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# Women entrepreneurs' progress in the venturing process: the impact of risk aversion and culture

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**Abstract** We explore the gendered impact of risk aversion and country-level culture on nascent student entrepreneurs' progress in the venturing process. Combining country-level cultural normative variables from the 2004 Global Leadership and Organizational Behavior Effectiveness (GLOBE) survey with data from the 2013/2014 Global University Entrepreneurial Student Spirit Study (GUESSS), our sample consists of 1552 nascent student entrepreneurs from 11 countries. We start with the assumption that perceptions of risk-taking behaviors are not gendered. We then split our sample, finding that, for women, perceptions of risk-taking behaviors are associated with less progress in the venturing process; however, starting a new venture in a socially supportive culture moderates that relationship. For men, neither risk-taking behavior nor country cultural variables are related to their progress in the venturing process. Our study highlights both the importance of country-level contextual variables in entrepreneurship and the need to employ a gendered perspective when studying nascent entrepreneurship.

**Keywords** Female nascent entrepreneurs · Male nascent entrepreneurs · Risk · Country-level culture · Start-up activities

**JEL classifications** J16 · J24 · M13 · L26

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## 1 Introduction

Is the relationship among risk aversion, national culture, and entrepreneurs' progress in the venturing process different for young women nascent entrepreneurs than for young men nascent entrepreneurs? This question, which grounds our study, is motivated by three independent observations. First, there exists conceptual and empirical work that finds that women are more risk averse than men, leading them to start fewer ventures (Bönte and Piegeler 2013; Brush et al. 2009; Verheul et al. 2012). Second, numerous branches of social science, such as economics (Baumol 1990; Greif 2001), sociology, (Aldrich 2009), and international business (Autio et al. 2013; Stephan and Uhlaner 2010), have noted that countries differ in their levels of start-up activity, and that some of these differences may be explained in part by country-level culture. Third, much of the recent literature on women's entrepreneurship focuses broadly on the impact of social forces (Hechavarria et al. 2017; Shahriar 2018), team diversity (Dai et al. 2019), and stereotypes (Alsos and Ljunggren 2017; Balachandra et al. 2019; Hmieleski and Sheppard 2019; Malmström et al. 2017; Strohmeyer et al. 2017; Yang et al. 2019), finding gendered differences across a broad spectrum of contexts (García and Welter 2013). Taken together, these observations suggest that country-level culture may differentially influence the relationship between risk aversion and progress in the venturing process and that these differences may have a gendered dimension.

We start our inquiry by exploring risk. Risk is defined as "the probability of incurring a loss" (Knight 1921). Research from economics tells us that risk is a function of entrepreneurship (Cantillion 1755) and risk aversion can often inform the decision to engage in entrepreneurial activities (Nabi and Liñán 2013). Numerous empirical studies have explored the relationship between risk and entrepreneurial choice (Puri and Robinson 2007: Segal et al. 2005), and many studies have used a gendered lens to study women and risk (Brindley 2005; Humbert and Brindley 2015) but less work has explored the relationship between risk aversion and country-level culture using a gendered lens (for an exception, see Shinnar et al. 2012).

We then turn our focus to the impact of country-level cultural norms on the relationship between risk aversion and entrepreneurial start-up activities of men and women nascent entrepreneurs. Culture is of a set of "shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives and are transmitted across age generations" (House et al. 2004: 57). Cultural norms and practices are known to shape individuals' entrepreneurial behaviors (Bowen and De Clercq 2008; Shane 1993), by providing a "dominant logic of action" that is a repertoire of habits, skills, and styles (Swidler 1986). Empirical studies have found a positive relationship between national rates of entrepreneurship and independent variables such as in-group collectivism (De Clercq et al. 2010), uncertainty avoidance (Wennekers et al. 2007), and general cultural values (Davidsson and Wiklund 1995).

In this study, we use an institutional theory lens to document how risk aversion is impacted by country-level cultural norms and how these together translate into entrepreneurial action. We look at informal institutions, which are systems of shared meanings and collective understandings that reflect a socially constructed reality (Feige 1990). Our overarching proposition is that the individual-level perceptions of risk-taking behaviors that influence the decision to engage in entrepreneurial start-up activities are moderated by country-level informal institutions, such as culture, and that this relationship has a gendered dimension.

To test the study's hypotheses, we combine country-level cultural variables from the 2004 Global Leadership and Organizational Behavior Effectiveness (GLOBE) project with data from the Global University Entrepreneurial Student Spirit Study (GUESSS) survey. The GLOBE study measures how culture is related to societal, organizational, and leadership effectiveness (House et al. 2004). The GUESSS project is an ongoing study of university students, which records founding intentions and start-up activities on a biannual basis.[1] Young people are well positioned to engage in entrepreneurship. Inc. Magazine's 2012 survey of the Inc. 500 CEOs found that, on average, these CEOs started their first new venture when they were 27. This is consistent with Lévesque and Minniti (2006, 2011), who found that most people who start a business are between 25 and 34 years old. Since many children are strongly encouraged by their families to get a university education, the start-up activities of university students are likely to

[1] An important limitation of this inquiry is that the data used to test our hypotheses are cross-sectional. This does not allow us to test time-lagged effects.

mirror start-up activities in general. Indeed, Moog and Backes-Gellner (2013) found that for students at German universities, neither the level of human nor social capital alone matters; instead, it is the balancing of these types of capital that leads to entrepreneurial activity. In this inquiry, we selected those respondents who were involved in the process of starting up a business, to a usable sample of 1552 students. However, given our interest in gendered effects, we split the sample into male and female subsamples. We chose to split our sample because the existence of stereotypes embedded in the gender system causes entrepreneurial activity to be gender-biased (García and Welter 2013; Ogbor 2000). Splitting our sample allows us to test whether our ideas about country-level culture and risk aversion are different based on the gender of the respondent.

We make two key contributions to the literature. First, at a macro level, we contribute to the ongoing gendered conversation around the importance of entrepreneurial context in new venture start-ups (Shinnar et al. 2012; Welter and Smallbone 2010). More specifically, by exploring the relationships between risk aversion, country-level cultural norms, and progress in the venturing process in both male and female nascent entrepreneurs, we add a gendered lens to the growing discourse around the impact of country-level cultural practices on entrepreneurship (Autio et al. 2013; Hayton et al. 2002; Kreiser et al. 2010; Liñán and Fernandez-Serrano 2014; Stephan and Uhlaner 2010; Stephan et al. 2015). Second, we adopt Stephan and Uhlaner's (2010) second-order cultural norms, thereby adding to the dialog around the operationalization of country-level culture (Autio et al. 2013). On the ensuing pages, we present our theory and hypotheses, followed by our empirical analysis, our findings and discussion, and our overall conclusions.

## 2 Theory and hypotheses

### 2.1 Entrepreneurs' progress in the venturing process

Start-up activities are the events and behaviors of individuals who are engaged in the process of starting a new venture (Gartner et al. 2004; Reynolds and Miller 1992) and constitute the "micro-foundations of entrepreneurial action" (Shepherd 2015, p. 490). These activities, such as formulating a business plan, identifying a market opportunity, looking for potential partners, or asking financial institutions for funding, are the building blocks of new venture creation. Individuals who are engaged in these start-up activities are considered to be making progress in the venturing process.

While many studies have looked at the effects of engaging in start-up activities on organizational emergence or first sales, less research has used start-up activities as an outcome variable and explored the antecedents to engaging in the start-up process. Using data from the Norwegian panel study of entrepreneurial dynamics, Alsos and Kolvereid (1998) looked at three types of founders—novice, parallel, and serial—finding significant differences among the three groups for seven start-up activities. Davidsson and Honig (2003) used the number of start-up activities as one of their dependent variables when they explored the role of the human and social capital of entrepreneurs. They found that entrepreneurs should develop and promote networks of all sorts. Samuelsson and Davidsson (2009) used progress in the venturing process, which was measured as a summation of start-up activities as their outcome variable, finding evidence that the venture creation process is different for innovative versus imitative new ventures. More recently, Edelman et al. (2016) looked at the social support provided to young entrepreneurs by their families. They found that access to families' social networks had a positive effect on the scope of start-up activities, whereas family financial support had a negative effect. In sum, a diverse body of research has explored the impact of start-up activities, but less research has used these activities as an outcome variable. We now turn to the gendered relationship between risk aversion and country-level culture and their impact on progress in the venturing process.

### 2.2 The impact of risk

Risk has long been a central issue in entrepreneurship research. Starting from Cantillion (1755), who described entrepreneurs as the self-employed who "adjust themselves to risk" where the return is uncertain, entrepreneurship research has addressed questions around risk. Previous theoretical and empirical research draws on the seminal work of Knight (1921) who defined risk as "the probability of incurring a loss," finding support for the contention that being an entrepreneur means making risky decisions (Ekelund et al. 2005; Stewart Jr et al. 1999; Wagner 2006).

While the notion that entrepreneurs are willing to take higher risks than employees is intuitively appealing, there is as much research on the other side of the argument. Here, researchers find that entrepreneurs may have no greater propensity to bear risk than non-entrepreneurs (cf. Brockhaus Sr 1980; Brockhaus and Horwitz 1986). Factors such as an overly optimistic perception of start-up risk (Cooper et al. 1988) or a difference in the way risks are framed (Palich and Bagby 1995) have led researchers to conclude that entrepreneurs do not take on more risk than non-entrepreneurs. Instead, they have an optimistic outlook when it comes to the assessment of factors that lead to risk or how to deal with risk (Cooper et al. 1988; Palich and Bagby 1995).

While research is ambivalent as to whether entrepreneurs perceive more risk than non-entrepreneurs, it is quite clear that starting a new venture involves some level of risk. Therefore, as a baseline, we hypothesize:

H1: *There is a negative relationship between risk-taking behavior and progress in the venturing process for both female and male nascent entrepreneurs.*

### 2.3 Informal institutions: country cultural norms and gender

We use an institutional theory lens to document how risk-taking behavior is impacted by country-level cultural norms and how these together translate into entrepreneurial action. However, instead of focusing on the formal "rules of the game" (North 1990; Peng et al. 2009), we look at informal institutions, which represent systems of shared meanings and collective understandings that shape cohesion and coordination among individuals in a society (Feige 1990). Country-level culture is an important informal institution (North 1990). Culture is the set of beliefs and values about what is desirable and undesirable in a society (Javidan and House 2001). Culture is durable, long-lasting, and relatively stable, with incremental changes occurring slowly (Brett et al. 1997; McGrath et al. 1992). It provides a context that shapes how a country's people view the world (Chui et al. 2002). By serving as a basis of formal institutions, culture leads to stable and systematic differences across countries (Greif 1994; Hofstede 1980) and forms the foundation upon which entrepreneurship occurs.

Women's entrepreneurship is also highly dependent on the country-level cultural context in which it occurs (Welter 2011). Country cultural norms can act to shape societal gender roles and stereotypes in terms of the occupations considered appropriate for men or women. Gender role stereotypes lead to gender stereotyping of occupations as predominantly feminine or masculine (Heilman 1983), leading individuals to aspire to hold jobs, or in our case start new ventures, in sectors that are socially acceptable for their gender.

To better understand the moderating impact of cultural practices on risk-taking behavior, we use data from the GLOBE study. The GLOBE project extended Hofstede's Cultural Dimensions (1980) to include nine dimensions that measure cultural differences across borders. The GLOBE study provides a deeper understanding of cultural complexities; yet to date, the application of GLOBE study variables to research on start-up behaviors has been limited. However, it is the only validated set of measures of cultural practices available for a wide variety of countries, and its nine dimensions of national culture all exhibit acceptable levels of internal consistency (House et al. 2004).

We focus our inquiry on GLOBE descriptive cultural norms (Stephan and Uhlaner 2010). Research suggests that descriptive norms can influence various behaviors at different levels of analysis, including the level of the individual entrepreneur (Nolan et al. 2008). Recent research using GLOBE data and examining entrepreneurial rates using Global Entrepreneurship Monitor (GEM) data have adopted a normative approach to culture (Stephan and Uhlaner 2010; Autio et al. 2013).

High inter-correlation among the GLOBE variables has led researchers to focus on a subset of cultural practices in their research. For example, Autio et al. (2013) used institutional collectivism, uncertainty avoidance, and performance orientation in their multilevel study of the effects of national culture on the entrepreneurial behaviors of individuals. To capture more of the robustness provided by the GLOBE data, we followed Stephan and Uhlaner (2010) and use their second-order variables, which they label as performance-based culture and socially supportive culture. We discuss each of these below.

*Performance-based country cultures* Performance-based cultures are based on cultural attributes such as

future orientation, uncertainty avoidance, and performance or achievement orientation and are negatively related to power distance and in-group collectivism. These are norms that encourage and reward individual accomplishments, as opposed to collective or family membership (Stephan and Uhlaner 2010). In our sample, the countries that loaded on the performance-based construct are Switzerland, Germany, Singapore, and the Netherlands.

A closer examination of the norms embodied in performance-based cultures indicates that, in general, in cultures with high uncertainty avoidance, there is less support of entrepreneurs (Mueller and Thomas 2001). Women entrepreneurs may be especially at a disadvantage in this context because women's networks tend to be based on family relationships more than men's networks (Moore 1990). In addition, it seems that, while male entrepreneurs are mostly driven by economic and performance motivations, women's networks are more driven by personal expectancies such as desire for autonomy (Ljunggren and Kolvereid 1996), which may put them at a disadvantage if they are in a country with a performance-based culture. Additionally, in societies that emphasize hierarchy, institutions that support entrepreneurship, such as venture capital, may be less likely to back ventures started by women as the gap between those in power and those who are not means that women do not fit preconceived ideas of who is an entrepreneur (Ozgen 2012). Taken together, these cultural attributes may discourage female entrepreneurs from engaging in the venturing process. Formally,

H2: *Performance-based cultures increase the negative relationship between risk-taking behavior and progress in the venturing process more for female than for male nascent entrepreneurs.*

*Socially supportive country cultures* Socially supportive cultures focus on attributes such humane orientation and assertiveness. Humane orientation refers to whether individuals are concerned about and are sensitive towards others (Stephan and Uhlaner 2010). Assertiveness refers to whether people are dominant and tough (House et al. 2004). Stephan and Uhlaner (2010) and Stephan et al. (2015) argue that the descriptive norms of high humane orientation and low assertiveness characterize a positive social climate in which people support each other. Stephan and Uhlaner (2010) posit that socially supportive cultures are a strong measure of social capital, defined as "goodwill, fellowship, sympathy and social intercourse" (Hanifan 1916: 130). In our sample, the countries that loaded on the socially supportive construct are Poland, Russia, Italy, Brazil, Spain, Malaysia, and Hungary. Table 7 in the Appendix shows the factor loadings for each country.

Nascent entrepreneurs are faced with the challenges of gaining access to and assembling the resources necessary to start their new venture. Entrepreneurs starting new ventures in socially supportive societies may face lower transaction costs as they gain access to resources through collaboration and cooperation (Meyskens et al. 2010a, 2010b). From a gendered perspective, women nascent entrepreneurs starting new ventures in socially supportive cultures may have more diverse network ties, leading them to greater access to resources, as the number of network relationships has a positive relationship with access to resources (Semrau and Werner 2014). Research examining the gendered nature of business advice networks found that only 10% of men's networks were gender diverse, but over 40% of women's networks included both men and women (Aldrich and Sakano 1995). Women entrepreneurs engaged in the start-up process in a socially supportive culture benefit from the positive interpersonal climate and implicit norms of cooperation (Stephan et al. 2015). Formally,

H3: *Socially supportive cultures decrease the negative relationship between risk-taking behavior and progress in the venturing process more for female than for male nascent entrepreneurs.*

## 3 Methods

### 3.1 Data collection and sample

To test our hypotheses, we used data from the Global University Entrepreneurial Spirit Students' Survey (GUESSS) project. GUESSS was started at the University of St. Gallen in 2003. Data are collected biannually with one country coordinator responsible for the data collected in that country. Several studies have used GUESSS data, focusing on entrepreneurial career intentions (Zellweger et al. 2011), the role of culture and age (Minola et al. 2016), or the impact of family support on

the scope of young entrepreneurs' new venture activities (Edelman et al. 2016).

The 2013/2014 GUESSS project collected data from 34 countries and 759 universities. We started with 107,267 observations from 34 countries (Argentina, Austria, Australia, Belgium, Brazil, Canada, Colombia, Denmark, England, Estonia, Finland, France, Germany, Greece, Hungary, Israel, Italy, Japan, Liechtenstein, Luxemburg, Malaysia, Netherlands, Nigeria, Poland, Portugal, Romania, Russia, Scotland, Singapore, Spain, Slovenia, Spain, Switzerland, and the United States). Because we are interested in respondents who are in the process of starting a new venture, we used this subset of the data, reducing our sample to 13,416 respondents. Then, as our objective is to observe students' progress in the venturing process, we kept only those respondents who answered the questions related to the entrepreneurial activities. This reduced our sample to 6498 respondents. We then looked at the number of respondents per country and, since we are interested in national culture, we eliminated countries that had fewer than 20 male or female respondents. We also excluded respondents with missing values in our individual- and firm-level control variables. This eliminated Argentina, Belgium, Colombia, Denmark, England, Finland, France, Greece, Israel, Japan, Mexico Nigeria, Portugal, Romania, and the United States from our sample, leaving us with 6128 respondents. We then complemented GUESSS data with country-level data on national cultural norms from the GLOBE study (House et al. 2004) and added control variables from the Global Entrepreneurship Monitor (GEM). When we matched the countries collected from GUESSS, GLOBE, and GEM, the following countries were not in the 2012 GEM and 2004 GLOBE studies: Belgium, Austria, Australia, Liechtenstein, and Luxemburg. In addition, we chose to not include Canada in our sample, because the GLOBE project only collected data from the English-speaking area of the country, and therefore may not represent the French-speaking provinces. After merging the three datasets, we were left with a final sample of 1552 (674 females and 878 males) student nascent entrepreneurs from eleven countries (Brazil, Germany, Italy, Hungary, Malaysia, the Netherlands, Poland, Russia, Singapore, Spain, and Switzerland). We used this sample in our analysis.

We tested for common method variance (Podsakoff et al. 2003), in both the female and male subsamples using several techniques. First, the respondents were guaranteed that their answers were anonymous. Second, the GUESSS questionnaire was crafted to avoid desirability bias by soliciting perceptual information with no right or wrong answer. Third, to preclude respondent fatigue, the questionnaire designers avoided common scale formats, and predictor and criterion variables were not measured in proximity. Fourth, we used a Harman (1976) single-factor test to check for common method bias. We entered all the self-reported measures into a factor analysis with varimax rotation. The single-factor solution indicated that one factor explained only 14.13% of the variance. Finally, we conducted a common latent factor for our confirmatory factor analysis (Podsakoff et al. 2003), using structural equation modeling. The results of the one-factor structure for the female-only subsample show that the estimation did not converge and had a poor fit ($\chi^2 = 1868.847$, $p < 0.000$; RMSEA = 0.150, $p < 0.000$, CFI = 0.124; CD = 1.000). The results of the one-factor structure for the male-only subsample show that the estimation did not converge and had poor fit ($\chi^2 = 2048{,}943$, $p < 0.000$; RMSEA = 0.145, $p < 0.000$, CFI = 0.132; CD = 1.000). Thus, we provide an assurance that common method bias is not a concern in both of our subsamples.

## 3.2 Variables

### *3.2.1 Dependent variable*

Entrepreneurs' progress in the venturing process relates to the events, behaviors, and accomplishments that lead to the development of a new venture (Edelman et al. 2016). To measure entrepreneurs' progress in the venturing process, we used nine self-reported dichotomous variables, which indicate whether the nascent entrepreneur had undertaken a specific activity. The activities include the following: 0—discussed a product or business idea with potential customers; 1—formulated a business plan; 2—collected information about markets or competitors; 3—started marketing or promotion efforts; 4—sold product or service development; 5—rented or brought premises for the business; 6—purchased materials, equipment, or machinery for the business; 7—attempted to obtain external funding; and 8—applied for a patent, copyright, or trademark. Start-up activities included in the GUESSS project are based on items from the Panel Study of Entrepreneurial Dynamics (PSED). We followed the same procedure as researchers who used activities as a dependent variable

(e.g., Davidsson and Honig 2003; Edelman et al. 2016). The variables range from 1 to 8, with 8 indicating a higher number of activities in which the nascent entrepreneur is engaged.

### 3.2.2 Independent variable

*Risk-taking behavior* Risk questions were adapted from Pennings and Wansink (2004) psychometric scales. We used three items from the GUESSS survey with responses ranging from 1 (strongly disagree) to 7 (strongly agree). The items are "I consider starting up my own business to be very risky," "I think it is dangerous to manage your own business," and "I believe that business ownership has a high risk." Higher values on risk-taking behavior represent that an individual perceives a higher risk when thinking on creating their own business. The Cronbach's alpha was 0.80, above the minimum threshold set for reliability (Nunnally et al. 1967). These items are consistent with previous literature which has studied entrepreneurial risk-taking behavior (e.g., Hoffmann et al. 2015). Table 8 in the Appendix shows the risk for the male and female samples per country.

### 3.2.3 Moderating variables

The 2004 GLOBE survey is an international data set aimed at assessing nine fundamental cultural dimensions of both societies and organizations (Grove 2005). The GLOBE study collected data from more than 60 societies, and their results are based on data of 17,370 middle managers in 951 organizations (House et al. 2004). Since the country-level cultural dimensions showed a high correlation (Peterson and Castro 2006), Stephan and Uhlaner (2010) reanalyzed the GLOBE variables, creating two second-order cultural dimensions, performance-based and socially supported cultures.

*Performance-based culture* Performance-based culture consists of five dimensions: future orientation, uncertainty avoidance, performance orientation, power distance, and in-group collectivism dimensions (the last two were reverse scored). The reported Cronbach alpha is 0.85 (Stephan and Uhlaner 2010) and in this study, it was 0.87. Higher values on performance-based culture mean that a culture rewards individual accomplishment and having a systematic, future-oriented plan is seen as a pillar for high performance (Stephan and Uhlaner 2010).

*Socially supportive culture* Socially supportive culture consists of two dimensions, humane orientation and assertiveness (the last one was reverse coded). The Cronbach alpha was 0.75 (Stephan and Uhlaner 2010) and in this study, it was 0.77. Higher values of social supportive culture reflect a positive social climate which have ease of contact, positive interpersonal climate, and norms of cooperation (Stephan et al. 2015). Both indexes have been validated (Autio et al. 2013) and used in several studies (e.g., Laskovaia et al. 2017; Stephan et al. 2015) which show that these indexes are reliable.

### 3.2.4 Control variables

We controlled for students' age (numeric variable that ranges between 18 and 34 years old); marital status (categorical variable coded as 0—single; 1—living with a partner; 2—married; 3—separated or divorced); field of study (dummy variable coded as 0—other field of study, such as natural science, engineering, health science, humanity, and other social science; 1—business, economics, and law); level of study (dummy variable coded as 0—PhD student; and 1—undergraduate; and 2—graduate); whether the respondent has participated in a entrepreneurship course (dummy variable coded as 0—no, the respondent has not participated; and 1—yes, the respondent has participated in a entrepreneurship course); and whether their parents were self-employed at that time (categorical variable coded as 0—no, my parents are not self-employed; and 1—yes, my father; 2—yes, my mother; 3—yes, both parents). Studies show that perceived competence is positively related to entrepreneurial activities (e.g., Liñán and Chen 2009). For this reason, we controlled for competence perception, using eight items in which the respondent indicates their perceived level of competence for creating a business; these items are ranged from 1 (very low competence) to 7 (very high competence). We ran a factor analysis, and all the items loaded on one factor that explained 0.60% of the variance, with a Cronbach alpha of 0.89. We controlled for the number of cofounders (numeric variable that ranges from 0 to 4 cofounders). We also controlled for industry, using sector (categorical variable coded as 0—information, technology, and communication; 1—wholesale, retail; 2—consulting; 3—advertising, marketing, design; 4—

education and training; 5—tourism and gastronomy; 6—health services; 7—other services; 8—architecture and engineering; 9—construction and manufacturing; and 10—other). Finally, using 2013 GEM data, we included two country-level control variables: 2013 total entrepreneurial activity in a country (numeric variable that ranges from 0 to 100%) and the stage of development of the country (dummy variable coded as 0—efficiency-driven economies; 1—innovation-driven economies).

The average age of our respondent was 22.39 (SD = 3.16) years old in the female sample and 22.69 years old in the male sample (SD = 3.17). 74.9% of the female students were single and 75.0% of them were studying for an undergraduate degree, while 79.6% of the male students were single and 80.1% were studying for an undergraduate degree. On average, both female and male students were starting their new ventures in the business sector wholesale and retail trade. Our aim is to examine cultural differences and our sample included eleven countries (Brazil, Germany, Hungary, Italy, Malaysia, the Netherlands, Poland, Russia, Singapore, Spain, and Switzerland). In addition, based on the World Economic Forum's country classification, 50% of countries in our sample were efficiency-driven (Brazil, Hungary, Malaysia, Poland, Russia), with the rest of the countries being innovation-driven economies (Germany, Italy, Netherlands, Singapore, Spain, Switzerland). The descriptive statistics and correlation matrix are shown in Table 1. Additionally, in Tables 2 and 3, we ran a t-test and chi-squared test to compare the female and male samples.

### 3.3 Statistical procedure

We chose to analyze our data using a negative binomial regression model, which is a generalization of the Poisson regression model. The negative binomial regression model provides an extra parameter to the estimation model.[2] Our dependent variable, while a count variable, suffers from over-dispersion, with 80.09% of respondents in the female subsample and 74.22% of the respondents in the male subsample indicating progress in the first three sets of start-up activities, which occurs because some individuals do not engage in all of the start-up activities (please see Fig. 1). Given that the negative binomial distribution has a separate probability distribution for the number of successes in a row of Bernoulli trials (Audretsch et al. 2012) and that Gourieroux et al. (1984) argues that a negative binomial regression model allows for non-linearity, contagion, unobserved heterogeneity, and correlated standard errors simultaneously (Long 1997), we chose this for our analysis.

We used STATA 13.0 for our analysis. Before specifying our regressions, we tested for multicollinearity. The highest variance inflation factor (VIF) among the independent variables was 2.12, which is below the conservative cut-off value of 5.0 (Studenmund and Cassidy 1992). Therefore, multicollinearity was not a concern in our model. As our aim was to observe whether there are gender differences, we followed Moog and Backes-Gellner (2013) procedure and we used separate analyses for female and male respondents which is a popular procedure in women's entrepreneurship because it provides a deep understanding of the differences between women and men entrepreneurs (e.g., Cliff 1998; Manolova et al. 2012). To ensure that splitting the data was a reliable procedure, we used a Wald test to determine whether there was a significant difference in the sample means. Tables 2 and 3 show the results, which indicate that there is a significant difference between men and women.

## 4 Results

Table 4 shows the results of our negative binomial regression models. First, we tested the overall sample. Models 1, 2, and 3 show the results of the overall sample. Then, in Table 5, we split the sample by gender, and models 4, 5, and 6 show results from the female-only subsample and models 7, 8, and 9 show the results from the male-only subsample. In the first step of the negative binomial regression model, we added the control variables (models 1, 4, and 7). In the second step, we included *risk-taking behavior* as the independent variable (models 2, 5, and 8). Then, we included the two interaction terms of *performance-based culture and social supportive culture* on the relationship between risk-taking behavior and progress in the venturing process (models 3, 6, and 9). In the formula below, we show the specification of our model:

Progress in the venturing process = $f$ (risk-taking behavior, performance-based culture $i$, socially supportive culture $i$, control variables) + Error

[2] Introduction to SAS. UCLA: Statistical Consulting Group. From https://stats.idre.ucla.edu/sas/modules/sas-learning-moduleintroduction-to-the-features-of-sas/ (accessed March 1, 2019).

**Table 1** Correlation matrix

| | Female sample | | Male sample | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. dev. | Mean | Std. dev. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Progress in the venturing process | 1.459 | 1.503 | 1.699 | 1.558 | 1.000 | | | | | | |
| 2. Age | 22.392 | 3.170 | 22.700 | 3.176 | 0.075*** | 1.000 | | | | | |
| 3. Marital status | 0.322 | 0.610 | 0.204 | 0.498 | − 0.002 | 0.312*** | 1.000 | | | | |
| 4. Field of study | 0.457 | 0.498 | 0.415 | 0.493 | − 0.029 | − 0.055*** | 0,007 | 1.000 | | | |
| 5. Level of study | 0.750 | 0.433 | 0.801 | 0.400 | 0.071*** | − 0.390*** | − 0.103*** | − 0.018 | 1.000 | | |
| 6. Entrepreneurship course | 0.376 | 0.485 | 0.374 | 0.484 | 0.026 | 0.030** | 0.022** | 0.107*** | − 0.041*** | 1.000 | |
| 7. Parental self-employment | 2.757 | 1.003 | 2.690 | 0.984 | 0.019 | 0.025** | 0.002 | 0.024** | − 0.000 | 0.024** | 1.000 |
| 8. Competence perception | 5.564 | 0.843 | 5.521 | 0.885 | 0.173*** | − 0.005 | 0.048*** | 0.126*** | 0.057*** | 0.119*** | 0.053*** |
| 9.Number of co-founders | 2.064 | 0.990 | 2.262 | 1.081 | 0.057* | − 0.007** | − 0.034* | − 0.050** | 0.055** | − 0.005 | − 0.081*** |
| 10. Sector | 4.766 | 3.300 | 4.521 | 3.799 | − 0.024 | 0.005** | 0.011 | − 0.072*** | 0.007 | − 0.017 | 0.004 |
| 11. 2013 total entrepreneurial activity | 9.663 | 3.204 | 9.753 | 3.768 | 0.004 | − 0.014 | 0.036*** | − 0.053*** | 0.163*** | − 0.042*** | 0.091*** |
| 12. Stage of development | 0.199 | 0.400 | 0.331 | 0.470 | 0.084*** | 0.083*** | − 0.114*** | − 0.084*** | − 0.076*** | − 0.105*** | − 0.078* |
| 13. Performance-based culture | 3.378 | 0.408 | 3.472 | 0.454 | 0.152*** | 0.113*** | − 0.084*** | − 0.101*** | − 0.002 | − 0.134*** | − 0.020** |
| 14. Socially supportive culture | 3.725 | 0.243 | 3.687 | 0.253 | 0.145*** | − 0.080*** | 0.006 | 0.013 | 0.050*** | 0.003 | 0.024** |
| 15. Risk | 4.749 | 1.404 | 4.444 | 1.428 | − 0.048 | − 0.052*** | − 0.035** | 0.005 | − 0.035*** | 0.024* | − 0.023** |
| | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | |
| 8. Competence perception | 1.000 | | | | | | | | | | |
| 9. Number of co-founders | 0.037 | 1.000 | | | | | | | | | |
| 10. Sector | − 0.030 | 0.013 | 1.000 | | | | | | | | |
| 11. 2013 Total entrepreneurial activity | 0.086*** | − 0.041** | 0.010 | 1.000 | | | | | | | |
| 12. Stage of development | − 0.109*** | 0.140*** | − 0.040* | − 0.553*** | 1.000 | | | | | | |
| 13. Performance-based culture | − 0.086*** | 0.119*** | − 0.038* | − 0.034*** | 0.699*** | 1.000 | | | | | |
| 14. Socially supportive culture | 0.067*** | 0.100*** | − 0.050** | 0.135*** | − 0.256*** | − 0.001 | 1.000 | | | | |
| 15. Risk | − 0.076*** | − 0.063** | 0.004 | − 0.096*** | − 0.026** | − 0.038*** | 0.042*** | 1.000 | | | |

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

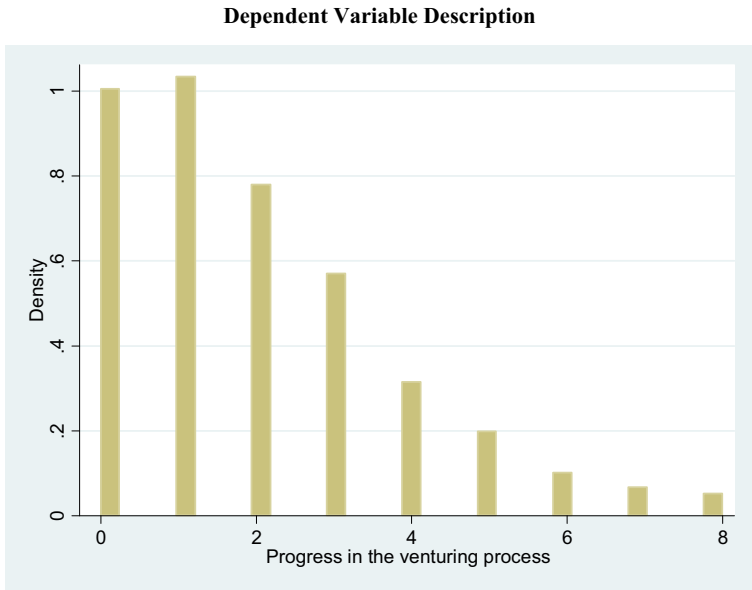


**Fig. 1** Dependent variable description

In model 1 (control variables only), the results indicate that there is a positive and significant relationship between level of study, entrepreneurship education, higher perception of competence, and ventures in the industrial sector of consulting, advertising, marketing, design, construction, and manufacturing, on progress in the venturing process of nascent entrepreneurs (Model 1). In addition, innovation-driven economies had a positive and significant relationship with nascent entrepreneurs. Then, we included gender and risk. Model 2 shows that there is a significant negative relationship between gender ($\beta = -0.093$, $p < 0.10$) and risk ($\beta = -0.028$, $p < 0.10$) and progress in the venturing process, which indicates that in the start-up process, men have a lower risk aversion than women. In model 3, we included the moderating variables and the results show that performance-based culture strengthens the relationship between risk-taking behavior and the start-up process ($\beta = 0.064$, $p = 0.10$). Socially supportive culture also shows a significant positive moderating effect on the relationship between risk perception and the start-up process ($\beta = 0.124$, $p < 0.10$).

**Table 2** Mean comparison between female and male sample (*t* test)

| Variables | Overall | Male | Female |
|---|---|---|---|
| Progress in the venturing process | 1.595 | 1.702 | 1.461*** |
| Risk | 4.577 | 4.445*** | 4.749 |
| Performance-based culture | 3.432 | 3.472 | 3.378*** |
| Social supportive culture | 3.703 | 3.688** | 3.726 |
| Age | 22.566 | 23.001 | 22.393** |
| Competence perception | 5.539 | 5.521 | 5.564 |
| Number of founders | 2.176 | 2.264 | 2.06*** |
| 2013 total entrepreneurial activity | 9.714 | 9.753 | 9.650 |

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

In the next step of the analysis, we tested our model using the female and male subsamples. Model 5 tested the direct relationship between risk-taking behavior and entrepreneurs' progress in the venturing process for female nascent entrepreneurs. Model 5 shows that risk-taking behavior had a negative and statistically significant relationship with progress in the venturing process for female nascent entrepreneurs ($\beta = -0.046$, $p < 0.10$), indicating that the higher the risk, the lower the number of start-up activities that are pursued by female nascent entrepreneurs. However, model 8 indicates that the relationship between risk and entrepreneurs' progress in the venturing process for male nascent entrepreneurs is not statistically significant ($\beta = -0.016$, n.s). Thus, H1, which states that there is a negative relationship between risk-taking behavior and progress in the venturing process for both young female and young male nascent entrepreneurs, is partially supported.

In models 6 and 9, we sequentially included the interaction terms. Our results show that the interaction between risk and performance-based culture was not statistically significant in entrepreneurs' progress in the

**Table 3** Comparison of frequency between male and female sample (chi-square)

| Variables | Male | Female | chi2 | |
|---|---|---|---|---|
| Marital status | | | | |
| Single | 731 | 502 | 19.517 | *** |
| Living with a partner | 115 | 126 | | |
| Married | 25 | 39 | | |
| Divorced | 4 | 4 | | |
| Field of study | | | | |
| Business, economics, and law | 387 | 321 | 86.083 | **** |
| Natural science and medicine | 332 | 128 | | |
| Social science | 41 | 73 | | |
| Other | 117 | 154 | | |
| Level of study | | | | |
| Undergraduate | 173 | 167 | 5.795 | ** |
| Graduate | 702 | 504 | | |
| Industry | | | | |
| Information, technology, and communication | 158 | 37 | 114.960 | *** |
| Wholesale, retail | 161 | 123 | | |
| Consulting | 55 | 44 | | |
| Advertising marketing design | 55 | 77 | | |
| Education and training | 28 | 50 | | |
| Tourism and gastronomy | 69 | 110 | | |
| Health services | 24 | 24 | | |
| Other services | 60 | 52 | | |
| Architecture and engineering | 60 | 18 | | |
| Construction and manufacturing | 44 | 20 | | |
| Other | 163 | 121 | | |

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

venturing process for neither female nascent entrepreneurs (β = 0.408, n.s) nor for male nascent entrepreneurs (β = 0.076, n.s). Therefore, H2 is not supported. Model 6 shows that the interaction between risk and socially supportive culture had a statistically significant and positive relationship with the venturing process of female nascent entrepreneurs (β = 0.206, $p < 0.10$). The result indicates that starting a venture in a socially supportive culture reduces the negative effect of risk on entrepreneurs' progress in the venturing process of female nascent entrepreneurs (see Fig. 2). In contrast, model 9 indicates that the interaction between risk and socially supportive culture did not have a statistically significant effect on entrepreneurs' progress in the venturing process for male nascent entrepreneurs (β = 0.083, n.s). Thus, H3 was supported. When we observed

**Table 4** Empirical results of progress in the venturing process using negative binomial regression

| | Overall sample | | |
|---|---|---|---|
| | Model 1 | Model 2 | Model 3 |
| Age | 0.011 | 0.009 | 0.009 |
| | (0.008) | (0.008) | (0.008) |
| Marital status | − 0.073 | − 0.066 | − 0.037 |
| | (0.049) | (0.049) | (0.048) |
| Field of study | 0.001 | 0.006 | − 0.007 |
| | (0.024) | (0.024) | (0.022) |
| Level of study | − 0.203*** | − 0.187** | − 0.175 |
| | (0.058) | (0.058) | (0.057) |
| Entrepreneurial education | 0.086* | 0.091 | 0.107 |
| | (0.049) | (0.049) | (0.048) |
| Parental self-employment | − 0.020 | − 0.017 | − 0.016 |
| | (0.024) | (0.024) | (0.024) |
| Competence perception | 0.194*** | 0.194*** | 0.18 |
| | (0.031) | (0.032) | (0.032) |
| Number of co-founders | 0.018 | 0.015 | − 0.004 |
| | (0.023) | (0.023) | (0.023) |
| Sector(a) | | | |
| 2013 total entrepreneurial activity | 0.009 | 0.007 | 0.023** |
| | (0.007) | (0.007) | (0.009) |
| Stage of development | 0.214*** | 0.197*** | 0.404*** |
| | (0.058) | (0.058) | (0.120) |
| Gender | | − 0.093* | − 0.100** |
| | | (0.052) | (0.051) |
| Risk (H1) | | − 0.028* | − 0.720*** |
| | | (0.017) | (0.262) |
| Performance-based culture | | | − 0.407** |
| | | | (0.195) |
| Socially supportive culture | | | 0.081 |
| | | | (0.308) |
| Risk *Performance-based culture | | | 0.064 + |
| | | | (0.039) |
| Risk * Socially supportive culture | | | 0.124* |
| | | | (0.069) |
| _cons | − 1.202*** | − 0.981*** | − 0.379 |
| | (0.358) | (0.375) | (1.183) |
| ln_alpha | − 1.435 | − 1.454 | − 1.565 |
| | (0.146) | (0.1485) | (0.161) |
| Alpha | 0.238 | 0.234 | 0.209 |
| | (0.035) | (0.035) | (0.034) |
| *N* | 1552 | 1552 | 1552 |
| Wald $\chi^2(22)$ | 106.65 | 111.17 | 165.7 |

**Table 4** (continued)

| | Overall sample | | |
|---|---|---|---|
| | Model 1 | Model 2 | Model 3 |
| Prob > $\chi^2$ | 0.000 | 0.000 | 0.000 |
| Log pseudo-likelihood | − 2550.718 | − 2547.4976 | − 2527.431 |

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

(a) Due to space reason, we did not show the control variable sector. The baseline was information, technology, and communication. In the overall sample and female sample, consulting, advertising, marketing, manufacturing, and construction positively and significantly influenced female nascent entrepreneurs. In the male sample, we did not find any significant relationship between the sectors and the progress in the venturing process

all models, they show that the alpha is higher than zero, indicating that using a negative binomial regression model is a suitable method for our sample. We looked at the statistical validity of a structural break for female and male. The Chow test results supported a structural break for our predictor variables ($p < 0.10$, $F = 2.02$).

### 4.1 Robustness tests

To test the robustness of our results, we conducted additional analyses. First, we eliminated Poland from the sample as it had the highest number of respondents in the sample (279 females and 218 males). In the female-only subsample, the results were the same as in our main models. However, the male-only sample showed some different results. The interaction between risk and performance-based culture had a positive and statistically significant relationship with the venturing progress of male nascent entrepreneurs ($\beta = 0.096$, $p < 0.10$). Like our main model, the relationship with the interaction between risk and socially supportive culture on progress in the venturing process of male nascent entrepreneurs was not statistically significant ($\beta = 0.060$, n.s). One explanation for this difference is that Poland shows an equal index of performance-based and socially supportive cultures (see Table 7 in the Appendix).

Next, we factor analyzed the set of start-up activities to observe whether an underlying structure emerged (Edelman et al. 2016). We entered the set of activities in a factor analysis with varimax rotation. The factors were as follows: factor 1—started a product or service development, started marketing or promotion efforts, purchased material, equipment or machinery, and registered the company; factor 2—discussed the product or business idea, collected information about markets and competitors; and factor 3—wrote the business plan, attempted to obtain external funding, and applied for a patent, copyright, or trademark. We ran an OLS regression using the three factors as dependent variables for both subsamples. The results were the same as in our main models. The effect of the interaction between risk and socially supportive culture was positive and statistically significant on factor 2 for female nascent entrepreneurs. However, the interaction between risk and performance-based culture had a positive and significant effect on factor 3 for male nascent entrepreneurs. We also ran our main model with the sample dependent variable, but in this case, we use an ordered probit. The ordered probit has a normality assumption, which is different from negative binomial regression. The results showed some differences from the main model. While the results of the female sample were still similar to our main model, the male sample showed some differences. The findings indicate that performance-based cultures moderate the relationship between risk-taking behavior and progress in the venturing process (Table 6). We consider that these results show the cultural embeddedness of the start-up progress and the importance of studying this phenomenon using a gendered lens. Thus, further research should focus on investigating this topic. Overall, the robustness checks show the differential effect of country-level culture on progress in the venturing process of female and male nascent entrepreneurs, and lend support to our initial findings.

## 5 Discussion

New ventures are created through the purposeful organizing activities of nascent entrepreneurs (Katz and Gartner 1988; Shook et al. 2003). These organizing activities are not conducted in a vacuum, but instead they are influenced by the perceptions of the nascent entrepreneur, as well as by the country-level cultural context in which they occur. In this paper, we draw insights from the literature on risk as well as the work done on country-level cultural norms to develop and empirically test a research model in which the risk aversion of the nascent entrepreneur is moderated by their country-level cultural context. In addition, we add a gendered perspective to this conversation, suggesting

**Table 5** Empirical results of progress in the venturing process using negative binomial regression by gender

| | Female sample | | | Male sample | | |
|---|---|---|---|---|---|---|
| | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
| Age | 0.015 | 0.012 | 0.010 | 0.009 | 0.008 | 0.009 |
| | (0.013) | (0.013) | (0.013) | (0.009) | (0.010) | (0.010) |
| Marital status | − 0.097 | − 0.103 | − 0.055 | − 0.040 | − 0.04 | − 0.016 |
| | (0.078) | (0.077) | (0.077) | (0.060) | (0.060) | (0.059) |
| Field of study | − 0.028 | − 0.031 | − 0.044 | 0.029 | 0.031 | 0.018 |
| | (0.035) | (0.034) | (0.033) | (0.032) | (0.032) | (0.031) |
| Level of study | − 0.157 + | − 0.139 | − 0.112 | − 0.204*** | − 0.201*** | − 0.201*** |
| | (0.096) | (0.096) | (0.095) | (0.071) | (0.071) | (0.071) |
| Entrepreneurial education | 0.16** | 0.168** | 0.199*** | 0.041 | 0.043 | 0.046 |
| | (0.078) | (0.078) | (0.078) | (0.062) | (0.062) | (0.062) |
| Parental self-employment | − 0.018 | − 0.017 | − 0.011 | − 0.018 | − 0.018 | − 0.019 |
| | (0.040) | (0.040) | (0.040) | (0.030) | (0.030) | (0.030) |
| Competence perception | 0.180*** | 0.178*** | 0.170*** | 0.205*** | 0.204*** | 0.190*** |
| | (0.054) | (0.054) | (0.053) | (0.038) | (0.038) | (0.038) |
| Number of co-founders | 0.024 | 0.016 | 0.002 | 0.015 | 0.016 | − 0.001 |
| | (0.038) | (0.039) | (0.040) | (0.027) | (0.027) | (0.028) |
| Sector(a) | | | | | | |
| 2013 total entrepreneurial activity | 0.014 | 0.011 | 0.039*** | 0.006 | 0.005 | 0.013 |
| | (0.012) | (0.012) | (0.015) | (0.009) | (0.009) | (0.012) |
| Stage of development | 0.320*** | 0.314*** | 0.626*** | 0.142** | 0.138** | 0.249* |
| | (0.095) | (0.096) | (0.220) | (0.072) | (0.072) | (0.140) |
| Risk | | − 0.046* | − 0.981** | | − 0.016 | − 0.590* |
| | | (0.027) | (0.438) | | (0.022) | (0.323) |
| Performance-based culture | | | − 0.431 | | | − 0.367 |
| | | | (0.307) | | | (0.250) |
| Socially supportive culture | | | − 0.105 | | | 0.146 |
| | | | (0.511) | | | (0.377) |
| Risk × performance-based culture (H2) | | | 0.048 | | | 0.076 |
| | | | (0.061) | | | (0.050) |
| Risk × socially supportive culture (H3) | | | 0.206* | | | 0.082 |
| | | | (0.114) | | | (0.082) |
| _cons | − 1.782*** | − 1.437** | − 0.470 | − 0.992** | − 0.902** | − 0.356 |
| | (0.607) | (0.638) | (2.135) | (0.431) | (0.452) | (1.424) |
| ln_alpha | − 1.321 | − 1.338 | − 1.491 | − 1.63554 | − 1.640 | − 1.741 |
| | (0.220) | (0.223) | (0.256) | (0.208) | (0.208) | (0.224) |
| Alpha | 0.267 | 0.262 | 0.225 | 0.194847 | 0.194 | 0.175 |
| | (0.059) | (0.058) | (0.058) | (0.041) | (0.040) | (0.039) |
| *N* | 674 | 674 | 6.74 | 878 | 878 | 878 |
| Wald $\chi^2(22)$ | 58.96 | 59.31 | 88.17 | 71.5 | 72.45 | 97.79 |
| Prob > $\chi^2$ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Log pseudo-likelihood | − 1067.31 | − 1065.968 | − 1054.992 | − 1470.57 | − 1470.307 | − 1460.996 |

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

(a) Due to space reason, we did not show the control variable sector. The baseline was information, technology, and communication. In the overall sample and female sample, consulting, advertising, marketing, manufacturing, and construction positively and significantly influenced female nascent entrepreneurs. In the male sample, we did not find any significant relationship between the sectors and the progress in the venturing process

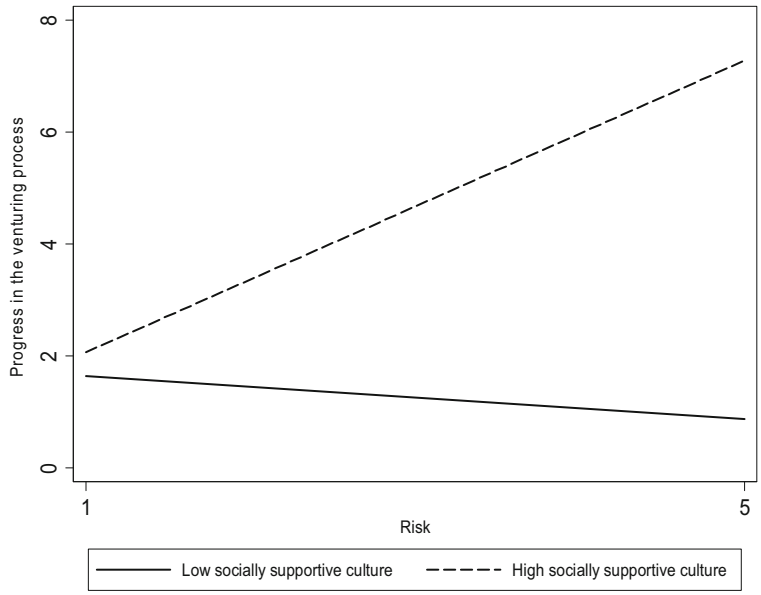


**Fig. 2** The effect of socially supportive culture on the relationship between risk and progress in the venturing process for female nascent entrepreneurs

that gender has a differential impact on both risk aversion and on the moderating effect of country-level culture. In doing so, we address the confluence of risk aversion and country-level culture, and their impact on progress in the venturing process, through a gendered lens.

### 5.1 The gendered direct effect of risk aversion on women entrepreneurs' progress in the venturing process

Consistent with the limited empirical work on risk and women entrepreneurs (Bönte and Piegeler 2013; Brush et al. 2009; Verheul et al. 2012) as well as the early work in economics which emphasizes the risk inherent in entrepreneurial pursuits, we find that risk significantly decreases female nascent entrepreneurs' progress in the venturing process. Our finding validates the conceptual work by Brush et al. (2009), who argues that, despite similar entrepreneurial experiences, women entrepreneurs perceive micro, meso, and macro environmental factors differently than men. It also supports previous empirical work by Verheul et al. (2012) who found that low tolerance for risk leads to women's reluctance to become self-employed and by Bönte and Piegeler (2013), who found that gendered differences in risk preferences contribute significantly to the gender gap in nascent entrepreneurship, leading to fewer female-led start-ups.

However, this effect was not significant in the men-only subsample. We expected to find that, consistent with economic theory (Knight 1921), men would find entrepreneurship to be a risky undertaking. We thought this might be especially true in our young, student sample where entrepreneurs are likely to have little experience in starting a new venture. Our non-significant findings lend support to work in entrepreneurship, which states that entrepreneurs frame risk differently than non-entrepreneurs (Cooper et al. 1988; Palich and Bagby 1995). Given that previous work in entrepreneurship has been conducted on predominantly male samples, we can conclude that what male entrepreneurs perceive as risky is different from what female nascent entrepreneurs perceive to be risky.

In sum, although we did not hypothesize any gendered differences in risk leading to progress in the venturing process, we find gendered differences. Specifically, risk-taking behavior decreases the likelihood of engaging in the entrepreneurial process for women while there is no significance in the relationship between risk-taking behavior and progress in the venturing process for men. Given our young, nascent entrepreneur sample, one interesting avenue for future research is to examine gendered perceptions of risk in a sample of older, serial entrepreneurs. It may be that once women go through the start-up process, they have a better understanding of the risks, and their perceptions may be different from what we find in an inexperienced set of female nascent entrepreneurs.

**Table 6** Robustness test results of progress in the venturing process using ordered probit regression

| | Female sample Model 10 | Male sample Model 11 |
|---|---|---|
| Age | 0.007 | 0.015 |
| | (0.015) | (0.012) |
| Marital status | − 0.069 | − 0.007 |
| | (0.082) | (0.018) |
| Level of study | − 0.143 | − 0.182 |
| | (0.099) | (0.037) |
| Field of study | − 0.060 + | − 0.225** |
| | (0.037) | (0.073) |
| Entrepreneurial education | 0.189** | 0.056 |
| | (0.087) | (0.074) |
| Parental self-employment | − 0.010 | − 0.016 |
| | (0.042) | (0.036) |
| Competence perception | 0.179*** | 0.220*** |
| | (0.050) | (0.042) |
| Number of co-founders | 0.007 | 0.000 |
| | (0.043) | (0.034) |
| Sector(a) | − 0.005 | − 0.002 |
| | (0.013) | (0.009) |
| 2013 total entrepreneurial activity | 0.045** | 0.015 |
| | (0.018) | (0.014) |
| Stage of development | 0.699*** | 0.298* |
| | (0.258) | (0.170) |
| Risk | − 0.986** | − 0.908** |
| | (0.534) | (0.405) |
| Socially supportive culture | − 0.202 | 0.004 |
| | (0.619) | (0.304) |
| Performance-based culture | − 0.313 | − 0.473 |
| | (0.378) | (0.305) |
| Risk × socially supportive culture | 0.225* | 0.139 |
| | (0.134) | (0.104) |
| Risk × performance-based culture | 0.0272 | 0.105* |
| | (0.074) | (0.061) |
| *N* | 674 | 878 |
| Pseudo R-squared | 0.037 | 0.028 |
| Log Likelihood | − 1047.1265 | − 1454.074 |
| Prob > chi-square | 0.037 | 0.027 |

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

(a) Due to space reason, we did not show the control variable sector. The baseline was information, technology, and communication. In the female sample, trade, consulting, and health services positively and significantly influenced female nascent entrepreneurs. In the male sample, we did not find any significant relationship between the sectors and the progress in the venturing process

### 5.2 The gendered moderating impact of socially supportive cultures

Our findings confirm our expectation that socially supportive cultures would decrease the negative relationship between risk-taking behavior and progress in the venturing process for female nascent entrepreneurs which validated our idea that, in socially supportive cultures, the impact of culture on risk is different than that in performance-based cultures. In socially supportive cultures, the family or other group members will step in to help any group member who encounters a large and possibly catastrophic loss after selecting a risky option. In this way, socially supportive cultures act as a cushion against possible losses (Weber and Hsee 1998). Our findings are supported by our robustness tests, which show that socially supportive cultures help reduce the risk aversion of nascent women entrepreneurs, thus illustrating the critical role played by the macro environment on women's entrepreneurs (e.g., Brush et al. 2009; Giménez and Calabrò 2018; Shahriar 2018).

Our findings indicate that, from a gendered perspective, the safety cushion provided by a socially supportive culture is particularly important for women engaged in the start-up process. Women have different patterns of childhood socialization (Gilligan 1982), which shape their values, attitudes, qualities, and mental patterns (Cliff 1998; Hersby et al. 2009) leading them to rely on family ties more than men rely on family ties. An introduction into the family's social network is a stamp of approval that bestows legitimacy on a young woman's entrepreneurial initiative and facilitates the completion of other start-up activities. Family social capital may increase access to necessary start-up resources that may be otherwise inaccessible to a female entrepreneur (Stephan and Uhlaner 2010). This logic is akin to Burt's (1998) argument about the benefits of borrowing social capital to gain legitimacy and acceptance.

A wider interpretation of our findings indicates that, at least for female entrepreneurs, progress in the venturing process occurs in a supportive context that is rich in social capital. Thus, social capital, which leads to greater access to important networks, helps female entrepreneurs in their search for necessary start-up resources. Therefore, by providing both a social safety net and help with resources, female

entrepreneurs in socially supportive cultures may find their risk aversion reduced, thus leading to greater progress in the venturing process.

### 5.3 The lack of a moderating impact of performance-based cultures

We were surprised to find no significant moderating relationship of performance-based culture between risk and progress in the venturing process for both female and male entrepreneurs in our primary statistical analysis. While contrary to our hypothesis, this finding is consistent with Stephan and Uhlaner (2010) who looked at the direct relationship between performance-based cultures and entrepreneurial activity and found no significant relationship. Interestingly, when we ran our robustness checks, we found that performance-based cultures increase the negative relationship between risk and progress in the venturing process for male nascent entrepreneurs only. An explanation may be because performance-based cultures encourage and reward individual accomplishments (Stephan and Uhlaner 2010), and since men are driven by economic motivations more than are women (Manolova et al. 2012), starting a new business may seem too risky to men, as they may not be able to achieve their economic goals. We suggest that future research could use a different methodological approach with the aim of providing a finer-grained and more nuanced analysis of the gendered relationship between risk and progress in the venturing process in performance-based cultures.

## 6 Future research, implications, and conclusions

Our study demonstrates that country-level cultural norms moderate the relationship between risk and start-up activities and that this relationship has a gendered dimension. Future research could conduct a trend study to look at the impact of culture on rates of entrepreneurship internationally. Data from the 2004 GLOBE study could be combined with recent work from the Global Entrepreneurship Monitor Women's Entrepreneurship 2016/2017 report (Kelley, et al. 2017), which finds that women's entrepreneurship is increasing globally. The global rise in rates of women-owned businesses could be indicative of a change in cultural values around women and entrepreneurship. Alternatively, it could be that women are accessing governmental and other available support systems in greater numbers leading to more women starting new ventures. In addition, our findings could be different if women are novice entrepreneurs versus serial. These trends are not reflected in our nascent student entrepreneur data and present an opportunity for future inquiry.

A limitation of our study is that our sample is both cross-sectional and restricted to students who are engaged in the process of starting a new venture, which means that there is no opportunity to study changes in risk aversion over time, nor is there way to explore the feedback loop that occurs when individuals impact culture, and culture impacts the individual, who in our case is starting a new venture. However, given that country-level culture changes slowly (Fernandez 2007), we are confident that this potential impact loop has minimal impact on our findings. One interesting extension to the paper would be to see if our model changes based on the timing of the exploitation of the new business opportunity. Extant research suggests that early opportunity identifiers take on more risk because others lack the knowledge to properly understand and assess the value of the opportunity (Shane and Venkatraman 2000). However, to date, no one has explored the possible gendered or country-level cultural impact of that insight.

Due to the way in which the data were collected, it is possible that regional differences in country culture may have been overlooked. We eliminated countries from our sample when we knew that data were incomplete, but it is possible that intra-country cultural differences may still be present. Future research could take a finer-grained approach and focus on regional gendered cultural differences, especially in Anglosphere countries, which are underrepresented in our inquiry.

Our cultural variables come from the GLOBE database, which is data of 17,370 middle managers in 951 organizations (House et al. 2004). While the GLOBE data is considered the most robust data available on country-level culture (Autio et al. 2013), it is possible that the cultural perceptions of middle managers are different from those of university students. In addition, it is possible that students may attend universities and start new ventures in a cultural context that is different

from that of their home country. Also, a limitation of our study is that we only have data on where the student was attending university, and not the student's national origin.

Limitations notwithstanding, for researchers, this study adds to the growing research emphasizing the importance of both gender and contextual variables when studying entrepreneurship. Our findings indicate that not only does progress in the venturing process have a gendered component, but also this is influenced by country-level contextual variables, such as culture. For public policy makers in performance-based cultures, programs and incentives that provide women nascent entrepreneurs with help with access to resources may help to moderate the risk of engaging in the new venture start-up process. For public policy makers in socially supportive cultures, it is important to continue policies that support women's networking as our findings are clear that women's risk aversion is less in cultures that are rich in social capital. For young nascent women entrepreneurs in performance-based cultures, our findings suggest the need to seek out critical relationships to help to offset the lack of a supportive environment. In contrast, for young nascent women entrepreneurs in socially supportive cultures, the support received by greater access to social capital and other resources can help to mitigate risk aversion, leading to greater progress in the venturing process. In conclusion, our study starts an interesting conversation on the relationship between risk and country-level culture in nascent student entrepreneurship using a gendered lens. It is our hope that other researchers will join in and enrich this conversation.

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**Data availability** Upon request to the authors.

**Compliance with ethical standards**

**Conflict of interest** The authors declare that they have no conflict of interest.

**Code availability** Not applicable.

## Appendix 1

**Table 7** Sample description

| | Performance-based culture* | Socially supportive culture** |
|---|---|---|
| Brazil | 3.47 | 3.75 |
| Germany | 4.05 | 3.33 |
| Hungary | 3.04 | 3.34 |
| Italy | 3.28 | 3.77 |
| Malaysia | 3.72 | 4.5 |
| Netherlands | 4.38 | 3.78 |
| Poland | 3.25 | 3.78 |
| Russia | 2.85 | 4.09 |
| Singapore | 4.05 | 3.62 |
| Spain | 3.28 | 3.45 |
| Switzerland | 4.37 | 3.73 |
| Average | 3.38 | 3.69 |

*Country culture scores range from 1 to 7. Higher values mean that in that society has a more performance-based culture

**Country culture scores range from 1 to 7. Higher values mean that in that society has a more socially supportive culture

## Appendix 2

**Table 8** Mean of risk perception for female and male sample (per country)

| | Female sample | | Male sample | |
|---|---|---|---|---|
| | Mean | Std. dev. | Mean | Std. dev. |
| Brazil | 3.778 | 1.663 | 4.061 | 1.614 |
| Germany | 4.424 | 1.351 | 4.374 | 1.404 |
| Hungary | 4.288 | 1.346 | 4.002 | 1.472 |
| Italy | 5.035 | 1.490 | 4.565 | 1.303 |
| Malaysia | 4.917 | 1.100 | 4.882 | 1.400 |
| Netherlands | 4.773 | 1.271 | 4.320 | 1.106 |
| Poland | 5.412 | 1.052 | 5.104 | 1.167 |
| Russia | 3.993 | 1.327 | 4.333 | 1.422 |
| Singapore | 4.796 | 0.934 | 4.869 | 1.276 |
| Spain | 3.578 | 1.144 | 3.561 | 1.423 |
| Switzerland | 3.896 | 1.581 | 4.040 | 1.201 |
| Average | 4.747 | 1.400 | 4.451 | 1.430 |

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