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Gender Gap in Entrepreneurial Intention, Reasoning, Self-Efficacy, and Education Preferences Among University Students: an Entrepreneurial Event Theory Perspective



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ABSTRACT

This study presents a gender-focused perspective of entrepreneurship education programs, aiming to understand variations in entrepreneurial intention, reasoning on entrepreneurship, self-efficacy, and entrepreneurial education preferences. The present research grounds on Entrepreneurial Event Theory to examine entrepreneurial intention, desirability, and feasibility in the context of entrepreneurship education. The research was conducted in Germany in 2021 and included a sample of 156 university students. The study deploys the Mann-Whitney U Test to examine gender differences among university students regarding entrepreneurship. The findings highlight a heightened perception of risk among female students, influencing their focus on positive/negative entrepreneurial events compared to male students. Moreover, the research reveals a greater inclination among females to engage in both curricular and extracurricular entrepreneurship education activities, corroborating previous studies suggesting greater benefits for

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female students in such programs. The study also underscores the importance of distinguishing between curricular and extracurricular offerings, indicating promising avenues for future entrepreneurship education research. Overall, this investigation contributes new insights and explanations regarding gender dynamics in entrepreneurship education, shedding light on potential areas for further exploration in the field.

KEYWORDS: *entrepreneurial intentions, Theory of Entrepreneurial Event, entrepreneurship education, entrepreneurial desirability, entrepreneurial feasibility*

Introduction

Female entrepreneurship education research represents a gendered perspective on entrepreneurship education and has been researched by researchers in different countries, most prolific in terms of publications being the authors from the USA, UK, Spain, Canada and Germany, followed by authors from Italy, Malaysia, South Africa and Sweden (Slavinski et al., 2020). This is a developing field of study, with publications increasing steadily over the years and therefore demonstrating the increasing attention of the scientific community.

Previous literature regarding gender and entrepreneurial intention often deals with the moderating role that gender plays in shaping entrepreneurial intention from the perspective of the Theory of Planned Behavior (Arshad et al., 2016; Bagheri & Lope Pihie, 2014). This stream of literature focuses on entrepreneurial attitudes, social norms and behavioral control to explain entrepreneurial intentions (Ajzen, 2011, 2020). However, there is a paucity of literature in terms of the gender gap and its specificities from the perspective of the similar, but more appropriate Theory of Entrepreneurial Event, developed by Shapero and Sokol (1982). This theory attempts to explain entrepreneurial intention through the desirability of entrepreneurship and feasibility of entrepreneurship, while also including the importance of entrepreneurial event in the realization of the entrepreneurial intention. Previous literature has studied the gender differences in terms of entrepreneurial intention and educational needs of students in different countries and has confirmed the difference between the female and male participants (Dabic et al., 2012). However, apart from this specific study, there is no other study dealing solely with entrepreneurial education in the

university context in terms of the gender gap, while applying the Theory of Entrepreneurial Event (Shapero & Sokol, 1982).

The institutional environment regarding the ease of starting a business and training/networking programs are shown to foster female entrepreneurship. (Kaya, 2021) More specifically, the university environment is shown to impact the entrepreneurial thinking and intention of female students, both through normative and cognitive dimensions (Saadaoui et al., 2024). The research design of the present study relies on the notion in the previous literature that entrepreneurial action is a complex phenomenon, consisting of two components: perceptions of desirability (values) and perceptions of feasibility (Schlaegel & Koenig, 2014; Shapero & Sokol, 1982). The present research extends the research framework on gender differences in entrepreneurial education, proposed by Dabic et al. (2012), by differentiating between curricular and extracurricular education preferences, but retaining the core structure of the research framework: gender differences (gap) regarding education, desirability, feasibility, and entrepreneurial intention. Considering the previously mentioned research gaps and the proposed research framework, this study sets out to uncover the gender gap in entrepreneurial education. As an operationalization of this overall goal, the following research hypotheses were posed, which served as the main objectives of the study:

- H1:** There is a significant gender difference among university students regarding entrepreneurial intentions.
- H2:** There is a significant gender difference among university students regarding desirability (reasons for/against starting a business).
- H3:** There is a significant gender difference among university students regarding feasibility (entrepreneurial self-efficacy).
- H4:** There is a significant gender difference among university students regarding curricular entrepreneurship education preferences.
- H5:** There is a significant gender difference among university students regarding extracurricular entrepreneurship education preferences.

The article begins with introducing the relevance of the topic researched, major research gaps and the five hypotheses which guided the research. Moreover, the literature on the gender gap in terms of entrepreneurial intention, self-efficacy, desirability, and education preferences is presented. After this section, the research framework and the

study context are presented, followed by detailed results. Finally, theoretical and practical implications, limitations, and future research directions are discussed, followed by a brief conclusion section.

Literature Review

Gender Gap Regarding Entrepreneurial Intention

Entrepreneurial intention is one of the most researched phenomena in entrepreneurship in recent decades (Liñán, 2005; Lopez & Alvarez, 2019; Mmadu & Egbule, 2014). It is relevant both for researching the interaction with entrepreneurship education and beyond. Previous literature has determined that designing and executing entrepreneurial education and support programs can also have a decisive impact on entrepreneurial intention. For example, it has been proved that a small group size can have a major positive impact on entrepreneurial intention, compared to a large group size (Paunović & Bog, 2009). Moreover, the importance of entrepreneurial intention is not limited solely to the pre-start-up phase but extends to the post-start-up phase of the entrepreneurial journey, transforming into entrepreneurial performance (Brandstätter, 2011; Gerke et al., 2023). Regarding the differences between females and males in terms of entrepreneurial intention, previous research is divided into three schools of thought: contextual, individual/personal, and other. Prior research, in the transition country context, reported that women are likely to show lower entrepreneurial intention (Westhead & Solesvik, 2016). However, researchers also found that the higher risk perception directly impacts the lower entrepreneurial intention, regardless of gender. Research in a developing country found that female students score not only lower entrepreneurial intention than male students but that this difference is consistent across all four subsections of the entrepreneurial attitudes survey instrument (Barber et al., 2021). Another interesting finding from a developing country context is that passion positively mediates the relationship between entrepreneurial attitudes and intentions, whereas the opposite mediating effect was found for creativity (Monica & Anuradha, 2024).

Gender Gap Regarding Entrepreneurial Self-efficacy

Previous research has found that self-efficacy is essential for each phase of the female entrepreneurial process, with autonomy being crucial during pre-launch and launch and locus of control in pre-launch and post-launch (Gerke et al., 2023). Self-efficacy is a motivational characteristic, shown to mediate the impact of personal and context factors on entrepreneurial intention (Molino et al., 2018). The university entrepreneurial ecosystem can positively influence self-efficacy, while self-efficacy can positively impact entrepreneurial intention (Pelegrini & Moraes, 2022). In this sense, previous studies have also demonstrated that entrepreneurial self-efficacy is a viable entrepreneurship education evaluation tool both for females and males. Moreover, it was found that it is correlated with previously having taken an entrepreneurship course (Mozahem, 2021). However, international comparative studies in terms of self-efficacy and entrepreneurship education research are very rare, representing a major research gap (Mueller & Conway Dato-on, 2013; Nowiński et al., 2019).

Gender Gap Regarding Desirability, Attitudes, and Social Norms towards Entrepreneurship

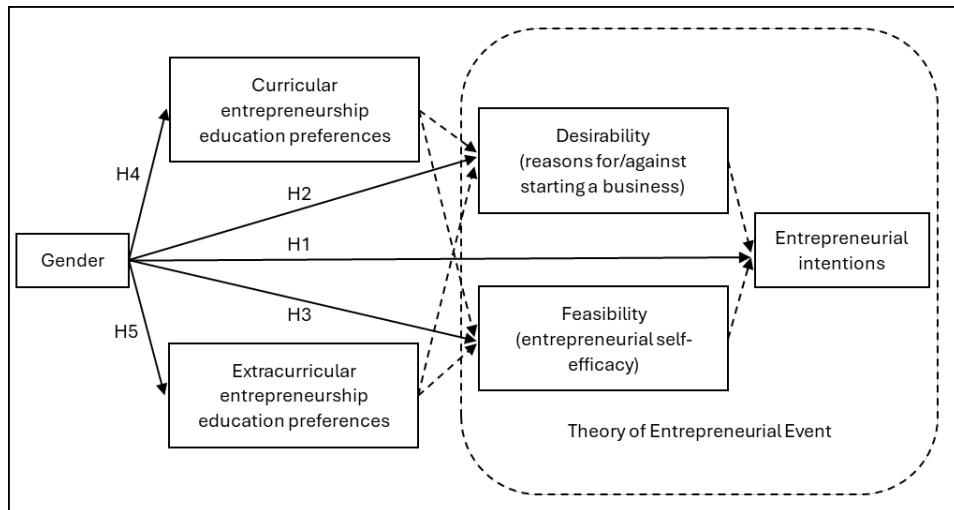
Entrepreneurial desirability is differently conceptualized in previous studies. It has been defined as the attractiveness of the idea of starting a business (Guerrero et al., 2008) or the perceived attractiveness of different career profiles (Fitzsimmons & Douglas, 2011). Other research has used multiple batteries with attractiveness and appeal of starting a business, satisfaction perception and perception of entrepreneurship as a calling (Giordano Martínez et al., 2017). Desirability is theoretically thought to be roughly equivalent to social norms and attitudes in the Theory of Planned Behavior (Fitzsimmons & Douglas, 2011; Mair & Noboa, 2003). In the present study, desirability is conceptualized as a battery of items concentrating on a set of reasons for and against starting a business. Previous research on the gender gap in entrepreneurial desirability has shown that male students show consistently higher perceived entrepreneurial desirability than female students (Abdelkarim, 2021). A gender gap regarding entrepreneurial intentions has also been confirmed from the perspective of the Theory of Planned Behavior, where social norms are the equivalent of desirability (El Harbi et al., 2009). There is a research

gap in comprehending and interpreting the gender gap concerning the desirability of entrepreneurship in entrepreneurial education, concerning the question of whether entrepreneurship education can help overcome gendered socialization effects and incentives. Moreover, effective approaches to achieving this remain understudied (Pergelova et al., 2023).

Model Development

The research design of the present study is grounded in the previous literature's conceptualization of entrepreneurial action as a complex phenomenon, encompassing two primary components, according to the Theory of Entrepreneurial Event: perceptions of desirability (values) and perceptions of feasibility (Shapiro & Sokol, 1982). The present research deploys and extends this model in order to evaluate the impact of a gender gap, or gender differences, on curricular and extracurricular entrepreneurial education preferences, desirability (reasons for/against starting a business), feasibility (entrepreneurial self-efficacy), and entrepreneurial intention. Therefore, the research framework on gender differences in entrepreneurial education, proposed by Dabic et al. (2012) is extended in the present research, by differentiating between curricular and extracurricular education preferences, but retaining the core structure of the previous research framework. Similarly to previous research, we assume in our model that gender has an indirect effect on entrepreneurial intention, by directly impacting desirability and feasibility. Another assumption is that gender affects both curricular as well as extracurricular entrepreneurship education preferences, which then impact (entrepreneurial) desirability and feasibility. The solid lines in Figure 1 indicate the scope of the present paper, while the dashed lines indicate the assumed theoretical connections not addressed by this paper, with one exception. Namely, we assume that the impact of gender on entrepreneurial intention is indirect. However, we test it both for the gender gap as an overarching concept and as a basis for further analysis of underlying antecedents such as desirability, feasibility, and preferences for curricular and extracurricular entrepreneurship education.

Figure 1: Research framework



Source: Authors

Data and Methods

The data collection took place from October 21st until November 28th, 2021 in Germany, at the Bonn-Rhein-Sieg University of Applied Sciences. It was part of the evaluation activities of the project „Start-up Manufaktur“. This project deals with entrepreneurship support, upskilling and the creation of an entrepreneurship culture at the university. The students were contacted via Email and LinkedIn to fill out the online questionnaire, hosted on the Unipark platform for a total sample of n=156 students. The respondents were informed in detail on the content and the goals of the study, that the study is anonymous and that no data which can be traced back to a single person will be collected. An informed consent was obtained from all the participants in the study. The data collection was conducted in accordance with the Declaration of Helsinki from 1964. The respondents were asked to answer the questions on ordinal Likert scales, ranging from 1=completely disagree to 6=completely agree. There were 2 items related to the intention to start a business, 8 items related to reasons of why to start a business, 9 items related to reasons for not starting a business, 7 items related to self-efficacy, 9 items related to curricular entrepreneurship education preferences, and 9 items related to extracurricular entrepreneurship education preferences.

Non-binary genders represented a very small subsample ($n=2$) and were thus excluded for further analysis. The total data set covers 156 students. On average, participants were 22.92 years old ($SD=3.48$) and 47.44% were female.

To examine gender differences in entrepreneurial intentions, self-efficacy, and entrepreneurial education preferences, Mann-Whitney U Tests were conducted as Kolmogorov-Smirnov and Shapiro-Wilk Tests revealed that the data is not normally distributed ($p \leq .001$). The Mann-Whitney U Test is a non-parametric test to examine whether there are statistically significant differences between two independent groups of an independent variable (gender: female and male students) on an ordinal dependent variable (entrepreneurial intentions, reasoning, self-efficacy, and preferences). It represents the non-parametric alternative to the test for independent variables, which is aimed at the metric-scaled dependent variable.

Results

Gender Differences in Entrepreneurial Intentions

In Table 1, discernible differences between women and men are apparent in different criteria of entrepreneurial intentions. Noteworthy distinctions emerge concerning the inclination to start a business, $p \leq .001$ ($r=.313$). Men exhibit a significantly higher intention to initiate a business compared to women. A similar pattern is observed in the context of business acquisition, $p=.034$ ($r=.170$), where male students manifest a substantially greater intention towards taking over a business compared to female students.

Table 1: Mann-Whitney U Test results for behavioral intention

		M (SD)	 M_{fe} - M_{ma} 	Mean Rank	<i>p</i>
I want to start a business	female	3.28 (1.74)	1.09	63.88	<.001*
	male	4.37 (1.48)		91.70	
I want to take over an existing business	female	2.24 (1.50)	.41	70.67	.034*
	male	2.65 (1.42)		85.57	

Source: Authors

Gender Differences in Entrepreneurial Reasoning

Substantial variations exist concerning specific motivations and inhibitors for entrepreneurship (desirability), as presented in Table 2 below. Women attribute significantly greater importance to the perceived threat of impending unemployment as a motivator for starting a business compared to men, $p=.014$ ($r=.196$). Conversely, the financial risk emerges as a more potent deterrent for female than for male students, $p\leq.001$ ($r=.345$). Moreover, the perceived burden of perceived excessive responsibility as a business manager constitutes a significantly greater impediment for women as opposed to men, $p\leq.001$ ($r=.286$).

Table 2: Mann-Whitney U Test results for reasoning on entrepreneurship

		M (SD)	$ M_{fe} - M_{ma} $	Mean Rank	<i>p</i>
Reasons for starting a business					
Potential for good earning	female	4.58 (1.12)	.08	74.82	.311
	male	4.66 (1.33)		81.82	
Self-realization	female	5.41 (.76)	.04	76.65	.583
	male	5.45 (.77)		80.17	
Innovative business idea	female	4.88 (1.09)	.11	80.05	.667
	male	4.77 (1.22)		77.10	
Independence	female	4.97 (1.34)	.21	75.44	.387
	male	5.18 (1.08)		81.26	
The existence of market potential	female	4.15 (1.18)	.13	74.40	.263
	male	4.28 (1.31)		82.28	
Good market and industry knowledge	female	4.08 (1.45)	.13	81.39	.473
	male	3.95 (1.43)		75.90	
Looming unemployment	female	2.77 (1.40)	.51	87.55	.014*
	male	2.26 (1.28)		70.34	
Following a current trend towards starting their own business	female	2.53 (1.38)	.25	83.28	.193
	male	2.27 (1.40)		74.19	

		M (SD)	 M_{fe} - M_{ma} 	Mean Rank	p
Reasons against starting a business					
Financial risk which is too high	female	4.96 (1.13)	.87	94.36	<.001*
	male	4.09 (1.41)		64.18	
Too much responsibility on the part of the business manager	female	4.34 (1.57)	.90	91.86	<.001*
	male	3.44 (1.61)		66.44	
Lack of professional competence/ soft skills/market knowledge	female	4.18 (1.40)	.28	83.89	.147
	male	3.90 (1.37)		73.64	
Lack of professional experience	female	4.08 (1.49)	.13	77.09	.705
	male	4.21 (1.39)		79.77	
Lack of or too low capital	female	4.81 (1.29)	.27	83.78	.150
	male	4.54 (1.34)		73.73	
Lack of co-founders and/or partners	female	3.92 (1.42)	.19	80.75	.546
	male	3.73 (1.66)		76.47	
Too much time investment needed	female	3.95 (1.68)	.22	81.54	.416
	male	3.73 (1.70)		75.76	
Lack of business idea	female	4.46 (1.59)	.24	81.22	.463
	male	4.22 (1.75)		76.05	
Currently good career entry opportunities for graduates	female	3.54 (1.42)	.28	83.07	.219
	male	3.26 (1.51)		74.37	

Source: Authors

Gender Differences in Entrepreneurial Self-efficacy

As presented in Table 3, women and men feel significantly different prepared by their studies in product-related and technical areas, $p \leq .001$ ($r = .333$), whereby women feel less prepared than men. All other criteria do not show statistical evidence in terms of gender differences in self-efficacy.

Table 3: Mann-Whitney U Test results for self-efficacy

		M (SD)	M _{fe} - M _{ma}	Mean Rank	p
Commercial area	female	3.23 (1.60)	.06	79.62	.764
	male	3.17 (1.59)		77.49	
Product-related and technical area	female	2.70 (1.25)	1.04	62.96	<.001*
	male	3.74 (1.59)		92.52	
Marketing	female	3.55 (1.80)	.07	80.75	.546
	male	3.48 (1.61)		76.47	
Soft Skills (presentation and negotiation skills and similar)	female	3.82 (1.32)	.17	75.79	.461
	male	3.99 (1.36)		80.95	
Legal area	female	3.14 (1.36)	.32	83.95	.143
	male	2.82 (1.38)		73.58	
Inter-disciplinary Know How	female	3.76 (1.17)	.20	83.02	.337
	male	3.56 (1.37)		75.32	
Practical experience (through orientation on the practice)	female	3.72 (1.40)	.02	79.03	.885
	male	3.74 (1.34)		78.02	

Source: Authors

Gender Differences in Entrepreneurial Education Preferences

Regarding entrepreneurial education preferences, there are partly gender differences in both curricular and extracurricular offerings, as illustrated in Table 4. Female students express a stronger desire for additional courses focusing on soft skills within the curricular framework, $p=.003$ ($r=.237$). Furthermore, gender-specific differences in curricular preferences occur in terms of seminars, related to marketing and sales, $p=.050$ ($r=.157$), with women displaying a greater interest in these topics compared to men. Variations in preferences for curricular seminars covering employee management are evident, $p=.014$ ($r=.196$), with women exhibiting a heightened interest in these areas, compared to men. Regarding extracurricular offers, females also exhibit higher intention to engage with soft skill seminars, $p=.007$ ($r=.218$), as well as exchange with existing companies and institutions $p=.035$ ($r=.169$).

Table 4: Mann-Whitney U Test results for entrepreneurial education preferences

		M (SD)	M _{fe} - M _{ma}	Mean Rank	p
Curricular offers					
Introductory and overview lectures	female	4.07 (1.31)	.08	79.22	.846
	male	3.99 (1.44)		77.85	
Soft Skills (presentation and negotiation skills and similar)	female	4.59 (1.47)	.65	89.49	.003*
	male	3.94 (1.53)		68.59	
Creating a business plan	female	3.95 (1.70)	.24	82.43	.294
	male	3.71 (1.58)		74.95	
Simulation games for starting a business.	female	3.84 (1.68)	.28	82.30	.311
	male	3.56 (1.72)		75.07	
Seminars on marketing and sales	female	4.23 (1.65)	.45	85.84	.050*
	male	3.78 (1.56)		71.87	
Seminars on financial management, financing, and liquidity planning	female	4.24 (1.65)	.39	84.30	.120
	male	3.85 (1.63)		73.27	
Seminars on employee management	female	4.30 (1.59)	.59	87.64	.014*
	male	3.71 (1.61)		70.25	
Seminars on organizational structure, company types, start-up types, legal aspects	female	4.00 (1.74)	.15	80.62	.571
	male	3.85 (1.71)		76.59	
Exchange with existing companies and institutions	female	4.07 (1.64)	.33	83.00	.229
	male	3.74 (1.70)		74.44	
Extracurricular offers					
Introductory and overview lectures	female	3.73 (1.56)	.49	85.24	.072
	male	3.24 (1.78)		72.41	
Soft Skills (presentation and negotiation skills and similar)	female	4.62 (1.32)	.69	88.61	.007*
	male	3.93 (1.62)		69.38	
Creating a business plan	female	4.23 (1.62)	.34	83.21	.207
	male	3.89 (1.71)		74.25	
Simulation games for starting a business	female	4.03 (1.70)	.41	83.62	.172
	male	3.62 (1.84)		73.88	

		M (SD)	$ M_{fe} - M_{ma} $	Mean Rank	<i>p</i>
Seminars on marketing and sales	female	4.20 (1.45)	.38	83.67	.167
	male	3.82 (1.67)			
Seminars on financial management, financing, and liquidity planning	female	4.03 (1.75)	.10	80.53	.588
	male	3.93 (1.64)			
Seminars on employee management	female	4.34 (1.62)	.32	83.94	.145
	male	4.02 (1.55)			
Seminars on organizational structure, company types, start-up types, legal aspects	female	4.20 (1.66)	.33	83.35	.194
	male	3.87 (1.66)			
Exchange with existing companies and institutions	female	4.69 (1.38)	.56	86.30	.035*
	male	4.13 (1.63)			

Source: Authors

Discussion

Theoretical Implications

The present research confirms findings from previous literature that entrepreneurial education should not be designed as “one-size-fits-all”, but should be gender-sensitive (Westhead & Solesvik, 2016; Wilson et al., 2007). Entrepreneurial education should acknowledge different entrepreneurial mindsets between female and male students in terms of entrepreneurial desirability (reasons for/against starting a business) and entrepreneurial feasibility (self-efficacy), leading to varying levels of entrepreneurial intention.

The finding that women attach greater importance to the perceived threat of impeding unemployment with regard to the desirability of starting a business can be interpreted in two ways. Firstly, it confirms a widely cited phenomenon in the literature that females are generally risk-averse towards entrepreneurship (Fossen, 2012), particularly when it comes to having low entrepreneurial intentions (Brandstätter, 2011). Coupled with two other results from the present study - that financial risk and responsibility are a more potent deterrents for female students than for male students - the argument for risk aversion is even more supported. However, a second,

alternative interpretation of the higher perceived threat of impending unemployment, along with financial risk and high responsibility, could be that women have more awareness about the necessity of a displacement event (negative information, event, displacement), as the Theory of Entrepreneurial Event suggests (Shapero & Sokol, 1982). This is a possibility not previously explored in empirical literature. Hence, the displacement event and its role in female entrepreneurship, in particular, is worth further exploration in future literature. This is probably the most important contribution to researching the gender gap through the lens of the Theory of Entrepreneurial Event.

Previous research into gender differences in entrepreneurial education does not differentiate between curricular and extracurricular offers, nor does it provide evidence of differences in terms of specific offers, needed by female and male students (Mozahem, 2021; Nowiński et al., 2019; Westhead & Solesvik, 2016). The present research closes this research gap and provides general insights that females are more interested in entrepreneurial education in general. Women are significantly more interested in developing soft skills, marketing and sales, and employee management skills as part of the curriculum, as well as soft skills and exchange with existing companies and institutions as extracurricular activities. This confirms previous findings in the literature that entrepreneurial education benefits more female than male students, as they use it to leverage change and break down societal barriers related to classical gender roles (van Ewijk & Belghiti-Mahut, 2019). Even small changes to entrepreneurial education, such as group size, can significantly affect entrepreneurial intention (Paunović & Bog, 2009). This needs to be considered for planning gender equitable entrepreneurship education which should explain desirability (demonstrate reasons for and against starting a business), and enhance self-efficacy (feasibility), thereby increasing ultimately entrepreneurial intent for all groups and all genders.

Practical Implications

The findings from the present study provide important practical implications for entrepreneurship educators, coaches, and mentors in a university context and beyond. The approach to entrepreneurship and consequently entrepreneurship education varies significantly between female and male students in several domains. Consequently, entrepreneurship education programs need to take into account these

differences and focus on developing the needed and preferred skills, while also addressing the need for mixed (cross-gender) entrepreneurial teams. It pertains not solely to entrepreneurs as individuals but also to entrepreneurial teams. A well-designed entrepreneurial education needs to answer and differentiate the following crucial points both for females as well for males: What are the reasons for/against starting a business? How can entrepreneurial self-efficacy be improved and in which areas? Should the education activities be rewarded with credits or some other form of monetary/non-monetary reward? What monetary/non-monetary incentives for young and aspiring entrepreneurs should be put in place to develop their sense of entrepreneurial self?

Conclusion

The current study addresses the gender gap in entrepreneurial education within a university context. This is an important and previously understudied topic, relevant to both the theory and practice of entrepreneurial universities and the third mission of the university. Designing entrepreneurial education at universities is confronted with a series of challenges, including those addressed in this research paper – namely, entrepreneurial desirability, feasibility, education preferences, and gender disparities. Gender disparities are important not only on an individual level but also on the level of group dynamics and in entrepreneurial teams. This is an important notion that needs to be considered both in terms of the limitations of the present study as well as a call on future research regarding the gendered perspective of entrepreneurship dynamics.

The present research deploys a Theory of Entrepreneurial Event Model for researching the gender gap in entrepreneurial education. This contributes twofold to the literature. Firstly, it confirms that it is a relevant and plausible model to research the gender gap in entrepreneurship education. Secondly, this theoretical framework provides a new perspective and insights into the much-cited female risk aversion in entrepreneurship. Female entrepreneurial intention differs from that of males in its greater consideration of entrepreneurial events as essential elements in potential entrepreneurial endeavors, whereas males may not prioritize this aspect. Therefore, it is not relevant to focus solely on ways to reduce female risk aversion in entrepreneurship. Instead, the focus should be on demystifying, inspiring,

and providing a path that leads from entrepreneurial intention to successful entrepreneurial endeavors.

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