner-Bond, M. (2014). Validity evidence based on test content. *Psicothema, 26*, 100-107.

Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing, 22*(4), 566-591. doi:10.1016/j.jbusvent.2006.05.002.

Stewart, W.H., May, R.C., & Kalia, A. (2008). Environmental perceptions and scanning in the United States and India: Convergence in entrepreneurial information seeking? *Entrepreneurship Theory and Practice, 32*(1), 83-106.

Steward, W.H., & Roth, P.L. (2004). Data quality affects meta-analytic conclusions: A response to Miner and Raju (2004) concerning entrepreneurial risk propensity. *Journal of Applied Psychology, 89*(1), 14-21. doi: 10.1037/0021-9010.89.1.14.

Stormer, F., Kline, T., & Goldenberg, S. (1999). Measuring entrepreneurship with the general enterprising tendency (GET) test: Criterion-related validity and reliability. *Human Systems Management, 18*, 47-52.

Suárez-Álvarez, J., Campillo-Álvarez, A., Fonseca-Pedrero, E., García-Cueto, E., & Muñiz, J. (2013). Professional training in the workplace: The role of achievement motivation and locus of control. *The Spanish Journal of Psychology, 16,* E35. doi: http://dx.doi.org/10.1017/sjp.2013.19.

Suárez-Álvarez, J., Pedrosa, I., García-Cueto, E., & Muñiz, J. (2014). Screening enterprising personality in youth: An empirical model. *The Spanish Journal of Psychology, 17,* 1-9. doi: 10.1017/sjp.2014.61.

Suliman, A.M., & Al-Shaikh, F.N. (2007). Emotional intelligence at work: Links to conflict and innovation. *Jordan Employee Relations, 29*(2), 208-220.

Sunindijo, R.Y., Hadikusumo, B.H.W., & Ogunlana, S. (2007). Emotional intelligence and leadership styles in construction project management. *Journal of Management in Engineering, 23*(4), 166-170. doi: 10.1064/(asce)42-597x(2007)23.

Taussig, F.W. (1915). *Principles of economics* (rev. ed., Vol. II). New York: Macmillan.

Timmerman, M.E., & Lorenzo-Seva, U. (2011). Dimensionality assessment of ordered polytomous items with parallel analysis. *Psychological Methods, 16*, 209-220.

Van Gelderen, M., & Jansen, P. (2006). Autonomy as a start-up motive. *Journal of Small Business and Enterprise Development, 13*(1), 23-32. doi: http://dx.doi.org/10.1108/14626000610645289.

Veciana, J.M. (1999). Creación de empresas como programa de investigación científica [Business creation as scientific research program]. *Revista Europea de Dirección y Economía de la Empresa, 8*(3), 11-36.

Vigil-Colet, A., Morales-Vives, F., Camps, E., Tous, J., & Lorenzo-Seva, U. (2013). Development and validation of the Overall Personality Assessment Scale (OPERAS). *Psicothema, 25*, 100-106. doi:10.7334/psicothema2011.411.

Wilson, M. (2005). *Constructing measures: An item response modeling approach*. Mahwah, NJ: Erlbaum.

Zhao, H., Seibert, S.E., & Lumpkin, G.T. (2010). The relationship of personality to entrepreneurial intentions and performance: A meta-analytic review. *Journal of Management, 36*(2), 381-404.

Zimowski, M.F., Muraki, E., Mislevy, R.J., & Bock, R.D. (1996). *BILOG-MG: Multiple-group IRT analysis and test maintenance for binary items [Computer software]*. Chicago: Scientific Software International.

Zumbo, B.D. (1999). *A handbook on the theory and methods of differential item functioning (DIF): Logistic regression modeling as a unitary framework for binary and Likert-type (Ordinal) item scores*. Ottawa ON: Directorate of Human Resources Research and Evaluation, Department of National Defense.