British and Spanish Entrepreneurial Intentions: A Comparative Study

La intención emprendedora en Reino Unido y España: un estudio comparativo

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Abstract

Extending from Ajzen's (1991) theory of planned behaviour, this paper develops a more integrated entrepreneurial intention model. This incorporates the role of culture, along with motivations, skills and knowledge of the entrepreneurial environment. The cross-cultural applicability of the model is tested across two different countries, Great Britain and Spain, on a total sample of 1005. Partial Least Squares technique is used to try and overcome limitations of previous research. The model broadly holds for both countries. Implications for public decision makers and entrepreneurship education are discussed. In particular, enhancing the level of knowledge and awareness about entrepreneurship would increase self-efficacy perceptions and, hence, entrepreneurial intentions.

Keywords: Entrepreneurial Intention ; Cross-cultural Analysis ; Entrepreneurial Knowledge ; Entrepreneurial Skills ; Entrepreneurial Valuation.

RESUMEN

Este trabajo, partiendo del enfoque de Acción Planificada (Ajzen), desarrolla un modelo más integrado de intención emprendedora, incorporando el papel de la cultura, las motivaciones, habilidades y conocimiento empresarial. La aplicabilidad transcultural del modelo se prueba analizando dos países diferentes (Gran Bretaña y España), en una muestra de 1005 individuos. Se utilizan Mínimos Cuadrados Parciales para superar las limitaciones de anteriores investigaciones. El modelo en general es válido para los dos países, derivándose implicaciones para la toma de decisiones y la educación emprendedora. En particular, mejorar el conocimiento y la toma de conciencia sobre el emprendimiento aumentaría la percepción de autoeficacia y, por lo tanto, las intenciones emprendedoras.

Palabras clave: Intención emprendedora; Análisis transcultural; Conocimiento emprendedor; Habilidades emprendedoras; Valoración emprendedora.

JEL Classification: A13, L26, R11.

A significant body of literature on entrepreneurship highlights the importance of studying cognitive factors, such as entrepreneurial motivation (e.g., attitudes, perceptions) and intention, in order to provide insights into the complex process of new venture creation (Autio, Keeley, Klofsten, Parker and Hay, 2001; Forbes, 1999; Krueger, Reilly and Carsrud, 2000; Peterman and Kennedy, 2003; Tkachev and Kolvereid, 1999). Such a cognitive perspective is valuable because it represents an attempt to understand the formation of new ventures and the underlying structures and processes (cf. Henry, Hill and Leitch, 2003). While there have been developments in this field, there is a lack of research across different cultures (Forbes, 1999; Liñán and Chen, 2009). Indeed, it is recognized that "cultural values […] will positively influence the presence of entrepreneurial cognition on both the individual and societal levels" (Forbes, 1999: 421). McGrath and MacMillan's (1992) seminal study suggested that entrepreneurs in different settings were more alike than was obvious. Importantly, despite these earlier provocative studies, there are only limited theoretically-driven empirical tests of cultural factors in entrepreneurial intention models.

It is clear that more cross-cultural research is needed to shed further light on the influence of different cultures and values on entrepreneurial intention. One of the main aims of this paper is to address this gap by using samples from two different countries in Europe (Great Britain –G.B.– and Spain) that have attracted little comparative research. This will be achieved by using an extended theory of planned behaviour (TPB) that includes cultural and other psychosocial variables (discussed below) in the model. That is, in addition to the core TPB motivational elements of: personal attitude, subjective norm and perceived behavioural control.

The two chosen European Union countries, G.B. and Spain, do naturally have a distinct culture and heritage, but they are not completely different in several regards. Both countries are 'innovation driven', reflecting mature economies, shifting towards the service sector and catering for an increasingly affluent population, combined with a focus on knowledge generation and development of innovative, opportunity seeking entrepreneurial activity and at the time of the study had reasonably comparable economic performance (Bosma, Acs, Autio, Coduras and Levie, 2008). Both the UK (of which GB forms

the majority) and Spain have significant populations (about 60.2 million and 43.4 million respectively based on World Bank 2005 Data). They are classified as high income countries with for example, total GDP for the UK and Spain at $2244.1 billion and $1129.7 billion respectively (World Bank 2005 data), and GDP per capita (PPP-adjusted) for UK and Spain for the same years at $31580 and $27270 respectively (World Bank 2005 data). Both countries have similar levels of nascent entrepreneurs (new businesses of less than 3 months) of around 3.1 and 3.3% (for UK and Spain respectively), early-stage entrepreneurial activity (new businesses of 3-42 months) at around 5.9 to 7% (Bosma et al., 2008). Historically both countries have also had similar early-stage entrepreneurial activity of about 5-8% (Reynolds, Bygrave, Autio and Hay, 2002). Thus, despite having distinct differences in cultural heritage, the two countries are reasonably comparable for the purposes of this research.

A second aim of the paper is related to trying to draw together some of the strands in TPB-based intention models. The TPB is increasingly been seen as a useful theoretical framework in new venture creation because it helps to explain the complex and intricate cognitive processes leading to firm creation (Autio et al., 2001; Krueger et al., 2000; Liñán, 2008). Authors suggest the TPB-attitude approach provides greater predictive capacity in explaining entrepreneurial intention and behaviour over some previous approaches, such as, the personality trait or demographic approaches (Autio et al., 2001; Moriano, Gorgievski and Lukes, 2008). Further, researchers suggest that intention models are more fruitful because underlying antecedents such as attitudes towards entrepreneurship can be modified with educational interventions (Liñán, Rodríguez-Cohard and Rueda, 2011a; Peterman and Kennedy, 2003).

Notwithstanding such theoretical advantages, TPB-based work can be identified as having 4 different strands. That is, (1) the effect of core TPB elements on entrepreneurial intention (e.g., Kolvereid, 1996; Krueger et al., 2000); (2) the effect of human and social capital (e.g., entrepreneurial skills, social relationships) on the TPB elements and EI (e.g., Chen, Greene and Crick, 1998; Liñán and Santos, 2007); (3) the effect of knowledge and awareness of the entrepreneurial environment on TPB elements and EI (e.g., Liñán, 2008; Luthje and Franke, 2003; Scherer, Brodzinsky and Wiebe, 1991); and/or (4) cross-cultural research (e.g., Autio et al., 2001; Moriano, Gorgievski, Laguna, Stephan and Zarafshani, 2012). Taken collectively, this body of work has provided useful insights into, and sound evidence for, the TPB model. However, it has arguably been fragmented, with the greater share of the work under the first strand, and the least under the third and fourth strands. Other issues with the intentions model have also surfaced (e.g., the need to consider the dynamics and looking at deeper underpinnings) with calls for more sophisticated models (Krueger, 2009; Krueger and Day, 2010). There is a lack of work that has attempted to combine these strands into a more integrated model.

A final aim of this paper is to address some limitations of previous research. Most past research in TPB [not just for entrepreneurship] has used linear

regression models (e.g., Autio et al., 2001; Tkachev and Kolvereid, 1999), despite the risk of missing indirect and complex effects. Hence, in this research, structural equation modelling is used to allow for more robust, sophisticated and recursive testing in order to better understand these effects.

This paper has implications for educators, policy makers and researchers by drawing together previous published work. It will also act as a comparison in two different cultures, allowing for a robust test of a model that may help to explain entrepreneurial intention in different contexts. This could be useful to policy makers to understand not only the pattern of relationships among intention antecedents, but also its implications for interventions and developing entrepreneurial intention.

The paper is structured around the following four main sections: a literature review presenting a conceptual framework and reflecting on previous research to underpin the model and hypotheses; a methodology section to explain the sample and measures used; a results section reporting on the structural equation models from the cross-country analysis; and a final section to discuss and conclude the paper.

2. Theory and hypotheses

Entrepreneurial intention can be defined as a conscious awareness and conviction by an individual that they intend to set up a new business venture and plan to do so in the future (see Bird, 1988; Thompson, 2009). The process of starting a new firm can thus be regarded as voluntary with conscious intentionality. Importantly, intention has been considered as the single most powerful predictor of entrepreneurial behaviours (Autio et al., 2001; Krueger et al., 2000), and also an important dependent variable in its own right (Thompson, 2009).

Applied to entrepreneurial intention, the TPB posits three motivational antecedents that act as precursors to new venture creation. These can be defined in the following way. Personal attitude (PA) towards becoming an entrepreneur refers to the extent of positive valuation about the start-up of a new venture. Subjective norm (SN) reflects the pressure and approval from significant others of becoming an entrepreneur, thus taking into account the individual's social context. Perceived behavioural control (PBC) measures the perceived ease or difficulty of becoming an entrepreneur. Research has generally provided support for the TPB in the context of entrepreneurship (e.g., Krueger et al., 2000), but the application and empirical test of the TPB model to different cultures has been surprisingly limited.

Because of cross-country differences in entrepreneurial activity, it is of theoretical and practical importance to examine how culture relates to levels of entrepreneurial activity (Hayton, George and Zahra, 2002). This would include entrepreneurial intention as this forms part of the entrepreneurial process. Culture can be defined as a set of shared beliefs, values and expectations

(Hayton et al., 2002). Similarly, Hofstede (2003: 9) defines it as "the collective programming of the mind that distinguishes members of one group or category of people from another". Importantly, cultural values provide an indicator as to the extent to which a society views entrepreneurial activity as attractive or not. Cultures that value and reinforce such entrepreneurial activity may facilitate more risk-taking and radical innovation, whereas those that value and reinforce conformity and control over the future are less likely to display entrepreneurial activity (Hayton et al., 2002). For example, some countries e.g., USA, encourage a can-do risk-taking attitude whereas others do not (Henry et al., 2003; Stephan, 2008).

Culture should influence entrepreneurship in two main ways: Bottom-up versus top-down. The first way (the 'aggregate trait' explanation) suggests that if a country has more individuals with entrepreneurial values and traits, more individuals will become entrepreneurs, a view that suggests values are aggregated. The second way (the 'societal legitimation' explanation) suggests that a higher level of moral approval or legitimization of entrepreneurship within a culture is reflected in that society's practices. For example, paying more attention to entrepreneurship in education, considering entrepreneurship desirable, and allowing a more favourable and supportive start-up environment, a view that highlights culture is a function of societal practices (Stephan, 2008).

If we are to understand the processes of intentions formation, it has become clear that we need to look more closely at the deeper beliefs that serve as anchoring assumptions for entrepreneurial decision making. Cultural and social norms can be a key source of those deep anchoring beliefs (Krueger, 2007).

There is a paucity of research looking at entrepreneurial motivation and intention across different cultures. This is important as the relative effects of TPB elements on entrepreneurial intention could be different in different countries. Recognizing this, Liñán and Chen (2009) called for more cross-cultural research in this field with wider samples from different countries to be tested. There is, however, limited available research on the application of the TPB to different cultures. Autio et al. (2001) examined the TPB core constructs amongst university students from the USA, Finland and Sweden, but they did not look at the influence of cultural variables directly. In other words, they did not look at social values, such as closer environment valuations (e.g., of significant others in the individual's closer environment), based on the social capital literature, nor social valuations (e.g., wider cultural values of society) of entrepreneurship in the chosen countries. This is important because such social and cultural values can influence the TPB motivational elements (Ajzen, 2001) and this is discussed later with reference to our two chosen countries.

In a more integrated attempt, as mentioned earlier, Liñán (2008) developed and tested an entrepreneurial intention model on a Spanish sample. This incorporated the aforementioned cultural variables of social valuation (SV)

and closer environment valuation (CV), along with entrepreneurial skill perceptions as they could make individuals feel more capable of starting a new venture. Nonetheless, researchers have also noted the importance of two other considerations (Ajzen, 1991; Autio et al., 2001; Bosma et al., 2008; Liñán, 2008; Liñán, Battistelli and Moriano, 2008; Luthje and Franke, 2003; Scherer et al., 1991). The first is the relevance of a greater knowledge of the entrepreneurial environment (e.g., knowing about sources of entrepreneurial knowledge and support assistance). The second is the importance of a cross-cultural perspective to better understand the effect of different cultural environments on entrepreneurial motivation and intention. Interestingly, the most recent analysis of the Global Entrepreneurship Monitor data found two key predictors of entrepreneurial activity: personal preparedness to venture and social/cultural norms, the two elements just described (Reynolds, 2011). The overall model in this research, thus, draws on Liñán (2008) but with these important extensions that are supported by GEM data.

Based on our model, however, some hypotheses are generic and should hold in both countries. More specifically, the model suggests that PA and PBC should influence intention, regardless of country. In cross-cultural research with other countries, this has generally been shown to be the case (e.g., Autio et al., 2001; Liñán and Chen, 2009). The case of SN is more intriguing and typically the weakest predictor of intention. Studies have found a weak or no direct effect between SN and intention (Autio et al., 2001; Krueger et al., 2000). Rather, recent argument and evidence suggests that the effect of SN may be indirect via PA and PBC, and this has been reported in Spain and Taiwan (Liñán, 2008; Liñán and Chen, 2009). Therefore, regardless of the country, the first set of hypotheses is:

H1a. Personal attitude positively influences intention
H1b. Perceived behavioural control positively influences intention.
H1c. Subjective norm will have a positive impact on personal attitude.
H1d. Subjective norm will have a positive impact on perceived behavioural control.

Given similar levels of (perceived) knowledge and skills in Britain and Spain to start a new venture (Bosma et al., 2008, suggest 45% and 43% respectively), the countries are not completely dissimilar in terms of perceived human capital. Thus, a number of tentative cross-cultural hypotheses can be derived from the available literature.

Most research on entrepreneurship and culture has employed Hofstede's five cultural dimensions (see Hofstede, 2003). These are: *individualism vs. collectivism* (extent to which people in a society prefer to act as individuals rather than in groups), *uncertainty avoidance* (the extent to which people prefer structured over unstructured situations), *power distance* (the extent to which the existence of inequality among people in a country is accepted), *masculinity-femininity* (the extent to which tough values like assertiveness and competition prevail over tender ones like quality of life and caring) and *long-*

short term orientation (the extent to which values are focused towards the future -like persistence- or the past and present). These values are important to influencing entrepreneurial cognitions. For example, a long-term oriented culture is likely to generate people with positive entrepreneurial values, beliefs, attitudes and actions (Busenitz and Lau, 1996).

In this research, two European but culturally different countries are used. Using Hofstede's dimensions, there are some noteworthy similarities and differences. Long-short term orientation is fairly similar (25 for Britain vs. 19 for Spain). This suggests similar levels of long term focus towards future rewards like perseverance and thrift. On the other hand, there are substantial differences for all other dimensions. Regarding individualism, Britain scores much higher than Spain (89 and 51 respectively), and appears much more individualistic-acting, implying a more entrepreneur-friendly culture. In relation to uncertainty avoidance, Britain scores considerably lower than Spain (35 and 86 respectively). This suggests that British culture is relatively more tolerant of uncertainty and feel less threatened by uncertain situations. Thus, in this dimension, Spanish culture is relatively more opposed to entrepreneurship. With regards to power distance, again Britain scores considerably lower than Spain (35 and 57 respectively), suggesting that, in Spain, inequality in interpersonal relationships that underlies functioning in that society is perceived as more natural. In this dimension, therefore, Spanish culture is again relatively less conducive to entrepreneurship. Finally, Britain scores considerably higher in masculinity (66 and 42 respectively). This suggests that British culture (as part of Anglo countries along with US) is relatively more masculine-orientated with a higher tendency towards assertiveness, earnings, advancement and 'live to work' culture compared to Spain (as part of Latin countries, Hofstede, 2003). This would imply that British culture is perhaps more favourable towards entrepreneurship.

The economic situation has generally been favourable in both countries since the mid-nineties up until recently. GB has, however, experienced better economic growth and lower levels of unemployment. Although Spain's unemployment has been higher, it has also been decreasing since the mid-nineties. Thus, the impact of the economic situation can be considered to be broadly comparable and neutral for the purposes of this study.

As far as the authors are aware, there is no TPB-based research contrasting the effects of cultural differences on entrepreneurial motivation and intention for the two countries of interest. However, the available literature does allow for some tentative hypotheses to be developed regarding personal attraction and perceived behavioural control. Bosma et al. (2008) found that personal attitude towards an entrepreneurial career is relatively stronger and more desirable in Spain than in Britain (68% and 52% respectively). A similar finding was reported by Uslay, Teach and Schwartz (2002). They found that more Spanish students agreed that entrepreneurship offers job satisfaction than their US counterparts. Since Britain is in the same Anglo group (Hofstede, 2003) as the US, this finding could also be considered for British respondents. This suggests that the salient

(affective and behavioural) beliefs about entrepreneurship in the two cultures tend to be different. In this sense, personal attitudes could be more strongly related to entrepreneurial intentions for Spanish than British respondents.

H2a. Personal attitude exerts a stronger effect on EI in Spain.

In Spain, however, the effect of uncertainty avoidance is considerably higher, suggesting that entrepreneurship (being a more uncertain and ambiguous career route) would be considered as socially less acceptable or socially less endorsed. Since Spanish culture, at least on this dimension, could be considered less entrepreneurship-friendly, it could be argued that Spanish respondents would feel less self-efficacy with respect to entrepreneurial activity, even if they had the knowledge and skills (cf., Liñán & Chen, 2009). Further, Bosma et al. (2008) suggest that Spanish respondents reported a relatively higher fear of failure preventing business start-ups than in the UK (52% and 38% respectively). This means that we can postulate the relative effect of PBC over intention would be greater in Britain than Spain. This leads us to our second set of hypotheses:

H2b. Perceived behavioural control exerts a stronger effect on EI in Britain.

Largely based on past research on social models and institutional theory (e.g., (Hmieleski and Corbett, 2006; North, 1990, 2005), our model incorporates social values as they reflect cultural codes of a society in terms of attitudes, values, behaviour, conduct and practices. This is also supported by the notion that cultural and social environments and values influence the motivational antecedents of intention (Davidsson and Honig, 2003; Fernández, Liñán and Santos, 2009; Shapero and Sokol, 1982). That is, perceptions of desirability (values about society and the attractiveness of entrepreneurship) and feasibility (capability perceptions) of new venture creation.

Hence, our model incorporates the two specific factors of social valuation and closer environment valuations (Liñán, 2008). The first, social valuation of entrepreneurship (SV), relates to wider cultural values in society which may encourage or discourage certain attitudes, personal traits, capacities, and shape normative perceptions towards entrepreneurial behaviour (Zahra, Jennings and Kuratko, 1999). A more positive social valuation of entrepreneurship would make individuals consider this option as a viable and valid career path, thus affecting their perceptions (Fernández et al., 2009). The underlying system of values pertaining to a specific group or society shapes the development of certain personality traits and abilities, modelling normative and ability perceptions towards the entrepreneurial activity (Thomas and Mueller, 2000). This would suggest that social valuation is important in not only determining subjective norm, but also perceived behavioural control.

H3a. Social valuation positively influences subjective norm.

H3b. Social valuation positively influences perceived behavioural control

The second, based on social capital literature, refers to the influence from the closer environment valuations (CV). Through everyday contact and interaction,

the potential entrepreneur is influenced by the valuation of entrepreneurship by their family members, friends and colleagues (Liñán, Santos and Fernández, 2011b; Liñán, Urbano and Guerrero, 2011c). This influence contributes to the generation of more favourable perceptions towards start-up (Kim, Aldrich and Keister, 2006; Scherer et al., 1991). They could exert their influence directly on attitude towards the behaviour as a consequence of the cognitive values and beliefs conforming individual's perceptions towards a career (Uphoff, 2000). Kennedy, Drennan, Renfrow and Watson (2003) found that expectations from family, friends and significant others are key variables influencing student's responses, and that closer environment expectations were related to attitude towards the behaviour and subjective norms. This leads to our third set of hypotheses:

H3c. Closer valuation positively influences personal attitude.
H3d. Closer valuation positively influences subjective norm

Entrepreneurial skills perceptions reflect the degree to which individuals are confident that they possess sufficiently high levels of entrepreneurial skills. Previous literature has identified specific skills (e.g., creativity, problem-solving) and suggested that possessing these skills could influence motivational factors. That is, enhancing the perceived level of ease in pursuing this career option, as well as greater personal attraction towards entrepreneurship and more approval from significant others (e.g., Boyd and Vozikis, 1994; DeNoble, Jung and Ehrlich, 1999; Scherer et al., 1991). Additionally, cultural factors could positively affect positive self-perceptions of entrepreneurial skills through wider socio-cultural (SV) and closer environment (CV) reinforcement (Delmar and Davidsson, 2000; Liñán, 2008; Mazzarol, Volery, Doss and Thein, 1999; Thomas and Mueller, 2000). These effects are tested in both countries to confirm their cross-cultural stability. Therefore, our fourth set of hypotheses is:

H4a. Entrepreneurial skills positively influence personal attitude.
H4b. Entrepreneurial skills positively influence subjective norm.
H4c. Entrepreneurial skills positively influence perceived behavioural control.
H4d. Social valuation positively influences entrepreneurial skills.
H4e. Closer valuation positively influences entrepreneurial skills.

Building on Liñán's (2008) results, we incorporate knowledge of the entrepreneurial environment. This is an important factor that reflects the level of knowledge and awareness the individual has about the entrepreneurial environment and support systems (Liñán et al., 2008; Liñán and Santos, 2007; Luthje and Franke, 2003; Schenkel, Azriel, Brazeal and Matthews, 2007). Typically for university students, this would include an awareness of associations, support bodies, training and support measures, and access to preferential loans. Higher knowledge of this kind could contribute to more realistic perceptions about entrepreneurial activity and the identification of

appropriate role models, and thus, influence the controllability of starting up a business (Scherer et al., 1991). This also extends from the positive effect of knowledge (declarative and procedural) on entrepreneurial activity suggesting that knowledge at the individual level is also needed to successfully open up and develop new businesses (cf., Unger, Keith, Hilling, Gielnik and Frese, 2009). Similarly, greater knowledge could contribute to a more accurate awareness of, and attraction to, the entrepreneurial career route and enhance social approval from significant others (due to the support systems available). This leads to the following hypotheses, regardless of country:

H5a. Entrepreneurial environment knowledge positively influences personal attitude.

H5b. Entrepreneurial environment knowledge positively influences subjective norm.

H5c. Entrepreneurial environment knowledge positively influences perceived behavioural control.

Further, as cultural variables, social and closer valuation, could also affect knowledge of the entrepreneurial environment. Wider social valuations (SV) in society can act as cultural reinforcement. Social cultural values and practices can exert their influence in terms of supporting or disapproving of the entrepreneurial career path, and of course encourage or discourage development of entrepreneurial environment knowledge. The greater the 'legitimation' within society, the more attention there is to developing entrepreneurially aware individuals (Stephan, 2008), i.e., those that are knowledgeable about support systems and measures. Similarly, closer valuations (CV, values of significant others around the individual) could exert their influence on encouraging or discouraging the acquisition of knowledge of the entrepreneurial career path. Graduates rely on a variety of sources for new venture creation support, both within and outside the university. Thus, they value the informal more than the formal (Tackey and Perryman, 1999), echoing Shapero's claim that entrepreneurs tend to prefer gaining information from personal sources via informal channels (Shapero and Sokol 1982). Thus, the greater the closer valuation, the more likely there will be greater entrepreneurial environment knowledge. Thus, the final hypotheses (tested in both countries to confirm their cross-cultural stability) are:

H6a. Closer valuation positively influences entrepreneurial environment knowledge

H6b. Social valuation positively influences entrepreneurial environment knowledge

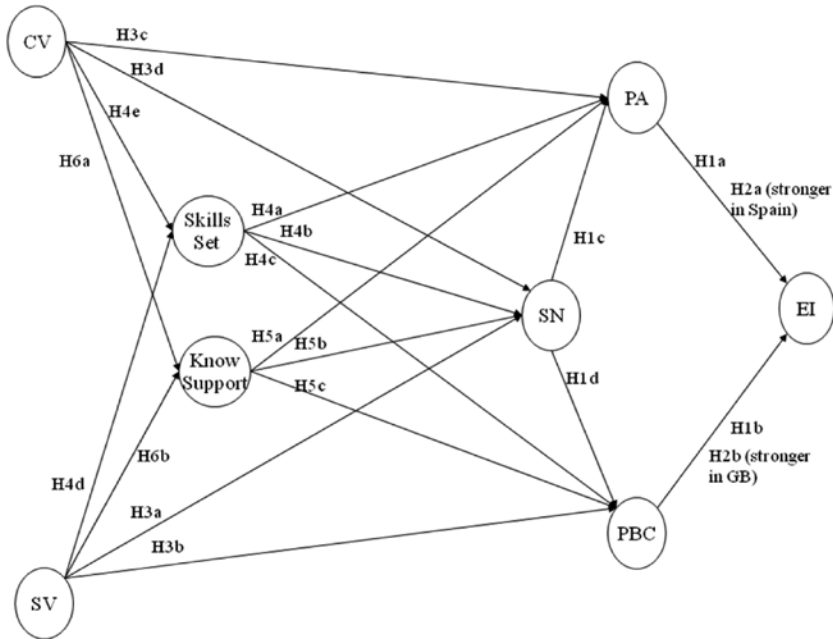Figure 1. Entrepreneurial intention model with hypotheses

Figure 1 summarizes the initial model we will employ for our analysis. This captures the main links of the proposed entrepreneurial intention model.

3. Methodology

3.1. Sample

For the British sample, data was collected from business school undergraduates at one large university in the North of England. Questionnaires were distributed to all attending students in several business-related classes and they were invited to complete them. This resulted in a high response rate (well above 95%). The final sample comprised 456 respondents engaging in business-related courses (93.9% business-related students, the rest were Accountancy/ Finance students). Of these respondents, 42% were female and 52% were male, with an average age of 21 years.

The Spanish sample comes from two large universities, one in the Northeast and another in the South of the country. Questionnaires were administered optionally to last-year students enrolled on a business degree during a class session, with previous authorization by the lecturer. A high response rate (well above 90%) led to a final sample of 549 usable questionnaires, 300 from the North-eastern university and 249 from the

Southern one. 56% of respondents were female and 44% were male, with an average age of 23 years.

Both British and Spanish samples correspond with the general characteristics of students at the respective universities. The small differences among both samples are explained by the differences between each country's university systems. In particular, Spanish degrees at the time of this research are longer (ranging from 3 to 5 years) and more women than men study business-related degrees at Spanish universities.

3.2. MEASURES

This research uses the same measures employed in Liñán, Urbano and Guerrero (2011c) to measure the TPB constructs, social and closer valuations, and entrepreneurial skills. More specifically, the first 20 items measure the four central constructs of the theory of planned behaviour. This includes: Personal Attraction (A2–reversed–, A10, A12–rev–, A15 and A18); Perceived Behavioural Control (A1, A5–rev–, A7, A14, A16–rev–, and A20); Subjective Norms (A3, A8, and A11), and Entrepreneurial Intention (A4, A6, A9–rev–, A13, A17 and A19–rev–). Social and Closer Valuation regarding entrepreneurship was measured through 8 items. Of these items: (a) 5 items measure perceptions regarding general social valuation of entrepreneurship (items C2, C3–rev–, C5–rev–, C6 and C8–rev–) and (b) 3 items (C1, C4, and C7) assess the valuation of entrepreneurship in the closer environment of the respondent. Regarding entrepreneurial skills, they were measured using a 6-item scale. Finally, knowledge of the entrepreneurial environment was measured through another 6-item scale included in the EIQ questionnaire (Liñán & Chen, 2009). Appendix 1 includes the relevant items.

A range of control variables were also measured including: age, gender (female = 0, male = 1), labour market experience (no = 0, yes = 1), self-employment experience (no = 0, yes = 1), personally knowing an entrepreneur (no = 0, yes = 1) and year of undergraduate education (ranged from 1 to 3). An analysis of these (see Table 1) revealed some significant differences. Hence, they will be included as control variables in the analysis.

TABLE 1. T-TEST FOR INDEPENDENT SAMPLES

	Mean value		Mean difference	Significance level
	GB	Spain		
F1 Know entrepreneur	0,6788	0,8574	,17859	,000
H4 Employment experience	0,7995	0,7386	-,06097	,023
Year of studies	1,9110	2,4845	,57356	,000
H5 Ever self-employed / SME owner	0,1046	0,0565	-,04816	,008
I1 Age (years)	21,2141	23,5927	2,37854	,000
I2 Gender	0,5818	0,4411	-,14075	,000

3.3. Data analysis

Previous research (Autio et al., 2001; Kolvereid, 1996) used linear regression and correlational analysis, rather than structural equation modelling. The latter approach offers the advantage of providing a more sophisticated understanding of pattern of relationships and direct/indirect effects on the TPB elements and entrepreneurial intention.

Given the characteristics of the proposed model, structural equation techniques will be used to test the hypotheses. In particular, multivariate analysis based on Partial Least Squares (PLS) will be used. When exploratory studies are carried out and relatively small samples are used, this multivariate statistical technique is more suitable than others, such as LISREL, based on the covariance analysis (Gefen, Straub and Boudreau, 2000). The PLSGraph V. 3.00 Build 1126 (Chin and Frye, 2003) software has been used. PLS analysis provides results for both the structural model (hypothesized relationships) and the measurement model (reliability and validity of indicators), according to Sánchez-Franco and Roldán (2005).

Additionally, with the purpose of exploring possible differences in the results between both countries, a multigroup analysis has been performed. This technique looks for statistically-significant differences in path coefficients between sub-samples (Chin, 2000).

4. Results

A PLS model is analysed and interpreted in two stages. The first one refers to the assessment of the measurement model (reliability and validity analysis). Only then can conclusions regarding structural relationships among the constructs be logically derived.

Reliability analysis may be carried out using item loadings. In this sense, individual reflective-item reliability is considered adequate when item loadings are above 0.707 on their respective constructs. This means that shared variance between the construct and its indicators is greater than the error variance. Nevertheless, for newly developed measures, a lower threshold of 0.6 may be accepted (Sánchez-Franco & Roldán, 2005). In this case, an initial model with all hypotheses and control variables was tested and a number of items loaded below the acceptable limit. A recursive method was used to eliminate the item with the lowest loading in its corresponding construct, re-run the model, and eliminate another item. When all items loaded above the 0.6 level, the model was deemed as acceptable (Table 2). All results presented below correspond to this depurated model.

Composite reliability scores are also included in Table 2. They assess the internal consistency of the constructs. It is usually assumed than a 0.7 threshold is enough for initial stages of research. In this case, scores are above 0.82 for all the constructs considered (Sánchez-Franco and Roldán, 2005).

Table 2. Full-sample measurement model (reliability indicators)

Construct / Indicator	Loadings	Composite Reliability	AVE
EI		0.895	0.589
A4	0.7106		
A6	0.7665		
A9recod	0.6603		
A13	0.8540		
A17	0.8077		
A19recod	0.7901		
PA		0.858	0.605
A10	0.8279		
A12recod	0.6624		
A15	0.8526		
A18	0.7536		
PBC		0.836	0.562
A1	0.7662		
A7	0.7662		
A14	0.8009		
A20	0.6580		
SN		0.877	0.704
A3	0.7951		
A8	0.8375		
A11	0.8817		
SV		0.824	0.700
C2	0.8524		
C6	0.8208		
CV		0.842	0.640
C1	0.7706		
C4	0.8287		
C7	0.7992		
SkillSet		0.871	0.531
D1	0.7842		
D2	0.7016		
D3	0.6848		
D4	0.7730		
D5	0.7416		
D6	0.6782		
KnowSupp		0.922	0.662
F3a	0.7642		
F3b	0.7895		
F3c	0.8206		
F3d	0.8184		
F3e	0.8662		
F3f	0.8208		

For added confirmation, Average Variance Extracted (AVE) assesses the amount of variance that a construct captures from its indicators relative to the amount due to measurement error (Chin, 1998). It is usually considered that a level above 0.5 indicates adequate reliability. In this case, all constructs had AVEs over that level.

Discriminant validity may also be assessed comparing AVE and the variance shared between this construct and the others in the model. That is, the squared correlation between each pair of constructs. In this sense, Table 3 presents AVE scores on the main diagonal, together with squared correlations. As may be observed, AVE scores are always higher, indicating adequate discriminant validity.

Table 3. Discriminant validity

|	EI	PA	PBC	SN	SV	CV	SkillSet	Know Supp
EI	0.589							
PA	0.588	0.605						
PBC	0.352	0.269	0.562					
SN	0.154	0.197	0.140	0.704				
SV	0.108	0.106	0.101	0.042	0.700			
CV	0.145	0.119	0.077	0.031	0.151	0.640		
SkillSet	0.140	0.110	0.235	0.072	0.052	0.069	0.531	
KnowSupp	0.076	0.028	0.120	0.003	0.026	0.052	0.048	0.662

Results from the measurement model indicate constructs present adequate properties. Regarding the structural model, the main criterion to assess their adequacy is the coefficient of determination (R^2) of each endogenous latent variable (Henseler, Ringle and Sinkovics, 2009), which should exceed 0.10 (Falk and Miller, 1992). Figure 2 shows the variance explained (R^2) in the endogenous constructs and the path coefficients (β) for all significant relationships. Consistent with Chin (1998), bootstrapping (500 resamples) has been used to generate standard errors and t-statistics. Bootstrapping represents a non-parametric approach for estimating the accuracy of the PLS estimates. This allows us to assess the statistical significance of the path coefficients.

Figure 2 presents the results for the joint sample. To make it clearer, control variables are not shown. Instead, Table 4 presents the significant coefficients of those control variables on each of the constructs considered. In this sense, the country dummy has turned out to be very relevant, significantly affecting almost all constructs. Only EI is not affected by this variable.

This would mean that intentions are explained by the relevant constructs and any difference in intentions by country is explained by the differences in the other constructs. TPB assumes that exogenous factors operate on

intention through the key antecedents; these findings support this 'conduit' effect. Additionally, it may be said that the Spanish sub-sample has lower levels of all of the constructs (except SN), reinforcing the idea that GB is a more entrepreneurial country than Spain.

Figure 2. Results of SEM for joint sample
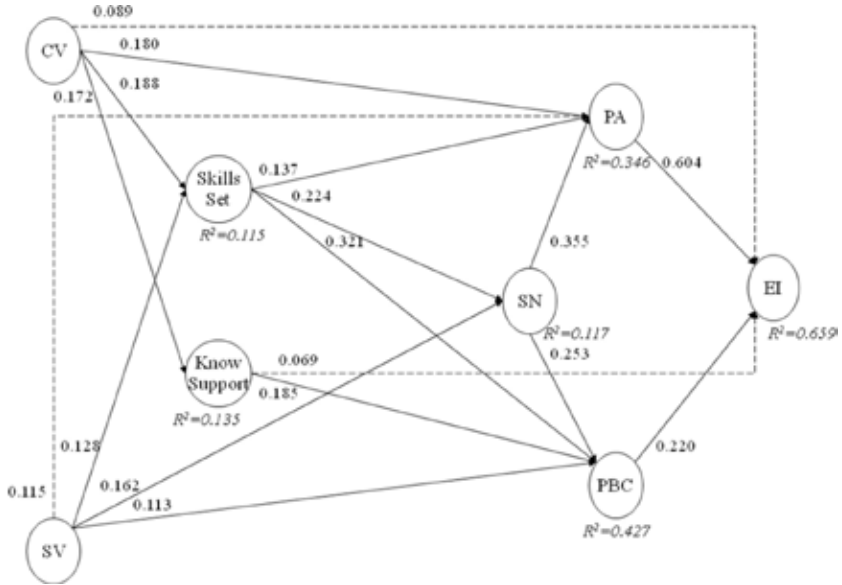
Note: Only significant (p < 0.05) paths shown. Dashed lines indicate non-hypothesized relationships.

Table 4. Significant control variables for the joint sample (p < 0.05)

	EI	PA	SN	PBC	Skills set	Knowldg. support	CV	SV
Age						0.100		
Gender		0.115		0.108	0.073			
Year Std	-0.041				0.091			
Role Model			0.093		0.067	0.129	0.157	0.096
LabExp			0.074		0.090			0.099
SelfEmpl Exp	0.052			0.078		0.078		
Spain		-0.126	0.075	-0.155	-0.083	-0.272	-0.156	-0.289

If we now compare the results from each sub-sample, we can see some relevant differences. Figure 3 presents them. Solid arrows represent path coefficients significant in both sub-samples. Meanwhile, dotted lines are used when the path was only significant in one sub-sample.

Figure 3. Comparative results of SEM for each sub-sample
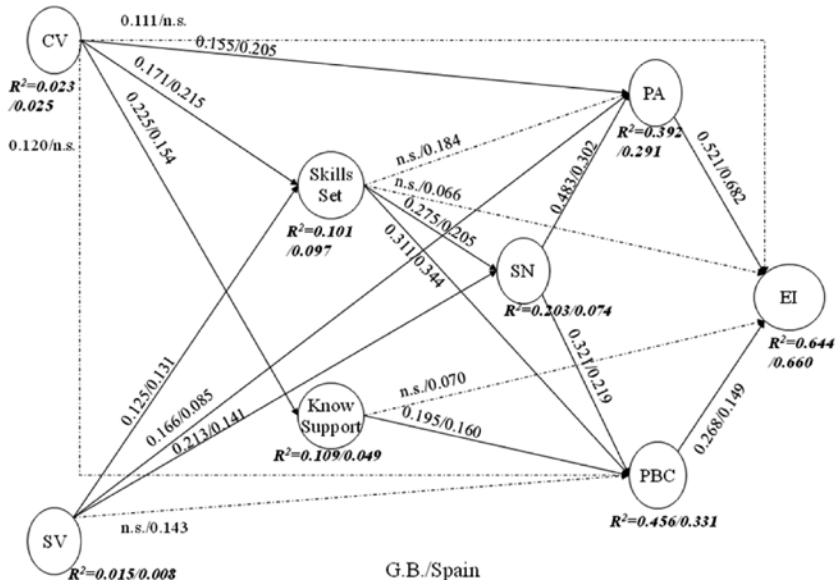
Note: Only significant (p < 0.05) paths shown. The first figure correspond the GB sample; the second to that of Spain. Dotted lines indicate relationships significant only in one sub-sample.

Finally, the multigroup analysis was carried out to test whether there were any statistically significant differences among both sub-samples with respect to path coefficients (Chin, 2000). In accordance with this procedure, a t-statistic has been calculated (equation 1 in Appendix 2), which follows a t-distribution with $m + n - 2$ degrees of freedom, Sp (equation 2 in Appendix 2) being the pooled estimator for the variance, m the number of cases of the British sample, n the number of cases of the sample from Spain, and SE the standard error for the path provided by PLS-Graph in the bootstrap test. Results are summarized in Table 5.

Table 5. Multigroup analysis

	β_{GB}	β_{Spain}	β_{GB} - β_{Spain}	t-student	Signif.
CV -> PA	0,155	0,205	-0,050	-0,7599	ns
CV -> SkillSet	0,171	0,215	-0,044	-0,5981	ns
CV -> KnowSupport	0,225	0,154	0,071	1,0204	ns
SV -> SkillSet	0,125	0,131	-0,006	-0,0894	ns
SV -> PA	0,166	0,085	0,081	1,3432	ns
SV -> SN	0,213	0,141	0,072	1,1444	ns
SkillSet -> SN	0,275	0,205	0,070	0,9696	ns
SkillSet -> PBC	0,311	0,344	-0,033	-0,5212	ns
KnowSupp -> PBC	0,195	0,160	0,035	0,6193	ns
SN -> PA	0,483	0,302	0,181	2,8833	**
SN -> PBC	0,321	0,219	0,102	1,5247	ns
PBC -> EI	0,268	0,149	0,119	2,3646	*
PA -> EI	0,521	0,682	-0,161	-3,5221	***

Note: ns = non-significant; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

It is now possible to draw some conclusions regarding structural relationships among the constructs. Overall, as can be seen from Figure 2, the core intention model for the joint sample is fully supported by the model. Thus, H1a through to H1d are confirmed, indicating that the influence of SN on intentions is indirect via PA and PBC, perhaps explaining the often-found weakness of SN as a predictor

The model explains 65% of the variance in entrepreneurial intention. This is very high given that most previous linear models tend to explain less than 40% of the variance in EI. The model also explains about 35% and 43% of the variance in PA and PBC, due to the significant contribution of SN.

Looking more closely at the results for each sub-sample, they also provide support for H1a, b, c and d. Consistent with the joint sample, the variance explained by the model is about the same (around 65%). Thus, adding support to applicability of the basic TPB model in terms intention formation being similar in the two countries examined.

As expected, with respect to the control variables (demographic and human capital), there are relatively few significant effects either on entrepreneurial intention, or on the antecedents of entrepreneurial intention. These effects were generally quite small (ranging from .04 to .10). The highest effects were of having a role model both on entrepreneurial environment knowledge (.13) and on a more positive valuation in the closer environment, such as family and friends (.15).

Hypotheses 2a and b concerned the relative influence of PA and PBC on EI for each of the two sub-samples would be different. PA did indeed exert a stronger effect on EI in the Spanish sub-sample (.682 vs. .521). This supports hypothesis H2a. In contrast, PBC exerted a stronger effect on EI in the British

sub-sample (.321 vs. .219). This supports hypothesis H2b. As shown in Table 5, both of these effects were significantly different, adding robustness to these findings.

Hypotheses 3a-d focused on the influence of social and closer valuation on core TPB elements of SN, PBC and PA. The results suggest a significant positive path between social valuation and SN for both the joint sample and two sub-samples, providing support for H3a. Regarding hypothesis H3b, there was also a significant positive path between social valuation and PBC for the joint sample and in one sub-sample (Spain) only, providing partial support to this hypothesis.

Hypothesis H3c suggested that closer valuation would influence PA. This was supported for both the joint sample and each sub-sample, providing support for H3c. Hypothesis 3d suggested that closer valuation would influence SN. However, this hypothesis is not confirmed for either the joint sample or the two sub-samples.

Hypothesis H4a-e concerned the paths from entrepreneurial skills to the TPB elements, and the influence of social and closer valuation on entrepreneurial skills. These hypotheses were largely confirmed as entrepreneurial skills were significant predictors of PA, SN and PBC respectively. This applied for the joint sample and the two sub-samples, with the exception of skills-PA (H4a) which was not significant in the British sub-sample. Apart from this partial exception, it is therefore confirmed that perceived entrepreneurial skills significantly influence the three motivational constructs in both the Spanish and British sub-samples. H4d and H4e were fully supported because social valuation and closer valuation were significant predictors of entrepreneurial skills.

Hypotheses H5a-c were only partially supported. H5c was significant, but H5a and H5b were not. Entrepreneurial environment knowledge only appeared to be a significant predictor of PBC. However, this finding was applicable to both the joint sample and each sub-sample.

Regarding hypotheses, H6a and b, again these were only partially supported. H6a (closer valuation would positively influence entrepreneurial environment knowledge) was supported, but H6b (social valuation would do the same) was not.

The valuation in the closer environment rather than society in general therefore appears to influence awareness of the entrepreneurial environment.

5. Discussion

The main aim of this paper was trying to draw together some of the strands in TPB-intention based models from a cross-cultural perspective. Social and skills perceptions, combined with entrepreneurial environment knowledge were investigated to see how they may affect the motivational antecedents of entrepreneurial intention. To a large extent, the majority of the hypotheses were supported and the model explained a highly satisfactory percentage of

the variance in entrepreneurial intention and its motivational antecedents. More specifically, the hypothesized model linkages received quite strong support. Most hypothesized relationships (H1a-d, H2a and H2b, H3a-c, H4a-e, H5c, and H6a) were significant. Importantly, these hypotheses were confirmed for both the joint sample and for each of the sub-samples, with only two exceptions (H3b, H4a).

Overall though, the model seems fairly robust because it was largely applicable to both British and Spanish sub-samples, that is, despite national differences between the two countries. Even when a limited number of hypotheses were not confirmed (H3d, H5a, H5b and H6b), they were similarly not confirmed in the joint sample nor for either of the national sub-samples. This at least indicates cross-cultural consistency. Intention was explained by an essentially consistent pattern of (motivational, social capital, skill set and environment knowledge) antecedents, suggesting that the formation of intentions and internal cognitive mechanisms is broadly comparable in the British and Spanish sub-samples. This provides solid support for the cross-cultural applicability of the entrepreneurial intention model.

The *general* picture obtained from these results suggests a certain path in the configuration of entrepreneurial intentions. As may be expected, closer and social valuations exert a direct effect on PA and SN. A more favourable environment towards entrepreneurship will contribute to people feeling more attracted and more supported to become entrepreneurs. But, additionally, perceived closer valuations of entrepreneurship (and social valuations with respect to skills) contribute to raising awareness, knowledge and skills which, in turn, also contribute to generating more favourable motivational antecedents and, through them, higher intention. This suggests that closer environment valuations of entrepreneurship contribute towards encouraging the acquisition of entrepreneurial skills, together with knowledge and awareness of the entrepreneurial career path, lending indirect support to the idea that graduates value informal more than formal support systems (Shapero and Sokol, 1982; Tackey and Perryman, 1999).

The inclusion of entrepreneurial environment knowledge into the model (H5 and H6) extended from previous research (Liñán, 2008). This construct thus made an important contribution. The effect of knowledge (and skills) is felt especially on PBC, as may be expected, and, to a lesser extent, on SN. Moreover, it is a significant predictor of PBC, regardless of country, suggesting a consistent effect of greater knowledge of entrepreneurial environment and support systems contributing to the sense of capacity of firm creation. In other words, they entrepreneurial knowledge directly contributes to feeling able to engage in entrepreneurial behaviour and perceiving controllability of that behaviour.

One of the strongest findings was the hypothesized cross-cultural differences were confirmed, suggesting the role of culture in explaining intention is likely to be quite important. In particular the relative effects of PA and PBC on EI were

significantly different. PA exerted a stronger effect on EI in the Spanish sub-sample. This is a notable finding and supports Bosma et al. (2008) and similar work (Uslay et al., 2002) that entrepreneurship is more strongly associated with personal satisfaction and enjoyment in Spain.

Conversely, the findings for H2b also support the Hofstede-based idea that PBC is a stronger predictor of EI in Britain than Spain. That is, the higher uncertainty avoidance in Spain suggests that entrepreneurship will be considered to be a more uncertain and ambiguous career route, and hence potentially culturally less acceptable and endorsed. We argued this could explain why feelings of entrepreneurial self-efficacy do not lead to higher start-up intentions. This, combined with a higher fear of failure in Spain (Bosma et al., 2008), could explain why PBC was a weaker predictor of EI in Spain.

Only two hypotheses are held in one sub-sample alone. Social valuation did significantly contribute to perceived behavioural control, albeit not in the British sub-sample (H3b). In a less entrepreneurial culture (that of Spain), perceiving low social valuations would tend to decrease PBC, possibly due to shared fear of failure and uncertainty avoidance beliefs. Additionally, possessing entrepreneurial skills does not increase PA in Britain (H4a). Given in this latter country there is a higher social valuation which directly increases PA, the role of skills may not be so relevant in this respect. Meanwhile in Spain (lower social valuation and weaker effect on PA) skills become important in increasing attraction towards entrepreneurship.

Similarly, when Spain was used as a dummy control variable in the joint-sample analysis, it turned out to be very influential, with significant paths to almost all constructs (except EI). The Spanish sub-sample had lower levels on most constructs, namely, PA, PBC, skills sets, entrepreneurial knowledge and closer/social valuations. This supports the idea that Britain, rather than Spain, was the more entrepreneurial country. Taken together with the relative effects of PA and PBC on EI in the two sub-samples, this suggests possible cultural and social nuances in the formation of intention from its antecedents.

Overall, however, the findings suggest a theory-driven explanation for McGrath & MacMillan's (1992) findings: Greater similarities than differences in the configuration of motivational antecedents of entrepreneurial intention that suggest perhaps a reasonable degree of convergence on the pre-founding cognitive processes of entrepreneurs in Britain and Spain.

5.1. LIMITATIONS AND IMPLICATIONS

Despite the strong support for the entrepreneurial intention model in this research, the findings should be treated tentatively because of the lack of previous cross-cultural work using British and Spanish samples. That said, the model and findings seem quite robust because they: (a) explain a very high percentage of the variance in entrepreneurial intention and also in PA and PBC; (b) were based on two countries which allowed for cross-cultural analysis; and

(c) statistical analysis (factor and structural analysis) was broadly equivalent in British and Spanish samples.

Taking the above into account, two main implications may be suggested. The first relates to the findings regarding the relative effects of PA and PBC on entrepreneurial intention in the British and Spanish sub-samples (H2). This has important implications for policy makers. There is an argument for entrepreneurship to receive greater positive social legitimation. Our results suggests that Spain is the less entrepreneurial country, with a relatively weaker effect between the critical motivational construct, perceived behavioural control, and entrepreneurial intention, despite higher levels of personal attraction to firm creation. This presents Spanish policy makers with an opportunity to take stock and address the issue of how entrepreneurship is culturally endorsed and approved in Spain, perhaps observing cultural practices in Britain. For example, how public policy in Spain, as well as Spanish universities, encourage the image of entrepreneurship and importantly facilitate positive entrepreneurial cognitions. That is, a higher social profile, positive image in the media and society, and more legal/tax reforms that facilitate entrepreneurship, to reinforce the social message that firm creation is an attractive, valued and feasible career option. This should help to reduce uncertainty avoidance about entrepreneurship (perceptions that this is an ambiguous and uncertain career path) and bolster PBC (greater sense of capacity), and hence raise levels of entrepreneurial intention and behaviour. All these are testable propositions that are worth exploring.

The second main implication concerns the effect of entrepreneurial environment knowledge over PBC. Given that this held, regardless of country, there are grounds to suggest that decision makers and entrepreneurship educators consider what they can do to enhance the level of knowledge and awareness students have about the entrepreneurial environment. This could take the form, for example, of raising awareness of students (perhaps at a university-wide level) of support bodies (e.g., Business Link and similar organizations, regional/local development agencies), training and support measures (e.g., technical aid, incubation centres) to develop quality businesses and access to preferential loans. Again this should help in sending out the right signals that becoming an entrepreneur is socially valued and enhance perceived capacity about firm creation.

6. Conclusions

This research has contributed towards the literature on entrepreneurial intention by developing and testing an entrepreneurial intention model in two countries, considering the role of culture, along with motivational and other constructs, especially, knowledge of the entrepreneurial environment. This more integrated and cross-cultural approach has received little attention in previous research.

The results support the majority of the hypotheses and the model broadly holds for the two different countries. The role of cultural and social nuances, do emerge, especially in the relative strength of effects between PA and PBC on entrepreneurial intention. Salient cultural beliefs associated with an entrepreneurial career appear to be at play, explaining why PA is more strongly linked to intention amongst our Spanish sample, and PBC is more strongly linked to intention amongst our British sample. Nonetheless, our results generally appear to suggest the cross-cultural applicability of the intention model, at least in terms of the three motivational antecedents of entrepreneurial intention. The relative importance of the antecedents of these motivational factors (social and skills perceptions, entrepreneurial environment knowledge) also appears to be broadly similar. Further research should be carried out to corroborate our findings in the same countries under investigation in this research and other culturally different countries to test the international applicability of the model.

We now have new, robust insights into what "lies beneath" the formation of entrepreneurial intentions that suggest useful research directions and also suggest practical implications for policy makers. As such, another important avenue of research will be to examine the link between entrepreneurial intention and behaviour in different countries, with a view to understanding the extent to which cultural differences influence this process.

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Appendix 1. Relevant Questionnaire Items

A. Indicate your level of agreement with the following statements about the Entrepreneurial Activity from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
A01.- Starting a firm and keeping it viable would be easy for me							
A02.- A career as an entrepreneur is totally unattractive to me							
A03.- My friends would approve of my decision to start a business							
A04.- I am ready to do anything to be an entrepreneur							
A05.- I believe I would be completely unable to start a business							
A06.- I will make every effort to start and run my own business							
A07.- I am able to control the creation process of a new business							
A08.- My immediate family would approve of my decision to start a business							
A09.- I have serious doubts about ever starting my own business							
A10.- If I had the opportunity and resources, I would love to start a business							
A11.- My colleagues would approve of my decision to start a business							
A12.- Amongst various options, I would rather be anything but an entrepreneur							
A13.- I am determined to create a business venture in the future							
A14.- If I tried to start a business, I would have a high chance of being successful							
A15.- Being an entrepreneur would give me great satisfaction							
A16.- It would be very difficult for me to develop a business idea							
A17.- My professional goal is to be an entrepreneur							
A18.- Being an entrepreneur implies more advantages than disadvantages to me							
A19.- I have a very low intention of ever starting a business							
A20.- I know all about the practical details needed to start a business							

C. Indicate your level of agreement with the following sentences about the values society put on entrepreneurship from 1 (total disagreement) to 7 (total agreement).

	1	2	3	4	5	6	7
C1.- My immediate family values entrepreneurial activity above other activities and careers							
C2.- The culture in my country is highly favourable towards entrepreneurial activity							
C3.- The entrepreneur's role in the economy is generally undervalued in my country							
C4.- My friends value entrepreneurial activity above other activities and careers							
C5.- Most people in my country consider it unacceptable to be an entrepreneur							
C6.- In my country, entrepreneurial activity is considered to be worthwhile, despite the risks							
C7.- My colleagues value entrepreneurial activity above other activities and careers							
C8.- It is commonly thought in my country that entrepreneurs take advantage of others							

D. How do you rate yourself on the following entrepreneurial abilities/skill sets? Indicate from 1 (no aptitude at all) to 7 (very high aptitude).

	1	2	3	4	5	6	7
D1.- Recognition of opportunity							
D2.- Creativity							
D3.- Problem solving skills							
D4.- Leadership and communication skills							
D5.- Development of new products and services							
D6.- Networking skills, and making professional contacts							

6.- Indicate your level of knowledge about business associations, support bodies and other sources of assistance for entrepreneurs from 1 (no knowledge) to 7 (complete knowledge).

	1	2	3	4	5	6	7
- Private associations (e.g. Chamber of Trade, Institute of Directors, etc.)							
- Public support bodies (e.g. Business Link, South East England Development Agency (SEEDA) etc.)							
- Specific training for young entrepreneurs							
- Loans in specially favourable terms							
- Technical aid for business start-ups							
- Business centres							

APPENDIX 2. MULTIGROUP ANALYSIS

$$t \ll \frac{Path_{GB} \tilde{} Path_{Spain}}{Spx\sqrt{\frac{1}{m_.} \tilde{} \frac{1}{n}}} \frown t(m_. \quad \tilde{n} \quad 2)$$

Equation 1. T-statistic with m + n - 2 degrees of freedom

$$Sp \ll \sqrt{\frac{(\tilde{m} \quad 1)^2}{m_. \quad \tilde{n} \quad 2} xSE^2_{GB.} \quad \frac{(\tilde{n} \quad 1)^2}{m_. \quad \tilde{n} \quad 2} xSE^2_{Spain}}$$

Equation 2. Pooled estimator for the variance