

This is an electronic reprint of the original article. This reprint may differ from the original in pagination and typographic detail.

---

## Entrepreneurial intentions and gender: pathways to start-up

Nikou, Shahrokh; Brännback, Malin; Carsrud, Alan; Brush, Candida G.

*Published in:*  
International Journal of Gender and Entrepreneurship

*DOI:*  
[10.1108/IJGE-04-2019-0088](https://doi.org/10.1108/IJGE-04-2019-0088)

Published: 01/01/2019

*Document License*  
CC BY-NC

[Link to publication](#)

*Please cite the original version:*  
Nikou, S., Brännback, M., Carsrud, A., & Brush, C. G. (2019). Entrepreneurial intentions and gender: pathways to start-up. *International Journal of Gender and Entrepreneurship*, 11(3), 348–372. <https://doi.org/10.1108/IJGE-04-2019-0088>

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

### Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



## Entrepreneurial Intentions and Gender: Pathways to Start-up

Journal:	<i>International Journal of Gender and Entrepreneurship</i>
Manuscript ID	IJGE-04-2019-0088.R2
Manuscript Type:	Research Paper
Keywords:	Entrepreneurship, Entrepreneurship Intentions, Fuzzy-set Qualitative Comparative Analysis, Gender

SCHOLARONE™  
Manuscripts

## Entrepreneurial Intentions and Gender: Pathways to Start-up

### ABSTRACT

**Purpose** — The purpose of this paper is to revisit the conceptualization and measurement of entrepreneurial intentions. Significant studies anchored in the Theory of Planned Behavior use causal statistical approaches to entrepreneurial intentions. This methodological approach, leads to the conclusion that there is a single pathway for all groups of people to achieve business start-up. Even though theory suggests approaches by women entrepreneurs to start a business may be influenced by different factors from those influencing men, results are inconclusive in these analyses. We argue that methodological preferences for linear, causal analytical approaches limit our understanding of gender similarities and differences in the business start-up process. We propose that when considering diverse samples, it is unreasonable to assume there is only a single pathway leading to business start-up.

**Design/methodology/approach** — Building on fuzzy-set Qualitative Comparative Analysis (fsQCA) and dataset of 2,038 respondents, we investigate factors predicting the intentions to start a business, and evaluate the alternative conjunctive paths that emerge.

**Findings** — The fsQCA results shows that the relationship among conditions leading to entrepreneurial intentions is complex and is best represented as multiple and conjunctural causation configurations. In other words, there are multiple significant pathways (refers to equifinality) that predict intentions to start a business start-up, and there are significant differences by gender.

**Originality/value** — This study is one of the first to examine the roll of gender as a sperate condition in the analysis. This paper offers implications for theory and future research and highlights the complexity of this domain.

**Keywords:** Entrepreneurship, Entrepreneurial Intentions, Fuzzy-set Qualitative Comparative Analysis, Gender

**Paper type** Research paper

### Introduction

One of the most important questions in the entrepreneurship domain concerns factors predicting the intentions to start a business. Since the late 1980's, a considerable number of studies have examined

1  
2  
3 entrepreneurship as intentional behavior and analyzed the formation of intentions to start a business as  
4 the first step in the launch process (Kautonen et al., 2015; Krueger et al., 2000; Liñán and Fayolle,  
5 2015). Early research on entrepreneurial intentions proposes that intentions are the best predictor of  
6 planned behavior, especially when that behavior is difficult to observe, rarely occurs, or involves  
7 unpredictable time lags (Krueger et al., 2000, p. 413). To accommodate this claim, Krueger and his  
8 colleagues state that entrepreneurship is a proto-typical example of that type of planned behavior, as  
9 starting a new venture requires a careful planning, for which the intentions-centered models such as  
10 Theory of Reasoned Action (TRA: Fishbein and Ajzen, 1975) and Theory of Planned Behavior (TPB:  
11 Ajzen, 1985) are the ideal choices (Krueger et al., 2000, p. 411; Rueda et al., 2015).

12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24 The Theory of Planned Behavior (hereinafter TPB), developed from the Theory of Reasoned Action is  
25 particularly important in the entrepreneurial domain because it considers personal and social factors to  
26 explain behavioral intentions (e.g. Maes et al., 2014). Ajzen proposes three independent variables  
27 measuring attitudes, subjective norms, and perceived behavioral control that determine behavioral  
28 intentions (Ajzen, 1985, 1987). He posits that the attitudes variable motivates a person's disposition  
29 toward performing a behavior. The subjective norms (SN) variable includes attributes of a person's  
30 social environment and situation, and the perceived behavioral control (PBC) variable addresses  
31 variation in a person's ability to control the performance of a behavior. According to TPB, behavioral  
32 intention is the immediate antecedent of the behavior or the action (Ajzen, 1985, 2002).

33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45 Despite the prior contributions of TPB, there is an underlying assumption that the pathway is the same  
46 for all regardless of gender. To this end, the vast majority of studies rely on causal modeling, or  
47 structural equation modeling, to come up with a single explanatory pathway leading to intentions to  
48 start a business. However, Feminist Theory argues that in fact, there may be systemic and contextual  
49 factors that may differentially deprive women of certain resources in the socialization process,  
50 specifically, education and networks. This suggests that women may have different configurations of  
51 variables leading to intentions than might be predicted for men. Without a better understanding of the  
52 possible differences in pathways leading to entrepreneurial intentions by men and women, we risk

1  
2  
3 creating generic prescriptions and practices that apply to everyone, and therefore, we may not be  
4 adequately training and supporting women entrepreneurs.  
5  
6  
7  
8

9 Therefore, in this paper, we argue that it is necessary to re-examine this theory in the context of a diverse  
10 sample. We specifically focus on and employ the TPB because it is an important socio-cognitive theory  
11 and performs better than alternative theoretical models (Lortie and Castogiovanni, 2015), and it is  
12 appropriate for investigating entrepreneurial intentions of students world-wide (e.g., Liñán and Chen,  
13 2009). We have three objectives in this study: (i) to explain entrepreneurial intentions in a more detailed  
14 and consistent way, (ii) to investigate entrepreneurial intentions in a diverse group of students and  
15 explicitly analyze by gender, and (iii) to integrate two lines of research on entrepreneurial intention,  
16 relationships between attitudes and entrepreneurial intention, and research on the connections between  
17 self-efficacy and entrepreneurial intentions (e.g. Rueda et al., 2015). The relationship between self-  
18 efficacy and behavioral intentions is important because literature shows that a person's belief about her  
19 capabilities to exercise control over her own level of functioning in skills and abilities to initiate a task  
20 or to perform a task also influence behavioral intentions (Bandura, 1977, 1986, 1997; Cardon and Kirk,  
21 2015). Ajzen (2002) argues that while self-efficacy (SE) and perceived behavioral control (PBC) may  
22 be seen as similar concepts (both are concerned with perceived ability to perform a behavior or sequence  
23 of behaviors), they differ from one another because self-efficacy is rooted in one's confidence in her  
24 ability to perform a behavior (e.g. start a new business).  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44

45 Given recent developments in entrepreneurship research and advances in the research methods (Kraus  
46 et al., 2018), we argue that traditional methodologies may not fully recognize the complexity of the  
47 interdependencies and conjunctive paths between variables influencing start-up behaviors, and  
48 therefore may not fully uncover the potential gender differences. From a more methodological  
49 perspective, the vast majority of research relies on traditional linear based approaches that test the  
50 symmetric links between the attitude and intentions towards entrepreneurial career behaviors (see e.g.  
51 Ozaralli and Rivenburgh, 2016). Therefore, for this study, we use an alternative method that goes  
52 beyond widely used regression-based analysis. We employ fuzzy-set Qualitative Comparative Analysis  
53  
54  
55  
56  
57  
58  
59  
60

(hereinafter fsQCA) introduced by Ragin (1987) to seek for the conjunctural causation (Arenius et al., 2017) and the alternative conjunctive paths leading to the outcome (entrepreneurial intentions).

Our results show that contrary to previous research, there are gender differences in the configurations, which are illuminated by the multiple configurations present in the fsQCA approach. But these are not apparent using traditional structural equation modeling. Most interestingly, we provide new insights on the tenet whether self-efficacy is a gendered variable or not in the analysis. This paper makes several theoretical and methodological contributions. From a theoretical standpoint, in the form of multiple configuration of conditions, the results contribute to the entrepreneurship research by providing new insights into the roles of different variables (conditions). We also show that the variation in conditions influencing the entrepreneurial intentions are sufficiently complex and we cannot assume that existing TPB theory applies equally to men and women. We further contribute to theory by providing new knowledge to the emerging global picture of entrepreneurship and our results show that perceived behavioral control (PBC) and self-efficacy have different effects on the behavioral intentions. From a methodological standpoint, the fsQCA analysis reflects a variety of configurations explaining entrepreneurial intentions rather than just a single significant pathway. In all, our results show a much more detailed picture of the antecedents to entrepreneurial intentions than reflected by linear regression analysis. The remainder of the paper is as follows; first, we present the literature review on entrepreneurship and the theoretical background followed by the research methodology. Next, we discuss and elaborate on configurational theory and then present the results of the fuzzy-set Qualitative Comparative Analysis (fsQCA) and associated results. We conclude with the discussion, conclusion, implications and limitations.

## Literature Review

Scores of studies have tested TPB and found that intentions are linked to starting a new business (see e.g. Gieure et al., 2019), but there remains an underlying assumption that the pathway, once identified, will be the same across all people (Fayolle and Liñán, 2014). However, there is reason to believe that

1  
2  
3 this may not necessarily be true when we consider the role of gender in entrepreneurial ecosystems.  
4  
5 Feminist theory and current research is predicated on the assumption that gender is not only a structuring  
6  
7 of society, but also that the start-up process may differ for men and women either because of overt  
8  
9 discrimination and/or systemic factors. For instance, a liberal feminist perspective would suggest that  
10  
11 that entrepreneurial ecosystem factors are structurally gendered and therefore might deprive women  
12  
13 from vital resources like education or network support (Brush et al., 2018). Alternatively, a social  
14  
15 feminist perspective would argue that the women's early and ongoing socialization process (Bird and  
16  
17 Brush, 2002) may influence the formation of entrepreneurial self-efficacy (Piperopoulos and Dimov,  
18  
19 2015). Furthermore, the image and belief about entrepreneurs is typically male/masculine, resulting in  
20  
21 stereotypes and characteristics associating entrepreneurial behavior with men (Gupta et al., 2009; Ahl,  
22  
23 2006; Henry et al., 2016).  
24  
25  
26  
27

28 Similarly, there is evidence that women pursue different organizational and economic missions, and  
29  
30 that there are significant variations in motivations (necessity versus opportunity) and intentions to start  
31  
32 a business world-wide (Jennings and Brush, 2013; Ladge et al., 2019). In the TPB literature, a relatively  
33  
34 small number of studies measure intentions by gender (Aloulou, 2015; Haus et al., 2013) or include  
35  
36 gender as a variable in the analysis. Of those that do, most studies using the full model of theory of  
37  
38 planned behavior (TPB) find that gender is of marginal, indirect or of no significance (Haus et al., 2013;  
39  
40 Krueger et al., 2000). On the other hand, studies examining direct or indirect effects of gender on  
41  
42 intentions find that it has a direct effect on self-efficacy which mediates the relationship to intentions  
43  
44 (Cardon and Kirk, 2015; Ladge et al., 2019) or that the relationship of social environment to intentions  
45  
46 is more significant for women than men (Aloulou, 2015). Similarly, a study of desirability and intention  
47  
48 found males have higher intentions to create firms (Zhang et al., 2014). Hence, there is an overarching  
49  
50 assumption that TPB applies equally to men and women yet we have a theoretical and empirical  
51  
52 rationale for expecting that there may be significant gender differences (Fayolle and Liñán, 2014).  
53  
54  
55

## 56 **Theoretical Background**

57  
58  
59  
60

1  
2  
3 Abundant research in entrepreneurship draws from Theory of Planned Behavior (TPB) finding that the  
4 key factors influencing entrepreneurial motivations, are attitudes, behaviors and intentions (Beynon et  
5 al., 2016). Notwithstanding that TPB might have some limitations such as being weak in predicting the  
6 observed behavior compared to self-reported behavior (Armitage and Conner, 2001), this theory has  
7 proven to be a strong theoretical lens, particularly in highlighting the importance of the link between  
8 attitude-intentions for entrepreneurs (Haus et al. 2013; Shahab et al., 2019). Some authors such as  
9 Souitaris et al. (2007) and van Ewijk and Belghiti-Mahut (2019), employing TPB argue that the  
10 intention for starting a new business is inspired by entrepreneurship education. By testing an exogenous  
11 variable (education) and its influence on the attitude and the intentions towards behavior (self-  
12 employment), Souitaris et al. (2007) confirm that the attitude-intention link can be investigated through  
13 the TPB. However, there are alternative theoretical models which prior studies have used. For example,  
14 Zhao et al. (2005) developed an integrated model of entrepreneurial experience, risk propensity and  
15 perception of formal learning to evaluate the role of self-efficacy and found that taking an  
16 entrepreneurship related-course, experience and risk propensity play a particular role on intentions to  
17 pursue an entrepreneurial career.

18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37 Following is a brief summary of the research on the relationships between constructs in TPB. Because  
38 our intent is to examine a diverse sample and consider where gender would make a difference, we  
39 indicate why gender might make a difference relative to self-efficacy (SE) and TPB constructs, as these  
40 relate more closely to entrepreneurial intentions (Liñán et al., 2011).

#### 41 42 43 44 45 46 47 *Self-Efficacy*

48  
49 According to Bandura (1986, 1997) self-efficacy is “*people’s beliefs about their capabilities to exercise*  
50 *control over their own level of functioning and over events that affect their lives*” (p. 257). In the context  
51 of entrepreneurial career, Bandura (1997) and Wilson et al. (2007, p. 389) argue that “*self-efficacy*  
52 *reflects an individual’s innermost thoughts on whether they have the abilities perceived as important to*  
53 *task performance, as well as the belief that they will be able to effectively convert those skills into a*  
54 *chosen outcome*”. Bandura (1986) further notes that self-efficacy and PBC are different concepts, while



1  
2  
3 the SE has more direct impact on behavior, and it is concerned with the cognitive perceptions of control  
4 based on internal control factors, the PBC reflects on more general and external factors. Self-efficacy,  
5 while not an original construct of the TBP, is a well-established antecedent of entrepreneurial intentions  
6 and often seen as a precursor to PBC (Cardon and Kirk, 2015; Krueger et al., 2000; Ladge et al., 2019).  
7 Moreover, Boyd and Vozikis (1994, p. 64) and Piperopoulos and Dimov (2015) found that individual  
8 self-efficacy plays an important role in the development of entrepreneurial intentions and actions, in  
9 other words, it influences the complex process of new business creation.  
10

11 With regards to gender, social feminist theory, role stereotype and role congruity theory argue that  
12 women entrepreneurs would have different attitudes, beliefs and approaches leading to entrepreneurial  
13 intentions compared to their male counterparts (Ahl, 2006; Bird and Brush, 2002; Eagly and Karau,  
14 2002). Consistent with role theories, when starting a business, women may perceive they have lower  
15 capabilities than men (Austin and Nauta, 2016). Women often underrate their skills and abilities, or  
16 believe they are less capable, while also perceiving greater hindrances than men in becoming an  
17 entrepreneur (Kelley et al., 2017). Other work argues that individuals with a higher risk propensity are  
18 more likely to pursue an entrepreneurial career, given that entrepreneurship is fraught with uncertainty  
19 (Zhao et al., 2005). Because the male stereotype of an entrepreneur is associated with “risk-taking”, it  
20 is likely women will have less self-efficacy in an entrepreneurial environment which is highly uncertain.  
21 Research shows that women often have less confidence in their entrepreneurial skills and capabilities  
22 than men (Wilson et al., 2007). Therefore, we not only expect self-efficacy impacts entrepreneurial  
23 intentions but also, we believe that the effect of self-efficacy on intention to start a new business start-  
24 up will be different across females and males.  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49

#### 50 *Perceived behavioral control (PBC)*

51 Perceived behavioral control is one of the main constructs of the TPB and refers to an individual’s  
52 perception towards the extent to which performing a behavior is easy or difficult (Ajzen 1991, p. 83).  
53 According to the TPB, the resources and opportunities available to a person must, to some extent, dictate  
54 the likelihood of behavioral achievement (Veciana et al., 2005, p. 169). Autio et al. (2001) argue that  
55 PBC is the sum of the one’s actual control of a behavior and her/his perception regarding this control.  
56  
57  
58  
59  
60

1  
2  
3 Furthermore, we argue that PBC moderates the relationship between intention and behavior specifically  
4 where the behavior is not under complete volitional control, for instance the desire to become an  
5 entrepreneur (see Baron and Kenny, 1986). Armitage and Conner (2001, p. 472-473) posit that PBC  
6 differs from self-efficacy such that in situations where prediction of behavior from intention is likely to  
7 be hindered by the level of actual control, PBC predicts behavior directly, while self-efficacy predicts  
8 only intentions.  
9  
10  
11  
12  
13  
14  
15  
16  
17

18 With regards to gender, following Eagly and Karau (2002) and role congruity theory, men and women  
19 will choose roles that fit with their personal characteristics. Because women will perceive a mismatch  
20 between their personal characteristics and their career role, they may perceive they will perceive higher  
21 barriers in starting a business. For instance, the Global Entrepreneurship Monitor (GEM) study shows  
22 that women perceive a higher fear of failure than men, especially in innovation economies (Kelley et  
23 al., 2017) or other research shows that women do have lower perceptions of control in starting a business  
24 (Haus et al., 2013). Therefore, we not only expect PBC impacts entrepreneurial intentions but also, we  
25 believe that the effect of PBC on intention to start a new business start-up will be different across  
26 females and males.  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38

### 39 *Subjective norms (SN)*

40  
41 Another construct within the TPB that is expected to influence intentions is subjective norms (Robledo  
42 et al., 2015). Subjective norms consist of a person's beliefs about whether significant others think she  
43 or he should engage in the behavior (Conner and Armitage, 1998). In other words, SN is defined as  
44 unwritten rules of conduct within a group, culturally embedded and they indirectly specify desired  
45 behaviors (Meek et al., 2010). These attributes stand for the perceived social pressure to perform or not  
46 to perform a certain behavior, like starting a new business start-up (Kautonen et al., 2010). In  
47 considering gender, social role theory (Eagly, 1987), argues that gender-based expectations lead both  
48 men and women to pursue gender stereotypical occupations consistent with their perceived skills.  
49 Further, these beliefs about capabilities and skills relative to a particular occupation may influence  
50 perceptions of control over behavior in entrepreneurial actions. Cultural values shape societal roles and  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 stereotypes in terms of occupations considered appropriate for men and/or women (de Vita et al., 2014).  
4  
5 Because successful entrepreneurs are equated with the male stereotype, this may create a social  
6  
7 environment where women are less supported in their entrepreneurial endeavors (Gupta et al., 2009;  
8  
9 Marlow and Patton, 2005). Research shows that subjective norms supporting entrepreneurship are  
10  
11 higher for men than for women, and this does affect intentions (Lo et al., 2012). Moreover, (Teo et al.,  
12  
13 2012) incorporate the demographic factors and subjective norms with the TAM model to investigate  
14  
15 the intention to adopt mobile banking and found that SN positively affect the intentions, however the  
16  
17 authors did not find any effect of gender between SN and intentions. Given the nature of the previous  
18  
19 studies, we not only expect SN impacts entrepreneurial intentions but also, we believe that the effect of  
20  
21 SN on intention to start a new business start-up will be different across females and males.  
22  
23  
24  
25

#### 26 *Attitude towards entrepreneurship (AT)*

27  
28 Some authors argue that attitude towards entrepreneurship is a reliable predicting factor of intention  
29  
30 (e.g. Adekiya and Ibrahim, 2016). Many prior studies have found a positive relationship between  
31  
32 intention and actual behavior by conceptualizing the intention as the cause of an action, in which the  
33  
34 greater the stated intentions to perform an act, the greater the likelihood of engaging in the act (e.g.  
35  
36 Ajzen, 2001; Rueda et al., 2015). Moreover, Bandura (1997) posits that people are more likely to engage  
37  
38 in behaviors that are believed to be achievable.  
39  
40  
41  
42

43  
44 Once again when it comes to gender, the stereotype of the successful entrepreneur tends to be associated  
45  
46 with characteristics such as aggressiveness, achievement orientation, dominance, and risk-taking, which  
47  
48 are perceived as more typical of men than women (Ahl, 2006; Gupta et al., 2009). Hence, women who  
49  
50 may identify with these characteristics may also perceive a disconnect between their behaviors and  
51  
52 those required to be a successful entrepreneur, creating cognitive dissonance (Eagly and Karau, 2002).  
53  
54 Men have a stronger proclivity toward entrepreneurial activity than women (de Bruin et al., 2007) and  
55  
56 research shows that men's attitudes towards entrepreneurship are more positive than for women (Karimi  
57  
58 et al., 2014). Other research also shows that overall, women have lower positive attitudes towards  
59  
60 entrepreneurship (Haus et al., 2013). Therefore, we not only expect attitude towards entrepreneurship

1  
2  
3 impacts entrepreneurial intentions but also, we believe that the effect of attitude on intention to start a  
4 new business start-up will be different across females and males.  
5  
6  
7  
8

9  
10 *Entrepreneurial intentions (EI)*

11 According to Ajzen (1991) entrepreneurial intention is the effort that a person will make to carry out  
12 that entrepreneurial behavior and it measures the degree to which individuals are likely to become an  
13 entrepreneur in the future (Liñán and Fayolle, 2015). Entrepreneurial intentions, driven by several  
14 personal and social factors, can measure an economy's favorability towards entrepreneurship (Autio et  
15 al., 2001). Santos et al. (2016, p. 44) examine the interplay between gender differences and the social  
16 environment in the formation of entrepreneurial intentions and find that the formation of entrepreneurial  
17 intentions is similar for men and women, but men consistently exhibit more favorable intentions than  
18 women.  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30

31 In sum, significant research draws from Theory of Planned Behavior (TPB) finding that the key factors  
32 influencing entrepreneurial motivations, are attitudes, behaviors and intentions (Beynon et al., 2016;  
33 Carsrud and Brännback, 2011; Zhao et al., 2005). But, there is theoretical rationale to expect that there  
34 might be gender differences in the factors leading to entrepreneurial intentions. To date, the vast  
35 majority of studies examining TPB utilize structural equation modeling (SEM) to investigate linear,  
36 correlational or symmetrical relationships, assuming that there are few fixed causal pathways to explain  
37 intentions towards a new business start-up, with gender often only considered a control variable. In the  
38 entrepreneurship domain conventional methods such as Structural Equation Modeling (SEM), and  
39 linear statistical approaches are the most commonly used means of examining entrepreneurial intentions  
40 (Haus et al. 2013; Krueger et al., 2000). In some respects, a reliance on a structured causal pathway to  
41 elicit narrow approaches to entrepreneurship are generally at odds with what we know about the wide  
42 variations in entrepreneurs generally and the heterogeneity of the phenomenon (Bruyat and Julien,  
43 2001). We believe not only the choice of theory, but also the choice of methodology matters in our  
44 understanding of gender differences.  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Therefore, we use fuzzy-set Qualitative Comparative Analysis (Ragin, 1987) to examine conjunctural causation (Arenius et al., 2017) and alternative conjunctive paths leading to the outcome. This method enables us to identify different patterns of causal conditions that produce the desired outcome, rather than how each individual independent variable relates to the outcome. When employing a conventional theoretical model, such as Theory of Planned Behavior, this method enables researchers to obtain complementary insights (e.g. in-depth insights about the gender differences discussed above and the net effect of each variable) which may not be possible when traditional statistical approaches such as SEM are used. For example, while SEM assesses the effect of variables individually, fsQCA allows the assessment of the effect of variables in terms on logical combinations. Moreover, as entrepreneurship is a heterogeneous phenomenon, by identifying alternative conjunctive paths we are able to answer the question “*how variables combine to cause a certain outcome*” (Liu et al., 2017, p. 64; Mas-Tur et al., 2015, p. 2281; Ragin, 1987, 2000). Notably, when a traditional statistical approach such as SEM is used, researchers often postulate several hypotheses which will be tested during the analysis. But, when fsQCA is used researchers formulate proposition(s) instead of hypotheses. Therefore, in this paper in order to assess the relationships between the antecedent factors predicting entrepreneurial intentions, we propose the following propositions:

**Proposition 1:** *No single best configuration of the constructs (i.e. self-efficacy, subjective norms, perceived behavioral control and attitude) leads to entrepreneurial intentions, but there exist multiple, equally effective configurations of causal factors.*

**Proposition 2:** *Configurations that lead to entrepreneurial intentions will be affected by the presence of gender.*

## **Research methodology**

### *Sample and Data collection*

For this research, our sample consisted of students selected from urban universities in eight different countries, Canada, Chile, China, Finland, Germany, Spain, Turkey and the USA. Although, we did not use any pre-qualifying questions or restrictions to avoid unwanted respondents, we aimed at gathering

1  
2  
3 data only from business students who are considered one step before entering into self-employment,  
4 thus targeting them as a sample population in the entrepreneurship research is considered as an  
5 appropriate sampling strategy (Shinnar et al., 2012). This assumption is also supported in Liñán et al.  
6  
7 (2011) research who posit that business students are more likely to pursue an entrepreneurial career  
8 when they obtain their degrees and this can be regarded as the primary reason for using business students  
9 as a sample in research investigating entrepreneurial intentions. Moreover, it has been argued that  
10 business school students with a degree in their hands tend to have higher intentions to pursue an  
11 entrepreneurial career (Hisrich et al., 2007). Gieure et al. (2019) recently show that it is within the  
12 university environment where students can find initial inspiration that together with the education in  
13 business and management can generate entrepreneurial intentions. In this regard, we argue that a sample  
14 making use of the students for data collection is an appropriate approach when one hopes to understand  
15 the behavioral intentions towards a given phenomenon, e.g. entrepreneurial intentions. Before  
16 distributing the questionnaire, we performed a pretest with a number of domain experts and  
17 knowledgeable researchers to verify the appropriateness of questionnaire items and to avoid ambiguous  
18 expressions. We used pen and paper-based survey as an instrument to collect the data. The main  
19 questionnaire was developed in English, and then for each country having a different language than  
20 English, translation was made to the respective country's official language. The survey was distributed  
21 to 2.282 respondents. After removing unengaged responses and responses with the missing values, the  
22 final dataset comprises of 2.038 complete and usable responses (see Table 1).  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42

43  
44 -----  
45 Insert Tables 1 about here  
46 -----  
47

#### 48 *Measures*

49  
50 To analyze the combined effect of self-efficacy and constructs within the TPB to the outcome variable,  
51 entrepreneurial intentions, we use items from well-established and validated scales. The items for  
52 measuring self-efficacy are derived from (Chen et al., 2001) and items for measuring perceived  
53 behavioral control are based on the study by (Liñán and Chen, 2009). To measure self-efficacy, we  
54 asked respondents to rate their confidence in their ability to perform a behavior making it different from  
55  
56  
57  
58  
59  
60

1  
2  
3 situation when respondents are asked to rate the degree to which their behaviors are controllable or  
4 uncontrollable (i.e. PBC). The items for measuring subjective norms are derived from the work of  
5 (Kautonen et al., 2010; Souitaris et al., 2007) and items for attitude towards entrepreneurship and  
6 entrepreneurial intentions are derived from (Ajzen, 1991; Liñán and Chen, 2009). These scales are in  
7 widespread use in entrepreneurship, especially entrepreneurial intentions research. Definitions for the  
8 items (19 in total) are reported in Appendix A. A seven-point Likert scale from “Strongly Disagree” (1)  
9 to “Strongly Agree” (7) was used to measure each item.  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19

### 20 *Descriptive statistics and measurement results*

21  
22 In the sample, 797 (39%) were females and 1.241 (61%), were males. The respondents’ average age  
23 was 25 years. More than 31% of the respondents (n = 635) had a job in addition to going to school, 136  
24 respondents (67%) ran their own businesses at the time of the survey, and 748 (37%) indicated that they  
25 had previously worked in a business owned by a member of their family. We examined the internal  
26 consistency through Cronbach Alpha’s values (Nunnally, 1967). Additionally, we performed maximum  
27 likelihood analysis to examine the measurement validity, and results show that all items fit their  
28 respective factors with loading over 0.7. The convergent validity was measured through average  
29 variance extracted (Fornell and Larcker, 1981), AVE indicates the degree to which measures within the  
30 constructs related and converged to each other. The results show that the values of internal consistency,  
31 i.e. Cronbach’s alpha ( $\alpha$ ), composite reliability (CR) and average variance extracted (AVE) for all  
32 constructs are above the recommended thresholds of 0.7; 0.7; and 0.5 respectively. The overall results  
33 of scale reliability analysis show that Cronbach’s alpha values ranged from 0.858 to 0.929. Therefore,  
34 we conclude that the measurements and different tests results indicate adequate internal consistency  
35 and convergent validity.  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50

51 We also assessed the discriminant validity, which indicates the degree to which measures of constructs  
52 that theoretically should not be related to each other are in fact not related (Trochim and Donnelly,  
53 2000). In other words, when a construct is formed only by the measures within that specific construct,  
54 we can argue that discriminant validity is established and our test result confirms this issue. In addition,  
55 as with all self-reported data, there is a potential for common method bias (CMB), thus following  
56  
57  
58  
59  
60

1  
2  
3 Podsakoff and Organ (1986) we ran Harmon one-factor test on all five constructs in our conceptual  
4 model. The test results showed the highest covariance explained by one factor is 31.65%, this result  
5 suggests that common method bias is not likely to pose method bias issue for this analysis. In other  
6 words, our data is not affected by the method bias. We also assessed the CMB by including a common  
7 method factor whose indicators included all the principal constructs' indicators and calculated each  
8 indicator's variances substantively explained by the principal construct and by the method (p. 86). The  
9 test results showed that the average substantively explained variance of the indicators and the average  
10 method-based variance are .54 and .21, respectively (Liang et al., 2007, p.71)

### 21 **Configuration theory**

22  
23  
24 We use fuzzy-set Qualitative Comparative Analysis (fsQCA) to assess the possible effect of different  
25 combinations of conditions (variables or constructs in terms of SEM approach) on the outcome of  
26 interest (entrepreneurial intentions). In entrepreneurship research, fsQCA is increasingly becoming  
27 popular (see e.g. Mezei and Nikou, 2018). This method builds on fuzzy-sets and fuzzy-logic principles  
28 with QCA (Ragin, 1987, 2000) and is a robust analytical technique that allows investigating situations  
29 in which the outcome of interest may follow from several different combinations of causal conditions.  
30 According to Ragin (2013) the relationships between the conditions and the outcome of interest are in  
31 terms of sets rather than variables and the core theoretical assumption underlying the methods is that  
32 there may be more than one combination of conditions that leads to the desired outcome (Mas-Tur et  
33 al., 2015, p. 2281). This is one of the advantages of this method compared to a more traditional approach  
34 and is known as "*equifinality*". Equifinality indicates that a single combination (configuration) of causal  
35 conditions cannot explain the outcome, rather a number of different causal paths capture the nuances of  
36 the phenomenon under investigation (Fiss, 2011).

37  
38  
39 Moreover, QCA views the conditions as clusters of interconnected conditions (variables) that must be  
40 simultaneously understood as a holistic integrated pattern and provides twofold advantages (Fiss, 2011).  
41 First, it accounts for asymmetric relationships between the dependent and independent variables, for  
42 example a variable can be considered necessary condition, but not sufficient for the occurrence of the  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 outcome. Second, it enables measuring the impact of a condition on the outcome when the presence or  
4 the absence of another condition(s) is considered to be important (Woodside, 2013). Therefore,  
5 conditions associated with the study can be combined in different ways to lead to the outcome (Mas-  
6 Tur et al., 2015). The results of fsQCA analysis will be in the form of one or multiple configurations.  
7 A configuration, in terms of fsQCA, refers to specific combination of causal conditions that generate  
8 the outcome. The fsQCA differs in many ways from the conventional methods primarily because it  
9 relies on the researchers' domain knowledge when the choice for the outcome and inclusion/exclusion  
10 of the conditions in the analysis should be made. Moreover, fsQCA enables to identify the extent to  
11 which a causal condition can be considered as necessary and/or sufficient for the outcome. The fsQCA  
12 analysis is comprised of several steps that must be carefully conducted. In the following we discuss the  
13 main steps of fsQCA analysis.  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

### 29 *Calibration*

30 The first step is to transform the measurements scores into fuzzy sets ranging from 0 to 1, this approach  
31 is referred to as calibration and is often done in two ways, *direct* or *indirect* calibration (Ragin, 2008,  
32 2000). Direct calibration requires identifying three qualitative breakpoints of the fuzzy sets and indirect  
33 calibration requires rescaling the original scores based on the qualitative assessments. During  
34 calibration of data into sets, the domain knowledge of the researcher plays a vital role. Depending on  
35 the variables' type, transformation into fuzzy sets takes different forms. When calibrating Likert scales,  
36 Ragin and Davey (2016) recommend to use three qualitative anchors (0.95, 0.5 and 0.05), representing  
37 a (i) full-membership, (ii) the cross-over point (most ambiguous membership), and (iii) a full non-  
38 membership. As we used seven Likert scales, we consider the membership value for 7 (full membership)  
39 as 0.95, for 4 (the cross-over point) as 0.51, and for 1 (non-full membership) as 0.05 (Fiss, 2007; Ragin,  
40 2000). The other values, that is 2, 3, 5, and 6, are calibrated on the basis of a linear transformation  
41 function. We used fsQCA 3.0 software (Ragin and Davey, 2016) and some of the available R packages  
42 to calibrate scores into fuzzy sets and perform the analysis (Thiem and Duşa, 2013).  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

### *Necessity analysis*

1  
2  
3 A necessary condition is one that might be present in majority of the configurations leading to the  
4 outcome and a sufficient condition is a condition whose presence guarantee the occurrence of the  
5 outcome (Fiss, 2007). Thus, we first examined if there were any conditions that could be identified as  
6 necessary for the outcome to occur. The degree to which the necessity relationships are relevant can be  
7 assessed through consistency values. Values above 0.90 indicate important relationships (Schneider and  
8 Wagemann, 2007). Table 2 shows there are two conditions, namely attitude towards entrepreneurship  
9 and subjective norms which can be assumed to be necessary for the occurrence of the entrepreneurial  
10 intentions. However, before running fsQCA analysis this issue cannot be confirmed.  
11  
12  
13  
14  
15  
16  
17  
18  
19

20 -----  
21 Insert Tables 2 about here  
22 -----  
23  
24

#### 25 *Truth-table construction*

26  
27 The next step is to construct the truth-table, which is a data matrix comprising a list of all combinations  
28 of causal conditions with respect to the cases (observations) within each combination (Muñoz and  
29 Dimov, 2015, p. 644). This means with the  $k$  condition sets, there will be  $2^k$  combinations to be  
30 evaluated. For reducing and simplifying the combinations, domain knowledge of the researcher plays a  
31 vital role. For example, (i) decision on what to do with the combinations of conditions which have not  
32 been empirically observed (i.e. zero observation), and (ii) decision on combinations of conditions which  
33 have been observed but with different frequencies. In such situation, a researcher based on her/his  
34 knowledge can decide the most appropriate threshold, known as frequency cut-off (Muñoz and Dimov,  
35 2015). Ragin (2008) suggested to set the frequency threshold to three and delete the combinations from  
36 the truth-table that do not adhere to this rule. However, this recommendation does not impose a strict  
37 rule and researchers depending on the phenomenon under investigation can choose different values for  
38 the frequency cut-off. Another scenario requiring a profound domain knowledge is the decision of  
39 setting the consistency threshold. Consistency is a fuzzy measure which can be used to assess the extent  
40 to which a combination of causal conditions in the constructed truth-table is sufficient to lead to the  
41 outcome. Ragin (2008) recommended to use 0.75 for benchmarking the consistency. In this paper, we  
42 set frequency cut-off to 3 and consistency threshold to 0.75.  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

### *FsQCA solution sets*

The output of the analysis includes three types of solution sets, complex, parsimonious and intermediate (Ragin, 2008). The set of complex solutions is calculated by taking the logical union of sufficient combinations identified in truth-table. Depending on the number of conditions in the analysis, the fsQCA output generates a large number of complex configurations, making the interpretation of the configurations extremely hard, even for knowledgeable scholars. Therefore, the complex solutions can be further simplified into parsimonious and intermediate solutions (Mendel and Korjani, 2013). Combinations which did not comply with the frequency cut-off value and were excluded from the analysis can be used to calculate the set of parsimonious solutions. Although there is a limitation in using insufficient information in combinations which did not satisfy the frequency rule, nevertheless, they are necessary for calculating the intermediate solutions. Parsimonious solutions are causal combinations with the least number of conditions and there is at least one such solution in every complex solution (Liu et al., 2017, p. 70). Ragin (2008) and Fiss (2011) demonstrated how complex and parsimonious solutions, through a counterfactual analysis, can be used to derive the set of intermediate solutions. If a condition is present in both the parsimonious and intermediate solutions, it is referred to a core condition and if is only present in the intermediate solution, it is referred to a peripheral (Fiss 2011, p. 403).

The following notations are used to demonstrate the fsQCA results: black circles (●) indicate the “presence” of a condition and blank circles (○) indicate its “absence”. Blank spaces indicate “do not care” (Ragin and Fiss, 2008). Moreover, large circles indicate “core conditions”, and small circles refer to “peripheral conditions”. We use the following notations for illustrating the role of gender in the analysis, black circles (●) indicate “female” and blank circles (○) indicate “male”.

### **fsQCA analysis results**

For the main part of the fsQCA analysis and in order to understand better the role of the gender, we first analyzed the data without including the gender, then the second analysis included gender. The

relationships between the conditions and the outcome, “entrepreneurial intentions” are depicted in Table 3. The results show except for one configuration (solution 4), the presence of perceived behavioral control (PBC) dominates all of the configurations. In solution one, the presence of attitude towards entrepreneurship and PBC lead to the outcome and both are core conditions. In solution two, we observe a support for previous findings in the literature where it has been speculated that PBC and self-efficacy mask each other, in other words, they are the same if not highly similar constructs, as in this solution the presence of condition (PBC) and the absence of another condition (SE) lead to the outcome of interest (Stroe et al., 2018). Based on the results, solution two has the highest consistency value (0.888).

To elaborate further, we posit that regardless of the gender of the respondents, the presence of PBC and the absence of self-efficacy, are enough conditions for the outcome to occur. In this solution, PBC is the core condition. Solution three presents a configuration that implies the presence of both PBC and the subjective norms lead to the occurrence of the outcome, this finding is consistent with results of (Straatmann et al., 2018) who also found PBC and SN both impact the entrepreneurial intentions. Solution four shows that PBC does not play a role in this configuration, instead we observe the presence of attitude towards entrepreneurship (AT) and subjective norms as well as the absence of self-efficacy lead to the outcome. These two conditions, i.e. AT and SN are related to how an individual sees/views her/his surroundings and to what extent others are important to them. The positive remarks from others and how others think a person should perform (subjective norms) supposedly forms a positive attitude towards an entrepreneurial career. The absence of self-efficacy in solution four justifies the importance of subjective norms and attitude in forming the entrepreneurial intentions. This finding is relevant and important because for the subjects in our research, i.e. students who are pursuing business degrees and are considered to be potential future entrepreneurs, the influence of their surroundings (SN) could positively affect their attitudes to pursue an entrepreneurial career. Other researchers such as Basu and Virick (2008) also find similar results where the authors stated that prior exposure to entrepreneurship education has a positive effect on students’ attitudes toward a career in entrepreneurship and on perceived behavioral control or entrepreneurial self-efficacy (p. 84). Overall, when gender of the subjects is not included in the analysis, an important observation in the results is that self-efficacy has

no significant influence on intentions in two solutions (solution 1 and 3 in Table 3), and in other two configurations (solution 2 and 4), the absence of self-efficacy leads to intentions. While, this observation is open to debate, prior studies also provide mixed results. For instance, Bullough et al. (2014) and Zhao et al. (2005) found that self-efficacy positively influences the entrepreneurial intentions, while Piperopoulos and Dimov (2015) and Hsu et al. (2019) found no significant effect of self-efficacy on entrepreneurial intentions.

-----  
Insert Tables 3 about here  
-----

Taken together, the findings of fsQCA analysis indicate that this method is a superior approach for understanding the combined and complex effect of conditions leading to intentions to create a new business. In terms of overall coverage value, the results show an overall solution coverage score of 0.787. It means that the four configurations of causal conditions explain 79% of the intentions to become an entrepreneur. The overall solution consistency is 0.834.

#### *fsQCA analysis results by gender*

In this section we report on the fsQCA results when gender is operationalized as a separate condition to uncover its unique effect on the entrepreneurial intentions. This is mainly due to the fact that fsQCA follows an effect-of-causes model and additional conditions are included only if they are strongly associated with the outcome of interest. Gender has been used as moderator in many prior studies applying standard statistical analysis (e.g. BarNir et al., 2011). BarNir et al. (2011) studied the effects of role models and self-efficacy on forming career intentions. Gender was used as a moderator for the overall effect of exposure to role models, such that the direct and indirect effects are different for men and women. The authors found that role models have a significant and positive impact on intention and gender moderated the effects. Therefore, to obtain additional insights regarding the role of gender in formulating entrepreneurship mindset, we include gender as a separate condition in fsQCA analysis to determine if gender has a differential impact on the analysis of the theory of planned behavior (see more e.g. Maes et al., 2014).

1  
2  
3 The results of the analysis with gender revealed five solutions. Interestingly, solution one is identical to  
4 solution one in the previous step of fsQCA analysis (see Table 4). This finding indicates that the  
5 presence of attitude towards entrepreneurship and perceived behavior control suffices for the outcome  
6 to occur, regardless of the gender of the subjects. Both of the PBC and attitude (AT) are core conditions.  
7  
8 In other words, for both females and males these two conditions are decisive and lead to entrepreneurial  
9 intentions. From the coverage value (0.743) standpoint, this solution has the highest value indicating it  
10 contains more cases in the solution. Out of four remaining configurations (solution 2-5), three of them  
11 are dominated by the males (solutions 2, 3, and 5, see Table 4). Solution two indicates that for males,  
12 the negation of self-efficacy and presence of PBC leads to the outcome. In solution three, again  
13 applicable only to males, indicates that the presence of PBC and presence of subjective norms influences  
14 the intentions of males to pursue an entrepreneurial career. Solution four, where the consistency value  
15 is the highest (0.902), is applicable only to females such that the presence of PBC and SN, the two  
16 important constructs of theory of planned behavior, in addition to presence of self-efficacy are the  
17 central conditions for the outcome to occur. This is the only solution in the entire analysis where the  
18 presence of self-efficacy plays significant role, and yet applicable only to females.

-----  
36 Insert Tables 4 about here  
37  
38 -----

39  
40 In solution five, applicable only to males, the absence of self-efficacy and the presence of both attitude  
41 towards entrepreneurship (AT) and SN are important conditions for the intentions, in this solution,  
42 attitude (AT) is a core condition. This is another intriguing result, because solution two, four and five  
43 support research findings which suggest that self-efficacy has an impact on entrepreneurial intentions  
44 and that the impact is gendered such that women have lower self-efficacy (Chen et al., 1998; Gatewood  
45 et al., 2002; Wilson et al., 2007) yet the rates for women creating a new business is high, suggesting  
46 while self-efficacy may be low, this does not deter women from starting a new business. In terms of  
47 overall coverage value, the fsQCA results show an overall solution coverage score of 0.773, which  
48 means that the five configurations (solutions) of causal conditions explain 77% of the intentions to  
49 become an entrepreneur. The overall solution consistency is 0.853.

1  
2  
3  
4  
5 The findings provide support for the two propositions we identified earlier. First, more than one  
6 configuration exist that leads to entrepreneurial intentions indicating equifinality (Proposition 1).  
7  
8 Second, the fsQCA results show configurations leading to entrepreneurial intentions, when gender is  
9 included in the analysis, are clearly different for females and males. This means that while one condition  
10 may be present for females, the same condition may be absent for males, depending on its combination  
11 with the other conditions, indicating causal asymmetry (Proposition 2).  
12  
13  
14  
15  
16  
17  
18  
19

## 20 **Discussion**

21  
22 Over the past 35 years, research has provided strong support for the utility of the theory of planned  
23 behavior (e.g. Liñán et al., 2011). Ample studies examined and investigated individual behavior by  
24 making use of one or more validated core constructs, such as self-efficacy and perceived behavioral  
25 control (e.g. Kautonen et al., 2013; 2015; Krueger and Carsrud, 1993). Current literature (see e.g.  
26 Guerrero et al., 2008) is preponderant with the methodological stance rooted in correlational-based  
27 (symmetrical) relationships analysis such as structural equation modeling (SEM) that tend to treat  
28 variables as competing in explaining variation in the dependent variable(s). Furthermore, while there  
29 are ample of studies with strong support for the gender differences (e.g. Díaz-García and Jiménez-  
30 Moreno, 2010; Gupta et al., 2009), we argue that traditional methodological approaches such as SEM  
31 often fail to uncover the nuances of the role that gender plays in the entrepreneurship research. Previous  
32 studies using both the theory of planned behavior and structural equation modeling to assess the role of  
33 gender in the path relationships, have found that gender role is of marginal or no significance (Kautonen  
34 et al., 2015; Krueger et al., 2000). This is not surprising since these analyses use gender as a moderator.  
35  
36 Further, these mixed results suggest that do not make a compelling case for considering gender  
37 differences in creating positive support or attitudes for entrepreneurship. Therefore, we might assume  
38 that given the lack of differences, there is no need to consider research on intentions of women  
39 entrepreneurs separately or compared to men entrepreneurs. Taking it one step further, this also might  
40 suggest that general training programs for both men and women would be designed to provide support  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 and create positive attitudes would be sufficient. Instead, our results support the opposite assumption,  
4 that many factors such as entrepreneurial self-efficacy contribute to the disparity between men and  
5 women in entrepreneurial career behaviors, and play a key role in determining the level of interest in  
6 pursuing such a career (Wilson et al., 2007; Shahab et al., 2019).  
7  
8  
9  
10

11  
12  
13 By applying the fsQCA, we were able to assess how conditions combined together exhibit different  
14 features and lead to different sets of solutions (Fiss, 2007; Mas-Tur et al., 2015, p. 2281). The results  
15 demonstrated in Table 4 clearly show that with this method we could obtain complementary insights  
16 and new knowledge about the role of gender that we often fail to gain with conventional statistical  
17 methods. In other words, we found conditions where their presence may be considered important for  
18 the females or the absence of the same condition may be considered important for the males or vice  
19 versa. In our study, unlike conventional quantitative statistical methods which treat variables as  
20 competing in the explanation of variation in outcomes (Mas-Tur et al., 2015, p. 2281), by using fsQCA  
21 we treated variables as partnering together to exhibit different features and leading to outcomes.  
22 Moreover, the fsQCA results show that we cannot assume that both men and women have positive  
23 attitudes, high perceived behavior control and perceived positive view of subjective norms. Thus, they  
24 would be equally likely to have entrepreneurial intentions. It also challenges the assumption that  
25 perceived high or low self-efficacy would not be important. With fsQCA approach when gender was  
26 not included in the analysis, not only did we find self-efficacy has no role for the outcome to occur in  
27 two configurations (solution 1 and 3 in Table 3), but also, we were able to demonstrate that in other two  
28 configurations (solution 2 and 4), the absence (lack) of this condition leads to the outcome. Instead of  
29 concluding only that self-efficacy is not significant, we find that the absence can also lead to a  
30 significant result. Further, the results show that the core variable may be different in driving the results,  
31 and the presence or absence of self-efficacy operates in combination with PBC and subjective norms.  
32 As discussed before, the fundamental premise of the fsQCA analysis is based on the synergistic effects  
33 and equifinality, therefore, we are able to see how combinations of conditions create the outcome of  
34 interest (Fiss et al., 2013).  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 Our findings seem to be more aligned with literature such as Nowiński et al. (2019), showing that there  
4 are differences in attitudes of women and men entrepreneurs in terms of self-efficacy, subjective norms  
5 and perceived behavioral control, rather than general TPB which suggests it applies to all entrepreneurs  
6 equally. Our study supports the notion that there are wide variations not only between men and women  
7 but also among groups of women related to motivations (necessity versus opportunity) and intentions  
8 to start a business (Kelley et al., 2017). We found only one configuration that applies to both females  
9 and males, in that configuration the presence of attitude to entrepreneurship and perceived behavioral  
10 control are considered to lead to the outcome (see solution 1 in Table 4). On the other hand, we found  
11 for males, the absence of self-efficacy in the configurations and the only thing that matters is whether  
12 they have high perceived control, positive attitudes and social support. In contrast, the presence of self-  
13 efficacy is important for females at least in one solution (see solution 4 in Table 4), supporting earlier  
14 research showing that women have lower self-efficacy and belief in their capabilities and that this  
15 perception is linked to lower intentions to start a business and impact fundraising and ultimately  
16 performance (Chen et al., 1998; Gatewood et al., 2002).

17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35 Our findings with regards to self-efficacy are open to debate and are in contrast to much previous work  
36 and somewhat surprising. The results imply that the contemporary dialogue about women being less  
37 confidence in business start-up may need to be replaced by consideration of the role of positive attitudes  
38 and subjective norms as these relate to women's entrepreneurial intentions. This finding provides  
39 support for work showing that a lack of family support, positive cultural norms, role models and culture  
40 can be a barrier to women's entrepreneurship (Eagly and Karau, 2002; Shinnar et al., 2012). This is  
41 consistent with theoretical work on the role of family and household embeddedness suggesting the  
42 family system can drive entrepreneurial approaches (Aldrich and Cliff, 2003). The results suggest that  
43 there is more research to be done on the antecedents to intentions, especially as this relates to gender.  
44 Further, we cannot assume that variations among groups of women do not exist and that further insights  
45 might emerge from a more in-depth analysis of a subgroup of women.

1  
2  
3 Overall, our paper demonstrates that testing constructs within the theory of planned behavior (TPB) in  
4 addition to self-efficacy using fuzzy-set qualitative comparative analysis provides better understanding  
5 of the conditions under which outcomes occur. The results show that there are different combinations  
6 of configurations where the predictor conditions interact together to influence the entrepreneurial  
7 intentions. The fsQCA analysis reveals that there are multiple configurations (causal factors) that lead  
8 to the outcome (see Table 3-4), thus providing enough justification for the appropriateness of the  
9 method, specifically when the attention is on a case-level receipt. Moreover, our results reveal some of  
10 the main weaknesses of correlational-based methods when the focus is on conceptualizing cases as  
11 combination of conditions and emphasis that it is these very combinations that give cases their unique  
12 nature. This means for entrepreneurs, different combinations of conditions exhibiting different features  
13 (e.g. attitude and PBC) may result in entrepreneurial intentions. This is more consistent with theory that  
14 suggests entrepreneurs are not motivated by the same things, and that there are a variety of different  
15 conditions leading to entrepreneurship (Carsrud and Brännback, 2011). In other words, there is more  
16 than one roadway to get to the destination– and usually there are multiple ways of solving a problem.  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34

### 35 **Conclusions and Implications**

36  
37 Significant research draws from the theory of planned behavior (TPB) showing that attitudes and  
38 behaviors influence intentions to start a new business. However, the majority of studies utilize some  
39 form of regression based statistical analysis which assumes symmetrical relationships and fixed causal  
40 pathways to describe intentions to start a new business. This assumption is inconsistent with theory and  
41 empirical evidence which shows that entrepreneurship is filled with unexpected and non-linear actions.  
42 We argue that even though significant pathways are explicated in the literature to date, current  
43 methodologies may not fully explain the non-linear actions and heterogeneity of the entrepreneurship  
44 processes, and more importantly ignoring the gender's role in pursuing such a career. In particular, there  
45 is a question as to whether the antecedents to entrepreneurial intentions differ by gender. Current studies  
46 are inconsistent and tend to assume there are no differences, even though feminist theory and research  
47 on women entrepreneurs suggests this is not the case. By employing fsQCA on a sample of 2.038  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 business school students, we analyzed entrepreneurial intentions. This method provides a robust  
4  
5 framework to further understand the contribution of different conditions leading to the occurrence of  
6  
7 the outcome, and enabled us to perform an in-depth investigation on the complexity of entrepreneurship.  
8  
9 The results of the analysis show that this method can be used to compare and contrast entrepreneurial  
10  
11 intentions of females and males by demonstrating possible combinations of conditions driving  
12  
13 entrepreneurship in terms of gender of individuals.  
14  
15

### 16 17 18 *Implications for theory*

19  
20 This paper makes several theoretical contributions. Firstly, we contribute to the entrepreneurship  
21  
22 literature by providing evidence that gender is an important intervening factor and indeed a significant  
23  
24 variable in understanding differences between females and males in pursuing an entrepreneurial career.  
25  
26 In the form of multiple configuration of conditions, the results provide detailed picture of  
27  
28 entrepreneurial intentions and show that the variation in conditions influencing the entrepreneurial  
29  
30 intentions are sufficiently complex, providing support for the research proposition. Contrary to previous  
31  
32 research on TPB (which ignores gender), we find gender differences in the configurations, which are  
33  
34 illuminated by the multiple configurations present in the fsQCA results. Secondly, we find that the  
35  
36 absence of self-efficacy in the results predicts males' intentions to become entrepreneurs (see Table 4,  
37  
38 solution 2 and 5). This finding implies new research directions as it relates to intentions because we  
39  
40 cannot assume that existing TPB theory applies equally to men and women as most previous research  
41  
42 has assumed. More research on additional antecedents other than self-efficacy is suggested. Also,  
43  
44 instead of just employing gender as a moderator, it needs to be more fully included in the analyses. This  
45  
46 suggests that we might consider re-thinking how gender is a contextual frame for current theories, such  
47  
48 as TPB, rather than just an analytical variable, as noted by Ahl (2006) and others. Thirdly, our results  
49  
50 suggest that entrepreneurial intentions itself is meaningless if not considered in conjunction with the  
51  
52 theory-based variables and other contextual conditions driving it, the conditions leading to the intentions  
53  
54 determine whether we should consider them desirable or not. This is extremely important observation,  
55  
56 as a more profound understanding of gender differences will help policymakers to strengthen the  
57  
58 strategies and their decision making. Finally, the findings of this paper make contribution to the  
59  
60

1  
2  
3 understanding of entrepreneurial intentions research by providing in-depth insight into the roles of  
4 different conditions in driving the intentions to start a new business start-up which provides a support  
5 for the research proposition. Our research provides a foundation for expanding the literature on  
6 conventional theoretical frameworks such as one proposed by Ajzen (1985), theory of planned behavior.  
7 Our findings make clear that perceived behavioral control (PBC) and self-efficacy have different effect  
8 on the behavioral intentions, this is in itself a theoretical contribution.  
9  
10  
11  
12  
13  
14

15  
16  
17  
18 On a more theoretical level, while there has been critiques on using theory of planned behavior, some  
19 even suggest abandoning the model (Sniehotta et al., 2014), we still see considerable potential in the  
20 model especially if we apply new statistical approaches to the data that allow for different combinations  
21 of configurations. The aim of this paper has not been to challenge TPB as such, but to show the  
22 complexity it seeks to model. Our research shows that we need more sophisticated methods (like  
23 fsQCA) and to consider and accept the possibility that a problem may have multiple solutions  
24 (supporting the research proposition). With fsQCA, we allow for and actively seek multiple solutions,  
25 whereas with traditional statistical methods we work to minimize and exclude potential noise that would  
26 result in complex and messy solutions.  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38

### 39 *Implications for practice*

40  
41 The fact, that fsQCA relies on the substantive domain knowledge of the researcher opens up for a truly  
42 rich scholarly debate about interpretations of research results, within and across research groups.  
43 Moreover, the results of this paper provide new insights to understand better the complexity of  
44 managerial behaviors, particularly entrepreneurial behaviors which should be pursued in future  
45 research. If we accept that there are many roadways to the outcome, we may also have to accept that  
46 one size does not fit all with respect to policy or training programs. Recent research on education and  
47 training of women entrepreneurs shows that factors influencing self-efficacy for women entrepreneurs  
48 is different than for men, in particular, when women interact and work with female entrepreneurs their  
49 self-efficacy is much higher, but the same is not true for men (Rosendahl-Huber and Bechtold, 2019).  
50 Also, there is a need to include female role models in classroom cases, panels and events, as well as  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 ensure that programs are not “gendered” and male dominated (Cochran, 2017). Policy will not only  
4  
5 have to adjust to the external economic conditions, but also become more sensitive to differences in  
6  
7 motivators for nascent entrepreneurs. For instance, the creation of policy for women entrepreneurs  
8  
9 needs to consider a bottom up approach whereby women entrepreneurs provide input on their needs  
10  
11 and solutions rather than employing simply a top down approach, once size fits all (Brush and Greene,  
12  
13 2016). Our research potentially suggests that there are no easy or quick fixes. Still, the findings of this  
14  
15 paper can be used to formulate strategies and public policies, in particular strategies that reinforce and  
16  
17 allow sustainable creation of a new businesses. The findings of this study offer a novel practical  
18  
19 contribution by identifying multiple recipes necessary to understand better the female intentions to  
20  
21 pursue an entrepreneurial career across a diverse sample.  
22  
23  
24  
25

#### 26 *Limitations and future research*

27  
28 This study is not without limitations. First, it could be argued that students are not representative of the  
29  
30 population as a whole, therefore the use of students as proxies for potential entrepreneurs might be  
31  
32 subject to debate, although the appropriateness of using students as more heterogeneous samples has  
33  
34 been recommended, particularly in the entrepreneurship context (Liñán et al., 2011). Before, further  
35  
36 analysis, we do not claim that the findings of this research can be generalized to any population. Second,  
37  
38 our dataset comprises of multinational data including eight countries, but we did not compare the results  
39  
40 at the country levels, so in the future cross-national analysis can be performed to see if differences  
41  
42 between countries can be obtained to enhance our understanding of entrepreneurial intentions. Like  
43  
44 other statistical methods, fsQCA has also some limitations, for instance the domain knowledge and  
45  
46 experience of a researcher play a vital role for the choice of the conditions, calibration of data and in  
47  
48 the process of simplifying configurations and interpretation of the results when fsQCA is used.  
49  
50 Moreover, the results of fsQCA could be sensitive to the cases included in the analysis, this limitation  
51  
52 is especially true when a small sample of cases is used (Berg-Schlosser and De Meur, 2009).  
53  
54 Nevertheless, it should be pointed out that this issue is not a limitation in our paper, as we utilized a  
55  
56 large number of cases (i.e. 2038).  
57  
58  
59  
60

Our research opens different avenues for future research looking at managerial behavior. For instance, researchers could employ the fsQCA in their studies to determine if different sets conditions let to similar results. One possibility might be entrepreneurial orientation which is rooted in four variables, competitive aggressiveness, proactiveness, innovativeness and risk propensity (Lumpkin and Dess, 1996). Researchers have examined the multiple ways that this construct is formulated in explaining performance (George, 2011). Scores of studies find different results, the vast majority applying SEM and other causal analytical techniques, suggesting this might be another area where fsQCA could yield new understandings.

## References

- Adekiya, A.A. and Ibrahim, F. (2016), "Entrepreneurship intention among students. The antecedent role of culture and entrepreneurship training and development", *The International Journal of Management Education*, Vol. 14 No. 2, pp. 116-132.
- Ahl, H. (2006), "Why research on women entrepreneurs needs new directions", *Entrepreneurship Theory and Practice*, Vol. 30 No. 5, pp. 595-621.
- Ajzen, I. (1985), *From intentions to actions: A theory of planned behavior*, In J. Kuhl & J. Beckmann (Eds.), *Action Control: From Cognition to Behavior*: 11-39, New York: Springer-Verlag.
- Ajzen, I. (1987), *Attitudes, traits, and actions: Dispositional prediction of behavior in personality and social psychology*, In *Advances in Experimental Social Psychology*, 20, pp. 1-63.
- Ajzen, I. (1991), "The theory of planned behavior", *Organization Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.
- Ajzen, I. (2001), "Nature and operation of attitudes", *Annual Review of Psychology*, Vol. 52 No. 1, pp. 27-58.
- Ajzen, I. (2002), "Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior", *Journal of Applied Social Psychology*, Vol. 32 No. 4, pp. 665-683.
- Aldrich, H. and Cliff, J. (2003), "The pervasive effects of family on entrepreneurship: Toward a family embeddedness perspective", *Journal of Business Venturing*, Vol. 18 No. 5, pp. 573-596.
- Aloulou, W.J. (2015), "Entrepreneurial Intention among Freshmen Students—Application of the Theory of Planned Behavior in Saudi Context", *Journal of Enterprising Culture*, Vol. 23 No. 4, pp. 473-500.
- Arenius, P., Engel, Y. and Klyver, K. (2017), "No particular action needed? A necessary condition analysis of gestation activities and firm emergence", *Journal of Business Venturing Insights*, Vol. 8, pp. 87-92.
- Armitage, C.J. and Conner, M. (2001), "Efficacy of the theory of planned behavior: A meta-analytic review", *British Journal of Social Psychology*, Vol. 40 No. 4, pp. 471-499.
- Austin, M.J. and Nauta, M.M. (2016), "Entrepreneurial role-model exposure, self-efficacy, and women's entrepreneurial intentions", *Journal of Career Development*, Vol. 43 No. 3, pp. 260-272.
- Autio, E., Keeley, R.H., Klofsten, M., Parker, G.G.C. and Hay, M. (2001), "Entrepreneurial intent among students in Scandinavia and in the USA", *Enterprise and Innovation Management Studies*, Vol. 2 No. 2, pp. 145-160.
- Bandura, A. (1977), "Self-efficacy: Toward a unifying theory of behavioral change", *Psychological Review*, Vol. 84 No. 2, pp. 191-215.
- Bandura, A. (1986), *Social Foundation of Thought and Action: A Social-Cognitive View*, Englewood Cliffs: Prentice-Hall.
- Bandura, A. (1997), *Self-efficacy: The Exercise of Control*, New York, NY: Freeman.
- BarNir, A., Watson, W.E. and Hutchins, H.M. (2011), "Mediation and moderated mediation in the relationship among role models, self-efficacy, entrepreneurial career intention, and gender", *Journal of Applied Social Psychology*, Vol. 41 No. 2, pp. 270-297.

- 1  
2  
3 Baron, R.M and Kenny, D.A. (1986), "The moderator–mediator variable distinction in social psychological  
4 research: Conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*,  
5 Vol. 51 No. 6, pp. 1173–1182.
- 6 Basu, A. and Virick, M. (2008), "Assessing entrepreneurial intentions amongst students: A comparative  
7 study", In VentureWell. Proceedings of Open, the Annual Conference (p. 79). National Collegiate Inventors &  
8 Innovators Alliance.
- 9 Berg-Schlusser, D and De Meur, G. (2009). Comparative research design: Case and variable selection. In:  
10 Rihoux B and Ragin CC, eds. *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA)*  
11 and Related Techniques. Thousand Oaks, CA: SAGE Publications, Inc.
- 12 Beynon, M.J., Jones, P. and Pickernell, D. (2016), "Country-based comparison analysis using fsQCA  
13 investigating entrepreneurial attitudes and activity", *Journal of Business Research*, Vol. 69 No. 4, pp. 1271-1276.
- 14 Bird, B. and Brush, C.G. (2002), "A gendered perspective on organizational creation", *Entrepreneurship*  
15 *Theory and Practice*, Vol. 26 No. 3, pp. 41-65.
- 16 Boyd, N.G. and Vozikis, G.S. (1994), "The influence of self-efficacy on the development of entrepreneurial  
17 intentions and actions", *Entrepreneurship Theory and Practice*, Vol. 18 No. 4, pp. 63-77.
- 18 Brush, C.G., Edelman, L.F., Manolova, T. and Welter, F. (2018), "A gendered look at entrepreneurship  
19 ecosystems", *Small Business Economics*, pp. 1-16.
- 20 Brush, C.G. and Greene, P.G. (2016), "Closing the gender gap: A new perspective on policies and practices"  
21 working paper prepared for the Organization for Economic Cooperation and Development (OECD), Paris, France.
- 22 Bullough, A., Renko, M. and Myatt, T. (2014), "Danger Zone Entrepreneurs: The Importance of Resilience  
23 and Self-Efficacy for Entrepreneurial Intentions", *Entrepreneurship Theory and Practice*, Vol. 38 No. 3, pp. 473-  
24 499.
- 25 Cardon, M.S. and Kirk, C.P. (2015), "Entrepreneurial Passion as Mediator of the Self-Efficacy to Persistence  
26 Relationship", *Entrepreneurship theory and practice*, Vol. 39 No. 5, pp. 1027-1050.
- 27 Carsrud, A.L. and Brännback, M. (2011), "Entrepreneurial motivations: what do we still need to know?",  
28 *Journal of Small Business Management*, Vol. 49 No. 1, pp. 9-26.
- 29 Chen, C., Greene, P. and Crick, A. (1998), "Does entrepreneurial self-efficacy distinguish entrepreneurs  
30 from managers?", *Journal of Business Venturing*, Vol. 13 No. 4, pp. 295–316.
- 31 Chen, G., Gully, S.M. and Eden, D. (2001), "Validation of a new general self-efficacy scale",  
32 *Organizational Research Methods*, Vol. 4 No. 1, pp. 62-83.
- 33 Cochran, S. (2017) "What's gender got to do with it? The experiences of women entrepreneurship students",  
34 working paper, University of Missouri- Kansas City.
- 35 Conner, M. and Armitage, C.J. (1998), "Extending the theory of planned behavior: A review and avenues for  
36 further research", *Journal of applied social psychology*, Vol. 28 No. 15, pp. 1429-1464.
- 37 de Bruin, A., Brush, C.G. and Welter, F. (2007), "Advancing a framework for coherent research on women's  
38 entrepreneurship", *Entrepreneurship Theory & Practice*, Vol. 31 No. 3, pp. 323-339.
- 39 de Vita, L., Mari, M. and Poggesi, S. (2014), "Women entrepreneurs in and from developing countries:  
40 evidences from the literature", *European Management Journal*, Vol. 32 No. 3, pp. 451-460.
- 41 Díaz-García, M.C. and Jiménez-Moreno, J. (2010), "Entrepreneurial intention: the role of gender",  
42 *International Entrepreneurship and Management Journal*, Vol. 6 No. 3, pp. 261-283.
- 43 Eagly, A.H. (1987). *Sex Differences in Social Behavior: A Social-Role Interpretation*. NJ: Erlbaum,  
44 Hillsdale.
- 45 Eagly, A.H. and Karau, S.J. (2002), "Role congruity theory of prejudice toward female leaders",  
46 *Psychological Review*, Vol. 109, No. 3, pp. 573-598.
- 47 Fayolle, A. and Liñán, F. (2014), "The future of research on entrepreneurial intentions", *Journal of Business*  
48 *Research*, Vol. 67 No. 5, pp. 663-666.
- 49 Fishbein, M. and Ajzen, I. (1975), *Belief, Attitude, Intention, and Behavior*. Reading, MA: Addison-Wesley.
- 50 Fiss, P.C. (2007), "A set-theoretic approach to organizational configurations", *Academy of Management*  
51 *Review*, Vol. 32 No. 4, pp. 1180–1198.
- 52 Fiss, P.C. (2011), "Building better causal theories: A fuzzy set approach to typologies in organization  
53 research", *Academy of Management Journal*, Vol. 54 No. 2, pp. 393–420.
- 54 Fiss, P.C., Cambré, B. and Marx, A. (2013), "*Configurational theory and methods in organizational*  
55 *research*". Emerald Group Publishing.
- 56 Fornell, C. and Larcker, D. (1981), "Evaluating structural equation models with unobservable variables and  
57 measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39–50.
- 58 Gatewood, E., Shaver, K., Powers, J. and Gartner, W. (2002), "Entrepreneurial expectancy, task, effort and  
59 performance", *Entrepreneurship Theory and Practice*, Vol. 27 No. 2, pp. 187–206.
- 60 George, B. (2011), "Entrepreneurial orientation: A theoretical and empirical examination of the consequences  
of differing construct representations", *Journal of Management Studies*, Vol. 48 No. 6, pp. 1291-1313.

1  
2  
3 Gieure, C., Benavides-Espinosa, M.D.M. and Roig-Dobón, S. (2019), "Entrepreneurial intentions in an  
4 international university environment", *International Journal of Entrepreneurial Behavior & Research*. DOI:  
5 <https://doi.org/10.1108/IJEER-12-2018-0810>.

6 Guerrero, M., Rialp, J. and Urbano, D. (2008), "The impact of desirability and feasibility on entrepreneurial  
7 intentions: A structural equation model", *International Entrepreneurship and Management Journal*, Vol. 4 No.  
8 1, pp. 35-50.

9 Gupta, V.K., Turban, D.B., Wasti, S.A. and Sikdar, A. (2009), "The role of gender stereotypes in perceptions  
10 of entrepreneurs and intentions to become an entrepreneur", *Entrepreneurship Theory and Practice*, Vol. 33 No.  
11 2, pp. 397-417.

12 Haus, I., Steinmetz, H., Isidor, R. and Kabst, R. (2013), "Gender effects on entrepreneurial intention: a meta-  
13 analytical structural equation model", *International Journal of Gender and Entrepreneurship*, Vol. 5 No. 2, pp.  
14 130-156.

15 Henry, C., Foss, L. and Ahl, H. (2016) "Gender and entrepreneurship research" A review and methodological  
16 approach", *International Small Business Journal*. Vol. 34 No. 3, pp. 217-241.

17 Hisrich, R., Langan-Fox, J. and Grant, S. (2007), "Entrepreneurship research and practice: a call to action for  
18 psychology", *American psychologist*, Vol. 62 No. 6, pp. 575-589.

19 Hsu, D.K., Burmeister-Lamp, K., Simmons, S.A., Foo, M.D., Hong, M.C. and Pipes, J.D. (2019), "I know I  
20 can, but I don't fit": Perceived fit, self-efficacy, and entrepreneurial intention", *Journal of Business Venturing*,  
21 Vol. 34 No. 2, pp. 311-326.

22 Jennings, J.E. and Brush, C.G. (2013), "Research on women entrepreneurs: challenges to (and from) the  
23 broader entrepreneurship literature?", *The Academy of Management Annals*, Vol. 7 No. 1, pp. 663-715.

24 Karimi, S., Biemans, H.J.A., Lans, T., Chizari, M. and Mulder, M. (2014), "Effects of role models and gender  
25 on students' entrepreneurial intentions", *European Journal of Training and Development*, Vol. 38 No. 8, pp. 694-  
26 727.

27 Kautonen, T., Luoto, S. and Tornikoski, E.T. (2010), "Influence of work history on entrepreneurial intentions  
28 in 'prime age' and 'third age': A preliminary study", *International Small Business Journal*, Vol. 28 No. 6, pp.  
29 583-601.

30 Kautonen, T., Van Gelderen, M. and Fink, M. (2015), "Robustness of the Theory of Planned Behavior in  
31 predicting entrepreneurial intentions and actions", *Entrepreneurship Theory and Practice*, Vol. 39, No. 3, pp. 655-  
32 674.

33 Kautonen, T., Van Gelderen, M. and Tornikoski, E.T. (2013) "Predicting entrepreneurial behaviour: a test of  
34 the theory of planned behavior", *Applied Economics*, Vol. 45 No. 6, pp. 697-707.

35 Kelley, D., Baumer, B., Brush, C.G., Greene, P., Mahdavi, M., Majbourni, M., Cole, M, Dean, M. and  
36 Heavelow, R. (2017). *Global Entrepreneurship Monitor 2016/2017 Report on Women's Entrepreneurship*,  
37 Wellesley, MA: Babson College.

38 Kraus, S., Ribeiro-Soriano, D. and Schüssler, M. (2018), "Fuzzy-set qualitative comparative analysis  
39 (fsQCA) in entrepreneurship and innovation research – the rise of a method", *International Entrepreneurship and  
40 Management Journal*, Vol. 14, pp. 15-33.

41 Krueger, N.F. and Carsrud, A.L. (1993), "Entrepreneurial intentions: applying the theory of planned  
42 behavior", *Entrepreneurship and Regional Development*, Vol. 5 No. 4, pp. 315-330.

43 Krueger, N.F., Reilly, M. D. and Carsrud, A.L. (2000), "Competing models of entrepreneurial intentions",  
44 *Journal of Business Venturing*, Vol. 15 No. 5-6, pp. 411-432.

45 Ladge, J., Eddleston, K.A. and Sugiyama, K. (2019), "Am I an entrepreneur? How imposter fears hinder  
46 women entrepreneurs' business growth", *Business Horizons*. <https://doi.org/10.1016/j.bushor.2019.05.001>.

47 Liang, H., Saraf, N., Hu, Q. and Xue, Y. (2007), "Assimilation of enterprise systems: the effect of institutional  
48 pressures and the mediating role of top management", *MIS quarterly*, Vol. 31 No.1, pp. 59-87.

49 Liñán, F. and Chen, Y.W. (2009), "Development and Cross-Cultural application of a specific instrument to  
50 measure entrepreneurial intentions", *Entrepreneurship Theory and Practice*, Vol. 33 No. 3, pp. 593-617.

51 Liñán, F. and Fayolle, A. (2015), "A systematic literature review on entrepreneurial intentions: citation,  
52 thematic analyses, and research agenda", *International Entrepreneurship and Management Journal*, Vol. 11 No.  
53 4, pp. 907-933.

54 Liñán, F., Rodríguez-Cohard, J.C. and Rueda-Cantuche, J.M. (2011), "Factors affecting entrepreneurial  
55 intention levels: a role for education", *International entrepreneurship and management Journal*, Vol. 7 No. 2, pp.  
56 195-218.

57 Liñán, F., Urbano, D. and Guerrero, M. (2011), "Regional variations in entrepreneurial cognitions: Start-up  
58 intentions of university students in Spain", *Entrepreneurship and Regional Development*, Vol. 23 No. (3-4), pp.  
59 187-215.

60 Liu, Y., Mezei, J., Kostakos, V. and Li, H. (2017), "Applying configurational analysis to IS behavioral  
61 research: a methodological alternative for modelling combinatorial complexities", *Information Systems Research*,  
62 Vol. 27 No. 1, pp. 59-89.



- Lo, C., Sun, H. and Law, K. (2012), "Comparing entrepreneurial intention between female and male engineering students", *Journal of Women's Entrepreneurship and Education*, Vol. 1 No. 2, pp. 28-51.
- Lortie, J. and Castogiovanni, G. (2015), "The theory of planned behavior in entrepreneurship research: what we know and future directions", *International Entrepreneurship and Management Journal*, Vol. 11 No. 4, pp. 935-957.
- Lumpkin, T. and Dess, G. (1996), "Clarifying the entrepreneurial orientation construct leading to performance", *Academy of Management Review*, Vol. 21 No. 1, pp. 135-172.
- Maes, J., Leroy, H. and Sels, L. (2014), "Gender differences in entrepreneurial intentions: A TPB multi-group analysis at factor and indicator level", *European Management Journal*, Vol. 32 No. 5, pp. 784-794.
- Marlow, S. and Patton, D. (2005), "All Credit to Men? Entrepreneurship, Finance, and Gender", *Entrepreneurship Theory & Practice*, Vol. 29 No. 6, pp. 717-735.
- Mas-Tur, A., Pinazo, P., Tur-Porcar, A.M. and Sánchez-Masferrer, M. (2015), "What to avoid to succeed as an entrepreneur", *Journal of Business Research*, Vol. 68 No. 11, pp. 2279-2284.
- Meek, W.R., Pacheco, D.F. and York, J.G. (2010), "The impact of social norms on entrepreneurial action: Evidence from the environmental entrepreneurship context", *Journal of Business Venturing*, Vol. 25 No. 5, pp. 493-509.
- Mendel, J.M. and Korjani, M.M. (2013), "Theoretical aspects of fuzzy set qualitative comparative analysis (fsQCA)", *Information Sciences*, Vol. 237(2013), pp. 137-161.
- Mezei, J. and Nikou, S. (2018), "On the use of configurational analysis in entrepreneurial research. A research agenda for entrepreneurial cognition and intention", 142-160. Edward Elgar.
- Muñoz, P. and Dimov, D. (2015), "The call of the whole in understanding the development of sustainable ventures", *Journal of Business Venturing*, Vol. 30 no. 4, pp. 632-654.
- Nowiński, W., Haddoud, M.Y., Lančarič, D., Egerová, D. and Czeglédi, C. (2019), "The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, Vol. 44 No. 2, pp. 361-379.
- Nunnally, J.C. (1967). *Psychometric Theory (1st ed.)*. New York: McGraw-Hill.
- Ozaralli, N. and Rivenburgh, N.K. (2016), "Entrepreneurial intention: antecedents to entrepreneurial behavior in the USA and Turkey", *Journal of Global Entrepreneurship Research*, Vol. 6 No. 1, pp. 1-32.
- Piperopoulos, P. and Dimov, D. (2015) "Burst bubbles or build steam? Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions", *Journal of Small Business Management*, Vol. 53 No. 4, pp. 970-985.
- Podsakoff, P.M. and Organ, D.W. (1986), "Self-reports in organizational research: Problems and prospects", *Journal of management*, Vol. 12 No. 4, pp. 531-544.
- Ragin, C.C. (1987), *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies*. Berkeley, CA: University of California Press.
- Ragin, C.C. (2000), *Fuzzy Set Social Science*. Chicago, IL: University of Chicago Press.
- Ragin, C.C. (2008), *Redesigning Social Inquiry: Fuzzy Sets and Beyond*. Chicago, IL: University of Chicago Press.
- Ragin, C.C. (2013), "New directions in the logic of social inquiry", *Political Research Quarterly*, Vol. 66 No. 1, pp. 171-174.
- Ragin, C.C. and Davey, S. (2016), "Fuzzy-Set/Qualitative Comparative Analysis 3.0", Irvine, California: Department of Sociology, University of California.
- Ragin, C.C. and Fiss, P.C. (2008), "Net effects analysis versus configurational analysis: An empirical demonstration", In C. C. Ragin (Ed.), *Redesigning Social Inquiry: Fuzzy Sets and Beyond* (pp. 190-212). Chicago, IL: University of Chicago Press.
- Robledo, J.L.R., Arán, M.V., Sanchez, V.M. and Molina, M.Á.R. (2015), "The moderating role of gender on entrepreneurial intentions: A TPB perspective", *Intangible Capital*, Vol. 11 No. 1, pp. 92-117.
- Rosendahl-Huber, L. and Bechtold, L. (2019), "Yes I can! A field experiment of female role model effects in entrepreneurship", paper presented at the 2019 Diana International Research Conference, Wellesley, MA.
- Rueda, S., Moriano, J.A. and Liñán, F. (2015), "Validating a theory of planned behavior questionnaire to measure entrepreneurial intentions", in Alain Fayolle, Paula Kyrö, Francisco Liñán (Ed.), *Developing, shaping and growing entrepreneurship*, 60-78.
- Santos, F.J., Roomi, M.A. and Liñán, F. (2016), "About gender differences and the social environment in the development of entrepreneurial intentions", *Journal of Small Business Management*, Vol. 54 No. 1, pp. 49-66.
- Schneider, C. Q. and Wagemann, C. (2007), *Qualitative Comparative Analysis (QCA) and Fuzzy Sets*, Barbara Budrich.
- Shahab, Y., Chengang, Y., Arbizu, A.D. and Haider, M.J. (2019), "Entrepreneurial self-efficacy and intention: do entrepreneurial creativity and education matter?", *International Journal of Entrepreneurial Behavior & Research*, Vol. 25 No. 2, pp. 259-280.

- 1  
2  
3 Shinnar, R.S., Giacomini, O. and Janssen, F. (2012), "Entrepreneurial perceptions and intentions: The role of  
4 gender and culture", *Entrepreneurship Theory and Practice*, Vol. 36 No. 3, pp. 465-493.
- 5 Sniehotta, F., Pressau, J. and Araújo-Soares, V. (2014), "Time to retire the theory of planned behavior",  
6 *Health Psychology Review*, Vol. 8 No. 1, pp. 1-7.
- 7 Souitaris, V., Zerbinati, S. and Al-Laham, A. (2007), "Do entrepreneurship programs raise entrepreneurial  
8 intention of science and engineering students? The effect of learning, inspiration and resources", *Journal of*  
9 *Business Venturing*, Vol. 22 No. 4, pp. 566-591.
- 10 Straatmann, T., Rothenhöfer, L.M., Meier, A. and Mueller, K. (2018), "A Configurational Perspective on the  
11 Theory of Planned Behaviour to Understand Employees' Change-Supportive Intentions", *Applied Psychology*,  
12 Vol. 67 No. 1, pp. 91-135.
- 13 Stroe, S., Parida, V. and Wincent, J. (2018), "Effectuation or causation: An fsQCA analysis of entrepreneurial  
14 passion, risk perception, and self-efficacy", *Journal of Business Research*, Vol. 89, pp. 265-272.
- 15 Teo, A.C., Tan, G.W.H., Cheah, C.M., Ooi, K.B. and Yew, K.T. (2012), "Can the demographic and subjective  
16 norms influence the adoption of mobile banking?", *International Journal of Mobile Communications*, Vol. 10 No.  
17 6, pp. 578-597.
- 18 Thiem, A. and Duşa, A. (2013), "QCA: A Package for Qualitative Comparative Analysis", *R Journal*, Vol. 5  
19 No. 1, pp. 87-97.
- 20 Trochim, W.M. and Donnelly, J.P. (2000), "*Research Methods Knowledge Base (2<sup>nd</sup> ed.)*", Atomic Dog  
21 Publishing, Cincinnati, OH.
- 22 van Ewijk, A.R. and Belghiti-Mahut, S. (2019), "Context, gender and entrepreneurial intentions: How  
23 entrepreneurship education changes the equation", *International Journal of Gender and Entrepreneurship*.  
24 <https://doi.org/10.1108/IJGE-05-2018-0054>.
- 25 Veciana, J.M., Aponte, M. and Urbano, D. (2005), "University students' attitudes towards entrepreneurship:  
26 A two countries comparison", *The International Entrepreneurship and Management Journal*, Vol. 1 No. 2, pp.  
27 165-182.
- 28 Wilson, F., Kickul, J. and Marlino, D. (2007), "Gender, Entrepreneurial Self-Efficacy, and Entrepreneurial  
29 Career Intentions: Implications for Entrepreneurship Education", *Entrepreneurship Theory and Practice*, Vol. 31  
30 No. 3, 387-406.
- 31 Woodside, A.G. (2013), "Moving beyond multiple regression analysis to algorithms: Calling for adoption of  
32 a paradigm shift from symmetric to asymmetric thinking in data analysis and crafting theory", *Journal of Business*  
33 *Research*, Vol. 66 No. 4, pp. 463-472.
- 34 Zhang, Y., Duysters, G. and Cloudt, M. (2014), "The role of entrepreneurship education as a predictor of  
35 university students' entrepreneurial intention", *International Entrepreneurship and Management Journal*, Vol. 10  
36 No. 3, pp. 623-641.
- 37 Zhao, H., Seibert, S.E. and Hills, G.E. (2005), "The mediating role of self-efficacy in the development of  
38 entrepreneurial intentions", *Journal of Applied Psychology*, Vol. 90 No. 6, pp. 1265-1272.
- 39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 **Tables and Appendices:**  
4  
5

6 **Table 1.** List of countries and # of participants

Country	Spain	Turkey	Canada	Chile	China	Finland	Germany	USA
N	201	474	221	292	278	156	220	96
Gender	F = 110 M = 91	F = 208 M = 266	F = 95 M = 126	F = 107 M = 185	F = 102 M = 276	F = 93 M = 63	F = 53 M = 167	F = 29 M = 67

12  
13 **Table 2.** The necessity assessment of causal conditions

Condition	Consistency	Coverage
Self-efficacy	0.881 (0.441)	0.644 (0.749)
Subjective norms	0.912 (0.421)	0.679 (0.607)
Perceived behavioral control	0.758 (0.693)	0.852 (0.596)
Attitude towards entrepreneurship	0.916 (0.479)	0.653 (0.602)
Gender	0.336 (0.634)	0.455 (0.508)

20 Note: The value for negation of a condition is shown in the parentheses

23 **Table 3.** Intermediate solutions of the fsQCA (without gender).

Causal conditions	Solution			
	S1	S2	S3	S4
Self-efficacy		○		○
Subjective norms			●	●
Perceived behavioral control	●	●	●	
Attitude towards entrepreneurship	●			●
Raw coverage	0.735	0.468	0.729	0.396
Unique coverage	0.020	0.002	0.007	0.007
Consistency	0.882	0.888	0.880	0.852
Overall solution coverage		0.787		
Overall solution consistency		0.834		

35 Note: Black circles indicate the presence of a condition, and blank circles indicate its absence. Large circles indicate core conditions;  
36 small ones, peripheral conditions. Blank spaces indicate "don't care".

39 **Table 4.** Intermediate solutions of the fsQCA (with gender)

Causal conditions	Solution				
	S1	S2	S3	S4	S5
Gender		○	○	●	○
Self-efficacy		○		●	○
Subjective norms			●	●	●
Perceived behavioral control	●	●	●	●	
Attitude towards entrepreneurship	●				●
Raw coverage	0.743	0.249	0.469	0.393	0.259
Unique coverage	0.138	0.001	0.005	0.001	0.001
Consistency	0.882	0.901	0.890	0.902	0.838
Overall solution coverage		0.773			
Overall solution consistency		0.853			

52 Note: Black circles indicate the presence of a condition, and blank circles indicate its absence, Large circles indicate core conditions;  
53 small ones, peripheral conditions, Blank spaces indicate "don't care," Male = ○, Female = ●

## Appendix A

Constructs and sources of questionnaire items.

Constructs	Measurement Items and Descriptions	Sources
Self-efficacy	SE1: When facing difficult tasks, I am certain that I will accomplish them. SE2: I believe I can succeed at most any endeavor to which I set my mind. SE3: I will be able to successfully overcome many challenges. SE4: I am confident that I can perform effectively on many different tasks. SE5: Even when things are tough, I can perform quite well.	Chen et al., 2001
Subjective norms	SN1: My family would see it as very positive if I would start my own business. SN2: My friends would see it as very positive if I would start my own business.	Kautonen et al., 2010; Souitaris et al., 2007
Perceived behavioral control	PBC1: I am prepared to start a viable firm PBC2: I can control the creation process of a new firm PBC3: I know the necessary practical details to start a firm PBC4: I know how to develop an entrepreneurial project	Liñán and Chen, 2009
Attitude towards entrepreneurship	AT1: A career as entrepreneur is attractive for me AT2: I had the opportunity and resources, I'd like to start a firm AT3: Being an entrepreneur would entail great satisfactions for me AT4: Among various options, I would rather be an entrepreneur	Ajzen, 1991; Liñán and Chen, 2009
Entrepreneurial intentions	EIN1: I will make every effort to start and run my own firm EIN2: I am determined to create a firm in the future EIN3: I have very seriously thought of starting a firm EIN4: I have the firm intention to start a firm some day	Ajzen, 1991; Liñán and Chen, 2009