

Article

Do Immigrant Entrepreneurs Have Natural Cognitive Advantages for International Entrepreneurial Activity?

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Abstract: Are entrepreneurs with an immigration background more willing to internationalize their entrepreneurial firms compared to their nonimmigrant peers? Previous research has already emphasized that immigrant entrepreneurs possess superior human resources and social capabilities—such as international experience, networks and language skills—that help them to better identify and evaluate international entrepreneurial opportunities. However, literature other than capability-based explanations is rare, and thus it is not yet understood in what sense immigrant entrepreneurs differ from other entrepreneurs in terms of their cognitive characteristics for international entrepreneurial activity. This study addresses this gap by involving a quantitative study of Berlin-based high-tech founding entrepreneurs to empirically investigate how immigrant entrepreneurs vary in their cognitive characteristics, and how this affects their intention to engage in international entrepreneurship. The findings show that immigrant entrepreneurs possess higher levels of proactive behavior, which lead to a more favorable evaluation of international business opportunities, and in turn positively affect the willingness to engage in international entrepreneurial activity. This contributes to a deeper understanding of immigrant entrepreneurs’ natural cognitive advantages and the role they play for entrepreneurial growth, success and national economic development.

Keywords: immigrant entrepreneurship; international entrepreneurship; migration; cognition

1. Introduction

International entrepreneurial intention (IEI), described as the willingness to actively exploit business opportunities abroad “in the race for new markets” [1] (p. 294), has been found to be an important predictor for international entrepreneurship (IE) [1–3]. Especially in an increasingly globalized world, IE is of growing importance and an indicator of entrepreneurial growth and national economic development [4]. However, Berlin-based entrepreneurial firms, accounting for one of the most important entrepreneurial ecosystems in Europe, have been found to be sluggish in terms of their IEI [5]. Hence, the understanding of factors that drive entrepreneurial internationalization is essential for national public policy makers.

In this vein, entrepreneurs with an immigration background are found to have superior capabilities and resources for IE [6], such as enhanced levels of international knowledge, language skills and cross-country relationships, which allow them to easily expand to foreign markets. Thus, several researchers have recognized immigrant entrepreneurship as an important determinant for entrepreneurial growth and economic development [7–10]. Saxenian [11], for example, found immigrant entrepreneurs to be the main drivers of the internationalization of Silicon Valley’s high-tech businesses. However, it is likely that there are more complex factors that account for this effect; research relating immigrant entrepreneurship to IE is still at its early stages [12], and has mostly been investigated from

a resource-based view, with less attention given to cognitive perspectives [6]. Given that cognitive characteristics play an important role in entrepreneurial decision making [13,14], this study employed a cognition-based view and anticipated that immigrant entrepreneurs not only differ in their resources and capabilities for IE, but also in their cognitive characteristics. More specifically, it is suggested that immigrant entrepreneurs have higher IEI due to higher levels in two cognitive characteristics that are essential determinants of IE, namely proactive behavior and favorable attitudes towards IE. Therefore, the research question is: “Why do immigrant entrepreneurs differ from other entrepreneurs in their levels of proactiveness and attitudes towards IE, and how does this affect their IEI?”

Drawing on a cognition-based framework, the roles of proactiveness and attitude towards IE were considered as mediators in the relationship between immigrant entrepreneurship and IEI. Proactiveness proposes future-related initiatives and decision making and has already been linked to entrepreneurial internationalization [15], while attitude towards IE captures the evaluation of international entrepreneurial behavior [2]. To empirically investigate how immigrant entrepreneurs differ from their peers in their levels of proactiveness and attitudes towards IE, a quantitative study of 59 Berlin-based high-tech founding-entrepreneurs was employed.

The results provided evidence that as well as possessing particularly strong IE capabilities and skills in human resources, immigrant entrepreneurs possess superior cognitive characteristics relevant for entrepreneurial growth and internationalization. Specifically, high levels of proactive behavior and favorable attitudes towards IE place international entrepreneurs in good positions from which to identify and evaluate international entrepreneurial opportunities, which in turn affects their willingness to actively engage in international business. These findings contribute to IE literature and immigrant entrepreneurship, and enhance the understanding of immigrant entrepreneurs as a valuable resource for entrepreneurial growth and success. To date, literature has rarely been focused on advantages of immigrant entrepreneurs; in particular, research of immigrant entrepreneurship related to entrepreneurial success and internationalization is in its infancy [8,12]. This study contributes to recent calls for a deeper understanding of immigrant entrepreneurs’ cross-border activities [12,16]. Additionally, the findings have implications for public and immigration policy by changing the roles immigrant entrepreneurs play in national economic development and IE.

The study is structured as follows: in a first step, the role of proactiveness and attitudes towards IE for IEI are described. Second, hypotheses are derived from the cognitive framework of need for cognition (NFC), followed by the methodology section where sampling is described, and the analysis conducted. Results are then presented, discussed and related to implications for theory and practice.

2. The Roles of Proactive Behavior and Attitude towards IE for the Formation of IEI

Previous research has already emphasized the importance of individual characteristics of the founding entrepreneur for entrepreneurial success [17] and IE [4,18,19]. Not surprisingly, well-established concepts in the IE literature like entrepreneurial orientation (EO) or a global mindset consist of cognitive elements [5].

The three dimensions of EO, namely risk-taking, innovativeness and proactiveness, were originally developed to investigate the drivers of entrepreneurial activity, but have also been applied to the field of IE since the birth of the research stream [20]. The EO dimensions are moreover included in the popular definition of IE offered by McDougall and Oviatt [21] (p. 903), which states that “International entrepreneurship is a combination of innovative, proactive, and risk-seeking behavior that crosses national borders and is intended to create value in organizations”. Thus, several studies using the dimensions of EO in an international context explicitly framed them as “international entrepreneurial orientation” [20]. This study focused explicitly on the role of the EO dimension proactiveness for the formation of immigrant entrepreneurs’ IEI. Proactiveness in an entrepreneurial manner can be described as a cognitive characteristic which results in future-looking actions and new opportunities [22–24], characterized by the search for new market opportunities and the willingness to actively exploit them [25]. Proactive individuals are described to “scan the environment for

opportunities, show initiative, and persevere in order to change things and take advantage from such change" [15] (p. 240). Thus, proactive behavior initiates innovative acts in order to be one step ahead of competitors, favoring entrepreneurial success and international performance [20]. Exhibiting proactive behavior helps to identify and exploit opportunities abroad [26]. Similarly, Frishammar and Andersson [27] found proactive behavior to be positively related to international performance.

Additionally, previous research highlights the role of a global mindset for IE, which is represented by an openness for and empathy towards different national contexts and cultures [28,29]. Thus, entrepreneurs who possess a global mindset are more likely to identify international market opportunities [30]. According to Nummela et al. [31] (p. 53) international entrepreneurship furthermore "refers to a manager's positive attitude towards international affairs, and also to his or her ability to adjust to different environments and cultures". Therefore, this study assumes that a global mindset is a prerequisite of a favorable attitude towards IE.

Attitudes are generally formed by a sum of beliefs about the outcomes of behavior [32] and are described as the "degree to which a person has a favorable or unfavorable evaluation of the behavior in question" [33] (p. 454). The more positive the evaluation of the behavior, the stronger the intention to engage in the behavior [34]. This relationship is also valid when investigating international entrepreneurial behavior. Previous research highlights the role of attitudes for international decision making [1,22,35], and has found that cognitive characteristics of the decision maker—such as international orientation, vision, values and psychic distance to foreign markets—shape international attitudes [22]. Furthermore, a favorable attitude towards IE is found to be a significant factor in entrepreneurs' decisions to internationalize their firms [31]. For the context of this study, the positive effect of a favorable attitude towards IE for the formation of IEI has already empirically been confirmed [1–3].

3. Theoretical Background and Hypothesis Development

3.1. NFC

NFC, described as "an individual's tendency to engage in and enjoy effortful cognitive endeavors" [36] (p. 306), is a cognitive factor related to proactive behavior [37] and attitude formation [38]. Scholars from the neighboring field of social psychology have already provided evidence that individuals differ in how they deal with activities, information and opportunities [38,39]. These differences in NFC are shaped by an individuals' current and past experience, and influence how they process information and engage in actions [38]. Individuals high in NFC are "more likely to organize, elaborate on, and evaluate the information to which they are exposed" [40] (p. 117), which leads to better judgement and attitude formation compared to those individuals low in NFC [38]. Additionally, individuals high in NFC tend to seek new information and opportunities, and prefer actions characterized by "novelty, complexity, and uncertainty" [41] (p. 1514). For example, Wu et al. [41] found NFC to be positively associated with innovative behavior and Curşeu and Jong [42] found individuals high in NFC to be embedded in more diversified and information-rich social networks. Furthermore, they tend to engage in challenging activities despite barriers [38], including entrepreneurship [37].

3.2. NFC and the Formation of Immigrant Entrepreneurs' IEI

Previous research on migrants has shown that they have a greater propensity to engage in entrepreneurial activity [43,44] and that they are more likely to identify opportunities than their nonmigrant peers [45]. Furthermore, immigrants are found to have unique personality characteristics, such as openness to experience [46], which lead to a different perception of the world [47]. Given that the cognitive process of opportunity recognition can be described "as efforts to make sense of signals of change (e.g., new information about new conditions) to form beliefs regarding whether or not enacting a course of action to address this change could lead to net benefits" [48] (p. 415), it is assumed that

immigrant entrepreneurs possess higher levels of proactiveness. This is supported by various studies that characterize immigrant entrepreneurs as a self-selected group which have already proactively left their home country to start new abroad [43,49,50]. Since migration and entrepreneurial activity are both characterized by uncertainty and the willingness to take risks, it is assumed that especially those “individuals seeking novelty, risk, and achievement might be more inclined to choose both behaviors” [43] (p. 389) and may be more likely to identify international business opportunities than their native peers [9].

Combining the aforementioned arguments, it is suggested that immigrant entrepreneurs differ in terms of their NFC and proactively respond to emerging opportunities, despite barriers and living conditions. This in turn has a positive impact on IEI. Therefore:

Hypothesis 1 (H1). *Proactiveness mediates the relationship between immigrant entrepreneurship and IEI.*

Individuals high in NFC have been found to better evaluate and recall information, leading to a more favorable attitude towards active behavior [38]. This is also assumed to be true for immigrant entrepreneurs. Due to their specific backgrounds and international experience, immigrant entrepreneurs have a natural global mindset, which allows them to better evaluate information related to IE [10]. Therefore, “immigrant entrepreneurs (compared to natives) often have better access to and understanding of public information relevant for international operations, use different techniques to search for information, understand deeper consumer needs in their country of origin and have more direct access to relevant transnational networks” [9] (p. 210). In short, immigrant entrepreneurs can better evaluate and recall the international information they are exposed to, leading to improved evaluation about foreign opportunities, and in turn to a higher attitude towards IE compared to native entrepreneurs.

Hence, it is suggested that the relationship between immigrant entrepreneurship and IEI is mediated by attitude towards IE; that is, immigrant entrepreneurs have a more positive attitude towards IE that, in turn, has a positive effect on IEI. Therefore:

Hypothesis 2 (H2). *Attitude towards IE mediates the relationship between immigrant entrepreneurship and IEI.*

Furthermore, it can be assumed that both mediators not only exert their effects individually but moreover are causally related. Previous research in the entrepreneurship field has already emphasized the association between proactiveness and the attitude towards IE. Acedo and Jones [15], for example, argue that proactive behavior leads to more positive attitudes towards international markets. Additionally, Nummela et al. [31] state that attitude is shaped by the proactive behavior and vision of the decision maker. The same association is expected for this context. Hence, it is hypothesized that proactiveness and attitude towards IE are causally related. Therefore:

Hypothesis 3 (H3). *The relationship between immigrant entrepreneurship and IEI is sequentially mediated by proactiveness and attitude towards IE.*

Combining the abovementioned argumentation, it is assumed that the effect of immigrant entrepreneurship on IEI is complex. The research model, based on a three-path mediation model [51], is presented in Figure 1.

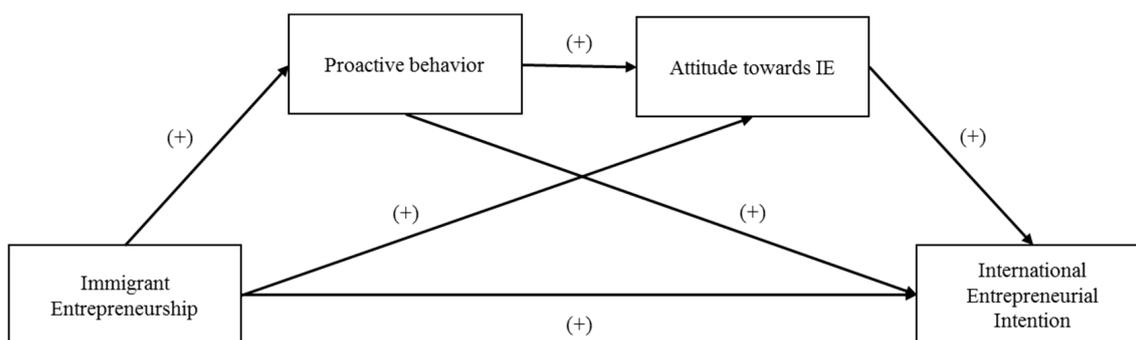


Figure 1. Path Diagram of Multiple Mediation Model. Note: Research model to explain the complex relationship between immigrant entrepreneurship and IEI. Research model with two mediators and interaction between mediators.

4. Methodology

4.1. Data

To understand how immigrant entrepreneurs approach IE, entrepreneurial firms were selected which are at early stages and thus strongly depend on the cognitive characteristics of their founding entrepreneur or founding team, compared to older firms which have a more stable organizational structure [30]. Thus, data were obtained from the high-tech incubation network of the Centre for Entrepreneurship at the Technical University of Berlin. 177 founding entrepreneurs from the network were approached by newsletter and individual emails in which the link to an English-language questionnaire was shared from September to December 2018. Through this, 66 responses were received, which corresponded to a response rate of 37%. The responses were further reduced to those entrepreneurs who were involved in “Total Early-Stage Entrepreneurial Activity” (TEA), which according to the definition of the Global Entrepreneurship Monitor consists of individuals who are actively setting up a business and those who own a newly established business less than 3.5 years old [52]. After excluding seven entrepreneurs who had already overcome the TEA stage, the analysis was based on a global sample of 59 responses.

Female participants made up 12% of the sample. The average age was 31 years, and 32% of the participants were considered as immigrant entrepreneurs.

4.2. Measures

To measure the dependent variable *IEI*, scales proposed by Felício et al. [30] were taken and adapted from firm level to the individual level. Thus, *IEI* was measured with five items of participants’ propensity to engage in IE ($\alpha = 0.77$).

The mediating variable ‘proactiveness’ comprises the willingness to act, and was measured with four items ($\alpha = 0.61$) proposed by Goktan and Gupta [53]. To measure the mediating variable ‘attitude towards IE’, scales proposed by Kautonen et al. [14] were taken and adapted from national to international context. Thus, to cover the respondents’ evaluation about IE, the wording “to start a business in the next 12 months” was replaced with “to start an internationally operating business in the future” ($\alpha = 0.90$).

For all above items, respondents indicated their level of agreement within a seven-point Likert scale ranging from totally disagree (=1) to totally agree (=7).

To capture migration background, the definition of Levie [44] was applied, which defines migrants as individuals who have emigrated from their home country (i.e., country of birth or nationality) to a different host country. Thus, to measure immigrant entrepreneurship, a dummy variable was created by asking two open questions. To get information about the current abode of the entrepreneurs, respondents were asked, “In which country are you currently based?”. Subsequently, “What is

your country of nationality?” was asked to indicate whether the entrepreneur had an immigration background. If the response of current abode differed from the country of nationality, the entrepreneur was labelled as an immigrant entrepreneur using a nominal scale (immigrant entrepreneur = 1).

In addition, control variables were included. First, it was controlled for gender, as men have been found to possess higher levels of EO [54] and furthermore have been found to identify international opportunities twice as often as their female counterparts [9]. Furthermore, it was controlled for age of the entrepreneur. All measures and Cronbach’s Alpha reliability estimates are presented in Appendix A.

4.3. Analysis

Due to the small sample size, the range of methods was restricted. Especially popular approaches like structural equation modeling do not lead to a good model fit when complex models are tested with a small sample size [55]. Furthermore, minding the shortcomings of the traditional Baron and Kenny approach to test mediation [56,57], this study followed recent recommendations for the use of the macro PROCESS for mediation analysis [58,59]. This nonparametric bootstrap extension of the Sobel test outlined by Preacher and Hayes (2004) has the advantage of isolating indirect effects as well as to detect serial mediation effects, thus enhancing the confidence of the statistical results via bias-corrected bootstrapped confidence intervals [59]. Previous studies have stated that the reliability in estimation is equivalent to that in structural equation modeling [58,60]. Due to its advances, the method has already been used to test mediation effects in an entrepreneurial context (e.g., [61,62]).

4.4. Results

Means, standard deviations (SDs) and correlations are provided in Table 1. Immigrant entrepreneurship correlated significantly with IEI ($r = 0.305$; $p < 0.05$) and its determinants (proactiveness: $r = 0.344$, $p < 0.01$; attitude: $r = 0.325$, $p < 0.05$), which indicates that there is a positive relationship between immigrant entrepreneurship and the propensity to become an internationally active entrepreneur. Similarly, both mediation variables were significantly and positively related to IEI (proactiveness: $r = 0.440$, $p < 0.001$; attitude: $r = 0.623$, $p < 0.001$). Demographic variables of age and gender did not significantly influence IEI. Furthermore, immigrant entrepreneurs did not significantly differ from nonimmigrant entrepreneurs when considering age and gender. The predictor variables did not correlate above 0.623. Furthermore, collinearity diagnostics showed that variance inflation factors were below 10 and the value of tolerance was above 0.1. Thus, multicollinearity did not bias the regression model [63].

Table 1. Correlations and descriptive statistics of measurement variables.

No.	Variables	Mean	SD	1	2	3	4	5	6
1	International entrepreneurial intention	5.15	0.99	1.000					
2	Proactiveness	5.75	0.72	0.440 ***	1.000				
3	Attitude towards IE	5.96	1.00	0.623 ***	0.384 **	1.000			
4	Immigrant entrepreneurship	0.32	0.47	0.305 *	0.344 **	0.325 *	1.000		
5	Age	31.31	5.18	0.129	0.036	0.152	0.058	1.000	
6	Gender (Female = 1)	0.12	0.33	0.080	−0.124	−0.048	0.095	0.170	1.000

Note: N = 59, * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed test).

The Preacher and Hayes [64] bootstrap approach allows researchers to isolate the indirect effects of both mediating variables, and allows further investigation of indirect effects resulting from a causal relation of these mediators in series [58]. Thus, 95% confidence intervals were calculated with 10,000 bootstrap samples utilizing the PROCESS Macro for SPSS.

Table 2 presents a confirmation of simple mediation effects. This finding shows that proactiveness and attitude towards IE, if applied separately, were in each case mediating the relationship between immigrant entrepreneurship and IEI. However, as this study proposes that both mediators are present in the same conceptual model, as shown in Figure 1, the mediating variables might have been impacted

by each other. Therefore, parallel mediation effects are presented in Table 3 which “enable researchers to probe different mediation theories simultaneously in a model” [58] (p. 79).

The results from parallel mediation showed that attitude towards IE exerted a positive indirect effect, as the confidence interval does not entail zero, which supported Hypothesis 2. However, mediation was not detected in the case of proactiveness, as zero is within the confidence interval of 95%. The results indicate that when employing parallel mediation, only attitude towards IE had a significant impact on IEI while the effect of proactiveness turned out insignificant. Therefore, Hypothesis 1 was rejected.

Table 2. PROCESS test for single mediation effects.

	Total Effect of X on Y	Effect of X on M	Direct Effect of X on Y	Partially Standardized Indirect Effect of X on Y	Standard Error	LL 95% CI	UL 95% CI
<i>Mediator Proactiveness</i>							
Immigrant entrepreneurship	0.5919 *	0.5207 **	0.3105				
Proactiveness			0.5406 **				
<i>Control</i>							
Age	0.0212	0.0067	0.0176				
Gender	0.1043	−0.3576	0.2976				
<i>Indirect effect</i>							
Proactiveness				0.2841	0.1332	0.0678	0.5878
<i>Mediator Attitude</i>							
Immigrant entrepreneurship	0.5919 *	0.7246 **	0.1633				
Attitude towards IE			0.5916 ***				
<i>Control</i>							
Age	0.0212	0.0282	0.0045				
Gender	0.1043	−0.3205	0.3696				
<i>Indirect effect</i>							
Attitude towards IE				0.4326	0.1825	0.1101	0.8199

Note: 10,000 bootstrap resamples, 95% CI, two-tailed test *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $p > 0.05$ n.s. X: Predictor variable (Immigrant entrepreneurship); M: Mediator variable; Y: Outcome variable (IEI).

Table 3. PROCESS test for parallel mediation.

	Total Effect of X on Y	Effect of X on M ₁	Effect of X on M ₂	Direct Effect of X on Y	Partially Standardized Indirect Effect(s) of X on Y	Standard Error	LL 95% CI	UL 95% CI
<i>Parallel mediation effects</i>								
Immigrant entrepreneurship	0.5919 *	0.5207 **	0.7246 **	0.0473				
Proactiveness				0.3176 *				
Attitude towards IE				0.5234 ***				
<i>Control</i>								
Age	0.0212	0.0067	0.0254	0.0043				
Gender	0.1043	−0.3576	−0.1681	0.3856				
<i>Indirect effects</i>								
Total					0.5496	0.2050	0.1791	0.9826
Mediator Proactive.					0.1669	0.0924	−0.0221	0.3467
Mediator Attitude IE					0.3827	0.1718	0.0896	0.7607

Note: 10,000 bootstrap resamples, 95% CI, two-tailed test *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $p > 0.05$ n.s. X: Predictor variable (Immigrant entrepreneurship); M₁: Mediator 1 (Proactiveness); M₂: Mediator 1 (Attitude towards IE); Y: Outcome variable (IEI).

As it was hypothesized that proactiveness and attitude are moreover causally related, serial mediation effects were tested. The findings presented in Table 4 show that proactive behavior leads to a more favorable evaluation of IE, which in turn increases IEI. Therefore, the relationship between immigrant entrepreneurship and IEI was sequentially mediated by proactiveness and attitude towards IE, supporting Hypothesis 3.

Table 4. PROCESS test for serial mediation effects.

	Total Effect of X on Y	Effect of X on M ₁	Effect of X and M ₁ on M ₂	Direct Effect of X on Y	Partially Standardized Indirect Effect(s) of X on Y	Standard Error	LL 95% CI	UL 95% CI
<i>Serial mediation effects</i>								
Immigrant entrepreneurship	0.5919 *	0.5207 **	0.5027	0.0473				
Proactiveness			0.4261 *	0.3176 *				
Attitude towards IE				0.5234 ***				
<i>Control</i>								
Age	0.0212	0.0067	0.0252	0.0043				
Gender	0.1043	−0.3576	−0.1681	0.3856				
<i>Indirect effects</i>								
Total					0.5496	0.2033	0.1791	0.9711
Mediator Proactiveness					0.1669	0.0913	−0.0222	0.3451
Mediator Attitude towards IE					0.2656	0.1680	−0.0601	0.6101
Serial Mediation					0.1172	0.1031	0.0028	0.3984

Note: 10,000 bootstrap resamples, 95% CI, two-tailed test *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $p > 0.05$ n.s. X: Predictor variable (Immigrant entrepreneurship); M₁: Mediator 1 (Proactiveness); M₂: Mediator 1 (Attitude towards IE); Y: Outcome variable (IEI).

5. Discussion

This study focused on the formation of IEI among native and immigrant entrepreneurs, revealing significant differences in the cognitive characteristics between the two groups of entrepreneurs. The findings show that immigrant entrepreneurs possess higher levels of IEI, consistent with prior research highlighting their enhanced potential for IE [6,7,10,11]. However, results show that this cannot be explained simply by their advanced capabilities and resources for IE, such as for example language skills [10] or international networks and experience [8]. Moreover, this study reveals that compared to their peers, entrepreneurs with an immigration background possess different cognitive characteristics related to IE.

Thus, this research provides evidence that not only capabilities and resources are playing a role in the formation of IEI, but also cognitive characteristics like proactiveness and attitude towards IE, accounting for complementary explanations besides the resource-based view. Therefore, the roles of proactiveness and attitude towards IE as mediators of the relationship between immigrant entrepreneurship and IEI were evaluated.

Parallel mediation analysis revealed that immigrant entrepreneurship impacted IEI through attitude towards IE. This finding shows that immigrant entrepreneurs have a more favorable evaluation of IE than their native peers. Thus, it may be expected that they possess a combination of a high NFC combined with superior international knowledge, leading to a global mindset and better evaluation of foreign markets, which in turn increases positive attitude towards IE. Immigrant entrepreneurs are more likely to recognize international opportunities due to superior access and evaluation of international information [9]. The role of proactiveness as a mediator of the link between immigrant entrepreneurship and IEI is more complex, and taken together with attitude towards IE, proactiveness loses its effect. This accounts for the essential role attitude towards IE plays in the formation of IEI [1]. This outcome also confirms the finding that proactiveness and attitude towards IE sequentially mediate the relationship between immigrant entrepreneurship and IEI, which could be confirmed by the data. Thus, immigrant entrepreneurs possess higher levels of proactiveness which positively affects positive attitudes towards IE and in turn IEI. This may be related to a higher NFC of immigrant entrepreneurs, which have been found to be particularly open to experience [46] and entrepreneurial action [43]. This proactive behavior of immigrant entrepreneurs is suggested to lead to a different and more favorable evaluation of entrepreneurial opportunities [47]. Furthermore, this finding confirms studies that have already suggested an association between proactiveness and attitude towards IE [15,31].

6. Conclusions and Implications

This study combined literature streams of IE and immigrant entrepreneurship by examining the link between immigration background and IEI. Therefore, a cognition-based lens was applied to investigate how immigrant entrepreneurs differ in the cognitive characteristics that drive IEI. Results from the research hold implications for theory and practice.

Firstly, this study contributes to theory as it expands the use of the concept NFC to an entrepreneurial context, and responds to the literature gap mentioned by Mensmann and Frese [37], i.e., that NFC has rarely been applied to the entrepreneurial context. Furthermore, this study lends support to the growing stream of literature that emphasizes the role of cognition for IE [1,2,5,15,26]. Specifically, this study examined the influence of proactiveness and attitude towards IE for the formation of IEI and provided insights about how they function in combination. Moreover, the findings provide an understanding about differences in cognitive characteristics needed for IE within the two groups of entrepreneurs.

Secondly, this study contributes to immigrant entrepreneurship literature by enhancing knowledge where immigrant entrepreneurs have natural cognitive advantages as entrepreneurs compared to their nonimmigrant peers. This study confirms previous studies' findings, i.e., that migrants have a greater propensity to engage in entrepreneurial activity and that they are more likely to identify opportunities than their nonmigrant peers [43]. In this vein, previous IE studies already challenged the necessity and barrier-based explanations of immigrant entrepreneurship [8,65] and focused on immigrant entrepreneurs with their superior capabilities and human resources for IE. This study complements existing literature by applying a cognition-based view [6] and responds to calls for a deeper understanding of immigrant entrepreneurs cross-border activities [12].

Finally, the study has practical relevance as well. First, the findings have implications for immigration policy by acknowledging immigrants' potential for entrepreneurial success and international growth. Identifying areas in which they have natural competitive advantages can support the social integration of immigrants and thus account for an efficient use of a country's human capital and national economic development [8]. Furthermore, the findings could help public policy makers to identify specific support and entrepreneurial training, which has the potential to reduce inequalities among entrepreneurs and thus contribute to Sustainable Development Goals [66]. Moreover, incentives for entrepreneurial diversity, such as for example a heterogenic and mixed team composition of immigrant and nonimmigrant founders, could prove beneficial for entrepreneurial growth and internationalization.

7. Limitations and Future Research

The study also has its limitations, which further research could aim to overcome. First, the data is self-reported and indicates a tendency for positive responses. This shows that the surveyed entrepreneurs have overestimated their cognitive characteristics, leading to a dataset that is slightly skewed from normal distribution [63]. Furthermore, the dataset is rather small and thus the choice of methods was limited. However, a nonparametric bootstrap test was used to ensure that the results were not biased.

Second, the study was drawn on Berlin-based high-tech entrepreneurs from the TU Berlin Centre for Entrepreneurship. In this context, several variables can account for a nested structure [67]. Thus, it might be expected that entrepreneurs belonging to the same founding team, incubator or city are more alike to each other than to entrepreneurs in other teams, incubators or cities. Furthermore, previous studies suggest that cognitive characteristics can also vary on the country-level, especially between developed and developing markets [5,68]. Therefore, care needs to be taken when generalizing the results.

Despite these limitations, the study has taken a step towards a deeper understanding on cognitive characteristics of immigrant entrepreneurs and their formation of IEI. Further research can complement

and verify the results by focusing on a different context and a larger sample size. Furthermore, qualitative analysis could be exploited to clarify the findings.

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Conflicts of Interest: The author declares no conflict of interest.

Appendix A

Table A1. Measures, Cronbach's Alpha and References.

<p><i>International entrepreneurial intention</i> (5 items, $\alpha = 0.77$) Scale: Totally disagree (=1)/Totally agree (=7) How well do the following statements on behavior describe you? 1. I think that internationalization is the only way to achieve the growth objectives. 2. I am willing to lead the enterprise into the international market. 3. I spend considerable amounts of time planning international operations. 4. I see the world as a single, vast market. 5. I see the world not only as a playground (i.e., a new market to explore) but also as a school (i.e., a source of new ideas and knowledge).</p>	Adapted from Felício et al. [30]
<p><i>Proactive behavior</i> (4 items, $\alpha = 0.61$) Scale: Totally disagree (=1)/Totally agree (=7) How well do the following statements on proactiveness describe you? 1. If I see something, I don't like I fix it. 2. No matter what the odds, if I believe in something, I will make it happen. 3. I love being a champion for my ideas even against others' opposition. 4. I am always looking for better ways to do things.</p>	Gupta and Govindarajan [54]
<p><i>Attitude towards IE</i> (6 items, $\alpha = 0.90$) Scale: Strongly disagree (=1)/Strongly agree (=7) Please rate the following statement based on the word pairs provided: "For me, taking steps to start an internationally operating business would be ..." 1. ... unpleasant/attractive 2. ... useless/useful 3. ... foolish/wise 4. ... negative/positive 5. ... insignificant/important 6. ... tiresome/inspiring</p>	Adapted from Kautonen et al. [14]
<p><i>Immigrant entrepreneurship</i> Scale: Yes (=1)/No (=0) Dummy variable created by the use of the following open questions: In which country are you currently based? What is your country of nationality?</p>	
<p><i>Demographics</i> What is your age in years? Which gender do you identify with?</p>	

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