Emotional competencies and cognitive antecedents in shaping student´s entrepreneurial intention: the moderating role of entrepreneurship education

Abstract This paper focuses on the analytic thinking of emotional competencies and their influence, in particular, in shaping university students' entrepreneurial intentions, backed by an extended model of Ajzen´s Theory of Planned Behaviour, and analyses the moderating role of entrepreneurial education among the variables under study. The results, derived from an ex-ante and ex-post questionnaire addressed to Spanish university students engaged in a compulsory entrepreneurship course, were subjected to structural equation modelling analysis. Our findings show that entrepreneurship by university students is favoured by the development of their emotional competencies, due to the direct influence of the latter in shaping entrepreneurial intention and its positive impact on their cognitive antecedents (entrepreneurial attitudes and perceived self- efficacy), and suggest that students with a higher degree of emotional competencies who receive entrepreneurship education will have a more positive attitude towards entrepreneurship and will perceive themselves more capable of becoming entrepreneurs. The primary contribution of this paper is to spotlight the use of emotional competencies in encouraging entrepreneurship, and to heighten awareness of the positive effect of education on emotionally-competent students**,** a factor that should be taken into account to improve entrepreneurship education programmes.

Keywords Emotional competencies Entrepreneurial intentions Attitude Self-efficacy Entrepreneurship education

Introduction

Universities generate knowledge and technological development and potentially stimulate economic activity (Goldstein and Renault 2004; Lööf and Broström 2008). They are directly engaged as agents of the entrepreneurial process, and thus it is essential for education in entrepreneurship to produce real outcomes in terms of entrepreneurial behaviour. In this context, university students' entrepreneurial behaviour is viewed as voluntary and intentional, and the decision to become an entrepreneur, as deliberate and conscious (Krueger et al. 2000), could be fostered.

Entrepreneurial intentions (EI) are studied as one of the most reliable precursors of entrepreneurial behaviour resulting in the creation of new enterprises (Liñan 2004; Prodan and Drnovsek 2010; Souitaris et al. 2007). Cognitive characteristics are valid elements for the study of EI, if not always sufficient, because entrepreneurship implicitly contains an emotional component (Cardon et al. 2012). The influence of emotional processes in cognition has been observed in a wide range of business contexts, affecting individuals, and

interpersonal and organisational processes (e.g., George and Brief 1992; Weiss et al. 1999), including decision making (e.g., Isen 1993; Isen and Labroo 2003). Emotional processes can influence judgement and behaviour, (Cohen 2005) and may be of particular significance in helping us understand entrepreneurial views, decisions and actions when these occur under conditions of uncertainty (Baron 2008). Certain regions of the brain have been shown to cater to both cognitive and emotional mechanisms, namely the individual´s ability to make personal judgements in decision making and the expression of feeling (Bechara et al. 2007; Damasio 2003).

Baron (2008) established the importance of the emotional process as a variable of interest in ongoing entrepreneurship research, observing that this factor influenced many aspects of cognition and behaviour. Because the environments in which entrepreneurs operate are unpredictable and uncertain, and also through their influence on cognition, emotional issues may have important effects on key aspects of the entrepreneurial process. It is difficult to separate emotional and rational perspectives because "emotions influence the impact of cognitively processed information on subsequent behavioural tendencies" (Welpe et al. 2012, p. 70). The framework proposed by Hayton and Cholakova (2012), drawn from the Expectancy Theory of Motivation (VIE theory, Vroom 1964) and the Theory of Planned Behaviour (Ajzen 1991), enhances our understanding of how the emotional process can influence entrepreneurial perceptions and intentions, and acknowledges that EI are also required so that action may be taken to reduce uncertainty over the accuracy, desirability, and feasibility of a business idea (Dimov 2007).

Previous studies have suggested that personality plays a role in a person becoming an entrepreneur, and have linked entrepreneurship with emotional intelligence (Shane and Venkataraman 2000; Rhee and White 2007; Pradhan and Nath 2012). Individuals with strong EI seem to be more aware of how certain outcomes influence their behaviour and are more capable of regulating their emotions (George 2000), thus exhibiting emotional competencies (EC) which encourage an entrepreneurial orientation (Padilla-Meléndez et al. 2014). In this paper, we focus on EC rather than emotional intelligence for several reasons. First, competencies – unlike intelligence and skills – demonstrate that the individual is capable of translating potential into reality, within a particular context. Thus, EC are a practical application of emotional intelligence, and little research attention has been paid to determine the effect of EC and their cognitive antecedents on students' EI. Second, such competencies and other cognitive factors are "trainable", and could be influenced by education (Boyatzis 2008; Boyatzis and Saatcioglu 2008; Sánchez 2011). Various studies conducted in educational contexts have shown that EC training could have beneficial effects on individuals (Brackett et al. 2012; Durlak et al. 2011; Ruiz-Aranda et al. 2012).

Education in this area is crucial, especially in view of the growing evidence that young adults lack the interpersonal skills needed for success in today's marketplace (Bedwell et al. 2014). Entrepreneurial education in the university offers an alternative route for students to enter the job market. In the 2015/2016 GEM Global Report (Kelley et al. 2016), regarding assessment of the quality of the entrepreneurship ecosystems in the 62 economies analysed, entrepreneurship education at the school stage (3,1) and post-school stage (4,5) are among the conditions that score the lowest (GEM average scores on a 9-point Likert scale*; 1 = highly insufficient, 9 = highly sufficient).* In Spain, about 40% of the working-age population who are in the early stages of the entrepreneurial process have received specific training in entrepreneurship, vs. about 34% of those who are in more advanced stages (Peña et al. 2015).

Most impact studies of entrepreneurship education are based on the hypothesis that it has a positive impact on entrepreneurial behaviour and EI (Fernández Pérez et al. 2014; Liao and Gartner 2008; Wilson et al. 2007;

Rauch and Hulsink 2015; Zhao et al. 2005). Research evidence suggests that entrepreneurship education can produce a range of desired outcomes, from increased EI among students setting out to become self-employed to the startup of growth-oriented businesses (Dickson et al. 2008; Yar Hamidi et al. 2008; Wilson et al. 2007, Sánchez 2011). In this study, we examine whether entrepreneurial education encourages the emotional and cognitive processes that impel individuals to become entrepreneurs, by raising confidence in their abilities and reinforcing their self-identification as entrepreneurs.

To sum up, in the understanding that EI refers to the intention to initiate a business or to become an entrepreneur (e.g., Bird 1988; Krueger 2003), we take an emotional-cognitive perspective, underpinned by an extended model of the Theory of Planned Behaviour (Ajzen 1991), to analyse the relationship between emotional competencies, cognitive factors (subjective norms, entrepreneurial attitude and entrepreneurial self- efficacy) and the strength of entrepreneurial intention, and to examine whether significant changes take place in this respect when specific education in entrepreneurship is received. The model to be tested is illustrated in Fig. 1.

Insert Fig. 1 about here

After this introduction, in which we affirm the importance and originality of the subject addressed, and describe the theoretical framework to be used, we present the theoretical foundations and hypotheses, followed by the description of the methodology used: sample and procedure, measurement instruments, path analysis and results; finally, the corresponding conclusions are drawn, practical implications of this study are indicated and the limitations inherent to this study are acknowledged.

Theoretical foundations and hypotheses

The influence of subjective norms, entrepreneurial attitudes and self-efficacy on university students' entrepreneurial intentions

Under the Theory of Planned Behaviour (TPB), EI are based on rational factors, such as subjective norms (SN), entrepreneurial attitudes (EA) and self-efficacy (SE) as proximal predictors of EI (Ajzen 1991). These are powerful predictors of intention and behaviour in entrepreneurship studies, and have been applied successfully in a wide variety of fields (e.g. Harland et al. 1999; Karimi et al. 2014). SN, in the context of this study, refer to the influence exerted on EI by "reference people" (Ajzen 2001), e.g., family members, friends and colleagues, all of whom may play a decisive role in an individual's decision to enter into or abstain from entrepreneurial activity (Chang et al. 2009). Values transmitted by reference people upgrade perceptions regarding SE (Cooper 1993; Fernández-Perez et al. 2014; Matthews and Moser 1995). Emotional support or otherwise is frequently a key factor in the decision to go on or to give up (Liñán and Santos 2007), especially among students, who in many cases are emotionally and financially dependent on their families (Chang et al. 2009). Although studies of entrepreneurship have demonstrated the existence of a positive and direct relationship between SN and EI (Carr and Sequeira 2007; Engle et al. 2010; Karimi et al. 2014; Kolvereid and Isaksen 2006; Usaci 2015), some authors have suggested that SN may be the weakest of the three indicators in the shaping of EI (Fini et al. 2012).

Other authors have found that SN has little or no effect, in a specific context, e.g., in Western societies, where individuals show higher levels of independence and individualism, and where emphasis is placed on the uniqueness of individuals' goals and achievements (Schlaegel and Koenig 2014). Various explanations of this apparent weakness in the relation have been proposed; one such is that SN affect EA and SE (Cooper 1993; Liñán and Chen 2009; Liñán, et al. 2011; Matthews and Moser 1996; Scherer, et al. 1991) and thus, indirectly affect EI. In this study, we examine both direct and indirect effects in order to obtain a better understanding of the role played by SN. Thus:

> *H1. The SE (H1a) and EA (H1b) and EI (H1c) of university students are influenced directly and positively by the SN experienced.*

Studies have validated the predictive power of EA within the configuration of intent and subsequent entrepreneurial behaviour, establishing a direct and positive relationship between them (Engle et al. 2010; Iakovleva et al. 2011; Moriano et al. 2011; Yurtkorua et al. 2014; Usaci 2015; Zhang et al. 2014). Liñán and Chen (2009) found EA to be the strongest predictor of EI. Students with a higher degree in this area will feel more confident in their ability to recognise an opportunity for company start-up at an early stage or to take risks in the entrepreneurial field (Kickul et al. 2009). This major importance of EA suggests that persons with a higher degree in this area will have a greater willingness to devote resources and time in this field (Schwarz et al. 2009). Karimi et al. (2014) found that among university students SE is the strongest predictor of EI. García- Rodríguez et al. (2015) reported that personal EA and SE (which they termed "perceived behavioural control") are antecedents of EI. Yurtkorua et al. (2014) found that both EA and SE, among other factors, predicted EI, although the effect of EA was much stronger. Thus:

> *H2. The EI of university students is influenced directly and positively by their EA (H2a) and by SE (H2b).*

Emotional competencies and entrepreneurial intentions of university students

Among the constructs linked to the phenomenon of entrepreneurship, particular theoretical attention has recently been paid to the study of competencies. Competency is defined as the ability to make functional use of knowledge and skills in different contexts (Boyatzis 1982, 2008; McClelland 1973, 1985; González and Wagenaar 2003). It rests on four foundations: technical knowledge, methodological knowledge, participatory knowledge and self-knowledge (Yáñiz 2008). The reality of competency is contextual and evidenced as a finality. In other words, a manager is competent when this quality is made apparent. The possession of great aptitude, in itself, does not guarantee competence, only that the owner is endowed with excellent potential (Cherniss and Goleman 2001). In many cases, the possession of competencies reflects the successful outcome of a learning programme. Such competencies directly correlate with job performance, can be measured against standards and can be improved with training (Bryant and Poustie 2001; Klarus et al. 1999). Academic literature and educational programmes in entrepreneurship have tended to emphasise the need for general business competencies over specific entrepreneurial competencies (Hills 1988; Solomon et al. 2002). A distinct set of

competencies is critical for entrepreneurial action, and they must be developed in conjunction with more general business competencies (Rasmussen et al. 2011).

Entrepreneurship implicitly carries an emotional component (Cardon et al. 2012). Studies have shown that personal background and characteristics such as values, attitudes, motivations, personality traits and skills predispose some individuals towards entrepreneurial behaviour (Collins et al. 2004; Rauch and Frese 2006; Stewart and Roth 2007). In this respect, too, Zampetakis et al. (2009) found that employees with more pronounced emotional intelligence, those who are better able to regulate, monitor and evaluate their own and others' emotions, are more willing to act entrepreneurially and perceive higher levels of organisational support. Emotional intelligence is the ability to recognise, understand and use emotional information about oneself that enables or causes effective or superior performance (McClelland 1973; Boyatzis 2009). Many authors prefer the term "emotional competence" to that of "emotional intelligence" because, unlike intelligence, competencies can be taught and learned (Kotsou et al. 2011; Nelis et al. 2011; Brasseur et al. 2013). More specifically, this term refers to how an individual identifies, expresses, understands, regulates and uses his/her emotions or those of others (Mayer and Salovey 1997; Mikolajczak 2009). For the purpose of this study, the construct *emotional competencies* (EC) is defined as the interrelated sets of behaviours that individuals employ to recognise and manage their own emotions and those of others. EC can play an important role in predicting effectiveness in management, leadership and entrepreneurship (Padilla-Meléndez et al. 2014). In our approach, particular emphasis is placed on subjects' interactions with the environment and on learning and personal development (Boyatzis and Saatcioglu 2008). Garner (2010) describes how the conceptualization of EC has evolved. Emotional competence, first considered a generic term, has been applied to many types of emotion-related skills. It has been conceived as including the awareness of emotion, the ability to use and understand emotion- related vocabulary, knowledge of facial expressions and the situations that elicit them, knowledge of the cultural rules for displaying emotion, and skill in managing the intensity of one's emotional displays in ways that are appropriate to the audience and the situation (Eisenberg and Spinrad 2004). Goleman (1998) defined an "emotional competence" as a "learned capability based on emotional intelligence which results in outstanding performance at work." An emotional, intelligence competency is an ability to recognise, understand and use emotional information about oneself that leads to or causes effective or superior performance; a social intelligence competency is the ability to recognise, understand and use emotional information about others that leads to or causes effective or superior performance; and a cognitive intelligence competency is an ability to think about or analyse information and situations that leads to or causes effective or superior performance.

For the purposes of this study, we use the construct EC as a behavioural approximation of emotional intelligence through a descriptive definition based on Goleman (1998) and Cherniss and Goleman (2005), with five clusters or groups of EC: self-awareness, self-regulation, motivation, empathy and social skills at appropriate times and in appropriate ways, at a sufficient frequency as to be effective in a given situation (see Appendix). Studies of university students have suggested that EC play a role in the decision to become an entrepreneur (see, for example, Goleman 1998; Padilla-Meléndez et al. 2014) and may be more powerful predictors of performance than overall personality traits (Finch et al. 2015; Guillén-Ramo et al. 2009). According to the definition of EI as "a self-acknowledged conviction by a person who intends to set up a new business venture and consciously plans to do so at some point in the future" (Thompson 2009, 676), students who exhibit higher EI would also present higher EC because the latter play an important role in predicting

effectiveness in management, leadership and entrepreneurship (Lackéus 2013; Padilla-Meléndez et al. 2014, Souitaris et al. 2007). In view of these considerations, we propose the following hypothesis:

H3. The EI of university students are influenced directly and positively by their EC.

The influence of emotional competencies on entrepreneurial attitudes and entrepreneurial self-efficacy

EA means the degree to which a person is inclined or disinclined to undertake entrepreneurial activities (Ajzen and Fishbein 1980). With respect to the entrepreneurial phenomenon, although some studies have pointed out the influence of competencies on the shaping of EI, through their effect on EA (Krueger 2003), little is known about the effects of EC on EA. Nevertheless, individuals who act as entrepreneurs manifest EA that in general are the result of their emotions and motivations (Gray et al. 2006). It is difficult to separate emotional and rational perspectives because "emotions influence the impact of cognitively processed information on subsequent behavioural tendencies" (Welpe et al. 2012, 70). Indeed, emotional intelligence has been considered to strengthen EA and to increase the likelihood of a student subsequently undertaking an entrepreneurial career (Souitaris et al. 2007). In short, students with strong EC are likely to present stronger attitudes towards entrepreneurship, be more productive and creative, less risk averse and more likely to adopt positive EA. Thus:

H4. The EA of university students are influenced directly and positively by their EC.

According to Wood and Bandura (1989, p. 364), SE is the belief in one's ability to mobilise motivation, to apply the cognitive resources available and to take the courses of action needed to face the specific demands of each situation. SE is usually more strongly present in individuals with greater emotional intelligence, who are more self-confident and who are in greater control of environmental demands (Wong and Law 2002), persevering when problems arise and not shrinking from challenges (Mikolajczak et al. 2006; Tsaousis and Nikolaou 2005). Persons who tend to reject destructive feelings also have a high degree of self-confidence, are able to recognise their own feelings and have a stronger entrepreneurial spirit (Hadizadeh et al. 2009). Thus, EC would act as the "emotional spur" that activates other entrepreneurial competencies, such as the willingness to take risks and openness to opportunities or to have a more creative outlook and to plan ahead better, that comprise entrepreneurial SE. Young entrepreneurs with positive EC will be more tolerant of stress, more confident and more in control of the requirements of a business start-up, such as identifying opportunities and solving problems (Grichnik et al. 2010; Mikolajczak et al. 2006). Students with strong EC are likely to experience greater self-satisfaction, be more confident and efficient and have a mental outlook favouring personal productivity (Goleman 1998; Padilla-Meléndez et al. 2014). Thus:

H5. The SE of university students is influenced directly and positively by their EC.

The moderating role of entrepreneurial education on the relationship between emotional competencies and entrepreneurial intentions

Successful entrepreneurship can be promoted early in life by educational measures with target age-appropriate entrepreneurial activities (Obschonka et al., 2011). Research evidence suggests that entrepreneurship education can produce a range of desired outcomes, which increase EI for students to become self-employed or to start up growth-oriented businesses (Dickson et al. 2008; Yar Hamid et al. 2008; Wilson et al. 2007, Sánchez 2011). Emotional and rational processes can be encouraged through entrepreneurial education, while fostering their relationship with IE. From a cognitive perspective, researchers have suggested there is a positive link between entrepreneurship education and EA, EI or action (Dyer 1994). Entrepreneurship education is associated with entrepreneurial SE, which may increase EI (Wilson et al. 2007; Zhao et al. 2005). With respect to emotional questions, Pekrun (2006) and Pekrun et al. (2007) stressed that educational activity and outcome emotions are closely related. Souitaris et al. (2007) found that entrepreneurship education enhances EA and the overall EI, and drew the conclusion that an appropriate educational intervention had the potential to make university students "fall in love" with an entrepreneurial career. This view is increasingly accepted and academics are now beginning to focus on the role played by emotional processes in facilitating entrepreneurial success (Baron 2008; Breugst et al. 2011; Foo 2011; Frese and Gielnik 2014; Humphrey 2013) and on the role of entrepreneurial education in this relationship (Arpiainen et al. 2013; Lackéus 2013; Lackéus et al. 2015). Entrepreneurial education as a source of emotions would seem to be linked to the formation of entrepreneurial identity, increased self-efficacy, increased tolerance of uncertainty and ambiguity and increased self-insight; strong EC, induced by action-based entrepreneurial education, seems to impact primarily on attitudinal learning outcomes, and many links have been observed between positive emotions and entrepreneurial outcomes (Lackéus 2013). At the university level, Arpiainen et al. (2013) showed that in entrepreneurship education there exist certain identifiable patterns, which they termed 'waves of emotions', that appear throughout the entrepreneurial education process, arising with different levels of intensity and related to different themes. These authors emphasised that both positive and negative emotions play an important and beneficial role in learning, provided there is a balance between positive and negative emotions. Pittaway and Cope (2007) focus on how to simulate entrepreneurial learning in an educational setting based on action and experiential learning theories, and showed that emotional exposure created through group dynamics played a major role in effective student learning and entrepreneurial orientation. Furthermore, entrepreneurial experiential learning can stimulate a significant increase in the emotional responses of participating students, helping to them to regulate and transform negative emotions and to focus on achieving their goals (Finch et al. 2015).

In view of the above considerations, we consider whether the existence of an entrepreneurial educational programme would foster the appearance of emotions and whether emotionally competent students receiving such a programme present different levels of EI and of their underlying variables. Specifically, we address the possibility that entrepreneurial education may strengthen the relationship between EC and EI and their cognitive antecedents (EA and SE) though emotional and cognitive changes which affect intentions and actions. Thus:

H6: The positive influence of EC on EA and SE and on EI is higher when entrepreneurial education has been received.

Method

Sample and Procedure

The sample population for our study consisted of 751 university students, all studying degrees in social and legal science and enrolled in business creation and entrepreneurship subjects, at the University of Granada, Spain. As a control group, we analysed a sample population of 111 students who had not received specific training in entrepreneurship, in order to detect any differences in EI depending on the specific training received in this respect. We also examined whether there were differences in EI according to these students' EC. The data were obtained from a survey conducted at the beginning and end of term. The questionnaires were completed by the students during class time. In order to obtain a valid and complete set of data, SEM analysis (LISREL) was performed at both individual and multi-group levels. Regarding the sample characteristics, 62.3% of the study population was female and 37.7% male, with an average age of 22 years. With respect to the education of their parents, 94.7% of their fathers and 96.3% of their mothers had an undergraduate degree. Harman's single-factor test was used to test for common method bias. The principal components factor analysis highlighted five factors which explain 68.97% of the total variance.

Measurement instruments (see Appendix)

University students' EI. The aim of using these items was to determine whether the students had considered starting their own business in the next five years. To measure this parameter, we adapted the scale proposed by Mueller (2011), and used a 7-point Likert scale ranging from 1 "strongly disagree" to 7 "total agreement", with four items ($\alpha = 0.889$).

University students' EA. Again following Mueller (2011), we measured positive or negative entrepreneurial attitudes using a 7-point Likert scale ranging from 1 "strongly disagree" to 7 "total agreement", with three items ($\alpha = 0.919$). These items are in line with those proposed by Ajzen (1991).

University students' SE. This was measured using three constructs developed by Mueller (2011), addressing aspects fundamental to individuals' belief in their ability to start up a new venture. To identify specific competencies, we used a 7-point Likert scale ranging from 1 "strongly disagree" to 7 "total agreement", with five items ($\alpha = 0.911$).

University students' SN. Following Mueller (2011), this parameter was measured using a 7-point Likert scale, ranging from 1 "strongly disagree" to 7 "total agreement", with two sets of items, combined into a three-item scale ($\alpha = 0.699$). This construct assesses how the students' networks would support their entrepreneurial career choices and their motivation to comply with reference persons' attitudes. The two sets of items were multiplied to obtain a score, with higher scores reflecting a greater influence of reference groups.

University students' EC. The results obtained show that the EC construct provides an adequate fit to the data (χ_{179} = 675.747; p = 0.00; *NNFI (TLI)* = 0.886; *GFI* = 0.986; *CFI* = 0.903; *RMSEA*=0. 061). Based on Goleman (1998) and Cherniss and Goleman (2005), we distinguished five clusters or groups of EC: self-awareness, self-regulation, motivation, empathy and social skills, using the 21 indicators shown in Table 1.

Insert Table 1 about here

Path Model Analysis

Among other advantages, structural equation modelling (SEM) takes into account measurement errors and variables with multiple indicators, and enables multiple group comparisons (Koufteros et al. 2009). The analyses were performed using the two-step procedure proposed by Anderson and Gerbing (1988), as follows: first, a confirmatory factor analysis (CFA) was performed to assess the overall reliability and validity of the scales incorporated in the model. Second, the necessary structural model was obtained to test the proposed causal relationships. In order to understand the nature of a set of EC constructs within the proposed model, the items observed were averaged by groups of EC, thus forming five parcels (see Little et al. 2002). Each parcel showed acceptable internal consistency, as shown in Table 1.

The first step of our analysis was to evaluate the overall reliability and validity of the scales built into the model. Convergent validity was verified by examination of the importance of the weights of the factors, and the shared variance. The amount of variance that was shared or captured by a construct should be greater than the amount of measurement error (shared variance > 0.50). In particular, the discriminant validity between each pair of latent variables was established, by constraining the correlation parameter between them to 1.0 and then performing a test of the chi-square difference of the values obtained for the restricted and non-restricted models (Anderson and Gerbing 1988).

In the CFA results obtained, significant chi-square differences indicate that the constructs are not perfectly correlated, and thus the discriminant validity is achieved. The goodness of fit statistics of the model (χ160 = 508,32; p = 0.00; *NNFI* = 0.98; *GFI* = 0.986; *CFI* = 0.983; *RMSEA*=0.0539) all provide evidence of internal consistency, as do the reliability statistics, which are within or very close to the recommended limits in all cases (> 0.90).

Results

Individual level

SEM analysis of the theoretical model was performed using LISREL 8.71 software. The estimation results showed satisfactory goodness of fit indices (χ161 = 593,96; p = 0.00; *NNFI* = 0.98; *GFI* = 0.98; *CFI* = 0.98; *RMSEA*=0.06). This model explains 61.8% of the variance in the students' EI, 57.1% of the variance in attitudes towards entrepreneurship and 73.8% of the variance in self-efficacy. To assess the overall fit of the structural

model, we used several indices of goodness of fit, representing absolute, comparative and residual aspects of fit. The greater the probability associated with the chi-square index, the better the fit of the model to the data (Bollen 1989). The non-normed fit index (*NNFI*), the goodness of fit index (*GFI*) and the comparative fit index (*CFI*) > 0.95 indicate an excellent model fit (Hooper et al. 2008). The root mean squared error of approximation (*RMSEA*) < 0.08 is considered acceptable (Hair et al. 2008).

The direction, structural item loading, strength and significant paths are illustrated in Fig 2. With respect to standardised parameter estimates, it was found that SN had a significant effect on EA (γ^{11}=0.56, $p < 0.001$) and SE (γ^{21}=0.38, $p < 0.001$), but the impact was non-significant for EI (γ^{31} = -0.06, ns). These results suggest that students who perceive the approval of their reference people regarding their decision to become an entrepreneur will have a more positive EA, and are more likely to perceive themselves as being capable of business creation. These findings provide support for Hypotheses 1a and 1b, but not for Hypothesis 1c.

Insert Fig 2 about here

EC has a significant effect on EA (γ^{12} = 0.32, $p < 0.001$) and SE (γ^{22} =0.62, $p < 0.001$), and a non- significant effect on EI (γ^{32} = -0.01, ns). Therefore, the results suggest that students with a higher degree of EC will have a more positive EA and will perceive themselves as being more capable of becoming entrepreneurs. These findings provide support for Hypotheses 4 and 5, but not for Hypothesis 3. Finally, the results show that EI are significantly influenced by EA (β^{31} = 0.75, $p < 0.001$) and SE (β^{32} = 0.19, $p < 0.001$), thus supporting Hypotheses 2a and 2b.

Since a non-significant direct effect between two constructs necessarily implies the absence of influence (Hair et al. 2010), we also performed a series of direct, indirect and total effects analyses in order to determine whether there were any causal dependency relations among other variables in the specified model. Once the direct and indirect effects had been identified for each pair of constructs in the model, we calculated the product of the direct effects in the composite path for a total effect (Long and Bollen 1993). Table 2 shows the results of this test, which reveals indirect effects among some relationships in the proposed theoretical model. For example, SN affect EI (0.488, $p <0.001$) through EA (0.556 x 0.748) and SE (0.378 x 0.192). Even though a direct effect on EI was found for EC, indirect effects analysis (0.357, $p < 0.001$) revealed an influence through EA (0.319 x 0.748) and SE (0.619 x 0.192).

Insert Table 2 about here

The overall influence of SN on EI is thus 0.431 ($p < 0.001$), while that of EC is 0.343 ($p < 0.001$). Considering the magnitudes of the overall effects, EC mainly affects SE, while SN affect EA. These results suggest that students who are strongly influenced by their reference groups or who present a higher degree of EC would develop EI through a more positive EA and would have stronger perceptions of their own capability for business creation.

Multi-group difference analysis

To test Hypothesis H6, a group comparison approach was used, given that the measure of the EI construct does not vary in the two sub-samples composed of pre-entrepreneurship course and post-entrepreneurship course students. To verify the moderating effect of the variable entrepreneurship education on those that predict EI, the path coefficients, which were obtained after running the model separately for each sub-sample, were compared. To assess the differences in the control group (the students who took an entrepreneurship course), we first established the equivalence level in the measurement model to determine whether pre-course and post-course answers attributed equivalent meaning to the items of the scales in the proposed model. We then analysed the structural paths among the latent variables in the model for both groups (Milifont and Fisher, 2010). This procedure is based on invariance tests to compare fixed and freed parameters in a sequence of models and chi-square difference tests (Vanderberg and Lance, 2000).

In the next step in determining measurement invariance and structural differences, a minimum requirement imposed was that at least two indicators should be invariant in order to ensure significant comparisons of latent variables, i.e., partial models were considered (Steinmetz et al., 2009). The analysis of differences between pre and post-entrepreneurship course students, and the goodness-of-fit indices for multi- sample nested models, are shown in Table 3. The measurement model for both groups provided a good fit to the data, particularly for the post-course group (see Table 3). Once the reliability of the indicators had been established, thus ensuring equivalence in the measurement model and structural parameters, the structural loads were compared.

Insert Table 3 about here

With respect to standardised parameter estimates, (see Fig. 3), the SN effect on SE is lower in the post-entrepreneurship course sample (0.31/0.24) while the values are very similar in pre/post-course effects on EA (0.46/0.43) and EI (-0.06/-0.00). These results suggest that students who receive entrepreneurship education and who also perceive the approval of their reference people regarding their decision to become an entrepreneur will have a more positive EA, and perhaps also, although to a lesser degree, because they are already confident about their own possibilities.

The effect of EC on EA (0.43/0.59) and SE (0.68/0.79) is clearly stronger in the post-entrepreneurship course sample, but remains non-significant for EI (-0.05 ns/-0.11ns). These results suggest that students with a higher degree of EC and who receive entrepreneurship education will have a more positive EA, perceiving themselves as being more capable of becoming entrepreneurs than students without entrepreneurship education. The results show that EI are significantly influenced by EA, but with a slightly more intensive effect in the pre-entrepreneurship course sub-sample (0.79/0.72); on the contrary, SE among the post-course students has a stronger effect on EI (0.33/0.43).

Insert Fig 3 about here

Conclusions

In this study, we consider the question of EI among university students as individuals, in the belief that education for entrepreneurship is of major importance for the students who receive it and for the economy in general. The results obtained corroborate the view that EC are a significant factor in shaping EI. Accordingly, academics and politicians should consider them as a priority aspect in the design of university syllabuses, thus leading to more effective education for entrepreneurship (Béchard and Grégoire 2005; Urbano and Toledano 2008). The central focus of this paper is its analysis of whether EC influence the shaping of university students' EI, either directly or through other cognitive antecedents of intentions. Furthermore, we analyse the moderating role of university entrepreneurial education in this relationship. We propose a complete theoretical model of the configuration of EI among university students, using an extended TPB model to predict and understand students' EI, and conclude that EC do indeed influence EI and its antecedents. Thus we provide a useful framework for understanding students' EI and the effectiveness of entrepreneurial education in this respect, focusing on cognitive and emotional factors and their interrelationships, and taking into account that it would be desirable to achieve an emotional-rational balance in the decision-making process (Cardon et al. 2005).

Our extended TPB model shows that enabling university students to develop their EC would promote their EI, as the result of the indirect positive influence of EC in shaping EI through EA and SE. However, we found no evidence of a direct relationship between greater emotional skills and a stronger EI. Thus, the possession of EC, in itself, will not lead more students to consider a business start-up. However, we suggest that the stronger these competencies, the more likely such persons are to pursue entrepreneurship, due to their enhanced cognitive antecedents, which are directly related to EI. EC provide valuable attributes (for example, cognitive flexibility), helping individuals counteract the cognitive bias that can hamper opportunity recognition, such as overconfidence, the illusion of control or non-representativeness (DeCarolis and Saparito 2006). Therefore, by extension, EC facilitate entrepreneurial intention and action. While it is appealing to contrast *emotion versus cognition*, in current research it is generally assumed that these processes can be contingent and combined. Thus, our study sheds new light on the duality of the decision-making process and suggests interesting new lines of research.

As regards the relation between cognitive factors and EI, our results are consistent with previous findings, and reflect the positive influence among university students of EA (Engle et al. 2010; Iakovleva et al. 2011; Moriano et al. 2011; Yurtkorua et al. 2014; Usaci 2015; Zhang et al. 2014) and SE on EI (Barbosa et al. 2007; Engle et al. 2010; McGee et al. 2009; Moriano et al. 2011) and, moreover, that of SN on EA and SE (Carr and Sequeira 2007; Engle et al. 2010; Kolvereid and Isaksen 2006), although no such influence was observed on EI (Liñán and Chen 2009). According to Schlaegel and Koenig (2014), the determinants underlying the TPB are good predictors of EI, although it might be useful in a future study to use the integrated model of EI based on other predictor theories to corroborate the conclusions drawn. It has been observed that when individuals receive education in entrepreneurship, their EA and EI often change, to a small degree, but positively (Bae et al. 2014). Rauch and Hulsink (2015) found that entrepreneurship education emphasises increasing antecedents of EI and behaviour. Accordingly, the provision of entrepreneurship education should be further improved and more tightly focused in order to make a significant difference to students' EI (Bae et al. 2014). Management scholars

demand a multidisciplinary mind-set and systems thinking in management education (Waddock and Lozano 2013, 267).

We have examined in detail the direct and indirect changes produced in the relation between EC, cognitive factors and EI when entrepreneurial education is received, in order to obtain a better understanding of the impact of this type of education on EC and their influence on providing a favourable climate for entrepreneurship. Our findings show that the positive influence of EC on EA and SE is higher among persons who receive entrepreneurial education. Although the direct effects are not significant, before or after entrepreneurial training is received, the indirect effect, especially through SE, is reinforced. Taking into account that SE is the weakest predictor of EI among Spanish students, which contrasts with the situation in other countries (Liñán and Chen 2009), the characteristics in question should be carefully considered in the design of entrepreneurial training programmes. According to Bandura (1997), an individual's sense of SE can be built up and strengthened in ways such as mastery experience (i.e., repeated performance accomplishment), vicarious experience and modelling. Moreover, SE can be encouraged through the development of EC and entrepreneurial education. Therefore, educators should focus on the use of appropriate teaching methods to enhance EC, thus encouraging SE. Our findings suggest that compulsory entrepreneurial education exerts a positive influence on students' EI by enhancing their SE and EA, even though EC as such do not form part of the syllabus. If EC were addressed appropriately, EI could be shaped and fostered and entrepreneurship education made more effective. Therefore, it is of critical importance that universities should not simply pass on the entrepreneurial skills and knowledge that scholars will require, but as well encourage the EC that underpin all successful personal endeavours (Sánchez 2011). The challenge facing educators is to equip students to take moderate, calculated risks, to undertake projects (economic, political, public or social), to facilitate change and to enhance collective benefits.

Practical Implications

Other authors have investigated the effect of emotions on entrepreneurship (Doern and Goss 2014; Souitaris et al. 2007; Welpe et al. 2012), but few have examined the effect of EC, a concept that addresses the ability to recognise and control emotions and to make functional use of them in different contexts. Moreover, these competencies can be nurtured and strengthened, and this understanding opens up a fruitful area for study, whose practical implications may be very beneficial to society in general. Another research line that might be extended would be to examine how individual factors which constitute EC, such as self-knowledge, self-management, self-motivation, empathy, social awareness and social skills, relate to the entrepreneurial intention construct and its antecedents. This study contributes valuable information for those who design, implement and assess educational programmes aimed at strengthening students' EI, beyond specific training in entrepreneurship. Nowadays, business school curricula tend to be strongly oriented towards technical management skills associated with bureaucratic rather than entrepreneurial activities. Our findings highlight the importance of providing training in all competencies related to shaping EA and SE, and not focusing exclusively on the knowledge and resources needed for business start-up, as in the traditional approach. The inspirational component fosters attitudes and intentions and raises students' interest in the entrepreneurial option. We believe educators should be trained not only in how to teach entrepreneurship, but also in how to change 'hearts and minds' (Souitaris et al. 2007). In addition, more work should be done to develop 'entrepreneurial passion',

fostering the link between EC and entrepreneurship. Such a link, evidently, is weakly developed or absent among our study population. In this respect, the development of a collaborative framework between the academic and the business worlds could lead to the creation of effective organisational and educational strategies.

As an extension of this research, significant opportunities exist to explore the influence of interactions between emotion and cognition, and thus improve the vitality of business research. Although a deeper understanding is being acquired of the impact of emotions on entrepreneurial cognition, we still know little about the reverse effect, e.g., the role of entrepreneurial cognition on emotions, and as a result, there is insufficient understanding of the reciprocity of their relationship. The development of new theoretical perspectives to deepen our understanding of cognitive-emotional processes and to examine them empirically could make significant contributions to the field of entrepreneurial research. An interesting potential line of research would be to examine the teaching of entrepreneurial subjects, i.e. the methodology used and how problems and activities are proposed and addressed. Different kinds of student decision-making modes could be incentivised through entrepreneurial education and it would be interesting to study their effectiveness in encouraging EI or otherwise and the differences between methods. It is therefore important in future research to develop a multilevel framework linking decision-making and students' emotional and cognitive attributes to the entrepreneurial contexts in which they will be applied, in order to systematically explain the conditions under which effectuation and causation will be more or less effective in encouraging entrepreneurial intentions. Intentions models – in particular, the TPB model – should also be used as indicators of the impact of entrepreneurship education programmes, at the individual level; at the group level (Fayolle and Gailly 2015), evaluation of entrepreneurship education programmes seems empirically justified only if homogeneous groups of participants are considered.

Limitations

This study presents some limitations. First, although the anonymity assured to the participants reduces bias *(*Konrad and Linnehan 1995), some degree of social desirability bias may remain (Podsakoff and Organ 1986). The second limitation is that the study included intentions and ambitions, and these might evolve and change over time (Krueger 2007). Nevertheless, our approach reduced the magnitude of this problem, since dynamic characteristics and causal factors can be determined if the relationships are based on theoretical foundations (Hair et al. 1999). Finally, as it was not the aim of this study to examine business conduct as such, there is a lack of information as to how, over time, EI is transformed into action. Therefore, further research into this question is needed, by means of longitudinal studies.

APPENDIX

Variable	Items
Students' Entrepreneurial Intention (EI)	• I plan to start a new business within 5 years of completing my studies. • I have already made taken some steps towards starting my own business (e.g., seeking information, discussing the idea with friends, writing a business plan). • I am sure I will start my own business within 5 years of completing my studies. • It is one of my career goals to become an entrepreneur.

Entrepreneurial Attitude (EA)	• Becoming an entrepreneur within 5 years of completing my studies would be very advantageous for me. • Becoming an entrepreneur within 5 years of completing my studies would be good for my career. • I would enjoy becoming an entrepreneur within 5 years of completing my studies.
Self-Efficacy (SE)	• I feel I am able to define an idea and a business strategy for a new venture. • I feel I am able to write a business plan (conduct a market research study, a financial analysis, etc.) • I feel I am able to negotiate and maintain supportive relationships with potential investors and banks. • I feel I am able to recognise opportunities for the development of new products and/or services. • I feel I am able to build relationships with key people to obtain the capital needed to start a new business.
Subjective Norm (SN)	• My family believes I should become an entrepreneur; the opinion of my family is important to me. • People who are important to me believe I should become an entrepreneur; the opinions of the people who are important to me have a strong influence on me. • People whose opinion I value have become entrepreneurs during the 5 years following the completion of their studies.
Emotional competencies(EC)	
Self-awareness	• I am able to recognise my own emotions and their effect on my actions. • I am aware of my own strengths and limits. • I have great confidence in my self-worth and my ability to do anything.
Self-regulation	• I consider myself an honest and upright person. • I am able to take responsibility for my personal actions. • I consider myself a person who is flexible and capable of addressing changes. • I feel comfortable and open to new ideas, approaches and information.
Motivation	• I like to push myself to improve or to meet a certain criterion of excellence. • I commit myself to working for the goals of a group or an organisation when I identify with them. • I act quickly to seize opportunities. • I am persistent in working to achieve my goals, despite obstacles and setbacks.
Empathy	• I am able to understand the feelings and viewpoints of others and I am actively interested in the things they care about. • I acknowledge the needs of other people to progress, and I like to foster their capabilities. • I am able to anticipate, recognise and meet the needs of others. • I like to take advantage of the opportunities offered by different types of people. • I am aware of the emotional currents and underlying power relations within a group.
Social Skills	• I can make use of effective means of persuasion. • I am a good listener and can transmit a compelling message. • I have the ability to negotiate and resolve disagreements. • I am capable of inspiring and leading groups and individuals. • I am capable of initiating and directing change.

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Table 1 Internal consistency of emotional competency scale. Latent variables and indicators of emotional competencies.

Latent variable	Items (n)	R^2	Cronbach's alpha	Composite reliability (CR)	Shared variance (AVE)*
Self-awareness	GE01	0 .454	0.627	0.7446	0.4944
	GE02	0 .424			
	GEO3	0 .605			
Self-regulation	GE05	0 .451	0.669	0.8136	0.5237
	GE06	0 .499			
	GE07	0 .489			
	GE08	0 .656			
Motivation	GE09	0 .592	0.746	0.8362	0.5608
	GE10	0 .540			
	GE11	0 .558			
	GE12	0 .552			
Empathy	GE13	0 .517	0.805	0.8831	0.6022
	GE14	0 .651			
	GE15	0 .631			
	GE16	0 .606			
	GE17	0 .606			
Social skills-Leadership	GE18	0 .512	0.829	0.9006	0.6463
	GE19	0 .518			
	GE20	0 .664			
	GE21	0 .727			
	GE22	0 .811			

Goodness of Fit Indices		
Absolute fit indices	Chi-square ($\chi 2$)	675.747 (p = 0.000)
	Degrees of freedom	179
	NCP	496.747
	GFI	0.986
	SRMR	0.167
	RMSEA	0.061
	ECVI	1.04
Incremental fit indices	*AGFI*	0.959
	NNFI (TLI)	0.886
	CFI	0.903
Parsimony adjustment measures	Normed Chi-square ($\chi 2$)	3.78
	PNFI	0.744
	PGFI	0.750
	AIC	779.747

Table 2 Structural model results (direct, indirect and total effects). Effects of EA, SN. SE, EC on EI.

Effect of		**On**	**Direct Effects** [a]	***t***	**Indirect Effects** [a]	***t***	**Total Effects**[a]	***t***
Perceived subjective norm	➔	Entrepreneurial Intention	-0.057***	-1.108	0.488**	5.27	0.431***	8.25
Perceived subjective norm	➔	Attitude	0.556***	15.329			0.5556***	10.07
Perceived subjective norm	➔	Self-efficacy	0.378***	11.332			0.378***	6.91
Emotional competencies	➔	Entrepreneurial Intention	-0,014	-0.258	0.357***	6.18	0.343***	6.20
Emotional competencies	➔	Attitude	0.319***	8.286			0.319***	4.21
Emotional competencies	➔	Self-efficacy	0.619***	17.632			0.619***	13.27
Attitudes	➔	Entrepreneurial Intention	0.748***	18.137			0.748***	10.80
Self-efficacy	➔	Entrepreneurial Intention	0.192***	3.128			0.192***	2.61

Notes: [a] Standardised Structural Coefficients; $^{\dagger}p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3 Difference analysis. Pre/Post-entrepreneurship course. Goodness-of-fit indices for multi-sample Nested Models.

	χ^2	*g.l.*	*p*	χ^2/*g.l.*	*RMSEA*	*NNFI*	*CFI*	$\Delta\chi^2$	Δ*g.l.*	*p*
1) Confirmatory factor analysis										
Students Pre-course $n = 111$	177.51	160	0	1.109	0.0315	0.997	0.997			
Students Post-Course $n = 111$	167.65	160	0	1.048	0.0208	0.999	0.999			
2) Aspects of measurement invariance										
CFA 1 (configural)	345.16	320	0	1.079	0.0267	0.998	0.999			
CFA 2 (metric)	373.91	335	0	1.116	0.0325	0.998	0.998	28.75	15	0.02
CFA 2 (metric) partial	364.69	333	0	1.095	0.0294	0.998	0.998	19.53	13	0.11
CFA 4 (error)	371.27	353	0	1.052	0.0217	0.999	0.999	6.59	20	1.00
3) Aspects of structural invariance										
CFA 5 (variances)	381.17	358	0	1.065	0.0243	0.999	0.999	9.90	5	0.08
CFA 6 (covariances)	403.87	368	0	1.097	0.0298	0.998	0.998	22.70	10	0.01
CFA 6 (covariances) partial	385.27	362	0	1.064	0.0242	0.999	0.999	4.10	4	0.39
4) Diferences on structural paths										
Model 8 base	417.86	360	0	1.161	0.0382	0.997	0.997			
Model 9 Invariance paths	436.05	368	0	1.185	0.0410	0.996	0.996	18.190	8	0.02

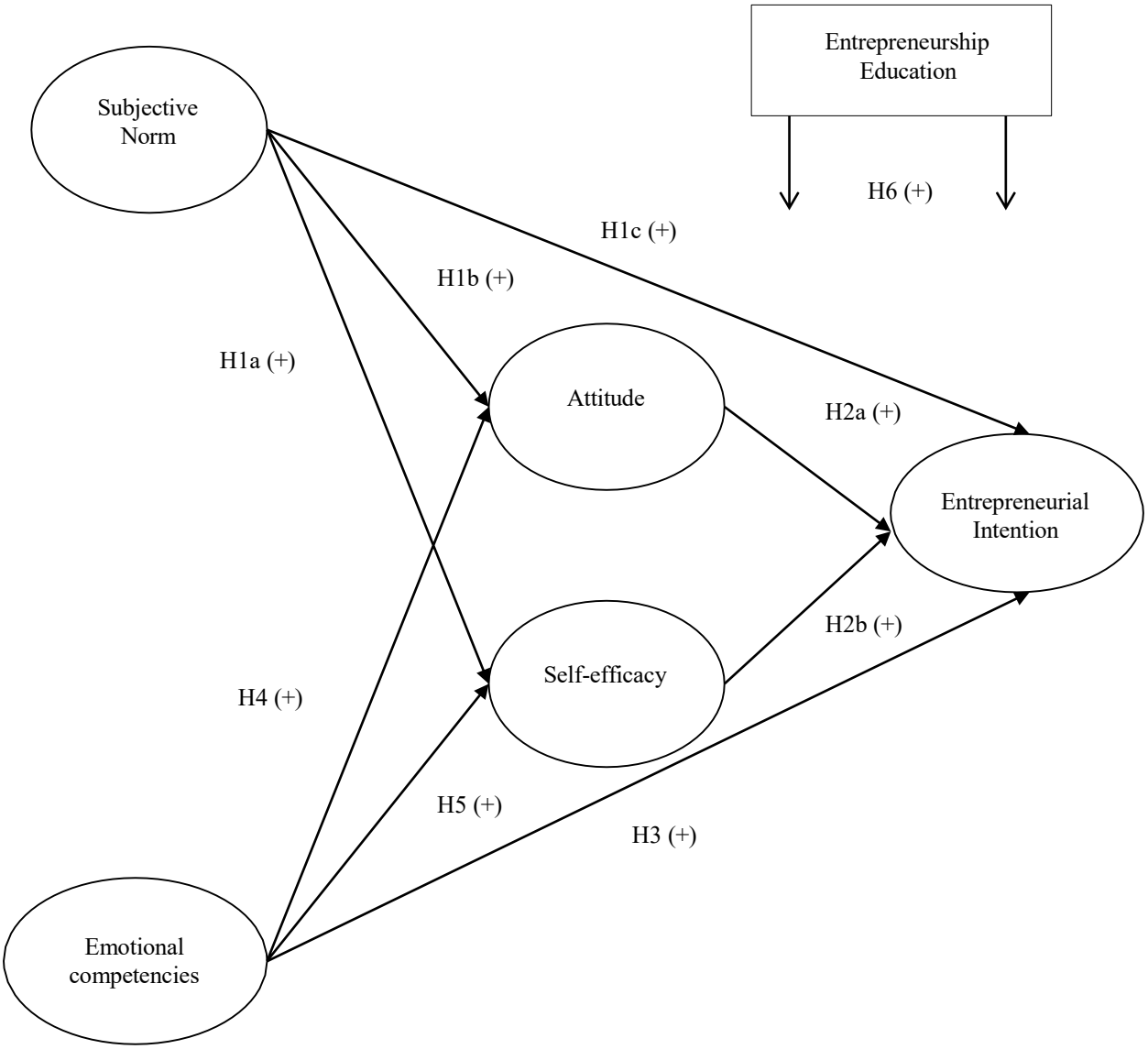

Fig. 1 Theoretical model proposed.

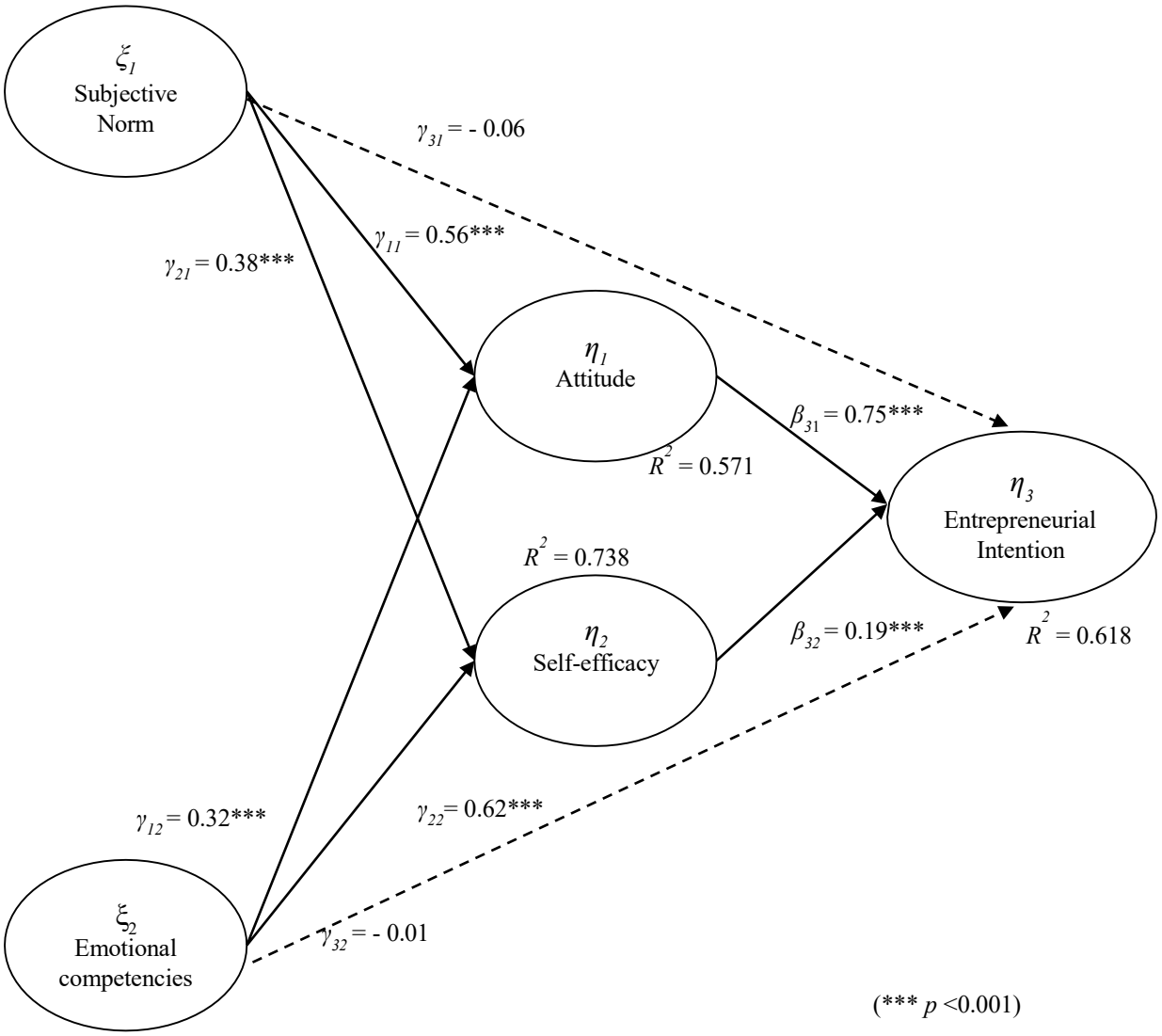

Fig. 2 Estimation results from the theoretical model ($N = 751$).

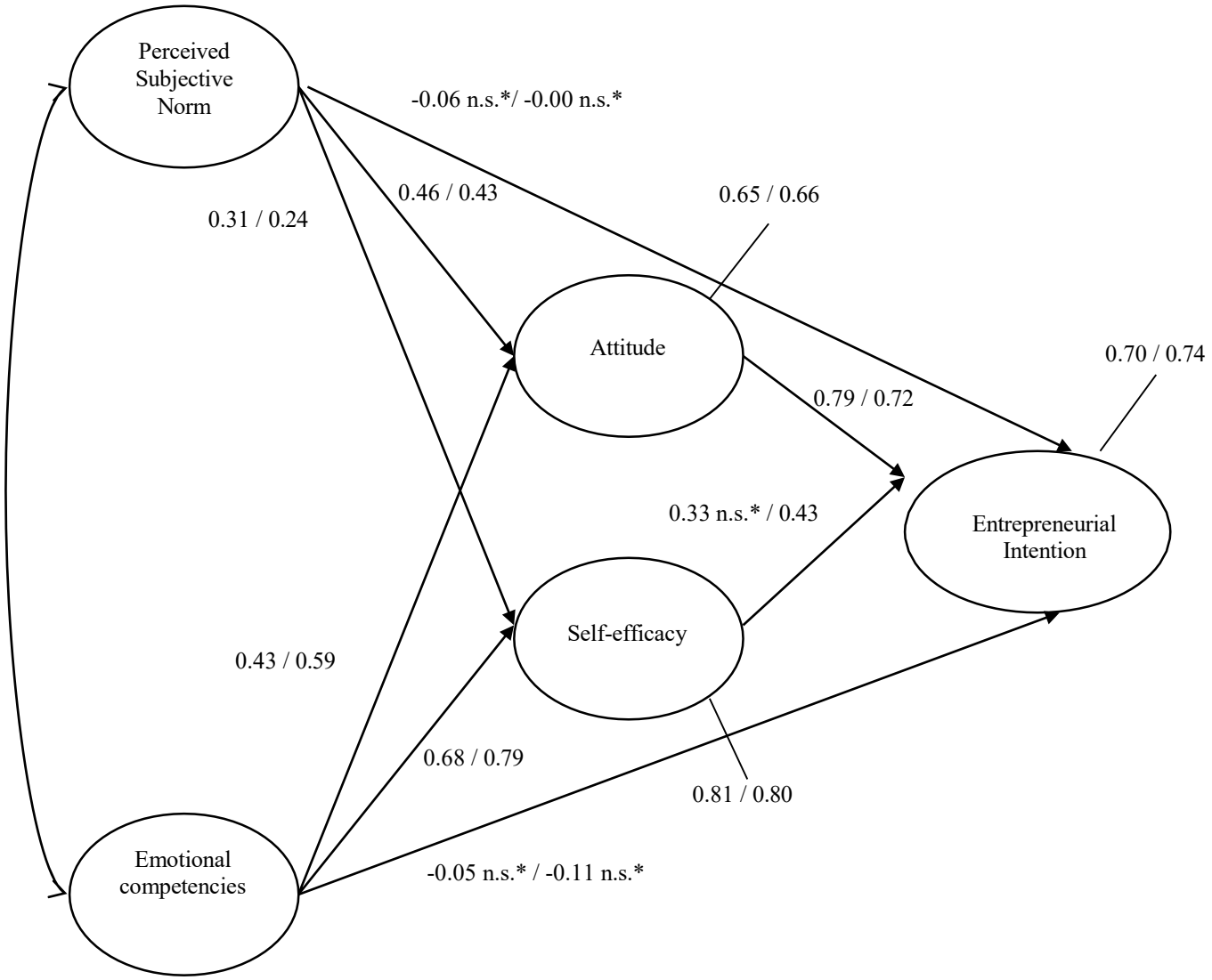

Fig 3 Path coefficients reported for pre-course/post-course sub-group *N-pre*= 111/ *N-post* = 111.