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HOW CULTURE MOLDS THE EFFECTS OF SELF EFFICACY AND FEAR OF FAILURE ON ENTREPRENEURSHIP

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Forthcoming, Entrepreneurship and Regional Development

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Abstract: We use data from the Global Entrepreneurship Monitor (GEM) and the Global Leadership and Organizational Behavior Effectiveness study (GLOBE) for 42 countries to investigate how the effects of individual's self-efficacy and fear of failure on entrepreneurial entry are contingent on national cultural practices. Using multi-level methodology, we observe that the positive effect of self-efficacy on entry is moderated by the cultural practices of institutional collectivism and performance orientation. Conversely, the negative effect of fear of failure on entry is moderated by the cultural practices of institutional collectivism and uncertainty avoidance. We discuss the implications for theory and methodological development in culture and entrepreneurship.

JEL Codes: D24, L25, L26

Keywords: Culture, Entrepreneurship, Institutions, Multi-level

1. Introduction

National culture is often seen as central to entrepreneurship (Hayton et al. 2002). Some countries are considered models of an “entrepreneurial society,” whereas others are perceived as “less entrepreneurial” (Freytag and Thurik 2007). Yet, findings from studies on how national culture influences individuals’ entrepreneurial behaviors remain conflicting (Bowen and De Clercq 2008, Mueller and Thomas 2000, Steensma et al. 2000, Stephan and Uhlaner 2010). One reason for this confusion is that few studies apply multi-level methods to test the relationship between national culture—a collective-level construct—and entrepreneurial behaviors—an individual-level construct. To fill this void in the literature, this paper provides a multi-level examination of the relationships between national culture and individual’s entrepreneurial entry.

Cultural norms and practices are known to shape individuals’ entrepreneurial behaviors, such as international orientation, start-up attempts, and innovative activities (Shane 1993, Bowen and De Clercq 2008). While economics, sociology, and management theories alike point to the importance of culture on the allocation of entrepreneurial efforts (Denzau and North 1994; Hayton et al. 2002; Thornton 1999, Williamson 2000), empirical studies on culture often disagree. For example, De Clercq et al. (2010) report a positive relationship between in-group collectivism and national rates of entrepreneurship - in contrast with much established beliefs. Wennekers et al. (2007) report a positive association between the cultural disposition of uncertainty avoidance and entrepreneurial behaviors, again in contrast with the general current of research. In part, this confusion may be due to the inconsistent treatment of levels of analysis and inappropriate application of OLS regressions in clustered data (Davidsson and Wiklund 2001, Peterson et al. 2012). Many macro-level studies have correlated country-level measures of culture with national rates of entrepreneurship, ignoring the fact that entrepreneurship is fundamentally an individual-level

endeavor (Bowen and De Clerq 2008, Stephan and Uhlaner, 2010). Micro-level research in entrepreneurship, on the other hand, has often tended to use individual-level operationalizations of cultural dispositions, ignoring the fact that as an encapsulation of a shared belief system, culture is fundamentally a collective construct (Hofstede 1991). Few studies use multi-level techniques in their analyses, increasing the risk of generating “false positives” (Hofmann et al. 2000).

Our overarching theoretical proposition is that the individual-level perceptions and motivations spurring the decision to enter entrepreneurship are contingent upon *informal* institutions, such as culture and behavioral norms. This proposition addresses an important gap since most empirical research have focused on *formal* rather than *informal institutions*, and few studies have attended to such contingencies that cross levels of analysis.

We address these gaps using cross-national data from the Global Entrepreneurship Monitor (GEM) and the Global Leadership and Organizational Behavior Effectiveness (GLOBE) study for 42 countries to test multi-level models investigating the effect of cultural traits on individuals’ entrepreneurial behavior. Cross-level moderation models reveal that several of the individual-level effects posited in entrepreneurship research are contingent upon cultural traits that operate at higher levels of analysis, testifying of the underexplored influences of national cultural context on individual’s entrepreneurship. We found that the positive effect of self-efficacy on entrepreneurial entry is more pronounced in cultural landscapes that favor institutional collectivism and have higher performance orientation. Intriguingly, we also found that the negative effects of individuals’ fear of failure on entry are somewhat smaller in settings with high levels of institutional collectivism. This may help explain the conflicting results in prior studies of the collectivism-entrepreneurship link (De Clerq et al. 2010, Uhlaner and Thurik 2007) highlighting the importance of research to theorize about different types of collectivism (Gelfand et al. 2004) as well as to explore what

consequences collectivism brings for entrepreneurial processes, such as opportunity identification, motivation building, and resource mobilization (Thessen 1997).

Empirically, our findings contribute by revealing a strong general pattern that individuals exhibiting similar perceptions may behave differently depending on their cultural context. Theoretically, this contributes by questioning prevailing individual-centric approaches to entrepreneurship, in which individuals are considered sole authors of their perceptions, dreams, and actions (Davidsson 1995, Fayolle et al. 2010). We also outline contributions to methodology in entrepreneurship research and discuss insights for public policy.

2. Theory and hypotheses development

We see entrepreneurship as opportunity-seeking behavior that operates at multiple levels of analysis (Davidsson and Wiklund 2001). This behavior takes place within a social and cultural context that the entrepreneurs cannot escape (Jack and Anderson 2002). By investing their own and others' resources to pursue the opportunity, entrepreneurs engage in risky actions that may lead to negative consequences (Cassar 2007). When implementing novel approaches to pursuing business opportunities, entrepreneurial entry also represents a variance-inducing act by introducing novelty into the social context, exposing entrepreneurs to the judgment of others (Eckhardt and Ciuchta 2008). Intention-based theories of entrepreneurial entry suggests that individuals consider not only their own ability to succeed and the possibility of failure, but also how this action is consistent with prevailing cultural norms and practices (Krueger and Carsrud 1993). Consequently, we draw upon intention-based theories of entrepreneurial behaviors and cultural theory to develop a multi-level model of entrepreneurial entry. *Cultural practices* refers to the actual manifestation of a culture in individuals' daily lives (House et al. 2004) and is useful for theorizing about the culture-

entrepreneurship link since distinctively from more abstract ‘values’, ‘practices’ are more proximate concepts dealing with the decisions important in entrepreneurship (Javidan et al. 2006). At the individual level, we expect individual self-efficacy and fear of failure to influence entry. We also expect individuals’ societal context as experienced through cultural practices to moderate how these two factors affect the likelihood of entry. Our model is illustrated in Figure 1 below.

INSERT FIGURE 1 HERE

2.1. Intentions, Self-Efficacy and Entrepreneurial Behaviors

A common view is that the best predictors of individual’s behavior are the intentions towards that behavior (Ajzen 2002). Consequently, intention-based models are commonly applied to theorize entrepreneurial entry as an intentionally planned behavior (Krueger et al. 2000). In this line of theory, individual’s entrepreneurial intention derives from perceptions of desirability and feasibility. Feasibility requires potential firm founders to perceive entrepreneurship as a “credible” career choice. Desirability depends on the individual values derived from his/her social and cultural environment (Shapero and Sokol 1982). In our development of this model, we view feasibility as linked to Bandura’s (1977) concept of self-efficacy. Self-efficacy constitute an individual’s cognitive estimate of his or her capabilities to mobilize the motivation, cognitive resources, and the will of action needed to exercise control over events in one’s life. Entrepreneurial self-efficacy refers to the strength of an individual’s belief that he or she will or will not be capable of successfully performing the roles and tasks

of an entrepreneur (Chen et al. 1998). Consequently, individuals view entrepreneurship as an attractive career option when they believe they have the requisite skills and abilities to act in a way that is needed to produce desired outcomes (Zhao et al. 2005). As such, we expect:

Hypothesis 1: An individual's *perception of entrepreneurial self-efficacy* will be positively related to his or her entrepreneurial entry.

2.2. Fear of Failure and Entrepreneurial Behaviors

While the theory of self-efficacy posits that the perceived feasibility of engaging in entrepreneurship drives individuals' behaviors, there may also be negative forces that inhibit entrepreneurial intentions that lead to eventual entry. Since entrepreneurship is intimately related to uncertainty and risk taking, individual's fear of failure is a potent factor inhibiting entrepreneurial entry (Caliendo et al. 2009). In the psychological research tradition, individual's fear of failure is thought of as a self-evaluative framework that influences how he or she defines, orients to, and experiences failure in achievement situations (Heckhausen 1991), especially those related to risk-taking behavior (Caraway et al. 2003). Fear of failure has been found to have a central influence on individuals' achievement motivation and their occupational aspirations (Burnstein 1963), including decisions to exploit a business opportunity or not (Welp et al. 2012), and also affect regional rates of entrepreneurship (Vaillant and Lafuente 2007). We therefore expect the following:

Hypothesis 2: An individual's *fear of failure* will be negatively related to his or her entrepreneurial entry.

2.3. Societal Institutional Collectivism and Entrepreneurial Behaviors

Individualism/collectivism is one of the most widely studied cultural dimensions (Smith and Bond 1993). Hofstede (1980) defined individualism as societies in which the ties between individuals are loose, and individuals' personal needs take precedence over those of the

group. Conversely, in collectivist societies, individuals are more often integrated into cohesive in-groups, which protect them in exchange for group loyalty. Important for our theory is that the individualism/collectivism dimension may play out at different levels of analysis and may be reflected in both cultural values and cultural practices (Thessen 1997, Konig et al. 2007). Gelfand et al. (2004) distinguished between societal institutions (how societal institutions and practices favor group loyalty at the expense of the individual in return for the loyalty of the collective toward the individual) and in-group collectivism (the degree to which individuals identify with and emphasize the importance of social groups, such as the family). Since our interest is on the country level, we focus on institutional collectivism as a cultural practice.

A strong emphasis in the literature has been to associate entrepreneurial behaviors with individualism rather than collectivism (Shane et al. 1991, Mueller and Thomas 2000, Hayton et al. 2002), whereas some have emphasized the need for balance between the two (Thessen 1997, Pinillos and Reyes 2001). Still, empirical support for the link between individualism and entrepreneurship remains mixed (De Clerq et al. 2010, Morris et al. 1993, Pinillos and Reyes 2001). These conflicting findings may partly reflect inconsistent research methods as well as the oversimplified ways in which the individualism/collectivism dimension has been conceptualized and theorized. We follow Thessen (1997) by distinguishing between the *variation-generating* and *resource-mobilizing* aspects of entrepreneurship when considering the effect of individualism/collectivism on entrepreneurial activity. The variance-generating aspect refers to how entrepreneurs have to create new means-end frameworks to connect supply and demand (Shane and Venkataraman 2000), exposing themselves to how deviation from commonly accepted behavior is tolerated. In collectivistic societies, the room for deviation is lesser since pursuing entrepreneurship may represent a potential challenge to established societal norms. The resource-mobilizing aspect

of entrepreneurship refers to how entrepreneurs have to find and leverage financial, social, and knowledge resources to launch a firm (Sørensen and Sorenson 2003).

Distinguishing between variance-generating and resource-mobilizing aspects helps theorize how collectivism shapes entrepreneurial entry. In societies with high institutional collectivism, group loyalty will be favored at the expense of individual income maximization. In return, there is a sense of collective loyalty toward the individual (House et al. 2004). Institutional collectivism may thus inhibit the effects of an individual's self-efficacy for entrepreneurial entry. In institutionally individualistic countries, tolerance for individual exuberance is higher since there are fewer institutionalized norms and social systems diminishing variance in social and economic behavior (House et al. 2004). Also, resource-mobilizing processes may be more cumbersome in institutionally individualistic societies, in which "every man is for himself" (Thessen 1997). Hence, the importance of individual-centric motivation marshaling resources to engage in entrepreneurship will be more important in institutionally individualistic societies because there are fewer institutionalized norms and social systems for decreasing inequality. These aspects lead us to posit that the effect of self-efficacy will exhibit a *stronger* effect on entrepreneurial entry in institutionally individualistic societies, as opposed to institutionally collectivist societies:

Hypothesis 3a: In societies characterized by a *low* level of institutional collectivism, entrepreneurial self-efficacy will be a more potent facilitator of entrepreneurial entry.

For the effect of individuals' fear of failure for entrepreneurial entry, institutional collectivism may not exhibit the same effect as self-efficacy. Institutional collectivism is depicted in societies as structures, institutions, and traditions that serve to mitigate exuberant individualism but also to provide a social fabric to support individuals deemed in need of support (Welter and Smallbone 2006). Because of such aspects, individuals are substantially less likely to choose an entrepreneurial career in societies in which institutional collectivism

is high, *regardless* of their fear of failure. An entrepreneurial career choice signals that the individual prioritizes his or her own interests and ambitions relative to those of the collective (Thessen 1997). If individuals do not fear the risk of failure, the context in which such risk tolerance plays out will reinforce the effect of that priority, diminishing the positive effect of low fear of failure on entrepreneurial entry in collectivistic societies. Thus, we hypothesize that the effect of *either* high or low fear of failure should be weaker in collectivist societies:

Hypothesis 3b: In societies characterized by a *low* level of institutional collectivism, fear of failure will be a more potent inhibitor of entrepreneurial entry.

2.4. Uncertainty Avoidance and Entrepreneurial Behaviors

Uncertainty avoidance refers to the extent to which individuals in a society feel threatened in ambiguous situations, the extent to which they prefer order and rule-based reduction of uncertainty, and how they tolerate uncertainty in general (Sully de Luque and Javidan 2004).

Also here, the findings of empirical studies to date are conflicting (Shane 1993, Wennekers et al. 2007). In Hofstede's definition, uncertainty avoidance is "the extent to which the members of a culture feel threatened by uncertain or unknown situations" (Hofstede 1991: 113).

Relevant for entrepreneurship, uncertainty avoidance affects the extent to which individuals in a given society feel threatened by ambiguity; prefer rule-based mechanisms for uncertainty reduction; and seek orderliness, consistency, structure, and formalized processes in their lives (Wennekers et al. 2010). Based on these arguments, we expect that in societies with high uncertainty avoidance, individuals exhibiting a high fear of failure will be more likely to also exhibit reservations toward entrepreneurship. Conversely, the effect of self-efficacy should be particularly strong in societies with low uncertainty avoidance. Therefore, we hypothesize:

Hypothesis 4a: In societies characterized by a *low* degree of uncertainty avoidance, entrepreneurial self-efficacy will be a more potent facilitator of entrepreneurial entry.

Hypothesis 4b: In societies characterized by a *high* degree of uncertainty avoidance, fear of failure will be a more potent inhibitor of entrepreneurial entry.

2.5. Performance Orientation

Performance orientation reflects the extent to which a community encourages and rewards innovation, high standards, and performance improvement (Javidan 2004). Perhaps the best known elaboration of this construct was provided by Weber (1905), who considered this cultural trait to be a key distinguishing aspect between Catholic and Protestant religions. The Protestant work ethic emphasizes the punctilious performance of everyday work as an intrinsically valuable calling in its own right and highlights the importance of work-related accomplishment as an important goal in life. The cultural uses of this construct, to our knowledge, have been limited to Konig et al.'s (2007) creation of scenario-based measures of entrepreneurs' cultural orientations. In his review, Javidan (2004: 245) associated performance orientation with, for example, valuing training and development, emphasizing results rather than people, emphasizing competitiveness and materialism, setting demanding targets, having a "can-do" attitude, appreciating feedback as necessary for improvement, taking initiative, providing bonuses and financial rewards, and believing that anyone can succeed if they try hard enough. These values are often associated with entrepreneurship (Davidsson 1995, Stephan and Uhlaner 2010). Individuals choosing the entrepreneurial career option set a high bar for themselves (Cassar 2007). The entrepreneurial career option also forces the individual to take initiative, and few would choose this option if they believed they could not succeed. Therefore, we hypothesize that performance orientation will positively moderate the effect of self-efficacy on entrepreneurial entry:

Hypothesis 5a: In societies characterized by a *high* degree of performance orientation, entrepreneurial self-efficacy will be a more potent facilitator of entrepreneurial entry.

Performance orientation might also come at a cost if performance can be directed at a variety of activities. While self-efficacy may influence the performance of both managers and entrepreneurs (Chen et al. 1998), a societal emphasis on high performance may lead individuals toward activities with the highest predicted economic outcome rather than toward activities that are more uncertain. It has been widely documented that on average, individuals with equal skills and experience have higher economic returns as paid workers than as entrepreneurs—a career from which some reap economic returns but most earn little (Hamilton 2000). Hence, in cultural settings in which professionalism, performance, and perseverance are seen as virtues, potential loss from engaging in more uncertain economic activities (if they do not pay off) may lead individuals to shun away from entrepreneurship if they are fearful of failing (Vaillant and Lafuente 2007). Thus, a society's performance orientation may enhance the effect of both self-efficacy and fear of failure on entry:

Hypothesis 5b: In societies characterized by a *high* degree of performance orientation, fear of failure will be a more potent inhibitor of entrepreneurial entry.

3. Methodology

3.1. Data

We test our predictions using eight years of survey data from the GEM dataset (Reynolds et al. 2005). We combined this with data on national cultural attributes collected by the GLOBE study (House et al. 2004). Together, 42 countries and 324,566 (unweighted) individual-level interviews from 2001 to 2008 were available after combining both data sources. We added exogenous controls of national-level attributes—*country's population* and *gross domestic product (GDP) per capita* and two additional cultural measures—obtained from the International Monetary Fund (IMF), EuroStat, and GLOBE data sets respectively.

3.2. Variables

The dependent variable in our analysis is *individual-level entrepreneurial entry*. GEM identifies three types of entrepreneurs: nascent entrepreneurs, new entrepreneurs, and established entrepreneurs. Since we do not know which nascent entrepreneurs actually go ahead and launch ventures, and that established entrepreneurs may be thought of as incumbents, the most salient operationalization of entrepreneurial entry comes from identifying ‘new’ entrepreneurs. GEM defines these as ‘owner-managers of new firms less than 42 months old’ – consistent with other studies of entrepreneurial entrants (Cassar 2007, Folta et al. 2010, Zahra et al. 2000). Overall, 12,788 of 324,566 (3.94%) individuals interviewed qualified as new entrepreneurs, which we coded as a dummy variable (1 = “entry”). Table 1 indicates the number of interviews and percentage rates of entrepreneurship by country averaged over 2001–2008.

Insert Table 1 here

The GEM dataset has been widely used in research, affirming its suitability for the study of entrepreneurship (Freytag and Thurik 2007, Bowen and De Clercq 2008). A potential limitation of the GEM dataset for our purposes, however, is that it captures any kind of entrepreneurial activity, including self-employment.

Individual-level (Level 1) predictors. Individual’s motivations and perceptions are fundamental predictors of entrepreneurial entry (Krueger and Carsrud 1993). In this study, we considered two such factors frequently theorized as central for entrepreneurial entry—*fear of failure* and *self-efficacy* in entrepreneurial efforts—both obtained from GEM. To minimize

bias caused by cultural interpretations (i.e., intention-based variables such as scales of self-efficacy may be judged differentially across cultures, Liñán and Chen 2009), only dichotomous (yes/no) scales were used. Although dichotomous scales limits variability and in turn nuances in findings, prior research suggests this is preferable to bias caused by cultural interpretations of scales (Hult et al. 2008, Runyan et al. 2012).

Fear of failure was captured using a dummy variable (1 = yes if individuals were fearful of failure, 0 = if not) that measures an individual's lack of confidence in his or her ability to cope with endogenous or exogenous uncertainty associated with new business venture-creation as well as the fear of anticipated consequences of such failure (Vaillant and Lafuente 2007).

Entrepreneurial self-efficacy indicates whether individuals think they possess the knowledge, skills, and experience required to start a new business (1 =yes, 0 = if not) (Krueger et al. 2000).

Country-level (Level 2) predictors. We used three cultural attributes as practiced at the country level: institutional collectivism, uncertainty avoidance, and performance orientation. GLOBE measures *societal institutional collectivism* as the degree to which (1) societal institutions and practices favor group loyalty even at the expense of the individual in return for the loyalty of the collective toward the individual and (2) the degree to which the common good is preferred over private good in societal decision making. *Uncertainty avoidance* societal practice is measured as the degree to which individuals in a given society feel threatened by ambiguity and prefer rule-based mechanisms, orderliness and clearly articulated expectations even at the cost of experimentation and innovation. *Performance orientation* reflects the society's current practices regarding innovation, improvement, and reward systems. In essence, performance orientation measures the extent to which a given society is perceived to encourage and reward performance improvement.

GLOBE measures of national cultural attributes are based on a survey of more than 17,000 middle managers in 951 organizations in 63 countries or cultural regions. Cultural attributes were measured with seven-point Likert-type scales, with cultural scores presented as regression-predicted scores that correct for response bias. We chose to use practice variables (“as is”) since our theory development emphasized cultural influences as experienced by individuals in their cultural contexts. Appendix 1 shows the wordings of the items used to measure the individual-level as well as the country-level predictors in this study.

Interaction terms. Six interaction terms were generated to test our hypotheses. Mean standardized Z-scores of each of the three cultural predictors were multiplied with each of the two individual-level perceptual variables to yield the six interaction terms.

Individual-level controls. Entrepreneurial entry may be influenced by factors other than an individual’s perceptions. We controlled for a number of demographic characteristics, obtained from the GEM dataset, that have been shown to strongly correlate with entrepreneurial entry: *Age and age squared.* An individual’s age is an important influence on entrepreneurial entry (Bosma et al. 2009). We controlled for individuals’ age as well as the mean-centered squared term of age in order to capture curvilinear effects.

Gender. Another important influence on entrepreneurial motivation is gender, with women typically being less willing to enter than men. In our data, female is coded as 2 and male as 1.

Education and household income tier. Both education and household income have been associated with entrepreneurial entry (Vinogradov and Kolvereid 2007). In GEM, education is operationalized using five categories: “none” (0), “some secondary” (1), “secondary” (2), “post-secondary” (3), and “graduate” educational experience (4). Household income includes three categories: “lower middle” (1), “middle” (2), and “upper middle” (3) tiers.

Country-level controls. We also controlled for two additional measures of cultural orientation¹—*in-group collectivism* and *assertiveness*. These two indicators were also obtained from the GLOBE survey. The GEM research suggests that a country’s level of economic development influences the nature and distribution of entrepreneurial activity (Pinillos and Reyes, 2001). We control for *GDP per capita* and *population size* (in millions) for each country from 2001–2008.

The three cultural predictors and control variables were z-standardized because they were collected from separate sources, so raw scores for each of them would have different interpretations. Standardizing them also yielded a reference point based upon which relative effects could be interpreted.

3.3. Research Design and Analysis

Since culture is a collective construct theorizing about societal structures (Hofstede 1991), studies using individual-level perceptions of culture may suffer from the ecological fallacy by assuming that collective-level attributes are directly reflected in individual behaviors (Peterson et al. 2012). Conversely, studies of entrepreneurship on the individual or firm levels of analyses often suffer from the individualistic fallacy of ignoring the broader context within which individuals are embedded (Stenholm et al. 2013). Multi-level designs help avoid these fallacies by allowing simultaneous consideration of country-level and individual-level factors. Our dataset constitutes a cross-sectional panel grouped by country, combining observations at the individual and country levels. Such data necessitates multi-level techniques for analysis (Hofmann et al. 2000). Our models are based on random-effect logistic regression for which an

¹ GLOBE lists nine measures of cultural practices and values. We used three as predictors and two as controls because (1) ‘humane orientation’ and ‘female egalitarianism’ dropped out of equations due to multicollinearity with the seven other dimensions and (2) out of the remaining seven, two dimensions—power distance and future orientation—were never statistically significant in any model, nor in robustness checks. Hence, we dropped them from the models presented. These analyses are available upon request.

individual's probability of entrepreneurial entry is a dichotomous outcome, estimated from individual-level factors (Level 1), country-level factors (Level 2), and cross-level interactions between the two.

Our objective was to examine the (1) the individual-level effects of *entrepreneurial self-efficacy* and *fear of failure* and (2) the interaction effects by which the three cultural predictors moderate the effect of the individual factors on an individual's probability of entering entrepreneurship. We adopted a three-step testing strategy by first estimating the influence of individual-level predictors on entrepreneurial entry (Model 2 of Table 4). We then included both individual- and country-level predictors in Model 3. Finally, we looked into the influence of the cross-level moderation effects between country-level cultural measures and individual-level perceptions towards entrepreneurship (Model 4).

4. Results

Table 2 provides the descriptive statistics for all the predictors and controls used. Table 3 shows the correlation matrix for the individual-level variables and country-level controls and predictors. To check multicollinearity, in addition to standardizing the cultural variables, we computed the variance inflation factors (VIFs) of all variables (constitutive and interaction variables) in our model. We found low to moderate VIF values between 1.04 and 6.5, which indicates that the models are not tainted by multicollinearity.

Insert Tables 2-4 here

Table 4 shows our multi-level model of individuals' probability of entrepreneurial entry. The model is reported with estimates for the fixed individual-level part (estimates of coefficients) and the random culture-level part (variance estimates). Columns 2 and 3 in Table 4 report the odds ratio (OR), where $OR > 1$ indicates a positive relationship and $OR < 1$ indicates a negative relationship. Columns 5–9 report the beta-coefficients of the logistic regression.

We note a variance of 15% (also called intraclass correlation [ICC]) in individual-level entrepreneurial entry across the 42 countries included in our study. This is shown in Column 1 of Table 4. This finding suggests that a significant proportion of entrepreneurial entry is explained by country-level factors—namely, culture in our study—thus warranting a multi-level analysis that accommodates contextual factors to explain entrepreneurial entry.

Columns 2 in Table 4 shows the influence of two individual-level predictors—namely, fear of failure and self-efficacy—on the probability of entry into entrepreneurship. The ORs show that individuals' fear of failure suppresses their probability of entering into entrepreneurship by 31% on average ($1 - 0.69$, $p < 0.000$). Individuals with high self-efficacy are on average more than five times ($OR = 5.47$, $p < 0.000$) more likely to enter into entrepreneurship than individuals with low self-efficacy. Combined, these findings support the individual-level hypotheses (Hypotheses 1 and 2) in that *individuals' self-efficacy* is positively associated with entrepreneurial entry, while *fear of failure* is negatively associated with entrepreneurial entry.

Column 3 in Table 4 shows the direct effects of cultural practices on entry. Although we did not formally hypothesize about these effects, summarizing them is in order. We found that a one-unit standard deviation change in institutional collectivism decreases the probability of entry by 12% ($1 - 0.88$; $p < 0.05$). Further, a one-unit standard deviation change in performance orientation increases probability of entry by 35% ($p < 0.001$). This is different from the country-level study by Stephan and Uhlaner (2010), which motivates the need for

studies to compare the differential effects of national culture on individual’s action versus aggregate rates of entrepreneurship. We also find a one-unit standard deviation change in uncertainty avoidance to decrease the probability of entry by 16%, although this is only marginally significant ($p < 0.10$).

To investigate Hypotheses 3a–5b, we introduced cross-level moderation effects between national culture and self-efficacy as well as between national culture and fear of failure in Column 4–9 of Table 4. The moderators were introduced sequentially to avoid multicollinearity. The estimates in Columns 4–9 reported as beta-coefficients of the logistic regression as opposed to the ORs reported in Columns 2 and 3 of Table 4 reveal statistical significances for five out of the six interaction terms (Hypothesis 5b not supported). Since cross-level interaction terms are estimated with individuals’ entry as the outcome variable, the coefficients themselves are individual-level disaggregates and cannot be used to explain direction and effect size for the dependent variable across countries (Bliese and Britt 2001). We therefore plotted the marginal effects of the five significant interaction terms holding all other variables constant at their means. This allows us to gauge the *economic significance* of the results instead of merely statistical significance. It also allows us to ascertain the directionality of cross-level effects, which cannot be inferred from the coefficients.

Insert Figures 2-6 here

All figures show the computed interaction between “high,” “medium,” and “low” levels of cultural practices (at one standard deviation above the mean, at the mean, and one standard deviation below the mean, respectively) and the perceptual variables for fear of failure and self-efficacy. Figure 2 plots the interaction between high, medium, and low levels

of institutional collectivism and entrepreneurial self-efficacy, which is observed in Table 4 as significant at $p < 0.01$. By comparing the end points of the lines (i.e., at low or high levels of self-efficacy), we see that the positive effect of an individual's self-efficacy on entrepreneurial entry is more pronounced in societies with low institutional collectivism. The difference between high and low self-efficacy amounts to an 8% increase in the likelihood of entrepreneurial entry in countries where institutional collectivism is low but a 12% increase in countries where institutional collectivism is high. This affirms Hypothesis 3 and shows that the estimated effects are both statistically significant and meaningfully large.

Figure 3 plots the interaction between high, medium, and low levels of institutional collectivism and fear of failure, which is moderately significant in Table 4 at $p < 0.06$. Comparing the end points of the lines (i.e., at low or high levels of fear of failure), we see that the negative effect of an individual's fear of failure on entrepreneurial entry is more pronounced in societies with low institutional collectivism, however, the influence is not very large in effect size. The difference between high and low fear of failure amounts to a 2% increase in the likelihood of entry in countries where institutional collectivism is low but only a 1% increase in countries with high institutional collectivism. This affirms Hypothesis 3b.

Figure 4 plots the interaction between high, medium, and low levels of uncertainty avoidance and self-efficacy, which is observed in Table 4 as significant at $p < 0.001$. By comparing the end points of the lines, we see that the positive effect of an individual's self-efficacy on entrepreneurial entry is actually marginally more pronounced in societies with *high* uncertainty avoidance. The difference between high and low self-efficacy amounts to a 11% increase in the likelihood of entrepreneurial entry in countries where uncertainty avoidance is low and a 9% increase in countries where uncertainty avoidance is high, thus rejecting Hypothesis 4a.

Figure 5 plots the interaction between uncertainty avoidance and fear of failure, observed in Table 4 as significant at $p < 0.001$. By comparing the end points of the lines, we see that the negative effect of an individual's fear of failure on entrepreneurial entry is more pronounced in societies with high uncertainty avoidance, yet while the influence is statistically significant, it is not large in effect size. The difference between high and low fear of failure amounts to a 1% decrease in the likelihood of entrepreneurial entry in countries where uncertainty avoidance is high and a 0.75% decrease in countries where uncertainty avoidance is low, weakly affirming Hypothesis 4b.

Finally, Figure 6 plots the interaction between performance orientation and self-efficacy, observed to be significant at $p < 0.05$. Comparing the end points of the lines, we see that the negative effect of an individual's fear of failure on entrepreneurial entry is more pronounced in societies with high performance orientation. The difference between high and low self-efficacy amounts to a 13% decrease in the likelihood of entrepreneurial entry in countries where performance orientation is high and a 7% decrease in countries where performance orientation is low. This affirms Hypothesis 5c in that performance orientation positively moderates how individuals' self-efficacy impacts entrepreneurial entry.

5. Discussion

This study is among the first to pinpoint some of the crucial mechanisms by which national cultural attributes and individual-level factors jointly shape entrepreneurial behaviors (Peterson et al. 2012). We observed several contingencies in how national culture moderates the effect of commonly investigated individual-level attributes through cross-level moderation effects. First and foremost, we found that the cultural traits of institutional collectivism and uncertainty avoidance in a country moderate both how individuals' fear of failure and their self-efficacy impact the likelihood of entrepreneurial entry, albeit uncertainty avoidance has a

relatively much smaller influence on how individuals' fear of failure impacts their likelihood of entrepreneurial entry. We also found that the level of performance orientation slightly moderates how individuals' fear of failure impacts their likelihood of entrepreneurial entry.

These cross-level moderations shows how individual's context have a direct influence on entrepreneurial entry, but also how the context moderates the effect of individual-level attributes on entrepreneurial entry. Individuals exhibiting similar perceptions may behave differently depending on the cultural context in which they are embedded. Further, changes in the cultural context may induce a change in how individuals with certain attributes behave.

Our results indicate that cultural landscapes favoring institutional collectivism do not exacerbate the negative effects of individuals' fear of failure on entry. This challenges the view that always associates entrepreneurship with individualism (Mueller and Thomas 2000) and which is consistent with findings by Morris et al. (1993) using survey data, as well as the findings by De Clercq et al. (2010) and Pinillos and Reyes (2001) using country-level aggregates of GEM data. Pinillos and Reyes (2001) further show that the effects of individualism in a country on entrepreneurship may be dependent on the country's level of economic development. While we control for economic development, our study does not attend to country-level moderation effects since our theoretical model is concerned with country-level influences on *how individual's motivation and perceptions shape entrepreneurial behaviors*, not country-level influences on *aggregate rates of entrepreneurship*. A general theoretical explanation that may explain the unearthed relationship between institutionalized collectivism and entrepreneurship may be found in the distinction between variance-generating and resource-mobilizing aspects of entrepreneurship (Thessen 1997). Entrepreneurs need both a societal setting that allows for deviance and playfulness (Hjorth 2004) as well as a social fabric that facilities resource mobilization (Sørensen and Sorenson 2003).

We theorized that in cultural landscapes that favor institutional collectivism, the positive effects of an individual's self-efficacy on entry would be enhanced because the individual's belief in his or her ability to succeed would mitigate the potentially negative influence of collectivistic structures and attitudes. We found support for such an effect, which was among the strongest in our study. Our study also surprisingly showed that if a country's culture is predominantly inclined toward uncertainty avoidance, there is actually an even stronger positive association between self-efficacy and entrepreneurial entry. These two cross-level moderations highlight the fact that belief in one's ability to succeed may partly isolate individuals from the negative influences of cultural norms for entrepreneurial entry. We theorized and found weak support for a moderation effect of uncertainty avoidance on fear of failure, but societal uncertainty avoidance did not negatively moderate the effect of individual's self-efficacy, on the contrary. This is interesting because it shows that individuals with high entrepreneurial self-efficacy may help to partly insulate individuals against societal uncertainty avoidance.

Finally, we theorized on the effect of performance orientation in terms of how self-efficacy and fear of failure impact entry. We found no evidence that the effect of individual's fear of failure for entrepreneurial entry was more or less pronounced in countries with cultures that exhibit a strong performance orientation. However, we did find national performance orientation to positively moderate the effect of an individual's self-efficacy. This finding may be explained by the fact that while several cultural settings are known to put a high emphasis on results, continuous improvement, and a strong work ethic (Weber 1905), many of them exhibit low rates of entrepreneurship since the economic framework (Henrekson and Jakobsson 2001).

Our study has several implications for entrepreneurship theory. We respond to calls for increasing the contextualization of research (Welter 2011) by studying the effect of

national culture on entrepreneurship. Our multi-level perspective on culture not only allows us to *control* for contextual differences but also to *theorize* on how contextual variance affects entrepreneurship (Autio et al. 2013, Zahra and Wright 2011). Theorizing on context is of importance in developing theory since decisions to engage in entrepreneurship involve personal tradeoffs that are influenced by contextual contingencies (Shane and Venkataraman 2000). To understand why some individuals and not others choose to pursue entrepreneurship, we need multi-level theories that consider not only individual-level characteristics but also the context within which those characteristics influence entrepreneurship (Davidsson and Wiklund 2001). This research serves as a reminder that the majority of entrepreneurship research that centers on the United States and Europe, are often devoid of context, and therefore have lower generalizability in other cultural contexts (Aldrich 2009, Kim and Li, 2013, Welter 2011, Zahra and Wright 2011).

We also contribute methodologically by showing the limitations of models focusing only on a single level of analysis (Davidsson and Wiklund 2001) and how these limitations can be overcome. Our paper highlights the potential danger of solely focusing on countries or regions as the unit of analysis when considering the influence of culture on entrepreneurship. Country-level studies often suffer from the individualistic fallacy of aggregating individual- or team-level entrepreneurial behaviors to that of the country level (Peterson et al. 2012). This may bias explanations at the country level, easily leading to over-socialized theory. As Hofstede notes (2001:17), countries “are not king size individuals. They are wholes, and their internal logic cannot be understood in the terms used for the personality dynamics of individuals. Eco-logic differs from individual psycho-logic.”

Individual-level studies using individuals’ *perceptions of culture* to study their entrepreneurial behavior may suffer from the ecological fallacy by assuming that collective attributes can be directly reflected in the behaviors and values of individuals, easily confusing

individuals' perceptions and motivations with that of the national culture (Hofman et al. 2000). Our analysis shows that while individuals' perceptions and motivations are a significant explanation of entrepreneurial behavior, they are contingent on national cultures in intricate ways. Multi-level models allow researchers to explore more detailed analyses of the mechanisms between culture and entrepreneurship, more truthful to the levels of analysis at which those mechanisms play out (Peterson et al. 2012). The development of multi-level theories offers rich opportunities for entrepreneurship research.

Our findings also carry implications for policy practice that seeks to manipulate context in order to engender desired outcomes. In order to promote entrepreneurship, societies with high institutional collectivism should seek to promote entrepreneurial role models that emphasize entrepreneurship as an attractive norm rather than as a behavior that conflicts with established norms. Societies with low institutional collectivism should promote an image of entrepreneurship as an act celebrating individuals rather than merely their societal contributions. Societies with low institutional collectivism could also seek to build mechanisms that mitigate the risks associated with resource investments in the pursuit of entrepreneurial growth, and similar initiatives could help mitigate the negative effect of cultural uncertainty avoidance. Finally, societies with low performance orientation might benefit from policy measures that highlight entrepreneurship as a lifestyle choice rather than merely as a way to become rich (Hjorth 2004).

Our study also comes with limitations. On the individual level, we considered two perceptions frequently associated with entrepreneurial behaviors: fear of failure and entrepreneurial self-efficacy. Obviously, entrepreneurship is influenced by other attributes such as demographics, experiences, and individuals' social position, which also deserves further scrutiny. Although single-item measures were motivated due to cross-country equivalence (Hult et al. 2008, Runyan et al. 2012), further research is needed to ascertain

perceptions related to entrepreneurship. Given the cross-sectional nature of the GEM data, it might also be possible that the actual act of having started a new venture enhance individuals' entrepreneurial self-efficacy and/or diminish their fear of failure. Further research is needed to ascertain the full causal chain of how these perceptions eventually leads to entrepreneurial action, and consider what other national cultural attributes such as assertiveness or future orientation that may influence entrepreneurship. Finally, our focus on national culture—commonly seen as the most salient unit of analysis from which to derive proxies of cultural practices—could be nuanced by studying more fine-grained groupings of culture on the regional or neighborhood level (Klyver and Foley 2012).

5.1. Conclusion

This study demonstrates important contingencies in how national cultural attributes affect individual-level entrepreneurial behaviors. The application of multi-level analysis techniques may unearth further important nuances in how national culture and individual attributes jointly mold individuals' entrepreneurial behaviors, and we hope future studies heed this call by challenging, developing, and/or refining the theoretical models and empirical findings presented in this paper.

REFERENCES

- Aldrich, H. E. 2009. Lost in space, out of time: How and why we should study organizations comparatively. In B. King, T. Felin, and D. Whetten (Eds), *Research in the Sociology of Organizations*, Vol. 26, 21–44. Bingley: Emerald Group.
- Autio, E., S. Pathak and K. Wennberg. 2013. Consequences of Cultural Practices for Entrepreneurial Behaviors. *Journal of International Business Studies* 44: 334-362.
- Bandura, A. 1977. *Social Learning Theory*. Englewood Cliffs, NJ, Prentice-Hall
- Bliese, P. and T. Britt. 2001. Social support, group consensus and stressor–strain relationships: social context matters. *Journal of Organizational Behavior*, 22: 425-436.
- Bosma, N., Z. Acs, E. Autio, A. Coduras and J. Levie. 2009. *Global Entrepreneurship Monitor 2008 Executive Report*: 65. London: GERA.
- Bowen, H.P. and D. De Clercq 2008. Institutional Context and the Allocation of Entrepreneurial Effort. *Journal of International Business Studies* 39: 1-21.
- Burnstein, E. 1963. Fear of failure, achievement motivation, and aspiring to prestigious occupations. *Journal of Abnormal and Social Psychology* 67: 189-193.
- Caraway, K., C. Tucker, W. Reinke and C. Hall. 2003. Self-efficacy, goal orientation, and fear of failure as predictors of school engagement in high school students. *Psychology in the Schools*, 40: 417-427.
- Caliendo, M., F. Fossen and A. Kritikos. 2009. Risk attitudes of nascent entrepreneurs—new evidence from an experimentally validated survey. *Small Business Economics*, 32: 153-167.
- Cassar, G. 2007. Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth. *Entrepreneurship and Regional Development* 19: 89-107.
- Chen, C., P. Greene and A. Crick. 1998. Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *Journal of Business Venturing*, 13: 295-316.
- Davidsson, P. 1995. Culture, structure and regional levels of entrepreneurship. *Entrepreneurship and Regional Development* 7 1: 41-62.
- Davidsson, P. and J. Wiklund. 2001. Levels of Analysis in Entrepreneurship Research: Current Research Practice and Suggestions for the Future. *Entrepreneurship: Theory and Practice* 25: 81-99.
- De Clercq, D., W. Danis and M. Dakhli, M. 2010. The moderating effect of institutional context on the relationship between associational activity and new business activity in emerging economies. *International Business Review* 19: 85-101.
- Delmar, F., and P. Davidsson. 2000. Where do they come from? Prevalence and characteristics of nascent entrepreneurs. *Entrepreneurship and Regional Development* 12: 1-23.
- Denzau, A. T., and North, D. C. 1994. Shared mental models: ideologies and institutions. *Kyklos*, 47(1): 3-31.
- Eckhardt, J. T. and M. P. Ciuchta 2008. Selected variation: The population-level implications of multistage selection in entrepreneurship. *Strategic Entrepreneurship Journal* 2: 209-224.
- Fayolle A., O. Basso and V. Bouchard. 2010. Three levels of culture and firms' entrepreneurial orientation: A research agenda. *Entrepreneurship and Regional Development* 22: 707-730.
- Folta, T.B., F. Delmar and K. Wennberg. 2010. Hybrid Entrepreneurship. *Management Science* 56: 253-269.
- Freytag, A. and R. Thurik. 2007. Entrepreneurship and its determinants in a cross-country setting. *Journal of Evolutionary Economics* 17: 117-131.

- Gelfand, M., D. Bhawuk, L. Nishii and D. Bechtold. 2004. Individualism and collectivism. In R. House, P. Hanges, M. Javidan, P. Dorfman and V. Gupta (Eds.), *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. Thousand Oaks, CA: Sage: 437-512.
- Hamilton, B.H. 2000. Does entrepreneurship pay? An empirical analysis of the returns of self-employment. *Journal of Political Economy* 108: 604-631.
- Hayton, J., G. George and S. Zahra. 2002. National culture and entrepreneurship: A review of behavioral research. *Entrepreneurship: Theory and Practice* 26: 33.
- Heckhausen, H. 1991. *Motivation and action*. New York: Springer.
- Henrekson, M. and U. Jakobsson. 2001. Where Schumpeter was nearly right – the Swedish model and Capitalism, Socialism and Democracy. *Journal of Evolutionary Economics* 11: 331-358.
- Hjorth, D. 2004. Creating space for play/invention--concepts of space and organizational entrepreneurship. *Entrepreneurship and Regional Development* 16: 413-432.
- Hofmann, D., M. Griffi. and M. Gavin. 2000. The application of hierarchical linear modeling to organizational research. *Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions*. K. J. Klein and S. W. J. Kozlowski. San Francisco, Jossey-Bass: 467-511.
- Hofstede, G. 1980. *Culture's consequences: International differences in work-related values*. Beverly Hills, CA, Sage Publishers.
- Hofstede, G. 1991. *Cultures and organizations: Software of the mind*. Newbury, UK, McGraw-Hill.
- House, R., P. Hanges, M. Javidan, P. Dorfman and V. Gupta. 2004. *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. London: Sage.
- Hult, G., D. Ketchen, D. Griffith, C. Finnegan, T. Gonzalez-Padron, N. Harmancioglu, Y. Huang, M. Talay and S. Cavusgil. 2008. Data equivalence in cross-cultural international business research: assessment and guidelines. *Journal of International Business Studies* 39: 1027-1044.
- Jack, S.L. and A.R. Anderson 2002. The effects of embeddedness on the entrepreneurial process. *Journal of Business Venturing* 17: 467-487.
- Javidan, M. 2004. Performance orientation. In R. House, P. Hanges, M. Javidan, P. Dorfman and V. Gupta (Eds.). *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. London, Sage: 235-281.
- Javidan, M., R. House, P. Dorfman, P. Hanges and M. De Luque. 2006. Conceptualizing and measuring cultures and their consequences: a comparative review of GLOBE's and Hofstede's approaches. *Journal of international business studies* 37: 897-914.
- Kim, P. and M. Li. 2013. Seeking Assurances When Taking Action: Legal Systems, Social Trust, and Starting Businesses in Emerging Economies. *Organization Studies* forthcoming.
- Klyver, K., and D. Foley. 2012. Networking and culture in entrepreneurship. *Entrepreneurship and Regional Development* 24: 561-588.
- Konig, C., H. Steinmetz, M. Frese, A. Rauch and Z. Wang. 2007. Scenario-based scales measuring cultural orientations of business owners. *Journal of Evolutionary Economics* 17: 211-239.
- Krueger, N.F. and A.L. Carsrud. 1993. Entrepreneurial intentions: applying the theory of planned behavior. *Entrepreneurship and Regional Development* 5: 315-330.
- Krueger, N.F., M. D. Reilly and A.L. Carsrud. 2000. Competing models of entrepreneurial intentions. *Journal of Business Venturing* 15: 411-432.

- Liñán, F. and Y.W. Chen. 2009. Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice* 33: 593-617.
- Morris, M. H., R.A. Avila J. and Alien. 1993. Individualism and the modern corporation: Implications for innovation and entrepreneurship. *Journal of Management* 19: 595-612.
- Mueller, S.N. and A.S. Thomas. 2000. Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *Journal of Business Venturing* 16: 51-75.
- Peterson, M.F., J.-L. Arregle and M. Xavier. 2012. Multilevel models in international business research. *Journal of International Business Studies* 43: 451-457.
- Pinillos, M. J. and L. Reyes. 2001. Relationship between individualist–collectivist culture and entrepreneurial activity: evidence from Global Entrepreneurship Monitor data. *Small Business Economics* 37: 23–37.
- Reynolds, P., N. Bosma and E. Autio. 2005. Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003. *Small Business Economics* 24: 205-231.
- Runyan, R., B. Ge, B. Dong and J. Swinney. 2012. Entrepreneurial Orientation in Cross-Cultural Research: Assessing Measurement Invariance in the Construct. *Entrepreneurship Theory and Practice* 36: 819-836.
- Shane, S. 1993. Cultural influences on national rates of innovation. *Journal of Business Venturing* 8: 59-73.
- Shane, S., L. Kolvereid and P. Westhead. 1991. An Exploratory Examination of the Reasons Leading to New Firm Formation Across Country and Gender. *Journal of Business Venturing* 6: 431-446.
- Shane, S. and S. Venkataraman 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review* 25: 217-266.
- Shapiro, A., and L. Sokol. 1982. The social dimensions of entrepreneurship. In C. A. Kent, D. L. Sexton, and K. H. Vesper (Eds.), *Encyclopedia of Entrepreneurship*. Engelwood Cliffs, NJ: Prentice-Hall: 72-90.
- Smith, P. B. and M. H. Bond 1993. *Social psychology across cultures: Analysis and perspectives*. Hemel Hempstead, UK, Harvester/Wheatsheaf.
- Sørensen, J.B., and O. Sorenson. 2003. From Conception to Birth: Opportunity perception and resource mobilization in entrepreneurship. *Advances in Strategic Management* 20: 89 - 117.
- Steensma, H.K., L. Marino and P. Weaver. 2000. The influence of national culture on the formation of technology alliances by entrepreneurial firms. *Academy of Management Journal* 43: 951-973.
- Stenholm, P., Z. Acs and R. Wuebker. 2013. Exploring country-level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing* 28: 176-193.
- Stephan, U., and L. Uhlaner. 2010. Performance-based vs socially supportive culture: A cross-national study of descriptive norms and entrepreneurship. *Journal of International Business Studies* 41: 1347–1364
- Sully de Luque, M. and M. Javidan 2004. Uncertainty avoidance. *Culture, leadership, and organizations*. R. J. House, P. J. Hanges, M. Javidan, P. W. Dorfman and V. Gupta. Thousand Oaks, CA, Sage: 602-653.
- Thessen, J.H. 1997. Individualism, collectivism, and entrepreneurship: A framework for international comparative research. *Journal of Business Venturing* 12: 367-384.
- Thornton, P. 1999. The Sociology of Entrepreneurship. *Annual Review of Sociology* 25: 19-46.

- Uhlaner, L. M. and R. Thurik. 2007. Postmaterialism influencing total entrepreneurial activity across nations. *Journal of Evolutionary Economics* 17: 161-185.
- Vinogradov, E., and L. Kolvereid. 2007. Cultural background, human capital and self employment rates among immigrants in Norway. *Entrepreneurship and Regional Development* 19: 359-376.
- Vaillant, Y. and E. Lafuente. 2007. Do different institutional frameworks condition the influence of local fear of failure and entrepreneurial examples over entrepreneurial activity? *Entrepreneurship and Regional Development* 19: 313-337.
- Weber, M. 1905. *The Protestant Ethic and the Spirit of Capitalism*. Berlin.
- Welpe, I., M. Spörrle, D. Grichnik, T. Michl and D. Audretsch. 2012. Emotions and Opportunities: The Interplay of Opportunity Evaluation, Fear, Joy, and Anger as Antecedent of Entrepreneurial Exploitation. *Entrepreneurship Theory and Practice* 36: 69–96.
- Welter, F. 2011. Contextualizing Entrepreneurship—Conceptual Challenges and Ways Forward. *Entrepreneurship Theory and Practice*, 35(1): 165-184.
- Welter, F., and D. Smallbone. 2006. Exploring the Role of Trust in Entrepreneurial Activity. *Entrepreneurship Theory and Practice* 30: 465-475.
- Wennekers, S., R. Thurik, A. Stel and N. Noorderhaven. 2007. Uncertainty avoidance and the rate of business ownership across 21 OECD countries, 1976-2004. *Journal of Evolutionary Economics* 17: 133-160.
- Wennekers, S., R. Thurik, A. Stel and N. Noorderhaven. 2010. Uncertainty Avoidance and the Rate of Business Ownership Across 21 OECD Countries, 1976–2004. In A. Freytag, and R. Thurik (Eds.), *Entrepreneurship and Culture*: Springer Berlin Heidelberg: 271-299.
- Williamson, O. E. 2000. The new institutional economics: taking stock, looking ahead. *Journal of Economic Literature*, 38(3): 595-613.
- Zahra, S.A., and M. Wright. 2011. Entrepreneurship's next act. *Academy of Management Perspectives* 25: 67–83.
- Zahra, S.A., R.D. Ireland and M.A. Hitt. 2000. International expansion by new venture firms: international diversity, mode of market entry, technological learning and performance. *Academy of Management Journal* 43: 925–950
- Zhao, H., S.E. Seibert and G.E. Hills. 2005. The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology* 90: 1265.

Table 1: Sample descriptives

Country	N	Entrepreneurial entry (%)	Institutional collectivism	Performance orientation	Uncertainty avoidance
Argentina	5,391	4.75	3.66	3.63	3.63
Australia	4,616	4.57	4.31	4.37	4.40
Austria	1,594	4.02	4.34	4.47	5.10
Bolivia	1,330	14.66	3.96	3.57	3.30
Brazil	5,133	10.40	3.94	4.11	3.74
Canada	3,661	3.52	4.36	4.46	4.54
China	5,899	9.85	4.67	4.37	4.81
Colombia	4,338	14.18	3.84	3.93	3.62
Denmark	12,165	2.48	4.93	4.40	5.32
Ecuador	800	11.75	3.82	4.06	3.63
Egypt	1,286	6.69	4.36	4.15	3.97
Finland	6,076	3.18	4.77	4.02	5.11
France	10,021	0.61	4.20	4.43	4.66
Germany	21,800	2.08	3.97	4.42	5.35
Greece	3,819	3.59	3.41	3.34	3.52
Hong Kong	2,728	2.93	4.03	4.69	4.17
Hungary	6,529	2.63	3.63	3.50	3.26
India	4,232	5.10	4.25	4.11	4.02
Indonesia	1,458	11.18	4.27	4.14	3.92
Ireland	2,959	5.44	4.57	4.30	4.25
Israel	4,700	2.49	4.40	4.03	3.97
Italy	3,231	1.64	3.75	3.66	3.85
Japan	5,387	2.08	5.23	4.22	4.07
Malaysia	988	10.43	4.45	4.16	4.59
Mexico	5,331	2.42	3.95	3.97	4.06
Netherlands	8,800	2.85	4.62	4.46	4.81
New Zealand	1,898	6.38	4.96	4.86	4.86
Philippines	1,450	18.34	4.37	4.21	3.69
Poland	2,491	1.53	4.51	3.96	3.71
Portugal	1,425	4.49	4.02	3.65	3.96
Russia	3,175	1.48	4.57	3.53	3.09
Singapore	6,179	2.80	4.77	4.81	5.16
Slovenia	6,598	2.30	4.09	3.62	3.76
South Africa	7,516	2.57	4.50	4.40	4.36
South Korea	4,065	8.07	5.20	4.53	3.52
Spain	64,412	3.89	3.87	4.00	3.95
Sweden	6,877	1.76	5.26	3.67	5.36
Switzerland	5,647	3.88	4.20	5.04	5.42
Thailand	6,055	10.55	3.88	3.84	3.79
Turkey	3,779	4.66	4.02	3.82	3.67
United Kingdom	56,335	3.31	4.31	4.16	4.70
United States	12,392	3.47	4.21	4.45	4.15

Notes: N is the number of observations.

% entrepreneurial entry represents the percentage of respondents per country who are identified as nascent or new entrepreneurs. Source: GEM (2001–2008).

National scores for the cultural practices—namely, institutional collectivism, uncertainty avoidance, and performance orientation—were obtained from the GLOBE survey.

Table 2: Descriptive statistics

Variables	N	Mean	Std. Dev.	Min	Max
Individual-level variables					
Entrepreneurial entry	324,566	0.04	0.19	0	1
Age	324,566	43.09	14.92	18	64
Gender	324,566	1.51	0.50	1	2
Education level	324,566	2.25	1.08	0	4
Household income	324,566	1.88	0.79	1	3
Self-efficacy	324,566	0.47	0.50	0	1
Fear of failure	324,566	0.37	0.48	0	1
Country-level variables					
GDP per capita (USD)	43	31,403.66	15,270.17	515	67,779
Population in millions	43	88.73	208.87	2.00	1,321.05
In-group collectivism	43	4.83	0.74	3.46	6.14
Assertiveness	43	4.25	0.29	3.41	4.71
Institutional collectivism	43	4.23	0.40	3.41	5.26
Performance orientation	43	4.15	0.32	3.34	5.04
Uncertainty avoidance	43	4.37	0.60	3.09	5.42

Table 3: Correlation matrix (based on N = 324,566)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Entrepreneurial entry	1.00													
Age	-0.06	1.00												
Gender	-0.04	0.04	1.00											
Education level	0.02	-0.12	0.00	1.00										
Household income	0.04	-0.03	-0.09	0.18	1.00									
Self-efficacy	0.15	-0.04	-0.16	0.07	0.11	1.00								
Fear of failure	-0.05	-0.04	0.05	-0.05	-0.04	-0.13	1.00							
GDP per capita (USD)	-0.07	0.17	0.03	0.21	0.00	-0.07	0.01	1.00						
Population in millions	0.05	-0.06	-0.04	-0.05	-0.01	0.02	-0.03	-0.39	1.00					
In-group collectivism	0.06	-0.15	-0.07	-0.21	0.08	0.06	0.08	-0.57	0.20	1.00				
Assertiveness	-0.05	0.03	-0.01	-0.04	0.03	0.02	0.04	0.30	-0.30	0.02	1.00			
Institutional collectivism	-0.02	0.05	0.02	0.17	-0.01	-0.09	-0.09	0.25	0.13	-0.58	-0.53	1.00		
Performance orientation	-0.01	0.04	0.01	0.04	-0.01	-0.03	-0.05	0.38	0.12	-0.43	0.11	0.48	1.00	
Uncertainty avoidance	-0.05	0.10	0.03	0.12	-0.04	-0.06	-0.06	0.52	0.03	-0.77	-0.09	0.65	0.69	1.00

Table 4: Effects on individual-level entrepreneurial entry (odds ratios for Models 2 and 3, beta-coefficients for Models 4–9)

	1	2	3	4	5	6	7	8	9
Individual-level (Level 1)									
Age		0.98***(0.00)	0.98***(0.00)	-0.02***(0.00)	-0.02***(0.00)	-0.02***(0.00)	-0.02***(0.00)	-0.02***(0.00)	-0.02***(0.00)
Age (squared)		0.99***(0.00)	0.99***(0.00)	-0.00***(0.00)	-0.00***(0.00)	-0.00***(0.00)	-0.00***(0.00)	-0.00***(0.00)	-0.00***(0.00)
Gender		0.84***(0.01)	0.84***(0.01)	-0.17***(0.01)	-0.17***(0.01)	-0.17***(0.01)	-0.17***(0.01)	-0.17***(0.01)	-0.17***(0.01)
Education		1.04***(0.00)	1.04***(0.00)	0.04***(0.00)	0.04***(0.00)	0.04***(0.00)	0.04***(0.00)	0.04***(0.00)	0.04***(0.00)
Household income		1.16***(0.01)	1.16***(0.01)	0.15***(0.01)	0.15***(0.01)	0.15***(0.01)	0.15***(0.01)	0.15***(0.01)	0.15***(0.01)
Self-efficacy: H1		5.47***(0.14)	5.47***(0.14)	1.70***(0.14)	1.70***(0.14)	1.70***(0.14)	1.70***(0.14)	1.70***(0.14)	1.70***(0.14)
Fear of failure: H2		0.69***(0.01)	0.69***(0.01)	-0.37***(0.01)	-0.37***(0.01)	-0.37***(0.01)	-0.37***(0.01)	-0.37***(0.01)	-0.37***(0.01)
Country-level (Level 2)									
GDP per capita (PPP), USD			0.99(0.00)	-0.00+(0.00)	-0.00+(0.00)	-0.00+(0.00)	-0.00+(0.00)	-0.00+(0.00)	-0.00+(0.00)
Population (million)			1.01(0.00)	0.00(0.00)	0.00(0.00)	0.00(0.00)	0.00(0.00)	0.00(0.00)	0.00(0.00)
In-group collectivism			1.13(0.14)	0.12(0.14)	0.12(0.14)	0.12(0.14)	0.12(0.14)	0.12(0.14)	0.12(0.14)
Assertiveness			0.76***(0.07)	-0.27****(0.07)	-0.27****(0.07)	-0.27****(0.07)	-0.27****(0.07)	-0.27****(0.07)	-0.27****(0.07)
Institutional collectivism			0.88*(0.07)	-0.13*(0.07)	-0.13*(0.07)	-0.13*(0.07)	-0.13*(0.07)	-0.13*(0.07)	-0.13*(0.07)
Uncertainty avoidance			0.84+(0.08)	-0.17+(0.08)	-0.17+(0.08)	-0.17+(0.08)	-0.17+(0.08)	-0.17+(0.08)	-0.17+(0.08)
Performance orientation			1.35****(0.12)	0.30****(0.12)	0.30****(0.12)	0.30****(0.12)	0.30****(0.12)	0.30****(0.12)	0.30****(0.12)
Cross-level interactions									
Institutional collectivism * Self-efficacy: H3a				0.07***(0.02)					
Institutional collectivism * Fear of failure: H3b					-0.04+(0.02)				
Uncertainty avoidance * Self-efficacy: H4a						0.24****(0.03)			
Uncertainty avoidance * Fear of failure: H4b							-0.15****(0.02)		
Performance orientation * Self-efficacy: H5a								0.07***(0.03)	
Performance orientation * Fear of failure: H5b									-0.04(0.02)
Random part estimates									
Number of observations	324,566	324,566	324,566	324,566	324,566	324,566	324,566	324,566	324,566
Number of groups (countries)	42	42	42	42	42	42	42	42	42
Variance of random intercept	0.58(0.08)	0.41(0.07)	0.22(0.05)	0.22(0.05)	0.22(0.05)	0.22(0.05)	0.21(0.04)	0.22(0.04)	0.22(0.04)
Variance of overall residual	3.27	3.26	3.33	3.33	3.33	3.25	3.23	3.23	3.33
% of variance, ICC or rho	15.04(0.02)	11.18(0.02)	6.18(0.01)	6.18(0.01)	6.18(0.01)	6.34(0.01)	6.11(0.01)	6.23(0.01)	6.18(0.01)
Model fit statistics									
Prob > Chi-squared	-	***	***	***	***	***	***	***	***
Log likelihood	-51,721	-47,601	-47,587	-47,582	-47,582	-47,543	-47,565	-47,584	-47,586
AIC ^a	103,442	95,216	95,202	95,194	95,194	95,116	95,160	95,198	95,202
Likelihood ratio test of rho = 0 ^b	***	***	***	***	***	***	***	***	***
Likelihood ratio test of model fit ^c	-	-	*	*	*	*	*	*	*

Notes: Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10. All tests of significances two-tailed. Odds ratios (OR) in Columns 2 and 3 above 1 represent a positive relationship, below 1 a negative relationship; Columns 4 – 9 report beta-coefficients needed to plot the interactions. ^a AIC is Akaike's Information Criterion and is = (2*k – 2*(Log Likelihood)), where k denotes degrees of freedom. Gradually smaller values over models denote improved model fit. ^b Statistically significant (p < 0.001). Likelihood ratio test of rho = 0 confirms that the country-level variance component is important. ^c LR test performed against previous model suggests improvement in model fit.

Figure 1: Theoretical model

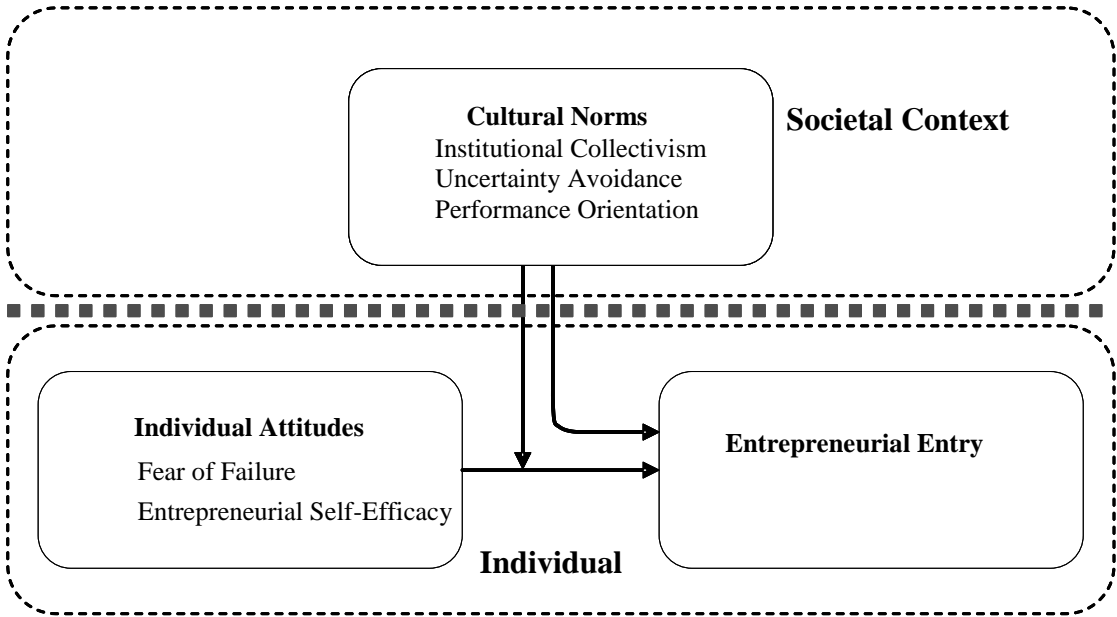


Figure 2: Interaction between country-level institutional collectivism and individual-level self-efficacy

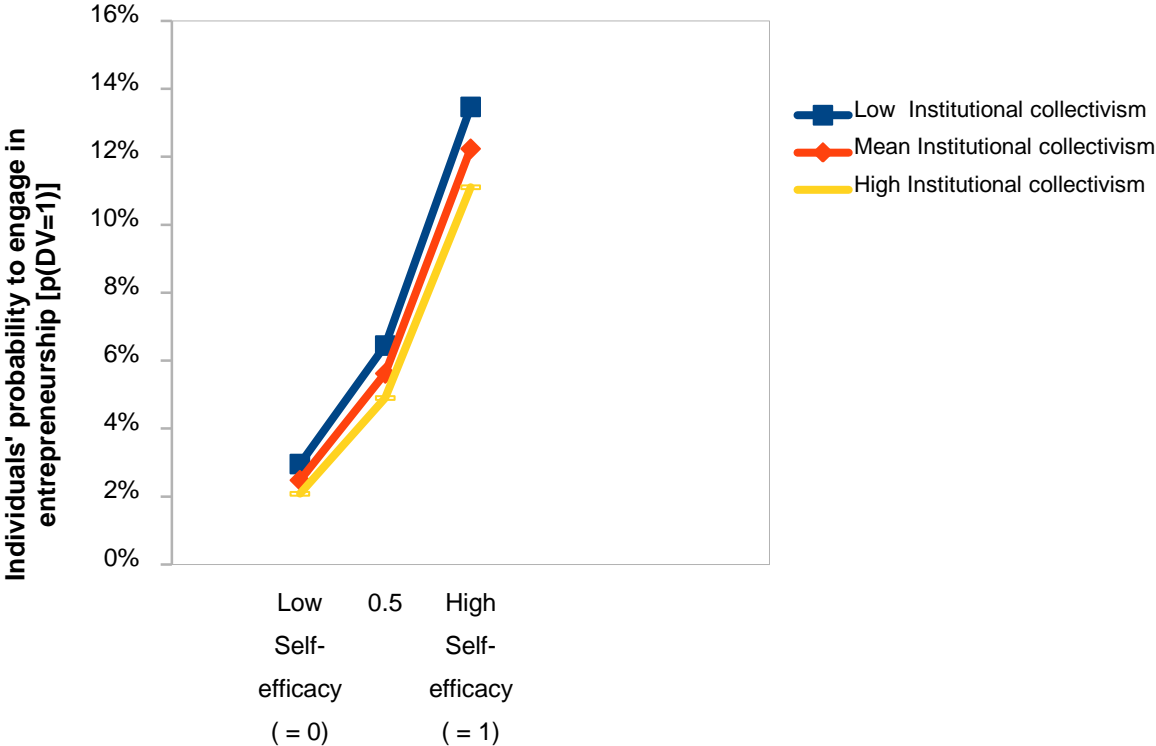


Figure 3: Interaction between country-level institutional collectivism and individual-level fear of failure

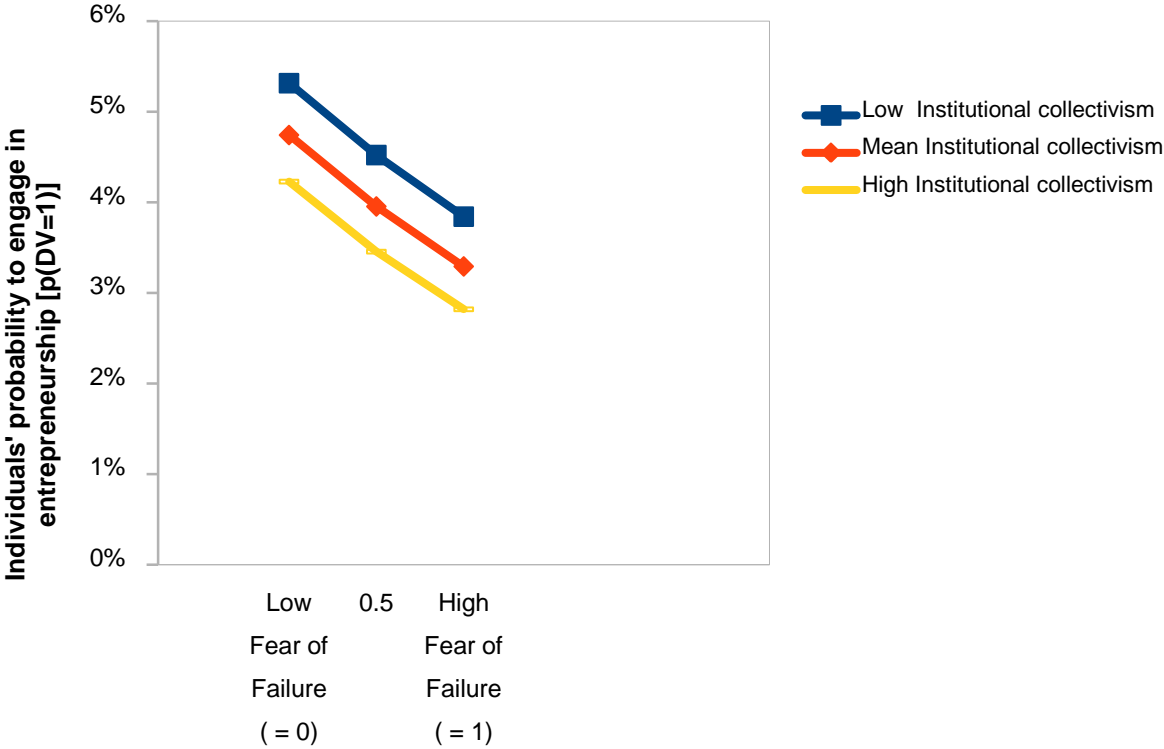


Figure 4: Interaction between country-level uncertainty avoidance and individual-level self-efficacy

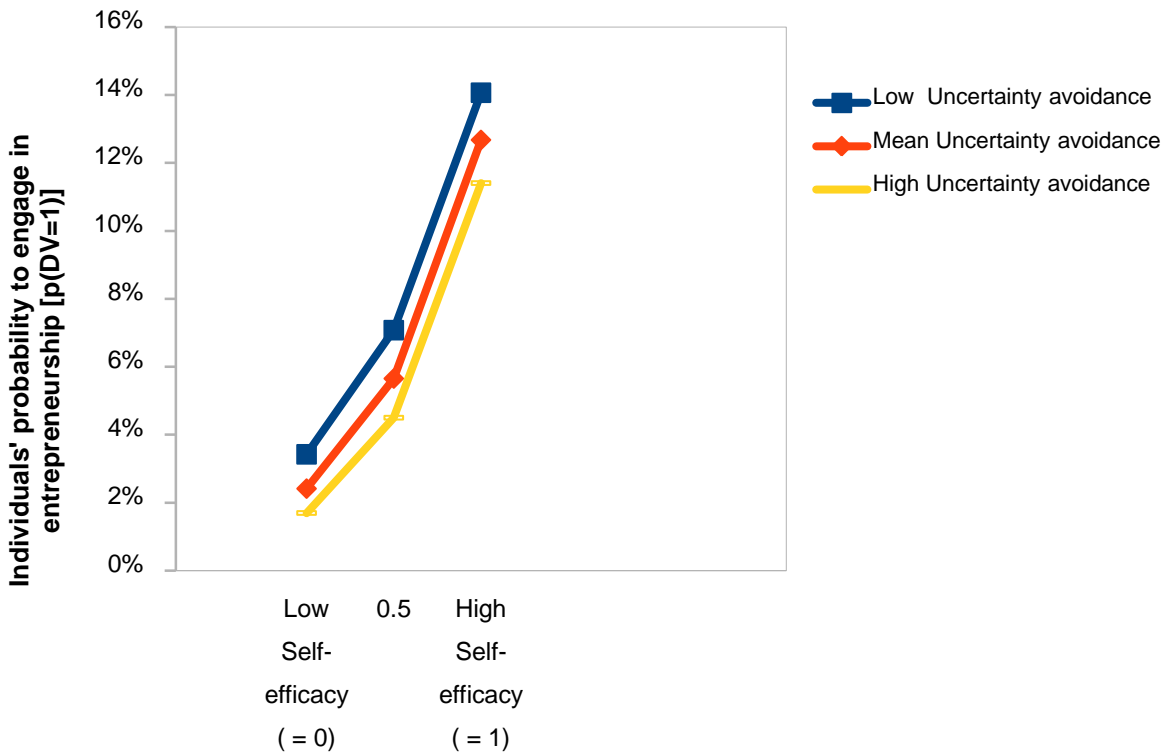


Figure 5: Interaction between country-level uncertainty avoidance and individual-level fear of failure

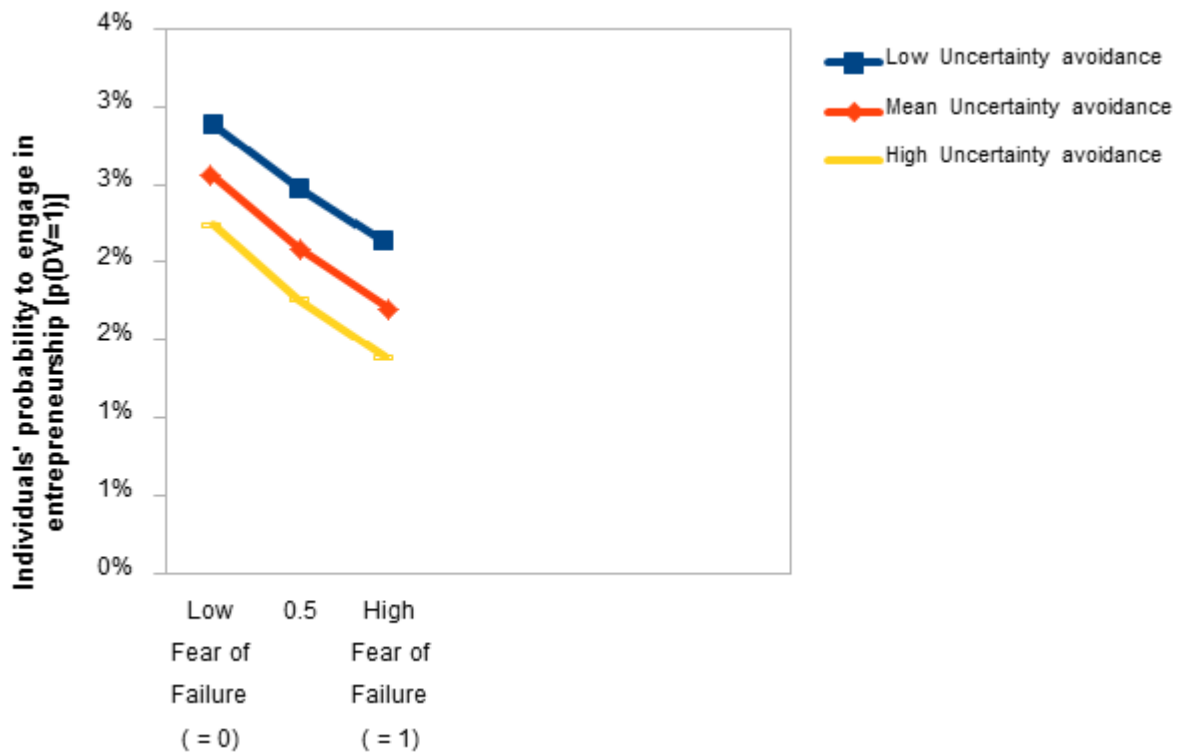
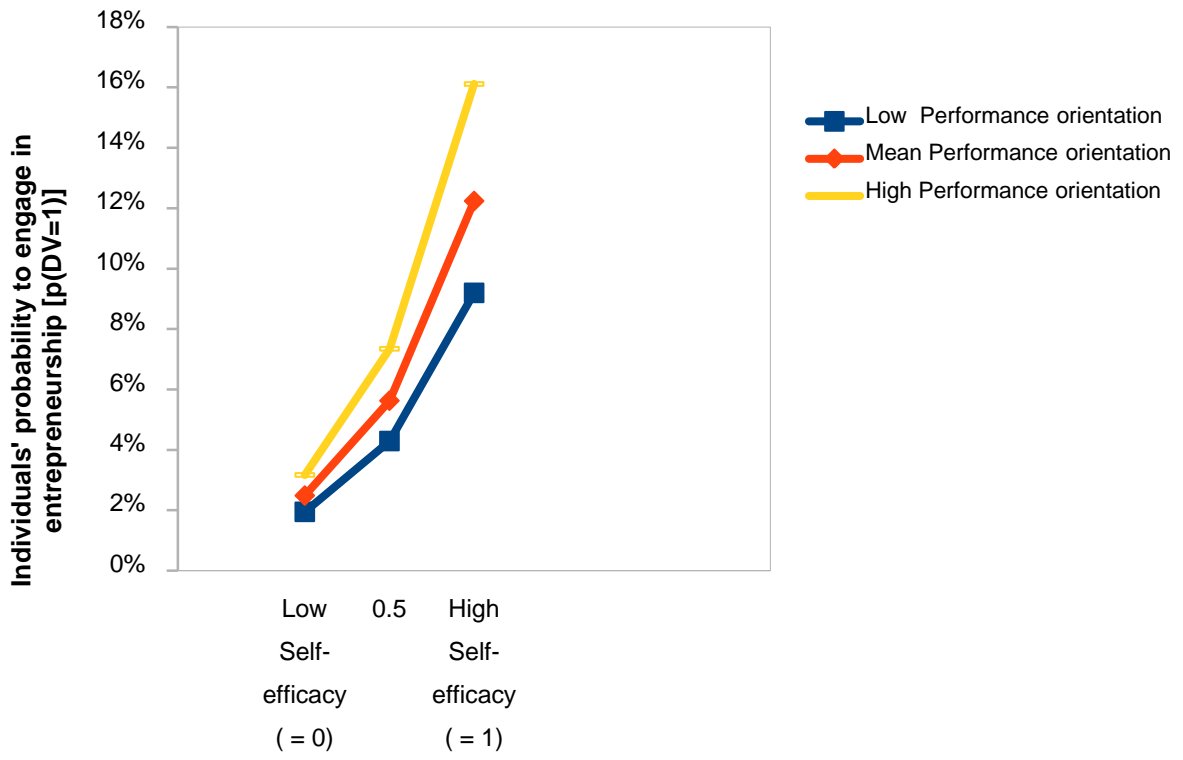


Figure 6: Interaction between country-level performance orientation and individual-level self-efficacy



Appendix 1

