
Predicting Entrepreneurial Career Intentions: Values and the Theory of Planned Behavior

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Abstract

Integrating predictions from the theory of human values with the theory of planned behavior (TPB), our primary goal is to investigate mechanisms through which individual values are related to entrepreneurial career intentions using a sample of 823 students from four European countries. We find that openness and self-enhancement values relate positively to entrepreneurial career intentions and that these relationships are partly mediated by attitudes toward entrepreneurship, self-efficacy, and, to a lesser extent, by social norms. Values and TPB constructs partially mediated cross-country differences in entrepreneurial intentions. Spanish students showed lower entrepreneurial intentions as compared to Dutch, German, and Polish students, which could be traced back to lower self-enhancement values (power and achievement), less positive attitudes toward entrepreneurship, and differences in social norms.

Keywords

entrepreneurial intentions, entrepreneurship, Europe, self-efficacy, theory of human values, theory of planned behavior, values.

Individuals make important choices about their careers and work settings in line with their values, that is, their guiding principles in life (Schwartz, 1992). For instance, past research finds that values are related to strategic career decisions and individuals' adjustment at work (e.g., Hoffman & Woehr, 2006; Judge & Bretz, 1992; Verquer, Beehr, & Wagner, 2003; Zytowski, 1994). However, our understanding of the mechanisms through which values influence career choices is still vague. Values motivate individuals to engage in value-congruent behavior, including choosing value-congruent vocational environments (careers, occupations, jobs, organizations, etc.; e.g., Edwards,

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2008; Knafo & Sagiv, 2004). Recent evidence further suggests that values may impact career choices via stimulating interest and learning and in turn the acquisition of skills and self-efficacy in value-congruent domains (Caprara, Alessandri, & Eisenberg, 2012; Caprara & Steca, 2007).

In this study, we draw on the theory of planned behavior (TPB; Ajzen, 1991) to develop predictions about the mechanisms through which values are related to entrepreneurial career intentions. TPB is particularly suited for this purpose, as it is well versed to explain deliberate, “high stakes” decision-making, where decisions have important consequences for individuals—such as career choices (Armitage & Conner, 2001). We focus especially on entrepreneurial career intentions, because entrepreneurship contributes to societies’ economic success, particularly economic growth and job creation, and is also found to be a highly satisfying career choice for the individual entrepreneur (Praag & Versloot, 2007, for a review).

Entrepreneurship refers to “new entry,” that is, the creation of new ventures resulting from an individual’s occupational choice to work for his or her own account and risk (e.g., Gartner, 1989). Recently, attention to graduate entrepreneurship, that is, the starting of firms by university students, has garnered particular attention (Nabi & Holden, 2008) for two reasons. First, graduates have high human capital and are likely to create growth-oriented businesses that are less likely to fail (Rauch & Rijdsdijk, 2013). Second, the successful transition from university to self-employment can help prevent graduate unemployment especially in economically challenging times such as the recent economic downturn (Scarpetta et al., 2012). Despite these benefits, entrepreneurial career choice has received relatively limited attention in vocational and career psychology (Gorgievski & Stephan, 2016, for a review, exceptions are Moriano, Gorgievski, Laguna, Stephan, & Zarafshani, 2012; Obschonka, Silbereisen, & Schmitt-Rodermund, 2010). This may be because most individuals opt for salaried employment rather than self-employment (e.g., Biemann, Zacher, & Feldman, 2012). However, by studying entrepreneurial career intentions, we may gain more general insights into why individuals choose uncertain and autonomous careers entailing high personal accountability—which are on the rise (Arnold, 2011).

In sum, this study aims to deepen our understanding of (entrepreneurial) career intentions by combining two key theories of human motivation—Schwartz (1992) theory of human values and the TPB (Ajzen, 1991). Connecting TPB with values theory also helps to bridge research focusing on the individual level (i.e., TPB) with that on a macro level (i.e., culture). We adopt the common view that values describe interindividual differences, that is, they are person variables, “infused” with context, as values develop through culture-specific socialization (e.g., Hartung, 2002; Hofstede, 2001; Schwartz, 2011). Thus, culture is expressed through individual values and values link the individual to its cultural environment (e.g., Taras, Kirkman, & Steel, 2010). We propose and test a mediation model in which values are related to entrepreneurial career intentions via attitudes, social norms, and perceived behavioral control (PBC).

Values and Entrepreneurial Career Choice

Building on Schwartz’s (1992) theory of basic human values, we define values as “abstract and important goals people strive to achieve in life”. Values are general concepts or beliefs that pertain to desirable end states or behaviors. They guide the selection or evaluation of behaviors, environments, and events over time and transcend-specific situations. They motivate action and are used as key decision-making criteria by individuals. Schwartz developed a comprehensive, widely validated theory of human values, proposing 10 value types that reflect distinct, but related motivational goals (e.g., Schwartz, 1992, 2009, 2011). These value types are organized into two higher order dimensions: (1) openness to change (consisting of self-direction and stimulation values) versus conservation (consisting of security, conformity, and tradition values) and (2) self-transcendence (universalism and benevolence values) versus self-enhancement (power and achievement values).¹

These dimensions summarize the systematic pattern of conflict and compatibilities among the 10 value types (e.g., Schwartz, 1992). Openness to change emphasizes striving for independence, autonomy, and seeking novelty. People who value openness to change find it important to be independent in thought and action; to be original and creative; and seek excitement, novelty, and challenge. This is in conflict with conservation values, which emphasize meeting the expectations of others and avoiding their sanctions or receiving protection and care. People who value self-enhancement strive to obtain control over others and resources, seek prestige and social status, as well as value personal success and demonstrating competence according to societal standards. This conflicts with self-transcendence values, which embody valuing understanding, appreciation, tolerance, and protection of people and the direct or indirect environment.

Values influence action through guiding decision-making in several possible ways (Bardi & Schwartz, 2003). Firstly, more important goals induce a stronger motivation to formulate goal intentions and action planning (Gollwitzer, 1999). The higher the priority given to a value, the more likely people will form intentions and action plans that can lead to the expression of this value in behavior, because people feel a need for consistency between their thoughts (values) and behavior (Bardi & Schwartz, 2003). Secondly, values induce valences on potential actions (Feather, 1995). Individuals evaluate value-consistent behavior positively and experience it as rewarding and satisfying, thus actions become more attractive if they promote attainment of valued goals. Thirdly, high priority values guide people to seek out and attend to value-relevant aspects of a situation (Schwartz, Sagiv, & Boehnke, 2000).

Next, we turn to how values theory may relate to entrepreneurial career choices. People who value openness to change, emphasizing independent action and readiness for new experience, and those who value self-enhancement, emphasizing pursuit of self-interests (Schwartz, 1992, 2011), would likely be attracted to entrepreneurial career choice, which offers the possibilities to fulfill those values. Entrepreneurial activity allows the realization of those values through offering high levels of autonomy and the possibility to lead others and obtain potentially high monetary returns (e.g., Kolvereid, 1996; Wach, Stephan, & Gorgievski, 2016). Others might find the same career option threatening and unattractive and prefer working in existing firms or institutions.

With regard to vocational behavior, Schwartz values' have been found to relate meaningfully to study choices at the university (Arieli, Sagiv, & Cohen-Shalem, 2016; Gandal, Roccas, Sagiv, & Wrzesniewski, 2005) and to vocational interests and occupations (Knafo & Sagiv, 2004; Sagiv, 2002). Research on values and entrepreneurship shows that values influence entrepreneurs' choices of strategic priorities for their firms (Gorgievski, Ascalon, & Stephan, 2011), their persistence in entrepreneurship (Holland & Shepherd, 2011), and their recognition of business opportunities (Shepherd, Patzelt, & Baron, 2013). There is further evidence that entrepreneurs hold value profiles that are systematically different from nonentrepreneurs. Self-employed people in comparison with nonself-employed people rate openness to change and self-enhancement values higher (Noseleit, 2010) and tradition and security values lower (Knafo & Sagiv, 2004). Entrepreneurs gave significantly greater weight than managers to self-respect and a sense of accomplishment values which are similar to self-enhancement values in Schwartz theory; they also value freedom, independence, and courage that resemble the openness to change dimension (Fagenson, 1993). Similarly, research on Chinese entrepreneurs showed that they value achievement, self-determination, independence, and freedom of choice (Holt, 1997).

Our interest is in understanding entrepreneurship at its very beginning, that is, the occupational choice to become an entrepreneur. By contrast, the above-mentioned studies focused on established entrepreneurs and may have been subject to survival bias (Davidsson, 2016). Entrepreneurship has a high failure rate, and certain value types may be systematically associated with failing versus surviving. In addition, entrepreneurs' values may change through processes of occupational socialization. Entrepreneurs have more active jobs (Dijkhuizen, Van Veldhoven, & Schalk, 2014;

Stephan & Roesler, 2010), which could reinforce the emphasis on openness to change and the deemphasize conservation values (Kohn & Schooler, 1983). First empirical evidence from Spain (Liñán, Moriano, & Jaén, 2015; Moriano, Palaci, & Morales, 2007) suggests that university students' individualist values (i.e., power, achievement, hedonism, stimulation, and self-direction) are positively related to entrepreneurial career intentions and activity. A recent study among university students showed need for power, but not need for achievement, was associated with entrepreneurial and leadership career choices (Ramsay, Pang, Ho, & Chan, 2016). In the current study, we adopt Schwartz's (2009) value theory to differentiate two dimensions of individualism—openness to change and self-enhancement values—and additionally investigate explanatory mechanisms which link those values to intentions. We further expand the scope of study to multiple countries to test for the culture universality of the impact of values on entrepreneurial career intentions. Based on the existing literature, we hypothesize the following:

Hypothesis 1a: Openness to change values relate positively to entrepreneurial career intentions.

Hypothesis 1b: Self-enhancement values relate positively to entrepreneurial career intentions.

TPB

The TPB is a well-established theory, widely used to explain and predict human behavior across a variety of life domains (e.g., Ajzen, 1991, 2011), including, for instance, health-related behaviors (McEachan, Conner, Taylor, & Lawton, 2011, for a meta-analysis; Webb & Sheeran, 2006, for experimental evidence) and proenvironmental behaviors (Steg & Vlek, 2009, for a review). Importantly, a recent meta-analysis supports the validity of TPB for predicting entrepreneurial career intentions and behavior (Schlaegel & Koenig, 2014). A conclusion corroborated by recent longitudinal studies using TPB to predict entrepreneurial behavior (e.g., Kautonen, Van Gelderen, & Fink, 2015).

TPB proposes that an intention to perform a given behavior together with the perceived control over it is the best (and the only) predictor of performing the behavior (Ajzen, 1991). The behavioral intention results from a rational choice process and is itself a function of the attitude toward the behavior, subjective norm, and PBC. The attitude toward a behavior is determined by the set of accessible behavioral beliefs that engaging in the behavior will lead to certain outcomes, for example, in the case of entrepreneurial career intentions whether being an entrepreneur relates to economic uncertainty, weighted by the (un)desirability of these specific outcomes (Ajzen, 1991). The subjective norm is an individual's perception of the social pressures to engage (or not to engage) in a behavior. Subjective norms consist of normative beliefs about how significant others evaluate the behavior and individuals' motivation to conform to these. PBC refers to individuals' perceptions of their ability to perform a given behavior. Attitudes toward entrepreneurship, subjective norms, and PBC are additive predictors of intentions that according to a recent meta-analysis explain about 28% of the variance in entrepreneurial career intentions (Schlaegel & Koenig, 2014). Similarly, research supports that TPB accounts for about 30% of the variance in behavior, in general, and 20% in health behavior (Armitage & Conner, 2001; McEachan et al., 2011).

In many studies predicting entrepreneurial intentions, PBC has been replaced by self-efficacy (e.g., Krueger, Reilly, & Carsrud, 2000; Miao, Qian, & Ma, 2016; Moriano et al., 2012). PBC is closely related to self-efficacy (Bandura, 1977); both concepts concern the perceived ability to perform a behavior. In their review, Armitage and Conner (2001) concluded that self-efficacy is more clearly defined and more strongly correlated with intentions than PBC. Our study will therefore focus on entrepreneurial self-efficacy instead of PBC.

TPB Components Mediate the Effect of Values on Entrepreneurial Career Intentions

TPB postulates in its sufficiency assumption that attitudes, norms, and PBC are the only direct antecedents of intentions (Ajzen, 1991). Thus, basic human values should impact entrepreneurial intention only indirectly via these TPB components. In line with this notion, past research in other domains links values either explicitly or implicitly to behavioral choices via attitudes. Values and attitudes both refer to desired end states and act as evaluative guides steering behavior. Values are more abstract and can be seen to underlie attitudes, which refer to the evaluation of specific objects or behaviors (Schwartz, 1992). Consistent with this argument, psychologists investigating natural food shopping have found empirical evidence for the value–attitude–behavior hierarchy (Homer & Kahle, 1988). Additionally, sustainability researchers found that values influence environmental behaviors indirectly via attitudes (e.g., Milfont, Duckitt, & Wagner, 2010). Thus, we expect that general values consistent with entrepreneurship, that is, openness to change and self-enhancement, predispose individuals to develop specific, positive attitudes toward entrepreneurship as a desirable career, which, in turn, positively predicts entrepreneurial career intentions:

Hypothesis 2: Positive attitudes toward entrepreneurship mediate the positive relations between (a) openness to change and (b) self-enhancement values and entrepreneurial intentions.

To our knowledge, no studies to date have investigated whether values may be related to career intentions via subjective norms. We argue that openness to change values may increase and self-enhancement values may decrease individuals' readiness to conform to the expectations of their significant others. Openness to change values emphasize independence in thoughts and actions, exploring new areas and risk-taking behavior (Schwartz, 1992). They may make people less responsive to comply with the wishes of their significant others. For example, research on Facebook users showed that openness to networking influenced knowledge sharing intention directly as well as indirectly through subjective norm and attitudes (Pi, Chou, & Liao, 2013). Self-enhancement values promote a focus on oneself and enhancing oneself over others and thus may decrease individuals' willingness to consider the viewpoint of significant others (Bernard, Maio, & Olson, 2003). Hence, we expect that

Hypothesis 3: (a) Openness to change values and (b) self-enhancement values relate negatively to perceived subjective norms, which in turn positively predict the intention to become an entrepreneur.

Values are also likely to influence entrepreneurial career choice via entrepreneurial self-efficacy, because values motivate skill acquisition and thereby the building up of self-efficacy in value-congruent domains. Such a relationship reflects the strong motivational function of values. Individuals desire to act in line with their values and if they find that they currently lack the skills to do so will take action to acquire them. Although we know of no relevant evidence in careers research, research by Caprara and colleagues (Caprara et al., 2012; Caprara & Steca, 2007) on prosociality supports the notion that prosocial values motivate the acquisition of relevant skills to perform prosocial behavior. In a longitudinal study, they find evidence that prosociality-specific self-efficacy beliefs mediate the effect of values on prosocial behavior (Caprara et al., 2012). We propose that values consistent with entrepreneurship will motivate the acquisition of entrepreneurial skills, which will be reflected in individuals' higher confidence in their entrepreneurial capabilities. Thus, we expect that:

Table 1. Sample Characteristics and Differences Tests Across Cultures (Subsamples).

Sample Characteristic	Sample					Significance of Differences Across Samples	
	Total Sample (N = 823)	Germany (n = 197)	Poland (n = 285)	Spain (n = 227)	The Netherlands (n = 114)	χ^2	df
Gender (%)							
Men	56.5	46.7	48.1	73.1	61.4	42.59***	3
Women	43.5	53.3	51.9	26.9	38.6		
Major (%)							
Psychology	57.5	51.3	43.7	100	18.4	393.73***	6
Business/economics	28.6	48.7	23.2	0	64		
Other	13.9	0	33.1	0	17.5		
Means and standard deviation (in brackets) of study variables						F	df
	Total sample (N = 823)	Germany (n = 197)	Poland (n = 285)	Spain (n = 227)	The Netherlands (n = 114)		
Age in years	23.96 (3.78)	23.93 (2.26)	22.25 (1.73)	27.16 (5.05)	22.12 (2.78)	125.76***	3
Openness values ^a	3.96 (0.94)	4.26 (0.69)	3.47 (0.83)	4.68 (0.67)	3.24 (0.79)	157.59***	3
Self-enhancement values ^a	3.25 (0.95)	3.80 (0.83)	2.88 (0.86)	3.40 (0.94)	2.94 (0.87)	49.66***	3
Attitudes ^a	4.06 (1.11)	3.90 (.89)	4.29 (1.21)	3.91 (1.24)	4.03 (0.81)	7.18***	3
Social norms ^a	3.45 (1.80)	2.19 (1.43)	4.37 (1.49)	4.19 (1.45)	1.83 (1.30)	155.91***	3
Self-efficacy ^a	4.88 (1.03)	5.03 (1.02)	4.98 (0.95)	4.60 (1.08)	4.95 (1.02)	8.17***	3
Entrepreneurial intentions ^a	3.60 (1.55)	3.14 (1.34)	4.45 (1.41)	2.99 (1.48)	3.48 (1.44)	54.89***	3

^aThe measurements show partial metric but not scalar invariance across countries. This means the differences in average scores across countries need to be interpreted with caution.

*** $p < .001$.

Hypothesis 4: Entrepreneurial self-efficacy mediates the positive relations between (a) openness to change and (b) self-enhancement values and entrepreneurial intentions.

Method

Sample and Procedure

Students are well-positioned to create growth-oriented ventures, that is, ventures with high levels of job creation (e.g., Nabi & Holden, 2008); therefore, we focus on students who are at the end of their bachelor studies or studying at master's level. These students are arguably considering career decisions. Participants are 823 students with a mean age 23.96 years ($SD = 3.78$) and 43.5% female, studying mostly psychology and business/economics majors from Universities in four different countries: $n = 197$, Germany; $n = 285$, Poland; $n = 227$, Spain; and $n = 114$, the Netherlands. Table 1 provides the sample description per country. The country samples differ significantly regarding their gender composition, the major students were enrolled in, and students' age. Our analyses will control for these sample differences.

Participation in the study was voluntary. All questionnaires were completed anonymously to ensure confidentiality. In the Netherlands, students received credit points for their participation. Questionnaires were completed in the classroom (paper-and-pencil version; Germany and Poland) or electronic online versions (Spain and the Netherlands). Missing data ($N = 30$) were deleted listwise. Students responded to the questionnaires in their native languages. Where accessible, existing national versions of measures were used (Cieciuch & Davidov, 2012). In case national versions were unavailable, scales were translated using a translation–back-translation (Hambleton, 1994) or collaborative–iterative translation procedure (Douglas & Craig, 2007) to ensure that item meaning was preserved through the translation process.

Measurement Instruments

Personal values were assessed using the Portrait Values Questionnaire (PVQ; Schwartz et al., 2001). The PVQ is cross-culturally validated and one of the most widely used instruments to assess personal values; for example, it is being used to measure values in the European Social Survey (Schwartz, 2003). Various versions have been developed. We use the original 40-item version. Its items are short verbal portraits. Each respondent is asked to answer “How much like you is this person?” followed by descriptions of people with certain value orientations. Openness to change values are measured with 7 items. Men and women are asked to compare themselves to portraits of same-sex persons, for example: “Thinking up new ideas and being creative are important to him, he likes to do things in his own original way” or “She likes to take risks. She is always looking for adventures.” Self-enhancement values are also measured with 7 items. Examples are as follows: “It is very important to him to show his abilities. He wants people to admire what he does” and “It is important to her to be in charge and tell others what to do. She wants people to do what she says.” Answers can be given on a 6-point rating scale, with answers ranging from 1 *not like me at all* to 6 *is a lot like me*. If the person portrayed in the description is “not like the respondent at all,” it corresponds with that particular value not being important for that respondent. Cronbach’s α reliability coefficients are .85 for openness values and .78 for self-enhancement values.

People differ in the way they complete values questionnaires—some people score all values “average” with some “high,” whereas under the same circumstances, others would score all values “high” and some “very high.” Validation studies among a large number of samples have shown that failing to correct for such differences in response tendencies across individuals can lead to inaccurate results (Schwartz, 2003; Schwartz et al., 2001). This is consistent with the theoretical rationale that the *relative* importance of values is critical for predicting attitudes and behavior. To correct for response tendencies, a person’s mean score across all values (the so-called Mean Rating or MRAT score) is subtracted from their individual score on each item (Schwartz, 2003; Schwartz et al., 2001).

Four *TPB components* were measured using the Entrepreneurial Intention Questionnaire (EIQ; Moriano et al., 2012). The EIQ follows Ajzen’s (2002) methodological recommendations of how to construct a TPB questionnaire using composite evaluations of attitudes and subjective norms. Its validity was confirmed in previous studies (Moriano, Gómez, Laguna, & Roznowski, 2008; Moriano et al., 2012).

Attitudes toward entrepreneurship are evaluated with 6 EIQ items assessing expected outcomes of an entrepreneurial career (e.g., “creating a new company or becoming an entrepreneur would mean for you: facing new challenges”). Answers range from 1 *absolutely improbable* to 7 *absolutely probable*. These were multiplied by the desirability of the same outcomes ranging from 1 *absolutely undesirable* to 7 *absolutely desirable*. Cronbach’s α reliability coefficient was .77.

Subjective norms were assessed with 3 EIQ items measuring how significant others (closest family members, closest friends, colleagues, and/or classmates) would view an entrepreneurial career choice using statements such as: “My closest family members think that I should pursue a

career as an entrepreneur,” answering format: 1 = *absolutely disagree* to 7 = *absolutely agree*. These were multiplied with individuals’ motivation to comply with these reference people, as indicated by the extent to which they care about what these people think, for example: “To what extent do you care about what your family members think as you decide on whether or not to pursue a career as an entrepreneur?” from 1 = *not at all* to 7 = *very important*. Cronbach’s α reliability coefficient was .89.

In line with other research on entrepreneurial intentions (e.g., Gelderen et al., 2008; Kolvareid & Isaksen, 2006), PBC was measured with the 5 items of the EIQ *Entrepreneurial Self-Efficacy Scale*. Respondents answered to the question: “If you were to create your own business, to what degree would you be able to complete the following tasks?” followed by for example: “Define your business idea and strategy of your company.” Answers range from 1 = *not at all effective* to 7 = *very effective*. Cronbach’s α reliability coefficient was .82.

Entrepreneurial career intention was assessed using 4 EIQ items that assess the perceived likelihood of an individual to choose an entrepreneurial career (e.g., “Do you think that in the future you will create your own company?”). Answers range from 1 = *definitely not* to 7 = *definitely yes*. Cronbach’s α reliability coefficients was .87.

Analysis Strategy

Hierarchical regression analysis and structural equation modeling (SEM) using maximum likelihood estimation (Amos 20; Arbuckle, 2006) were applied to analyze the data. Goodness of fit of the SEM models was evaluated using model χ^2 , the root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), the comparative fit index (CFI), and the Tucker–Lewis index (TLI). For the model χ^2 , higher values reflect poor model fit. RMSEA is a measure of absolute model fit. Values $\leq .05$ represent a close fit, and RMSEA $\leq .08$ represents adequate model fit (Browne & Cudeck, 1992). GFI, CFI, and TLI correct for model complexity. Higher values represent better model fit, with 1.0 for GFI and CFI indicating a perfect model fit. GFI, CFI, and TLI values close to .95 or higher in combination with RMSEA ≤ 0.05 indicate a good fit (Hu & Bentler, 1999). Values of .90–.95 indicate a reasonable fit, and values below .90 a poor model fit (Kline, 2005).

Results

Assessment of the Measurement Model

Tests for measurement equivalence across countries. Because our study combines data from four countries, we tested cross-cultural measurement equivalence for the values and TPB scales using multigroup SEM. Measurement in equivalence may lead to biased results (Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000). We tested for configural, metric, and scalar equivalence. Configural equivalence means the dimensionality of the measures is the same across different samples. This means in each sample the same number of factors is observed and the same items are associated with each factor (Cheung & Rensvold, 2002). Metric equivalence means that items show equal factor loadings across all samples (Meredith, 1993). If achieved, this indicates that the relationships between latent factors can be compared meaningfully across samples. Scalar equivalence indicates whether the item intercepts are equivalent across samples (Meredith, 1993). If this is accomplished, differences in the latent means can be interpreted meaningfully across different samples. The different forms of equivalence build on each other. It is possible that a measure achieves metric, but not scalar equivalence, and when a measure does not achieve metric equivalence, this automatically means the scale lacks scalar equivalence, too. For each level, it is possible to test for partial equivalence in case full equivalence was not achieved, by allowing a small number

Table 2. Model Fit Indices for the Structural Equation Modeling Models Predicting Entrepreneurial Career Intentions through Personal Values and TPB Variables.

Model	χ^2	df	GFI	CFI	TLI	RMSEA
M0 Null model, correlations between latent variables	629.71***	212	.95	.95	.92	.05
M1 Direct effects values only	721.70***	215	.93	.93	.91	.05
M2 Direct effects TPB variables only	647.22***	214	.94	.94	.92	.05
M3 Direct effects TPB and values	640.47***	212	.94	.94	.91	.05
M4 Indirect effects of values mediated through TPB	656.07***	214	.94	.94	.92	.06
M5 Final model	648.06***	212	.94	.94	.92	.05
M6 Final model including country	1,050.76***	275	.92	.92	.89	.06
M7 Modified model including country	818.52***	270	.94	.94	.92	.05

Note. TPB = Theory of Planned Behavior; GFI = goodness-of-fit index; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation.

*** $p < .001$.

of parameters to vary across samples, with a minimum of two invariant items for each factor (Steenkamp & Baumgartner, 1998).

Equivalence tests of our data supported configural and partial metric invariance for all scales. Partial metric invariance models showed similar model fit as compared to models not assuming metric invariance: for intentions, $\Delta\chi^2_{(8\ df)} = 12.83$, p ns (with only one parameter constraint released for Germany); for attitudes, $\Delta\chi^2_{(21\ df)} = 14.71$, p ns (one parameter constraint released for Germany, two for the Netherlands); for social norms, $\Delta\chi^2_{(5\ df)} = 2.72$, p ns (one parameter constraint released for Poland); for self-efficacy, $\Delta\chi^2_{(11\ df)} = 14.27$, p ns (one parameter constraint released for Germany); and for individual values $\Delta\chi^2_{(28\ df)} = 36.35$, p ns (one parameter constraint released for Germany and Poland, two for Spain and the Netherlands). Thus, based on these results, we conclude relationships between latent variables can be qualitatively analyzed across countries (Steenkamp & Baumgartner, 1998). The scales lacked scalar invariance, thus mean differences across countries need to be interpreted with caution. Model fit for models assuming scalar invariance fit significantly worse to the data than the partial metric invariance models: for intentions, $\Delta\chi^2_{(12\ df)} = 238.20$, $p < .001$; for attitudes, $\Delta\chi^2_{(6\ df)} = 121.78$, $p < .001$; for social norms, $\Delta\chi^2_{(9\ df)} = 295.95$, $p < .001$; for self-efficacy, $\Delta\chi^2_{(15\ df)} = 52.85$, $p < .001$; and for individual values $\Delta\chi^2_{(42\ df)} = 702.56$, $p < .001$.

Test for factorial structure and correlations between latent variables. As a basis for testing Hypotheses 2 through 5, we fitted a null model to the data, which contained the factorial structure and correlations between all latent variables. Scale scores of the two openness values (self-direction and stimulation) and the two self-enhancement values (power and achievement) were used as observed indicators of the higher order latent factors “openness” and “self-enhancement” values in the SEM model. The scale items were used as observed indicators of all other latent factors. The null model showed adequate fit (see Table 2, M0) and all specified paths leading from the latent factors to the individual items were statistically significant, ranging between .46 ($p < .001$) for stimulation as indicator for self-direction to .96 ($p < .001$) for the second indicator for subjective norms.

Descriptive Results

Table 1 shows means and standard deviations of the raw study variables per country. As can be seen, countries differed on all study variables. Note that these differences need to be interpreted with caution due to sample differences in gender, age, and study major (see Table 1) and lack of scalar invariance. They will be analyzed in more detail below using latent variables and

Table 3. Means and Standard Deviations of the Raw Study Variables, Correlation Coefficients Between Latent Study Variables, and Cronbach's α Reliability (Italics in Diagonal), $N = 823$ European Students.

Variable	Standard										
	<i>M</i>	<i>Deviation</i>	1	2	3	4	5	6	7	8	9
1. Gender	0.57	0.50	—								
2. Age	23.96	3.78	.12***	—							
3. Major	0.29	0.45	-.06	-.20***	—						
4. Openness values	0.30	0.56	.01	.07	-.07	.85					
5. Self-enhancement values	-0.40	0.79	-.04	-.34***	.30***	-.01	.78				
6. Attitudes	4.06	1.11	-.11**	-.07	.09*	.63***	.06	.77			
7. Social norms	3.45	1.80	-.03	.01	-.17***	.10	-.16***	.29***	.89		
8. Self-efficacy	4.88	1.03	-.04	-.02	.17***	.35***	.27***	.67***	.17***	.82	
9. Entrepreneurial intentions	3.60	1.55	.02	-.21***	.14***	.19***	.23***	.57***	.35***	.67***	.87

Note. Gender: 1 = male, 0 = female; major: 1 = economics, 0 = other; openness and self-enhancement values are corrected for MRAT, model fit for the correlational model is presented in Table 2 (Model 0)

* $p < .05$. ** $p < .01$. *** $p < .001$.

controlling for sample differences. Table 3 shows correlations between the latent study variables in the whole sample.

Values and TPB

We tested our hypotheses through comparing different SEM models (see Table 2 for model fit). All models controlled for age, gender, and study major and all models used MRAT corrected values scores. The first model (M1) regressed entrepreneurial intentions on the values orientations without considering TPB predictors. This model showed evidence for Hypotheses 1: both openness to change values (1a) and self-enhancement values (1b) predicted entrepreneurial career intentions. Path coefficients were, respectively, $\beta = .57, p < .001$ for openness to change values and $\beta = .17, p < .05$ for self-enhancement values. The second model (M2) regressed entrepreneurial intentions on TPB predictors, but not values orientation. The third model (M3) built on the first two regression models and included both values orientations and TPB variables as direct predictors of intention. These models showed that values orientations predicted entrepreneurial intentions in addition to TPB variables (the difference in model fit between M3 and M2 was statistically significant), $\Delta\chi^2_{(2\ df)} = 6.75, p < .05$.

In order to test the mediation hypotheses, the fourth model (M4) included indirect effects of openness and self-enhancement values on entrepreneurial intentions through TPB components. In partial support of Hypothesis 2, better attitudes toward entrepreneurship mediated the influence of openness to change values on entrepreneurial intention (2a), but not of self-enhancement values (2b). In addition, social norm perceptions did not mediate the relationship between openness to change values and entrepreneurial career intentions (3a) but did mediate between self-enhancement values and entrepreneurial intentions. In line with the expectations, higher self-enhancement values related to lower social norms perceptions (3b). Finally, supporting Hypothesis 4, entrepreneurial self-efficacy mediated the influence of both openness (4a) and self-enhancement values (4b) on entrepreneurial intentions.

We explored further whether values had additional direct effects on intentions (M5). Results showed TPB variables fully mediated the effect of openness values on intentions, but the

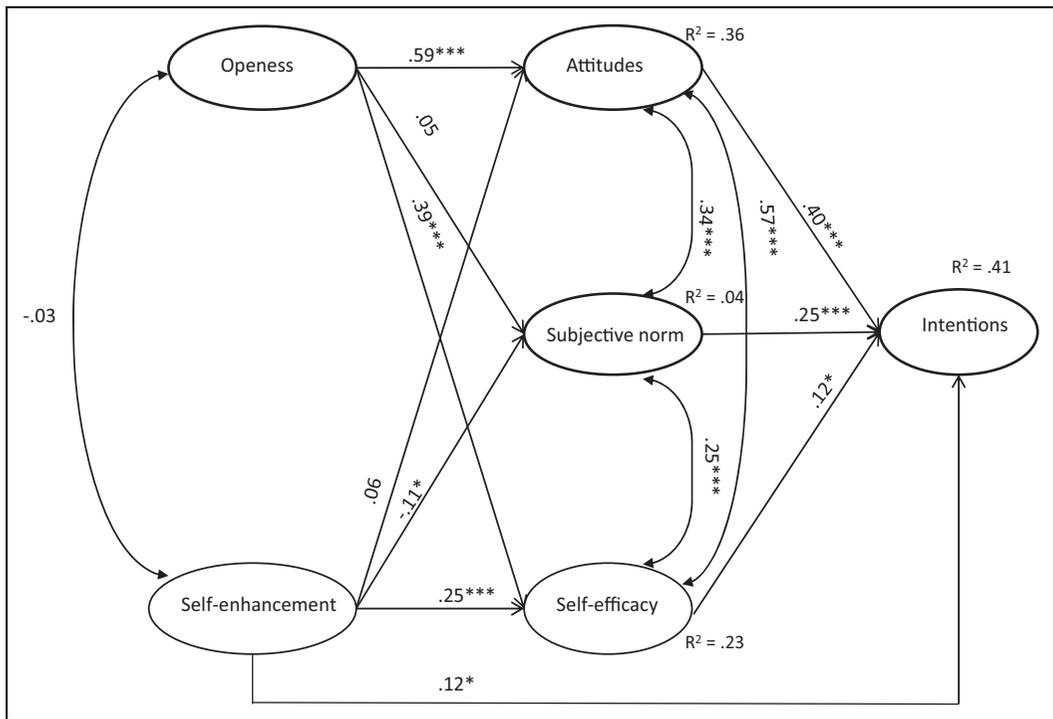


Figure 1. Direct and indirect effects of openness to change and self enhancement values through attitudes, subjective norms, and entrepreneurial self-efficacy on entrepreneurial intentions. $N = 823$ students; model fit: $\chi^2_{(212\ df)} = 648.06$, $p < .001$, goodness-of-fit index = .94, comparative fit index = .94, Tucker–Lewis index = .92, and root mean square error of approximation = .05; relationships are controlled for age, gender, and major. * $p < 0.5$. ** $p < .01$. *** $p < .001$.

relationship between self-enhancement values and intentions was only partially mediated by TPB variables and adding a direct effect of self-enhancement values on intentions significantly improved model fit ($\Delta\chi^2_{(1df)} = 8.01$, $p < .01$). M5 is depicted in Figure 1.

Additional Analyses of Country Effects

In further exploratory analyses, we added country dummy variables: Poland (1 = *yes*, 0 = *no*), Germany (1 = *yes*, 0 = *no*) and the Netherlands (1 = *yes*, 0 = *no*) against Spain (always 0 as the reference point) to the final SEM model as shown in Figure 2. This model showed a relatively poor model fit, with a TLI of .89 (see Table 2, Model 6). For this reason, we examined modification indices to see how it could be improved. We found that allowing five additional relationships between the dummy variables for Poland and the Netherlands and the observed indicators of the attitudes constructs significantly improved model fit (Table 2, Model 7). This adjustment only slightly changed the final solution of the structural equations model, and hence, this model is presented in Figure 2. Results indicated that differences between countries in entrepreneurial intentions can be at least partly explained through differences in values and TPB variables. Students in Poland, Germany, or the Netherlands rather than Spain reported stronger self-enhancement values which related in turn to higher entrepreneurial intentions (respectively, $\beta = .37$, $p < .001$; $\beta = .41$, $p < .001$; and $\beta = .33$, $p < .001$). No significant relationships were found with openness to change values.

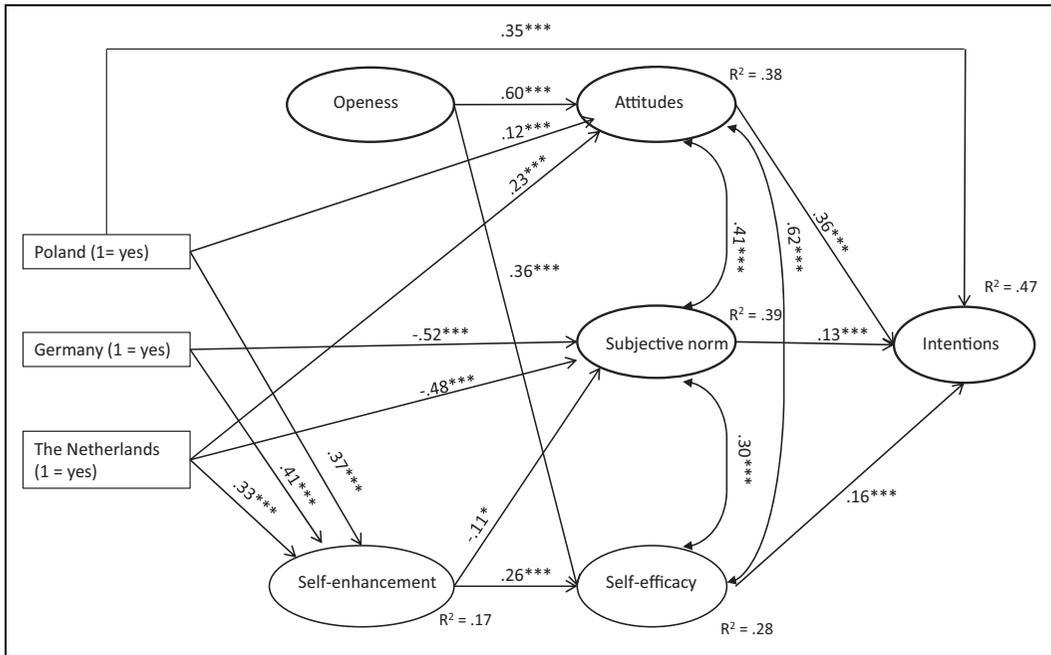


Figure 2. Indirect effects on entrepreneurial intentions of country residency (Spain is the reference group) through openness to change and self-enhancement values, attitudes, subjective norms, and entrepreneurial self-efficacy. *N* = 823 students; model fit: $\chi^2_{(270\ df)} = 818.52, p < .001$, goodness-of-fit index = .94, comparative fit index = .94, Tucker–Lewis index = .92, and root mean square error of approximation = .05; relationships are controlled for age, gender, and major. **p* < .05. ***p* < .01. ****p* < .001.

Concerning TPB variables, students in Poland and the Netherlands had stronger entrepreneurial attitudes. The modifications in the adjusted model indicated that for Dutch students, this was mainly due to stronger positive beliefs related to challenges, risk-taking, uncertainty, and creativity and to a lesser extent to creating jobs, higher income, and being your own boss. In Poland, students’ positive beliefs related to being able to earn a higher income as a self-employed were relatively weaker as compared to the other beliefs. Students in Germany and the Netherlands also showed lower compliance with entrepreneurial subjective norms. Values and TPB variables did not fully explain why students in Poland reported higher entrepreneurial career intention, as indicated by an additional direct relationship.

Discussion

The present study integrated predictions from the theory of basic human values and TPB to understand drivers of students’ entrepreneurial career intentions. We tested a mediation model using SEM on a sample of 823 students from four European countries. By analyzing their career choices, we help to explain an important stage of career development—the transition from education to work (e.g., Dietrich, Jokisaari, & Nurmi, 2012; Koen, Klehe, & Van Vianen, 2012). The results contribute to career and vocational psychology as well as to entrepreneurship research. Within career and vocation psychology, we add to research on values and occupations highlighting that basic human values are useful for understanding occupational choices (e.g., Knafo & Sagiv, 2004). This is arguably particularly so when trying to understand nontraditional career choices such as

entrepreneurship, which seem to be a general life choice, considering the uncertainty, responsibility, and time commitment entrepreneurs bear (Dijkhuizen et al., 2014). To entrepreneurship, our findings offer a connection and thereby better theoretical understanding between the separate research streams on values, culture, and entrepreneurship on the one hand and entrepreneurial intentions on the other hand.

This study provides novel evidence showing that values are related to career intentions in several ways. First, our findings show higher self-enhancement and openness to change values predict entrepreneurial career intentions. This adds new evidence that values are important for career choices (Knafo & Sagiv, 2004; Sagiv, 2002). Second, we shed light on potential mechanisms. We find that attitudes, self-efficacy, and to a lesser extent social norms mediate the effect of values on entrepreneurial career intentions. Thus, we extend existing research that has investigated direct links of values with entrepreneurial career choice (Holt, 1997; Liñán et al., 2015; McGrath, Mac-Millan, & Scheinberg, 1992; Moriano et al., 2007; Noseleit, 2010). We note that vocational and career research more commonly uses work values than general values and our research extends their insight by explaining the role of personal values. Third, we find that values are one route via which country factors influence career intentions, yet our findings are also suggestive of strong normative influences of the country context that are not mediated by values. This finding is consistent with recent research that emphasizes the role of cultural norms (Stephan & Uhlaner, 2010; Stephan, Uhlaner, & Stride, 2015) and institutions (Iakovleva, Kolvereid, Gorgievski, & Sørhaug, 2014) as distinct from the effect of values.

Finally, our findings also add to research on the TPB. Of the TPB components, attitudes toward entrepreneurship had the strongest relationships with entrepreneurial career intentions. By forming more favorable attitudes toward entrepreneurship, we can help to promote entrepreneurial intentions among students. However, our results question the sufficiency assumption of the TPB (Ajzen, 2011), according to which the influence of all background factors, including country context and personal values on intentions would be mediated by attitudes, social norms, and PBC. Being from Poland directly predicted a higher level of entrepreneurial intentions in students. Poland has been excluded from the free market economy for a long time, and entrepreneurship may provide hope for further economic development of countries from that region (Praag & Versloot, 2007). Cultural and economic variables, apart from individual psychological ones, may show their influence here on entrepreneurial career choice.

Limitations and Future Research Directions

The TPB we employed to explain career intentions is based on cognitive processes explaining deliberate actions and it overlooks less cognitive aspects of peoples' functioning, for example, affect and other personality variables which may play a role in entrepreneurship (Laguna, Alessandri, & Caprara, 2016). Vocational choices may reflect deeper personality processes (e.g., Braunstein-Bercovitz, Benjamin, Asor, & Lev, 2012). We partly deal with this limitation by additionally analyzing personal values i.e. openness and self-enhancement values, representing core personality tendencies (Schwartz, 1992, 2009, 2011), but future research could look into personality processes in more detail.

In addition, results of cross-country equivalence tests show measures of values, TPB constructs, and entrepreneurial intentions were (partially) metric invariant but lacked scalar invariance. The implication is that cross-country differences in average scores need to be interpreted with caution. Possibly, students from different countries have different frames of reference when answering to the questions. These differences would need to be investigated in more detail using qualitative designs (Meredith, 1993). An increasing number of cross-national studies are being published to date. We

like to emphasize the importance of testing cross-cultural equivalence of measurement instruments in cross-national studies in order to avoid drawing erroneous conclusions.

In this study, we have explored entrepreneurial career intentions. Many studies revealed that intention is one of the best predictors of future behavior (Ajzen, 2011) and may serve as a proxy, also for other career choices (Schlaegel & Koenig, 2014). However, there is typically a gap between intention and actual behavior and also perceptions of occupation may differ from what these occupations really are, causing dropout (Walls, 2000). Future actual career choices of students may differ from what they intended to do and a future study might investigate this next step.

Our study concentrated on students, and their educational experiences may increase their openness to nontraditional career choices. Students' entrepreneurial intentions may be different and depend on other factors than in other samples, for example, the unemployed (Laguna, 2013). Further research may investigate the interplay between personal values and TPB components in predicting entrepreneurial intentions and actions in other samples.

Implications for Practice

Strong career intentions and subsequent actions may prevent young people from unemployment and career indecision (Braunstein-Bercovitz et al., 2012; Scarpetta et al., 2012); hence, it is important to understand these intentions and their roots. Despite high demands, entrepreneurship is found to be a highly satisfying career choice and important source of societies' economic growth (Praag & Versloot, 2007); therefore, it is worthwhile to stimulate entrepreneurial career choices. Youth have been heavily affected by job losses during the global crisis, and their access to jobs is difficult (Scarpetta et al., 2012) and self-employment is a vital alternative. Moreover, new firms are a source of new jobs for others. Studies show that individuals high in entrepreneurial career motivations are also high in boundaryless and self-directed career attitudes (Chan et al., 2012). Thus, stimulating entrepreneurial motivations and intentions may help young people to better adapt to new boundaryless career perspectives. Results of this study suggest several ways to stimulate entrepreneurial career choices.

Career counselors and other practitioners may aim to facilitate openness to change and self-enhancement values formation, especially in young people. If people adhere too strongly to security, conformity, and tradition values (Schwartz, 2009), they may be prone to keep what is stable and safe, and in effect avoid more demanding career choices. Social influences, for example, through role models, which promote openness to change values, may in the long run help young people to be more ready for demanding career choices such as entrepreneurial activity and this way contribute to economic development and avoid unemployment.

Other helpful pointers for vocational counseling come from better understanding how values together with TPB components interplay in forming entrepreneurial intentions. To increase entrepreneurial career choice, counselors can stimulate positive attitudes toward entrepreneurship, which improve subjective norms facilitating entrepreneurial activity and entrepreneurial self-efficacy.

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Note

1. Hedonism values are the 10th value type and belong to both the openness to change and self-enhancement value dimensions.

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