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Testing Alternative Measures of Subjective Norms in Entrepreneurial Intention Models

Abstract

Although the Theory of Planned Behavior can be applied to entrepreneurship, study outcomes concerning the role of the subjective norm construct vary substantially. Using data from nine countries exhibiting substantial dissimilarities in history, culture, economy and population size, this study investigates two critical topics held responsible for the conflicting outcomes in research for entrepreneurial intention: (i) measurement issues and (ii) possible indirect influences between the motivational antecedents of intention. It also, at the same time, takes into account the cultural and macroeconomic environment. Regarding the competing methods to measure subjective norms, linear regression and structural equation both suggest that the frequently-applied product of normative beliefs and motivation to comply is not, in the case of entrepreneurial behavior, the best option. A single multi-item subjective-norm measure offers better results, since this type of measurement significantly improves the performance of the subjective norm component. Furthermore, although structural equation modeling reveals a good fit of the original Theory of Planned Behavior model, the internal consistency and explanatory capacity of the constructs is higher when the modified model is tested. This latter model takes into account the indirect influences of subjective norms on attitudes towards entrepreneurship and on perceived behavioral control, suggesting that social pressure would affect personal preferences. These results should serve as a guide for future theoretical and empirical development and put existing study outcomes into perspective.

Author Keywords: Entrepreneurial intention, Theory of planned behavior, Subjective norm, Measurement, Structural equation modeling

Introduction

Research on venture creation and on what drives the decision to become an entrepreneur is an eclectic line of work that covers a broad range of subjects. The focus of this field of research has gone through dramatic changes over the past decades. While investigation at the individual level has continued to be at the centre of entrepreneurship research, one of the major developments has been a shift from the traditional focus on the psychological characteristics and personality traits, toward individual behavior and cognitive aspects (Baum & Locke, 2004; Brandstatter, 1997).

Gartner (1989) emphasized the need to study individuals before the entrepreneurial event, in order to overcome the disadvantages of ex-post rationalization trends and, thus, to develop good predictors of entrepreneurial behavior. However, one of the major problems of ex-ante approaches in entrepreneurship research is the unpredictable and usually long-time lag between the measurement and the actual observation of the behavior (Reynolds, 1997). Creating a business is a complex decision process, taking place over a certain span of time (Bird, 1992) and is largely under volitional control.

Investigating entrepreneurial intentions is a frequently applied method in response to this time-delay problem. Entrepreneurial intentions can be seen as the initial step towards launching a business (S. H. Lee & Wong, 2004) and, in line with this, intentions have been found to be the single best predictor of the subsequent entrepreneurial behavior (L. Kolvereid, 1996; Krueger, 2003; Krueger, Reilly, & Carsrud, 2000).

The present paper is based on Ajzen's Theory of Planned Behavior ("TPB"), one of the most widely used theoretical approaches to understand and foresee a behavior by investigating intentions. Since its inception, a substantial quantity of studies in a wide range

of domains have applied it to various kinds of behaviors (for an online list of references, see Ajzen, 2010) and an important amount of them have provided broad support for this theory. Entrepreneurship represents one of those behaviors for which the applicability of the TPB has been shown (Autio, Keeley, Klofsten, Parker, & Hay, 2001; L. Kolvereid, 1996), giving the TPB a highly influential role in entrepreneurship research during the last decade. Said theory states that the attitudes towards starting-up (i.e. the individual valuation of the possible outcomes of setting up a venture), the subjective norms (i.e. the perceived social pressure to create a venture or not to start-up) and the perceived behavioral control (i.e. the perceived ease or difficulty of venture creation) are predicting intentions.

Although empirical studies based on the TPB are increasingly popular, comparisons between these analyses nevertheless remain difficult. These difficulties especially concern the *subjective norm* construct, with:

(1) The multiple ways applied to measure the construct:

While some previous studies in entrepreneurship were using the products of the ‘normative beliefs’ with the ‘motivations to comply’ (L. Kolvereid, 1996; Kolvereid & Isaksen, 2006), others used simplified measures (Autio et al., 2001; Krueger et al., 2000). Other researchers, in turn, simply omitted the subjective norm completely (Peterman & Kennedy, 2003).

(2) The varying role played by the subjective norm in the model:

Study outcomes concerning the role of the subjective norm in the Theory of Planned Behavior have also been varying substantially. Some meta-analyses (Armitage & Conner, 2001) generally accredited the weak predictive power of the subjective norm in the Theory of Planned Behavior. In the case of entrepreneurship, some researchers (Liñán & Chen, 2009)

argued that this weakness would be explained by the presence of interactions and indirect effects of the subjective norms on the entrepreneurial intention.

(3) The differing environments of the study samples:

It has also been argued that the subjective norm reflects the perception the individual has of the prevailing values in its environment. As such, it may be affected by the predominant cultural characteristics of the surrounding society (Ajzen, 1991; Davidsson & Honig, 2003; De Carolis & Saporito, 2006). Cultural norms affect the start-up intention (Brännback, Carsrud, Krueger, & Elfving, 2008). When judging behaviors, the macroeconomic environment is also considered. The impacts of cultural and societal variations at the individual level, however, have largely been ignored, and cross-cultural analyses are still rare.

There therefore is a need for research to clarify these discrepancies. While analyses based on intentions significantly increased in number during the last decade, a lot remains to be done in order to overcome contradictions and to achieve a better comprehension of the factors influencing entrepreneurial awareness.

In line with these needs, this paper will therefore contribute to a better understanding of three issues: (i) the operationalisation, (ii) the role of the subjective norm and (iii) environmental aspects.

First, some of the current measurement practices will be compared, using not simply one but, rather, two different models (an original TPB and a modified TPB) and, by doing so, taking into account possible roles of the subjective norm construct in the Theory of Planned Behavior model applied to the entrepreneurial behavior. This study will thus add to a better

understanding of the cognitive mechanisms acting in the configuration of entrepreneurial intention.

Second, in order to address the environmental aspects, a cross-national study is considered, in which nine culturally different countries are analyzed. The selected countries exhibit substantial dissimilarities in history, culture, economy and population size: European Union countries (Germany, the Netherlands, Spain), a prosperous European non-EU country (Norway), countries linked to each other by a common past in the British Empire (Australia, Canada), transition economies (Romania, Russia) and a representative of emerging Latin America (Mexico).

The present paper is structured as follows: following this introduction, the second section will reconsider previous contributions and introduce the hypotheses. A third section will present some methodological issues, and will be followed by the actual empirical analyses. The final two sections will cope, respectively, with the discussion and the conclusion.

Theoretical Background

The Subjective Norm and the Entrepreneurial Intention Model

According to Ajzen (1991), the relative importance of the different motivational antecedents – attitudes toward the behavior, the subjective norm and perceived behavioral control – in predicting intention varies. Depending on the type of behavior and the nature of the situation, one or two intentional antecedents might dominate over the other(s) when predicting the intention. Sparks, Hedderley, & Shepherd (1992), for instance, found evidence for the negative relationship between the variability of attitudes and the perceived control, and thus improved the relative predictive power of attitudes.

Although the TPB can be applied to entrepreneurial behavior (Autio et al., 2001; Lars Kolvereid, 1996), there are conflicting outcomes between the relative contribution of the attitudes, the subjective norms and the perceived behavioral control. Generally, three critical issues have been held responsible for the conflicting outcomes in research on entrepreneurial intention.

The first of them may be linked to measurement issues (Chandler & Lyon, 2001) with respect to the subjective norm, for which contradictions have been especially striking. In this sense, the origin of entrepreneurship is set in social processes (Katz, 1992) and individual discrepancies in sociability may boost the predictive power of the subjective norm (Trafimow & Finlay, 1996). However, many studies excluded the subjective norm from their analyses (Peterman & Kennedy, 2003). Therefore, this factor -which reflects a person's perceived social pressure to perform a specific behavior or not- demands more attention.

Ajzen (2005) defined subjective norms as the sum of the products of the 'normative beliefs' of individuals about the perceived opinion of reference people (e.g., family, closest

friends, other important people), with the ‘motivations to comply’ (the extent to which the individual cares about those perceived opinions). Nevertheless, significant dissimilarities can be found in the quantification of this cognitive variable in entrepreneurship research.

Amongst those entrepreneurship scholars including subjective norm in their analyses, some of them followed Ajzen’s approach (L. Kolvereid, 1996; Kolvereid & Isaksen, 2006; Tkatchev & Kolvereid, 1999; van Gelderen et al., 2008). Others chose simplified measures of subjective norms, reflecting for instance the environment of students (Autio et al., 2001; Liñán & Chen, 2009) or measuring on a 0 - 100 scale the opinion of the respondents on whether their family and friends would want them to start up (Krueger et al., 2000).

In studies using simplified items, the subjective norm tends to be non-significant, while those applying the more complex measure ‘subjective norms x motivations to comply’ confirmed that the subjective norm significantly explains venturing intention. In their meta-analysis, Armitage & Conner (2001) considered the kind of subjective norm measures that were applied (multiple items, single item, normative beliefs x motivations to comply, social support, normative beliefs and other) as a moderating variable of the relationship between the subjective norm and intentions. Multiple item measures of normative beliefs scored generally better than ‘normative beliefs x motivations to comply’ measures.

The second critical issue relates to the possible existence of indirect influences between the motivational antecedents of entrepreneurial intention. Ajzen (1991) himself indicated that the specific pattern of relationships between the three motivational antecedents had to be established for every specific behavior. In particular, there are arguments to consider a different pattern. In this sense, the literature on social capital stresses the role of networks in transmitting values and norms which, in turn, would affect motivations (Casson & Della Giusta, 2007; Naphiet & Ghoshal, 1998).

Thus, the subjective norm, to the extent that it reflects perceived values in the individual's environment, may be considered as a form of cognitive social capital (De Carolis & Saporito, 2006; R. Lee & Jones, 2008). Therefore, these values –received from others around- may partly determine personal attitude and perceived behavioral control (Liñán & Santos, 2007).

Since this line of reasoning may be contradictory with the simpler initial TPB model, a comparison of both alternatives may be justified. Consequently, this study will try to gain a better understanding of these indirect effects. Two versions of the intention model will be taken into consideration.

- a) Model A is the original Theory of Planned Behavior. This model includes possible impacts of personal attitudes (PA), subjective norms (SN) and perceived behavioral control (PBC) on intention, but also considers the correlations between each of the three antecedents of intention.
- b) Model B is a modified model in which subjective norms (SN) explain personal attitude (PA) and perceived behavioral control (PBC), whereas the three motivational constructs explain the entrepreneurial intention.

Based on the literature, we therefore pose this initial set of hypotheses about the alternative models and measures to test the effect of subjective norm on the entrepreneurial intention:

H1a. Subjective norms have a positive direct impact on entrepreneurial intentions (models A and B).

H1b. Subjective norms positively influence attitudes towards entrepreneurship and perceived behavioral control (model B).

H1c. The simple multi-item subjective norm measure is superior to the measure combining normative beliefs with the motivations to comply (models A and B).

The third critical point that potentially explains the differences between the results of studies on entrepreneurial intention is linked to the environment of their respective samples.

Subjective Norms and Contextual Aspects

Although subjectivity can be considered as a collective phenomenon – a common collection of global and non domain-specific psychological evaluations of behavior, norms, particular perceptions of specific attributes of phenomena– it has so far mainly been discussed from an individualistic perspective (Casson, 2003). From this individualistic point of view, values, norms and beliefs play a key role in the formation of intentions (Ajzen, 2005). Individuals hold certain beliefs in the outcomes of performing a specific behavior and evaluate these results; they also hold beliefs about the opinions of others and about their own capabilities. Consequently, their decisions about behavior are based on these perceptions and beliefs (Shaver & Scott, 1991).

Individuals do consider their environment when judging and evaluating behaviors and opportunities: an environment that encompasses both objective (such as macroeconomic indicators or regulatory frameworks) and subjective factors (such as the cultural background or ongoing political debates). This has been argued, among others, by Chell & Baines (2000), who showed that venturing decisions vary because of the environment in which they are embedded in, or Kristiansen (2002), who also showed that contextual factors influence entrepreneurial intention (Kristiansen & Indarti, 2004).

Van Gelderen et al. (2008) found that the fear of financial insecurity negatively affects the development of entrepreneurial intention. The economic situation at the national level, assessed by factors such as GDP per capita, general unemployment rates, or social benefits -which should themselves be correlated to the fear of financial insecurity– would therefore be expected to partly explain the level of start-up intention in the population of that nation. Besides the macroeconomic indicators, burdensome regulations, such as business registration, have also been found to hamper venturing (Bruhn, 2008; Kaplan, Piedra, & Seira, 2007; Prantl & Spitz-Oener, 2009).

Regarding the socioeconomic variables, income level, labor conditions or business entry regulations may all affect individual perceptions about entrepreneurial activity. The first of these factors is most often measured through GDP per capita. This is one of the most prominent economic variables in research literature dealing with the drivers of entrepreneurial activities. With marginal exceptions (Ovaska & Sobel, 2004), empirical outcomes support the notion of GDP per capita being correlated to start-up activities.

Some studies (Noorderhaven, Thurik, Wennekers, & van Stel, 2004) provided evidence of low levels of total entrepreneurial activity in countries with a fairly high GDP per capita, i.e., with a rather wealthy population. Others (Carree & Thurik, 2003) reported the contrary, showing a positive correlation between GDP per capita and levels of self-employment. Recent findings (van Stel, Wennekers, Turik, Reynolds, & de Wit, 2003; Verheul, van Stel, & Thurik, 2006) harmonize these conflicting outcomes by suggesting a U-shaped relationship. Thus, entrepreneurial activity decreases with income level up to a point, from which a small positive relationship is found.

A second very relevant macroeconomic factor is the unemployment rate, which is most often used as an indicator of labor conditions or opportunity costs of starting-up

(Reynolds, Storey, & Westhead, 1994). Several research works have approached this relationship from different perspectives. In this way, at the aggregate level, Noorderhaven et al. (2004) put forward the ‘entrepreneurial’ effect, suggesting that entrepreneurship reduces unemployment. Meanwhile, Parker & Robson (2004) found a negative impact of high unemployment benefits on self-employment. Thurik, Carree, van Stel, & Audretsch (2008) confirmed that in this two-way causation, the ‘entrepreneurial’ effect dominates the unemployment push. On the other hand, at the individual level, unemployed persons: (i) do not enjoy the advantages of a paid job and the related relative financial security, and (ii) they also develop a less critical attitude towards the likely losses of starting-up. Ritsilä & Tervo (2002) suggested that, for unemployed individuals, the positive perception of the potential gains from setting up a business dominated the possible losses of such an activity.

Nevertheless, in the present study, the effect of the national-level unemployment rate on each individual’s perception is considered. Higher levels of unemployment may indicate a reduced demand due to an economic downturn, which would mean less expected chances of success and profits, making individuals feel less attracted towards start-up and seeing less economic opportunities (Reynolds et al., 1994). In this sense, the unemployment rate is more directly linked to the relative entry and exit rates, and not to the aggregate self-employment stock (Hamilton, 1989; Meager, 1992). Therefore, aggregate unemployment may be expected to negatively influence the entrepreneurial intention of individuals.

The third objective factor that will be subject of this analysis is business entry regulations. This factor significantly distinguishes countries. With a few exceptions, Civil Law countries for instance tend to regulate business entry more heavily than their Common Law equivalents (Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2002). The link between entry regulation and entrepreneurship has received frequent attention. Findings suggest the

existence of a strong relationship between entry regulations and the actual entry rates (Djankov, 2009). This line of research resulted in a popularity of reforms aiming to facilitate start-up regulations. The World Bank's most recent Doing Business report (2010) points out that, in 2008/2009, 61 economies recognized the importance of reducing entry barriers and introduced reforms to make it easier to start a venture. During the period since the first publication of the Doing Business report in 2003, three-quarters of the economies have implemented such changes in regulations. Important correlated sub-categories of business entry are time needed to register a business and procedures needed to complete for registration. Research, such as Kaplan et al. (2007) or Ciccone & Papaioannou (2007), confirms a negative correlation between time to register and business entry in different markets.

Therefore, the following set of hypotheses may be formulated regarding the influence of socioeconomic variables on entrepreneurial intention and the subjective norm:

H2a. The GDP per capita is associated with the entrepreneurial intention, while the unemployment rate and the days to start-up have a negative impact on entrepreneurial intention.

H2b. The GDP per capita is associated with the subjective norms, while the unemployment rate and the days to start-up have a negative impact on subjective norms.

Additionally, authors such as Arenius & Minniti (2005) emphasize the coexistence of perceptual factors and macroeconomic environment as highly-influential variables for entrepreneurial decisions. An important subjective environmental factor is culture: a set of values characteristic to a particular society or group (Mueller & Thomas, 2001).

The socio-cultural environment moderates the exploitation of an opportunity through the desirability – thus through attitudes and subjective norms – of venturing and through the evaluation of these activities (Shane, 2003). Thus, besides the objective environmental context, culture fosters the country effect as well. It motivates members of a community to engage in activities that may not be appropriate or evident in other countries or societies (George & Zahra, 2002). While favorable attitudes towards entrepreneurial profit-seeking in a society, for instance, encourage the willingness to choose such a career path (Casson, 1995), negative attitudes have the opposite effect (Gnyawali & Fogel, 1994).

Analyzing data from the International Social Survey, based on the data of 23 countries, Blanchflower, Oswald, & Stutzer (2001) confirmed clear country differences in actual self-employment rates and in national self-employment preferences. Minniti & Bygrave (1999) blamed this cultural effect on the fact that individual behavior is influenced by the opinion of others, thus by subjective norms.

Nevertheless, culture is clearly a complex and multidimensional variable that is not easy to define, let alone to measure. Different approaches have been proposed. In particular, Hofstede's (1980) five dimensions of culture have been extensively used in entrepreneurship research (Hayton, George, & Zahra, 2002; Mcgrath & MacMillan, 1992; Mitchell, Smith, Seawright, & Morse, 2000; Mueller & Thomas, 2001; Mueller, Thomas, & Jaeger, 2002; Shane, Kolvereid, & Westhead, 1991). In this sense, two broad hypotheses will be formulated regarding the effect of cultural dimensions:

H3a. Hofstede's cultural dimensions impact on entrepreneurial intentions.

H3b. Hofstede's cultural dimensions impact on subjective norms.

Methodology

Participants

The subjects in our study were 1281 business students enrolled in either a graduate business program or in their last year of a bachelor program, across 9 countries (N size in parentheses): Australia (79), Canada (96), Germany (137), the Netherlands (121), Norway (112), Mexico (90), Romania (115), Russia (235) and Spain (296). The questionnaire was handed out between January and June 2007. The average age of respondents is 23 years. Half of the respondents (50%) are females. Over 43% of respondents report that their parents have been self-employed. Thirty-four percent of respondents are currently working at least part-time and 13% are presently involved in start-up activities. Data for this study are part of a joint multinational effort by the International Entrepreneurial Intention Research Group (IEIRG) and have been used before, among others, by Griffiths, Kickul & Carsrud (2009) or (Iakovleva, Kolvereid, & Stephan, 2011).

Measures

Individual-level information was collected using the IEIRG scales, which have already been validated. Entrepreneurial Intention has been measured through a 7-item scale (Griffiths et al., 2009). The 5-item scale for PA has been taken from Liñán and Chen (2009). PBC was measured through a 4-item scale built from Ajzen (2002) referring to the measurement of PBC of behaviour in general. A previous version of this PBC measure was already applied by Tkatchev & Kolvereid (1999). The subjective norm is measured through a 3-item scale taken from Kolvereid (1996). Similarly, the motivations to comply with these subjective norms have also been taken from Kolvereid (1996). These measures

have been validated by (Iakovleva et al., 2011), showing adequate reliability (Cronbach's alphas over 0.8 for all measures except PBC, for which it was 0.71).

Regarding national-level variables, the main economic indicators have been taken from the World Development Indicators on-line database (by the World Bank): Gross National Income per capita (GNIpc) at purchasing power parity current US\$ (PPP\$, 2006) and time required to start a business (number of days, 2006). Additionally, the unemployment rate in 2006 was obtained from the International Labor Organization statistical database. Cultural dimensions were taken from Hofstede (2003).

Results

First, a stepwise linear regression analysis was performed, introducing subsequent blocks of variables, as shown in Table 1. The economic variables (Model 2), the cultural variables (Model 3), intentional antecedents - attitudes and PBC - (Model 4) were successively added to the Model 1 that includes the gender control variable. Finally, the two measures of the subjective norm were introduced alternatively (Model 5 and Model 6). Models 2 and 3 are thus dealing with the hypotheses 2 and 3, while models 5 and 6 are used to test the relative contribution of each of the competing measures of subjective norm to explaining the entrepreneurial intentions (hypotheses 1a, 1b and 1c).

Multicollinearity tests were performed and this was found to be present. For this reason, some of the control variables had to be left out. The SPSS 17.0 software has been used for the analysis.

Several authors have suggested the presence of complex inter-relationships among the variables in the model, starting from Ajzen (1991) himself. Therefore, Structural Equation Modeling ("SEM") is a more adequate technique to be used in this case. SEM also allows the

comparison of Ajzen's original model with the modified version of the TPB by Liñán and Chen (2009), which has also been tested in the present study.

Second, thus, following the regression, a more rigorous and adequate comparison - a structural equation analysis - has been performed using AMOS 17.0. This covariance-based software is quite similar to LISREL and others. The main reason for choosing it was its integration with SPSS. The figures 1 and 2 present the results of the SEM. More specifically, figure 1 shows the original TPB with the two alternative measures of subjective norm, while figure 2 presents the results for the modified TPB with the alternative measures of the subjective norms, thus dealing again with hypotheses 1a, 1b and 1c.

Finally, the path coefficients of the control variables for the original and for the modified intention models are shown in the tables A1 and A2.

Results of the Linear Regression

Model 1 includes gender as a control variable. Results indicate that being male increases the start-up intention, but explanatory power is very limited (only 2.1% of explained variance). Originally, age was also included, but as new regressors were added, it presented collinearity with the intercept, and was not significant. Therefore, it was removed from the analysis. Since the age span of the respondents is quite narrow, it is not surprising that no statistically-significant relationship is found.

In Model 2 and 3 economic and cultural variables have been successively added. Nevertheless, since only 9 countries were included in the analysis, national variables presented a considerable degree of multicollinearity. Therefore, some of them had to be removed, until the problem was solved in all 6 models. As a result, only three economic variables (the GNI per capita, the unemployment level, and the days to start-up) and two

cultural dimensions (Individualism and Masculinity) were tested. A larger number of countries would be needed to test the remaining variables or, alternatively, individual level data would be necessary.

The inclusion of economic variables raises R^2 to 0.157. As may be expected, lower unemployment and fewer days required to start-up result in higher entrepreneurial intention, although this latter variable is not significant in Model 2 (and only marginally in Model 6). Notably, the larger negative effect is that of GNIpc. This is consistent with the fact that three middle-income economies (Mexico, Romania and Russia, with GNIpc below 14000 PPP\$) are included together with six high-income ones (with values above 28000 PPP\$). The former group presents considerably-higher intention levels. On the contrary, the effect of cultural variables, though significant, is very small (the increase in R^2 is only 0.006). In particular, lower intention levels characterize countries with an individualistic culture. This may be explained, the same as with the income level, by the fact that higher income countries are, in general, more individualistic than the rest. In this sense, the inclusion of cultural variables lowers the beta coefficient of GNIpc, suggesting this relationship. Overall, results from models 3 and 4 yield support for hypotheses **H2** and **H3**.

INSERT TABLE 1 ABOUT HERE

Model 4 includes individual-level motivational variables (PA and PBC). Variance explained increases substantially to 0.651. At the same time, the coefficients of other variables from Model 3 drop a great deal, which would be indicating the presence of some interaction and/or indirect effects. That is, demographic, socioeconomic and cultural

variables affect motivations and, through them, intention. In this case, Structural Equation Models are a more adequate instrument to be used (see below). In particular, once PA and PBC are included, individualism becomes non-significant.

Models 5 and 6 are a direct comparison of the alternative measures proposed for the subjective norm. The beta coefficient for the SNxMC (subjective norms pondered by their respective motives to comply, Model 5) is 0.126, significantly increasing R^2 by 0.012. Alternatively, when the simple SN measure is included (Model 6), the resulting beta coefficient is 0.204, which implies a larger increase in R^2 of 0.025. Besides, the coefficients for other variables are essentially similar. Therefore, although both coefficients are significant, the contribution of the simple SN measure is greater. Support is thus found for hypotheses **H1a** and **H1c**.

In particular, the coefficients for PA and PBC are notably lower when an SN measure is included. A first interpretation of this result would be that the path coefficients of PA and PBC in Model 4 would be reflecting not only their own effect on intention, but also the indirect effect of SN. Therefore, as was indicated in the theory section, there are arguments to suggest a more complex pattern of relationships between the motivational antecedents of intention, with the probable existence of indirect and interaction effects between them. This is in accordance with hypothesis **H1b**. For this reason, structural equations models have been used to achieve a more rigorous comparison of the two alternative SN measures proposed in this study. Figures 1 and 2 summarize the results.

Results of the Structural Equations

The test of the original TPB model proposed by Ajzen (1991) is presented in Figure 1. The analysis has been performed including control variables (gender, national economic

variables and cultural dimensions) but, to preserve the clarity of the presentation, only the relationships between the central TPB constructs are presented in the Figure. In the appendix, Table A1 includes all other path coefficients between control variables and the original TPB-model constructs. For every construct, indicator or path relationship, the first figure corresponds to the model with the SNxMC measure, whereas the second one relates to the model with the SN-simple measure.

INSERT FIGURE 1 ABOUT HERE

As shown in Figure 1, fit indexes are similar (comparative fit index, CFI, goodness of fit index, GFI, or root mean squared error of approximation, RMSEA) for both models. Nevertheless, when the simple SN measure is used, squared multiple correlations of the SN manifest indicators are higher (0.71 for SN1, 0.80 for SN2 and 0.92 for SN3, instead of 0.67, 0.69 and 0.81 for the SNxMC measures, respectively), and standardized regression weights are also higher (0.84, 0.90 and 0.96, instead of 0.82, 0.83 and 0.90 for the SNxMC measures). Thus, internal consistency is greater for the SN-simple measure. Similarly, correlations among latent motivational antecedents are higher (0.61 for the SN-PA measure and 0.47 for the SN-PBC measure). Finally, the path coefficient from SN to Entrepreneurial Intention is also higher (0.14, instead of 0.09 for the SNxMC measure). Hypotheses **H1a** and **H1c** are supported in model A (original TPB model).

Model B, a modified version of the TPB model (Liñán & Chen, 2009), was also tested. Results are presented in Figure 2. As before, only central constructs are shown, while

Table A2 presents the corresponding path coefficients from control variables on the modified TPB-model constructs.

INSERT FIGURE 2 ABOUT HERE

In this modified version, subjective norm is hypothesized to explain PA and PBC (H1b). Results for this model are also satisfactory in terms of model fit and path coefficients. As in the previous model, the simple SN measure seems to offer slightly better results both in terms of the internal consistency of the construct (in relation to its indicators) and also in its explanatory capacity with regards to attitude (a path coefficient of 0.60 for the simple SN measure instead of 0.50 for the SNxMC measure), to PBC (0.47 instead of 0.37) and even to entrepreneurial intention (0.14 instead of 0.08). Besides, variance explained for attitude and PBC is clearly higher when the SN-simple measure is used, reinforcing the support for **H1b**. Meanwhile, **H1a** and **H1c** are also supported in model B.

Finally, regarding the control variables, their coefficients are the same for both structural models and for each of the alternative SN measures (Tables A1 and A2), indicating that the effect of these variables is not affected by the way in which SN is operationalized. Overall, hypotheses **H2a** and **H2b** are supported, since higher income and unemployment result in lower intention. The negative effect of the unemployment rate on the subjective norm is only found for the SN-simple measure, whereas in the case of income it is found for both measures. The days-to-startup negative effect on intention is only indirect, through PBC. On the other hand, cultural variables exert a weak effect on intentions and the subjective norm (but again, the effect is greater for the SN-simple measure). Countries where

masculinity is higher tend to exhibit lower intention among their individuals while, at the same time, this cultural dimension is also associated with a more favorable subjective norm. Alternatively, individualism is associated with a less favorable PA.

Discussion

The originality of this study lies in its attempt to determine the specific role of subjective norms in a setting of a nine-country sample. In this context, two competing measures of the subjective norm have been tested on two alternative intention-model typologies. Until now, the application of intention models to entrepreneurial behavior has resulted in conflicting outcomes concerning subjective norms, to the extreme of simply neglecting this intentional antecedent completely, despite recent evidence of its significant contribution in multi-country analyses (Engle et al., 2010). The present study sheds some light on this problem.

The results clearly indicate that studies neglecting subjective norms (Peterman & Kennedy, 2003), indeed fail to take into account a significant parameter. The subjective norm has a positive effect not only directly on entrepreneurial intention (H1a), but also on PBC and PA towards venture creation (H1b). If SN is not explicitly included in the analysis, the coefficients of PA and PBC on intention will be biased, as is derived from the results in Table 1.

Based on the support found for Hypotheses H1a and, especially, H1b, it may be concluded that a modified TPB model (in which the subjective norm explains PA and PBC) offers a better fit than the traditional one. Of course, further investigation is needed before this statement is confirmed. In essence, though, what it means is that the opinion of others

about a behavior has a direct effect on personal attitudinal and control beliefs, and this relationship is unidirectional, and not bidirectional as traditionally assumed.

Regarding the competing subjective norm measures, from the results of the linear regression models, it may be argued that a simple measure of the subjective norm offers a better fit than a more elaborated measure based on a product of the subjective norm and motivation to comply. Further, the results from the structural model confirmed those of the linear regression, allowing the conclusion that the type of measurement used has a significant impact on the performance of the subjective norm component.

Therefore, it may be concluded that a multiple-item simple subjective norm measure, when compared to subjective norms pondered with the motivation to comply, should be deemed superior in at least three aspects: parsimony, internal consistency and explanatory capacity. That is, the SN simple measure is more parsimonious, it has a higher Cronbach's alpha, and a higher and more significant path coefficient, together with a better overall model fit. This is in line with indications derived from general meta-analyses of the theory of planned behavior (Armitage & Conner, 2001). This superiority of the simple measure still holds when taking into account the more complex configuration of relationships between the antecedents of entrepreneurial intention (model B) and comparing this more thoroughly by means of structural equations.

The results regarding socioeconomic variables seem to confirm those of previous studies. According to the literature, individuals in high-income countries should present a lower start-up intention but, mainly, because of lower necessity motivations. In these countries there will be less people willing to become entrepreneurs, but a higher proportion of them will do so because of an opportunity motivation (van Stel et al., 2003).

Nevertheless, since this is one of the first research works in which the effect of those variables on the motivational antecedents of intention has been tested, some new interpretations may be proposed. Thus, socioeconomic variables affect all antecedents but, especially perceived control. In this sense, if the market is declining (higher unemployment) or regulation is restrictive (more days to start-up), less people feel able to successfully start a venture.

The strongest relationships, though, were established between national per capita income and both entrepreneurial intention and subjective norms. While the first of these relationships has already been well documented, the second is notably under-researched. It would be indicating that a lower wealth level of the population not only directly impacts the personal “cost-benefits” analysis of the potential entrepreneur, but also acts indirectly through the perceived opinions of those with close ties, who are probably doing the same kind of analysis themselves.

The results also suggest that cultural variables exert only a modest effect on entrepreneurial intentions and on subjective norms (H3a and H3b). This could be an indication that behind the intuitively often-expected cultural impact on entrepreneurial intention, what actually are hidden are more objective factors, such as population wealth. On this issue, however, the data set has its limitations, as the range of cultures that were tested, even if broad in some aspects, does not really include the more extreme cases. Additional research might here be desirable. Overall, while some of the cultural dimensions weakly influence attitudes, others do so with subjective norms. Meanwhile, none of them has any effect on perceived control. It may be the case that people determine their perceived control based on relatively objective factors (or, better said, their perceptions about the actual socioeconomic situation), whereas culture (values) affects mainly more subjective

perceptions such as those regarding established rules (subjective norms) and personal preferences (attitudes).

Finally, a number of limitations have to be acknowledged in this research. In the first place, the sample is made up of students. This has the advantage of facilitating comparisons, but may not be completely representative of the adult population. Secondly, the number of countries analyzed is limited. Some meaningful results have been found regarding the influence of socioeconomic and cultural variables, but this may be the consequence of the specific countries selected. A generalization of these results should be made with extreme caution. Besides, multicollinearity of some national-level variables is another consequence of the limited number of countries being studied. Therefore, a complete test of the socioeconomic and cultural hypotheses has not been possible.

Conclusions

This paper has tested two alternative measures of subjective norms in two different models of entrepreneurial intention. The results have favored parsimony, since the simpler subjective norm measure offers better results than the more complex ‘normative beliefs x motivations to comply’ measures. The other result that emerges from this study is that the subjective norm has an influence on PA and PBC. That is, values and beliefs shared by important people around the individual do affect personal preferences towards performing entrepreneurial behaviors and the sense of being able to carry them out.

A second objective of the paper was to gain generalizability by testing the hypotheses in an international sample. This would also allow the testing of the influence of socioeconomic and cultural variables. In this sense, the results have been as expected, even

though this cannot be considered a complete test of the contextual influence on the intention-model variables.

Finally, a number of research options are opened by this research. Firstly, more studies with different and varying samples are needed to confirm or reject these results. Especially, a similar study on a substantially larger number of countries should be carried out to confirm the results regarding SN and the model pattern, and also to strengthen those results regarding socioeconomic and cultural variables.

Appendix

Table A1. Path coefficients of control variables on Original TPB-model constructs (standardized coefficients).

	Original TPB with SNxMC measure				Original TPB with Simple SN measure			
	Entrep. Intention	Personal Attitude	P. Beh. Control	Subj. Norm	Entrep. Intention	Personal Attitude	P. Beh. Control	Subj. Norm
Gender	0.063 ^{***}	0.134 ^{***}	0.081 ^{**}		0.062 ^{***}	0.141 ^{***}	0.085 ^{**}	0.067 [*]
GNI per capita	-0.105 ^{***}	-0.258 ^{***}	-0.181 ^{***}	-0.202 ^{***}	-0.101 ^{***}	-0.250 ^{***}	-0.184 ^{***}	-0.179 ^{***}
Unemployment	-0.072 ^{***}	-0.118 ^{***}	-0.215 ^{***}		-0.074 ^{***}	-0.135 ^{***}	-0.226 ^{***}	-0.097 ^{**}
Days to Start-up			-0.188 ^{***}				-0.190 ^{***}	
Individualism		-0.095 ^{**}				-0.111 ^{**}		-0.098 ^{**}
Masculinity	-0.046 [*]			0.060 [*]	-0.051 [*]			0.088 ^{***}

Significance level: † = p<0.1; * = p<0.05; ** = p<0.01, *** = p<0.001

Table A2. Path coefficients of control variables on Modified TPB-model constructs (standardized coefficients).

	Modified TPB with SNxMC measure				Modified TPB with Simple SN measure			
	Entrep. Intention	Personal Attitude	P. Beh. Control	Subj. Norm	Entrep. Intention	Personal Attitude	P. Beh. Control	Subj. Norm
Gender	0.063 ^{***}	0.134 ^{***}	0.081 ^{**}		0.062 ^{***}	0.141 ^{***}	0.085 ^{**}	0.067 [*]
GNI per capita	-0.105 ^{***}	-0.258 ^{***}	-0.181 ^{***}	-0.202 ^{***}	-0.101 ^{***}	-0.250 ^{***}	-0.184 ^{***}	-0.179 ^{***}
Unemployment	-0.072 ^{***}	-0.118 ^{***}	-0.215 ^{***}		-0.074 ^{***}	-0.135 ^{***}	-0.226 ^{***}	-0.097 ^{**}
Days to Start-up			-0.188 ^{***}				-0.190 ^{***}	
Individualism		-0.095 ^{**}				-0.111 ^{**}		-0.098 ^{**}
Masculinity	-0.046 [*]			0.060 [*]	-0.051 [*]			0.088 ^{***}

Significance level: † = p<0.1; * = p<0.05; ** = p<0.01, *** = p<0.001

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Research.

Table 1. Linear regression on entrepreneurial intention (standardized coefficients)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	0.144***	0.160***	0.168***	0.065***	0.072***	0.069***
GNI per capita	---	-0.361***	-0.295***	-0.127**	-0.121**	-0.122***
Unemployment	---	-0.192***	-0.176***	-0.052*	-0.057**	-0.053*
Days to Start-up	---	-0.035 ^{ns}	-0.053 ^{ns}	-0.028 ^{ns}	-0.032 ^{ns}	-0.039 [†]
Individualism	---	---	-0.107**	-0.015 ^{ns}	-0.015 ^{ns}	-0.008 ^{ns}
Masculinity	---	---	-0.023 ^{ns}	-0.031 ^{ns}	-0.040*	-0.049*

Personal Attitude	---	---	---	0.683 ^{***}	0.631 ^{***}	0.582 ^{***}
P. Behav. Control	---	---	---	0.146 ^{***}	0.124 ^{***}	0.099 ^{***}
Subj.NormxMC	---	---	---	---	0.126 ^{***}	---
Subj.Norm simple	---	---	---	---	---	0.204 ^{***}
R²	0.021	0.157	0.163	0.651	0.663	0.676
Adjusted R²	0.020	0.155	0.159	0.649	0.660	0.673
Change in R²	0.021	0.137	0.006	0.488	0.012	0.025
Change in F	26.619 ^{***}	68.102 ^{***}	4.306 [*]	878.302 ^{***}	43.227 ^{***}	95.184 ^{***}

Significance level: ns = not significant; † = p<0.1; * = p<0.05; ** = p<0.01, *** = p<0.001

Figure 1: Original TPB model with alternative SN measures (standardized coeffs.)

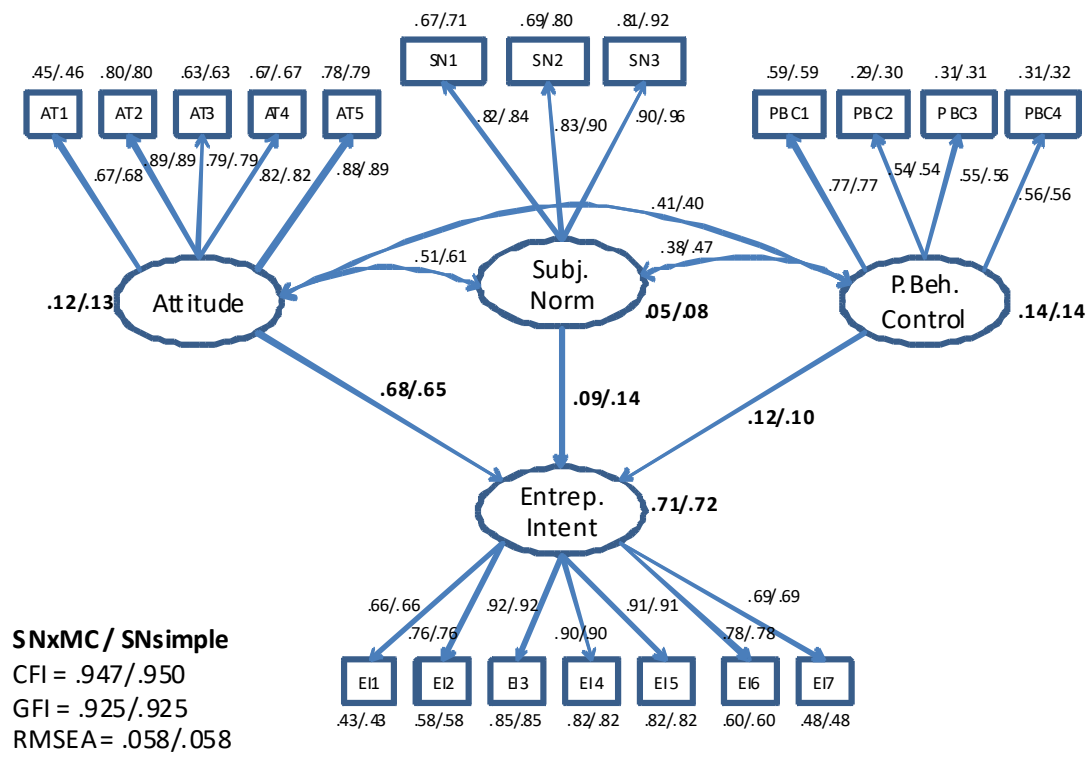


Figure 2: Modified TPB model with alternative SN measures (standardized coeffs.)

