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Are voluntary international migrants self-selected for entrepreneurship? An analysis of entrepreneurial personality traits

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ABSTRACT

In many countries, international migrants show a high tendency to become entrepreneurs. In the literature this has often been attributed to discrimination, ethnic networks, and sociodemographic differences. This paper examines a new explanation and argues that voluntary international migrants have a more entrepreneurial personality as a result of self-selection. An analysis of intentions, preparatory actions ($n = 1,385$) and long-term actions ($n = 360$) of skilled migrants and non-migrants confirms this hypothesis. It suggests that the relationship between voluntary international migration and entrepreneurship is mediated by a greater willingness to take risks and, to some extent, by a greater need for achievement.

1. Introduction

Across the world, international migrants display a remarkably high tendency to start new companies, in many cases higher than that of the native population (Fairlie & Lofstrom, 2015; Levie, 2007; Xavier, Kelley, Herrington, & Vorderwühlbecke, 2013). This has been associated with many positive outcomes such as innovation, job creation, and the reduction of social tensions (Baycan-Levent & Nijkamp, 2009; Fairlie & Lofstrom, 2015; Li, Isidor, Dau, & Kabst, 2018; Zhou, 2004). Given the economic and social impact and globally increasing migration figures, an understanding of the phenomenon's root causes appears essential. Yet the reasons behind the high prevalence of entrepreneurship among migrants are a subject of controversy. While prior research has identified important causes such as labor market discrimination and differences in social and human capital, recent reviews see "little convergence of findings" and insufficient attention being paid to theories from the domains of entrepreneurship and psychology (Dheer, 2018; p.604; Ma, Zhao, Wang, & Lee, 2013; Elo et al., 2018).

Against this background, the present paper explores a psychological explanation of migrant entrepreneurship: personality-based self-selection. It tests the hypothesis that voluntary international migrants are self-selected with respect to personality traits that make them more likely to start a business. Prior research has argued that individuals with high levels of skill and social capital are more likely to migrate, as they are better able to cover the costs of migration (Chiswick, 1999; Liebig & Sousa-Poza, 2004; Sanders & Nee, 1996). Extending this line of thought,

some scholars have speculated that this argument could also apply to personality, and that immigrants may be particularly willing to take risks, as is evident in their decision to migrate (Constant & Zimmermann, 2006; Neville, Orser, Riding, & Jung, 2014).

However, in spite of its intuitive appeal, empirical support for this proposition has so far been weak. Studies comparing personalities of immigrants and the host country population have produced mixed findings. For example, Barsky, Juster, Kimball, and Shapiro (1997) found higher levels of risk taking propensity among immigrants to the US than in the majority population, while studies in Germany and Israel found the exact opposite pattern (Bonin, Constant, Tatsiramos, & Zimmermann, 2009; Kushnirovich, Heilbrunn, & Davidovich, 2018). Unfortunately, such studies are not able (or designed) to test for self-selection (Liebig & Sousa-Poza, 2004). Differences between immigrants and the majority population can stem from a variety of sources other than self-selection, including preexisting cultural differences between populations, migration policy, or transformative experiences in the host country (Chiquiar & Hanson, 2005; Hofstede & McCrae, 2004; Liebig & Sousa-Poza, 2004).

Another group of studies investigated correlates between personality traits and migration intentions, finding positive associations between traits such as openness to experience and the intention to move abroad (Remhof, Gunkel, & Schlaegel, 2014; Van Dalen & Henkens, 2007). Unfortunately, none of these studies tested whether the traits subsequently also influenced entrepreneurship. Thus, even if one assumes that these intentions translate into actual migration and migrants are

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therefore favorably selected with respect to certain traits, it remains unclear whether these selection effects are substantial enough to promote entrepreneurship in the host country context. Migrants are often confronted with barriers in the host country, which can lead to heteronomy and limited choice (Bhugra, 2004; Zhou, 2004). In such situations, the effect of personality on behavior tends to be diminished (Mischel, 1973). Moreover, Kushnirovich et al. (2018) have argued that migrants are likely to seek “risk homeostasis” and limit risk-taking in the host country after already having taken the risk to migrate. In view of this, it is not surprising that Bonin et al. (2009) and Naude, Siegel, and Marchand (2017) concluded in a review of migrant entrepreneurship research that there is no theoretical or empirical support for an effect of personality.

This paper aims to contribute to this research by theoretically developing the personality-based self-selection hypothesis and testing it with a robust research design. It focuses on two personality traits: willingness to take risks and need for achievement. Building on entrepreneurial personality theory (Rauch and Frese, 2014; Chell, 2008; Kerr, Kerr, & Xu, 2018; Rauch & Frese, 2007), it argues that voluntary migrants are more likely to possess these traits due to self-selection, and that this subsequently leads to higher levels of entrepreneurship among migrants than among those who remain in the country of origin. In doing so, it focuses on voluntary international migrants, defined as individuals who relocate voluntarily to a country other than that of their usual residence, for a period of at least a year, for the purpose of seeking employment or self-employment.

The study tests these arguments with a novel design that overcomes the methodological limitations of earlier work. As recommended by Liebig and Sousa-Poza (2004) and Chiquiar and Hanson (2005) with respect to measuring self-selection, it studies a sample of migrants and non-migrants from one country of origin instead of comparing immigrants and the host country’s majority population. The study tests hypotheses with three types of variables: entrepreneurship and migration intentions, preparatory activities (measured in the country of origin) and long-term actions (measured 12 years later). This allows testing hypotheses with high internal validity (intentions, preparatory activities) and high external validity (long-term actions). In addition, unlike in earlier work, the measurement of the antecedent variable, personality, takes place already before the migration event, as is recommended for the testing of self-selection effects (Mokhtarian & Cao, 2008).

The results add to the growing body of literature on the drivers of migrant entrepreneurship (Dheer, 2018; Ma et al., 2013; Rath & Kloosterman, 2000) and provide first robust evidence that personality-based self-selection does indeed contribute to more entrepreneurship among migrants. They confirm this relationship on a number of levels (intentions, preparatory activities, long-term actions) and in sub-samples of long-term and permanent international migrants as well as return migrants. The latter type of migrant, returning to the country of origin after having lived and worked abroad, is of particular interest, as return migrant entrepreneurship is associated with positive development effects in the countries of origin, in particular in the global south (Ammassari, 2004; Batista, McIndoe-Calder, & Vicente, 2017; Demurger & Xu, 2011; Lu et al., 2017). Yet the roots of this type of migrant entrepreneurship are still little understood, which has invited intense discussion and skepticism about the significance of this phenomenon (Naude et al., 2017; Wahba, 2015). Results thus help to extend our understanding of the drivers of migrant entrepreneurship and return migrant entrepreneurship. They also offer some contributions to other areas of research, such as host country integration (Cerdin, Diné, & Brewster, 2014; Zikic, Bonache, & Cerdin, 2010), as well as implications for managerial and policy practice. Further details are provided in Sections 6.2, 6.3 and 6.4.

The remainder of the paper is structured as follows: Section 2 provides a brief review of the literature on the drivers of migrant entrepreneurship, while Section 3 introduces entrepreneurial personality theory as a theoretical basis and formulates three hypotheses. Section 4 outlines the methodology used to test these hypotheses, whereas Section

5 presents the results. These are then discussed in Section 6. Finally, Section 7 contains concluding remarks on the paper’s wider relevance.

2. Literature review: Drivers of migrant entrepreneurship

In order to situate the study in the existing body of knowledge, this section first provides a brief review of research on migrant entrepreneurship with respect to its economic effects and drivers.

Over the last few years, scholarly interest in the entrepreneurial activity of international migrants has increased across disciplines including sociology, labor economics, and management (Aliaga-Isla & Rialp, 2013; Dheer, 2018). These streams of research have identified several beneficial effects of migrant entrepreneurship. For migrants, entrepreneurship offers a more viable path to economic integration than employment through the labor market (Constant & Schultz-Nielsen, 2004; Fairlie & Lofstrom, 2015). Migrant entrepreneurship has also been associated with transgenerational benefits since many entrepreneurs invest in building their children’s education (Sanders & Nee, 1996; Zhou, 2004). Host country economies profit from the high rate of self-employed immigrants too, as migrant businesses create a considerable number of job opportunities, increase tax revenues, and introduce innovative ideas and products to the market (Baycan-Levent & Nijkamp, 2009; Kerr & Kerr, 2016; Li et al., 2018). Another common observation in this line of research is that the proportion of migrants who engage in entrepreneurship tends to be high, in many countries even higher than among the native population (Fairlie & Lofstrom, 2015; Vandor & Franke, 2018; Xavier et al., 2013). The pattern has been confirmed for different types of entrepreneurship, including technology start-ups (Wadhwa, Saxenian, Rissing, & Gereffi, 2007), highly successful enterprises (Dalziel, 2008), and for migrants who return to their countries of origin (Lu et al., 2017).

Taken together, the benefits and high prevalence of entrepreneurship among international migrants beg the question of why so many choose to start a business. Prominent among the early answers provided by the literature was the argument that disadvantages in the labor market and discrimination push migrants to become entrepreneurs (Bonacich, 1973). Setting up a business can thus be a reaction that allows immigrants to find (satisfactory) employment in spite of these obstacles (Aldrich & Waldinger, 1990; Bonacich, 1973). Another contributor to migrant entrepreneurship lies in the social networks of some international migrants (Aldrich & Waldinger, 1990; Sanders & Nee, 1996). Such networks provide access to financial capital, knowledge and human resources, all of which are vital for a new business (Light & Bonacich, 1988; Sanders & Nee, 1996). Their embeddedness in a particular ethnic context, sometimes reinforced by residential co-location, further facilitates the access to these resources (Portes & Sensenbrenner, 1993; Zhou, 2004). Moreover, ethnic residential concentration can create opportunity structures that are more recognizable and favorable to migrant entrepreneurs (Aldrich & Waldinger, 1990). Finally, migrants may differ from the native population with respect to certain individual characteristics that promote entrepreneurship. In some countries, for example, the human capital, age and gender composition of migrants’ contributes to higher levels of business formation (Dheer, 2018). Recent work has also argued that cognitive abilities such as creativity and opportunity recognition capabilities can increase in the process of migration and thus foster entrepreneurship (Lorenz, Ramsey, & Richey, 2018; Vandor & Franke, 2016).

Despite this impressive body of research, reviews have also highlighted noteworthy challenges. The discourse is organized according to different, often unconnected research fields, which has led to fragmentation and inconsistent findings with regard to the drivers of migrant entrepreneurship (Dheer, 2018). Many authors have also pointed out that the dominance of sociological theory, along with a narrow understanding of migrant entrepreneurship as an ethnic phenomenon, have meant that the literature does not “include the person behind the entrepreneur” and ignores insights from the fields of entrepreneurship

and psychology (Elo et al., 2018, p.363; Aliaga-Isla & Rialp, 2013; Dheer, 2018; Rath & Kloosterman, 2000). This is particularly true for the role of personality, which is a key theoretical perspective in mainstream entrepreneurship research, but largely absent from research on migrant entrepreneurship (Aliaga-Isla & Rialp, 2013; Elo et al., 2018).¹

3. Theoretical underpinnings and hypothesis development

This section develops three hypotheses on the role of personality in migrant entrepreneurship. It begins by examining the theoretical grounds for the personality-oriented approach underlying these hypotheses: entrepreneurial personality theory. It then goes on to present hypotheses with regard to two personality characteristics, which, so it is argued, are common to voluntary international migrants and entrepreneurs: willingness to take risks and need for achievement.

3.1. Entrepreneurial personality theory and self-selection

Human personality is an important influence in many life and work decisions. Defined as the disposition to exhibit a certain kind of cognitive and behavioral response across different situations (McCrae & Costa, 1999), personality affects a wide range of choices, from financial investments to the choice of a profession (Barsky et al., 1997; Lent, Brown, & Hackett, 1994). In the context of entrepreneurship, personality is most commonly conceptualized as a set of traits. A personality trait represents a single dimension of personality that is predictive of a particular type of behavior, consistent across situations and stable over time (Chell, 2008; Rauch & Frese, 2014; Roberts & DelVecchio, 2000). In line with models of person-environment fit (Chatman, 1989; Lent et al., 1994), entrepreneurial personality theory assumes that starting and managing a new business venture requires the entrepreneur to fulfill a number of specific tasks and work roles, such as innovator, risk-taker, relationship builder, or goal achiever (Markman & Baron, 2003; Zhao, Seibert, & Lumpkin, 2010). Personality is expected to impact on entrepreneurship when individuals have: (i) expectations that becoming an entrepreneur will provide access to these tasks and roles (ii), a personality-based preference for these tasks and roles; and, (iii), the liberty to align their career choices with their preferences (Rauch & Frese, 2014, Markman & Baron, 2003; Rauch & Frese, 2007; Zhao et al., 2010).

Studies into the personality of entrepreneurs typically focus on narrow, “proximal” personality traits such as need for achievement or willingness to take risks. This approach differs from the distal trait models frequently used in psychological research, such as the Big Five Factor model (McCrae & Costa, 1999), but offers the advantage that the tasks and roles of entrepreneurs can be better matched by such narrow traits (Rauch & Frese, 2007). As Rauch and Frese (2007, 2014) highlight, this circumvents the problem that Big Five factors can conceal the predictive validity of more specific traits, when only certain facets of a Big Five trait exert influence on entrepreneurship. The present paper follows this argument and conceptualizes personality as a set of proximal traits.

Research into entrepreneurial personality has identified many proximal traits that predict entrepreneurial action, including willingness to take risks, need for achievement, internal locus of control, and others (Kerr et al., 2018; Rauch & Frese, 2007; Stewart & Roth, 2007; Zhao & Seibert, 2006). Out of these numerous traits, this study focuses on two: willingness to take risks and need for achievement. The first reason for this choice is that the literature regards these two traits as central. It is true that entrepreneurship researchers have not agreed on a definitive list of key entrepreneurial personality traits – and probably never will. However, willingness to take risks (WTR) and need for achievement

(nAch) have been integral parts of virtually all such attempts, including the “Giessen-Amsterdam-Model” (Rauch & Frese, 2014), the “Big Three” (Chell, 2008) and others (Frank, Lueger, & Korunka, 2007; Kerr et al., 2018; Zhao & Seibert, 2006). They reflect two important characteristics of the entrepreneurial work environment: high levels of risk and the necessity to strive for high performance (Markman & Baron, 2003; McClelland, 1965). Furthermore, unlike that of other traits, the roles of WTR and nAch have been studied extensively in the context of entrepreneurship, receiving robust empirical support (Brandstätter, 2011; Kerr et al., 2018; i.a.). Finally, and most importantly, the situational characteristics reflected in these traits can also be associated with the experiences of voluntary international migrants, as will be discussed below. Consequently, these two traits are also likely to exert an influence on voluntary international migration and thus contribute to the self-selection of individuals with an entrepreneurial personality.

3.2. Hypothesis 1: Voluntary international migration is associated with entrepreneurship

This first hypothesis of this model is not novel. As described in Section 2, a large body of research has associated voluntary international migration with increased levels of entrepreneurship. The present study aims to replicate this finding, albeit – as will be explained in the following – for reasons very different from those articulated in prior work. I therefore formulate the following (auxiliary) hypothesis.

Hypothesis 1. Voluntary international migration is associated with entrepreneurship.

3.3. Hypothesis 2: The mediating role of willingness to take risks

The central idea of this study is that individuals with certain personality traits are more likely to migrate, and that these personality traits also make them more likely to start a business as migrants. This means that the frequently observed relationship between voluntary international migration and entrepreneurship is partially explained (i.e. mediated) by personality traits that are more pronounced among voluntary migrants due to self-selection. To develop a mediation hypothesis for willingness to take risks, two arguments need to be combined: first, it is argued that self-selection into migration is more likely for individuals with higher levels of willingness to take risks (WTR). Self-selection thereby describes the tendency of individuals to select into situations that fit their preferences and personality (Chatman, 1989; Lent et al., 1994). It leads to the outcome that the pool of individuals taking this choice (in this case: migrate) systematically differ from those who do not take the choice (in this case: remain in the country of origin) with respect to these characteristics (Lent et al., 1994; Liebig & Sousa-Poza, 2004). Second, it is discussed why willingness to take risks is likely to exert an effect on entrepreneurship.

The experience of international migration has often been associated with risk. Successive studies have shown that international migrants experience structural disadvantages in the host country labor market owing to their lack of locally relevant human capital (e.g., skills and qualifications acknowledged by employers), social capital, and knowledge of the institutional landscape (Aldrich & Waldinger, 1990; Al Ariss, 2010; Zikic et al., 2010). These challenges are often exacerbated by discrimination and xenophobia (Al Ariss, 2010; Bonacich, 1973; Zschirnt & Ruedin, 2016). As a result, the situation of immigrants is characterized by several risks: the risk of unemployment, the risk of lower earnings, and the risk of having to work in positions for which they are over-qualified (Borjas, 1994; Eurostat, 2018).

In addition to such material risks, international migrants are exposed to those of experiencing social and psychological loss. The many challenges of relocation and adjustment, together with the experience of an unfamiliar, potentially unwelcoming cultural context, have been associated with stress and depression (Bhugra, 2004; Dalziel, 2008).

¹ In a systematic review of 45 peer-reviewed articles on migrant entrepreneurship, Aliaga-Isla and Rialp (2013) identify 30 different theory bases in the literature, none of which refers to personality. See also Ma et al. (2013) for similar findings in a review of over 400 journal articles.

Adjustment to the new context can also pose challenges to migrants' identities, requiring them to evaluate their newly acquired "foreignness" and cope with the imminent threat of their previous status and professional identity being devalued (Zikic & Richardson, 2016; Zikic et al., 2010). While these difficulties are often not fully appreciated prior to migration (Cerdin et al., 2014; Zikic & Richardson, 2016), empirical studies have suggested that many emigrants do foresee some of the risks with respect to employment and acculturation in the host country already before migration (Mähönen & Jasinskaja-Lahti, 2013; Van Dalen & Henkens, 2012). Given this, it appears plausible that those who decide to migrate will have higher WTR than those who do not.

Risk-taking is also strongly associated with entrepreneurship. Since the early work of Knight (1921), risk has been recognized as a key feature of business venturing. Operating in a nascent organization, entrepreneurs must work with limited resources, untested product offers and questionable access to markets. This makes them vulnerable to failure (Markman & Baron, 2003). Depending on context, industry and research method, three-year survival rates of start-ups have been found to range from 50% to 70%, with only 20 to 50% surviving five years (Delmar & Shane, 2004; Fairlie, Morelix, Tareque, Russell-Fritch, & Reedy, 2016). In addition to the threat of financial loss, these data imply that an entrepreneur faces also psychological and health risks (De Mol, Ho, & Pollack, 2018; Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Most individuals who consider becoming entrepreneurs are familiar with these dangers and know that a large share of new ventures fail (Ucbasaran et al., 2013). Hence, it has been argued that individuals with high WTR are more likely to start a business (Baron, 2007). Empirical studies have supported this assumption and identified WTR as a good predictor of entrepreneurial intentions (Lüthje & Franke, 2003) and actions (Kerr et al., 2018; Rauch & Frese, 2007; Zhao et al., 2010).

Taken together, it can be expected that WTR mediates the relationship between voluntary international migration and entrepreneurship. Because of the various risks associated with migration discussed above, individuals who decide to migrate will have higher levels of WTR than those who do not migrate. These higher levels of WTR among voluntary international migrants can then be expected to lead to more entrepreneurship in this group. On that basis, I formulate the following hypothesis.

Hypothesis 2. The relationship between voluntary international migration and entrepreneurship is mediated by willingness to take risks, in the sense that a) voluntary international migration is associated with higher willingness to take risks and b) willingness to take risks is associated with higher levels of entrepreneurship.

3.4. Hypothesis 3: The mediating role of need for achievement

Building on the same logic as for willingness to take risks, it is argued that the relationship between voluntary international migration and entrepreneurship is also mediated by need for achievement. Again, two arguments are combined in this section: on one hand, I argue that need for achievement (nAch) is higher among voluntary international migrants due to self-selection, on the other hand, that nAch is likely to increase entrepreneurship.

To begin, international migration is not only associated with risks; it also represents an environment compatible with the preferences of individuals with high need for achievement (nAch). Such individuals set, and strive to reach, challenging goals to demonstrate their ability and competence (McClelland, 1961). They are more persistent in pursuing goals and better able to cope with stress when confronted with adversity (Wu, Matthews, & Dagher, 2007). Such a mindset is likely to be helpful, even essential, in dealing with the many issues faced by international migrants, such as administrative hurdles, socio-cultural adjustment, and the above-mentioned risks of discrimination and psychological loss (Al Ariss, 2010; Bhugra, 2004; Cerdin et al., 2014; Zikic & Richardson, 2016). As Zikic et al. (2010) found in a study of qualified immigrants,

respondents with a higher motivation to succeed and to take advantage of opportunities are more likely to adapt embracing and proactive strategies to overcome hurdles. At the same time, the promise of improved financial and material wellbeing, a prominent motive for voluntary migration (Borjas, 1994; Massey et al., 1993), probably looms larger for high-nAch individuals, who often have a relatively strong desire for financial and professional success (McClelland, 1961, 1965, Baruch, O'Creavy, Hind, & Vigoda-Gadot, 2004).

Here, it is important to reiterate that self-selection depends on a realistic prior assessment of the environmental characteristics before the decision to migrate is made. Prior research provides support for this view, suggesting that many emigrants anticipate not only the challenges ahead but also at least some of the financial opportunities afforded by migration (Cerdin et al., 2014; Mähönen & Jasinskaja-Lahti, 2013; Van Dalen & Henkens, 2012). Moreover, research on migration and personality indicates a link between nAch and the migration intentions of students (Boneva et al., 1998; Remhof et al., 2014). I therefore argue that individuals with high nAch will be more likely to migrate.

Turning to the second part of the argument, I contend that nAch has a positive influence on the decision to start a business. Founding a company allows entrepreneurs to pursue their "dream and will to establish a private empire" (Schumpeter, 1912: 138), and gives them the chance to perform challenging tasks, work autonomously and gain financial rewards (Hisrich & Peters, 1995; Markman & Baron, 2003). At the same time, entrepreneurship has become a recognized and reputable career choice in most countries of the world (Bosma & Kelley, 2019). Together, these arguments suggest a comparatively high fit between nAch and entrepreneurship. The empirical evidence is not fully conclusive (Hansemark, 2003), but meta-analyses show that most studies have generally supported the notion that achievement-oriented individuals are more likely to choose entrepreneurial careers (Collins, Hanges, & Locke, 2004; Rauch & Frese, 2007; Stewart & Roth, 2007). In sum, it can be concluded that a higher level of nAch among those who decide to migrate is likely to mediate the relationship between voluntary international migration and entrepreneurship. Hence the third hypothesis is:

Hypothesis 3. The relationship between voluntary international migration and entrepreneurship is mediated by need for achievement, in the sense that a) voluntary international migration is associated with higher need for achievement, and b) higher need for achievement is associated with higher levels of entrepreneurship.

The relationship between the hypotheses formulated in this section is illustrated in Fig. 1. It must be stressed that this framework does not posit that voluntary international migration causes higher WTR and nAch, but that international voluntary migrants have higher levels of these traits due to self-selection into migration. In doing so, the model follows the example of other research that attempts to identify those characteristics of migrants which explain their engagement in entrepreneurial behavior (Fairlie & Lofstrom, 2015). Choosing to become an international migrant is thus defined as an independent variable, and personality as a mediator of its influence on entrepreneurship. Research in migrant entrepreneurship and in other domains has used similar approaches, for example to analyze personality as a mediator between immigration generational status and entrepreneurial intentions (Dheer & Lenartowicz, 2020) or social capital and achievement (Yuan & Ngai, 2016).

4. Methodology

This section describes the study conducted to test the hypotheses set out in the previous section. After explaining how the data was collected, I define "voluntary international migration" and explain how it was operationalized. Finally, I discuss the features of the sample and the instruments used to measure the study variables.

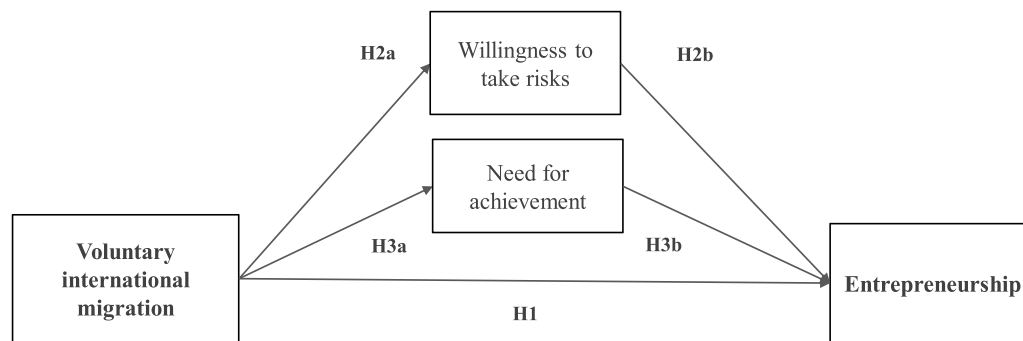


Fig. 1. Framework of hypotheses.

4.1. Data collection

The data on which this study is based are drawn from two complementary sources. The first is an online survey conducted in June 2007 (time T1). Using the mailing lists of two major Austrian universities, namely Vienna University of Economics and Business and Vienna University of Technology, it was sent to an estimated 14,790 undergraduate and graduate students. To encourage participation, each respondent could take part in a raffle offering six cash prizes, 60 vouchers for a gym and 100 tickets for a concert of the author's own rock band. The biasing effect of these prizes is estimated to be low, as 85% of the prizes went uncollected, including two cash prizes and virtually all concert tickets. The survey sought information about respondents' demographic characteristics, personalities, intentions to emigrate and to start companies as well as any preparations they had made to carry out such plans plus. It was completed by 1,659 respondents, yielding a response rate of 11.2%. A comparison of early and late respondents did not indicate any significant differences in the independent and dependent variables that would point to a non-response bias (Armstrong & Overton, 1977).

In April 2020 (time T2), a second wave of data was collected by searching for profiles of T1 respondents on the two most commonly used professional social networks in Austria, LinkedIn and XING. All entries were screened for entrepreneurship and migration activities in the 12-year time span between T1 and T2 (details see below). The use of such data sources has been recommended for research on careers, as they are less prone to researcher intervention or hindsight bias than survey data (Case, Gardiner, Rutner, & Dyer, 2012; Platanou, Mäkelä, Beletskiy, & Colicev, 2018). They are especially well suited to the purposes of this study since international relocations can otherwise make it difficult to follow subjects over a long period of time. Of the 1,659 T1 respondents, 695 had supplied an email address including their full name, which was used to search publicly shared information on LinkedIn and XING. Demographic information such as gender, age and place of study were used to corroborate the validity of each entry (Case et al., 2012). When a case could not be identified, the search was expanded to general search engines. Moreover, each case was investigated by two coders. Of the 695 T1 respondents that had provided a full name, 471 were identified on professional social media and 428 of these included comprehensive information about their activities between T1 and T2 in their profiles. In order to control for systematic differences between the T1 and T2 samples, mean comparisons were conducted for all independent and control variables between the T1 and T2 samples. Analyses showed little difference between the two samples, with the average effect size of differences calculated as Cohen's d reaching 0.0827 (Appendix A).

4.2. Definition and measures of voluntary international migration

In this study, voluntary international migration (VIM) is defined as the voluntary relocation of a person to a country other than that of her or his usual residence for a period of at least a year (so that the country of destination effectively becomes her or his new country of usual

residence) for the purpose of seeking employment or self-employment. This definition corresponds with the frequently used recommendation of the United Nations (1998) for defining long-term migration, but specifies two aspects more narrowly. First, since a certain degree of autonomy in decision-making is indispensable for the process of self-selection (Lent et al., 1994), it was amended to focus only on voluntary migration. The definition thus excludes forced migration, such as displacement in the course of wars or natural catastrophes. A second amendment places emphasis on individuals who pursue employment or self-employment in their country of destination and thus excludes types of international migration like study visits, exchange terms and holidays, which are typically not the focus of migrant entrepreneurship studies.

To enable a robust test of the hypotheses, the concept of VIM was operationalized in three complementary ways.

- (i) **Migration intention:** In line with earlier work on international migration (e.g., Remhof et al., 2014; Van Dalen & Henkens, 2007), one measure used an ex-ante perspective, being based on respondents' general intention to emigrate in the future. Using a survey question from Burda, Härdle, Müller, and Werwatz (1998), participants were asked in the T1 survey whether they were "considering living and working outside Austria in the course of their life". Answers were provided on a 7-point scale ranging from 1 ("does not apply at all") to 7 ("applies fully"). Two variants of the question specifying the duration of emigration as "up to 5 years" or "more than 5 years" were also included for robustness checks.
- (ii) **Preparatory action:** Another item in the T1 survey assessed whether respondents had already undertaken steps towards implementing their intention to migrate. In line with Van Dalen and Henkens (2007), respondents were asked to indicate their degree of agreement, on the same 7-point scale as for intentions, with the statement: "I have already taken the first steps towards living and working outside Austria (e.g., written applications, searched for a flat abroad, done research on required administrative formalities)".
- (iii) **Long-term action:** Finally, T2 biographical data derived from two professional social networks (XING and LinkedIn) and web searches were used to generate an additional measure. This binary variable indicated whether or not the person concerned had lived and worked outside Austria for at least 12 months between T1 and T2. The variable was coded by two independent raters who, after the first round, reached acceptable levels of agreement (Cohen's $\kappa = 0.58$). Subsequently, debatable cases were revisited and discussed until full agreement was reached.

Additional coding of the long-term action variable also allowed to differentiate between two groups of voluntary international migrants: *permanent migrants*, who were still living and working abroad at the time of measurement (T2); and *return migrants*, who had lived and worked

Table 1
Descriptives and correlations.

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Gender	0.57	0.50																			
2. Age	24.47	4.43	0.11**																		
3. Disposable income	408.19	269.78	-0.09**	0.36**																	
4. Number of children	0.07	0.35	0.01	0.42**	0.16**																
5. Raised abroad	0.04	0.21	0.07**	0.05	-0.01	0.05															
6. Entrepreneurship: education	0.19	0.39	-0.08**	0.07**	0.06*	0.02	0.03														
7. Entrepreneurship: prior experience	0.10	0.30	-0.19**	0.32**	0.21**	0.19**	0.02	0.07*													
8. Willingness to take risks	5.02	1.00	-0.19**	0.09**	0.13**	0.04	0.05	0.13**	0.15**												
9. Need for achievement	5.28	1.02	-0.09**	-0.11**	0.02	-0.02	0.03	0.11**	0.06*	0.38**											
<i>Voluntary international migration</i>																					
10. Intention	5.86	1.66	-0.07**	-0.01	0.03	-0.04	0.01	0.05	0.02	0.33**	0.21**										
11. Preparatory action	2.00	1.74	-0.09**	0.04	0.12**	-0.02	0.02	0.05	0.06*	0.25**	0.14**	0.20**									
12. Long-term action	0.26	0.44	-0.11*	-0.09	0.08	-0.07	0.06	0.06	0.02	0.20**	0.19**	0.17**	0.25**								
<i>Entrepreneurship</i>																					
13. Intentions	0.50	0.29	-0.26**	0.09**	0.10**	0.09**	0.05*	0.18**	0.33**	0.36**	0.27**	0.09**	0.10**	0.03							
14. Preparatory action	1.65	1.47	-0.19**	0.19**	0.20**	0.15**	0.01	0.12**	0.49**	0.19**	0.09**	-0.01	0.18**	0.01	0.50**						
15. Long-term action	0.34	0.76	-0.06	0.05	0.11*	-0.05	0.02	0.07	0.32**	0.23**	0.08	0.06	0.00	0.22**	0.23**	0.24**					
16. Long-term action binary coding	0.24	0.43	-0.02	0.06	0.12*	-0.04	-0.02	0.07	0.32**	0.21**	0.05	0.04	-0.06	0.17**	0.26**	0.23**	0.81**				
17. Inverse Mills ratio: email	-0.68	0.03	-0.53**	-0.15**	0.30**	0.08**	-0.19**	0.62**	0.21**	0.16**	0.16**	0.05	0.07**	0.11*	0.25**	0.23**	0.11*	0.10			
18. Inverse Mills ratio: social networks	-0.74	0.03	-0.68**	0.02	0.19**	0.10**	-0.07**	0.59**	0.39**	0.22**	0.16**	0.06*	0.09**	0.14**	0.35**	0.31**	0.18**	0.17**	0.82**		
19. GDP per capita	47071.28	11943.96	-0.04	-0.01	-0.09	0.01	-0.04	-0.09	0.03	-0.10	-0.03	-0.05	-0.10	-0.15**	0.00	0.01	-0.10	-0.08	-0.08	-0.03	
20. Entrepreneurial activity	9.15	2.16	0.04	0.04	-0.05	-0.01	-0.06	-0.01	0.05	-0.02	-0.05	-0.01	0.00	-0.33**	0.00	0.04	0.01	-0.02	-0.02	-0.02	-0.14**

n = 1,385 for variables 1-11, 13, 14; n = 360 for variables 12, 15-20; p: * < 0.05, ** < 0.01. Gender: 0 = male, 1 = female

abroad for at least 12 months but later returned to their country of usual residence (see analyses for these sub-samples in 5.3.1 and 5.3.2).

4.3. Sample characteristics

Following the exclusions described in Section 4.2, the final T1 sample consisted of 1,385 cases and the T2 sample of 360 cases. The gender breakdown of respondents was 57% female to 43% male, while the average ages of T1 and T2 respondents were 24.5 and 35.5 years, respectively. At T1, the majority (90.6%) were enrolled at Vienna University of Economics and Business, another 7.6% at Vienna University of Technology; 1.7% did not indicate their university affiliation. The most frequent major fields of study were business administration (35.4%), international business administration (26.1%), business and law (9.2%), and business education (4.5%), while 88.9% of students were enrolled in Bachelor or other undergraduate programs, 5.6% in Master programs and 5.5% in doctoral programs.

Of the T2 sample of 360, 95 cases (26.4%) have in fact lived and worked abroad for at least one year between T1 and T2 and are therefore understood to be international voluntary migrants. Within this group, 53.7% of respondents emigrated permanently (i.e. were still living abroad at the time of T2) and have spent an average of 7.04 years (median: 7.5 years) living and working outside of Austria. Another 46.3% worked abroad for at least one year but later returned to Austria. On average, these return migrants lived and worked abroad 3.08 years (median: 2.62 years). These durations are comparable to those recorded in other studies of migrant entrepreneurship and return migrant entrepreneurship (e.g., McCormick & Wahba, 2001; Neville et al., 2014). The rest of the sample served as comparison group. It comprised of 265 long-time Austrian residents who also lived and worked in Austria between T1 and T2 and did not leave the country to live and work abroad at any time (89.8% of this group) or only for a period of time of less than 12 months (10.2% of this group, 5.4 months on average).

An analysis of the responses to a question about the reasons for migration suggests that the criterion of voluntariness was fulfilled. Most of the migrants in the T1 sample cited economic reasons for their intention to leave (78%), expecting either better job opportunities abroad (30.5%) or that working abroad would increase their chances on the domestic labor market after returning to Austria (68%). Other cited reasons included the desire for new experiences (78%) and new social contacts (76%). Overall, this makes the migrants in the sample reasonably representative in the context of voluntary international migration

from developed countries. Migrants from developed countries are often motivated by seeking employment opportunities (Massey et al., 1993; Van Dalen & Henkens, 2012). Also, the majority of T2 migrants (88.4%) chose to migrate to OECD countries, which are frequently chosen destinations of international migrants in general (OECD, 2019). Nevertheless, it should be pointed out that Austria represents a specific cultural and political context from which results should be extrapolated with caution (see Section 6.5). Furthermore, the sample consisted exclusively of individuals with tertiary education and work experience. Consequently, respondents were generally examples of “skilled migrants” (Docquier & Marfouk, 2006; Zikic, 2015).

4.4. Measurement instruments

Personality. Need for achievement (nAch) and willingness to take risks (WTR) were measured using established scales. In the case of nAch, this was a subscale of Cesarec and Marke’s Personality Scheme, containing items such as “I would like to achieve something of truly great importance” (Cesarec & Marke, 1973; Hansemark, 2003). Willingness to take risks was measured on a scale developed by Hisrich and Peters (1995; example items “When I travel, I tend to use new routes” and “I have taken a risk in the last six months”). Both scales have previously been used in the context of entrepreneurship research and displayed good psychometric properties (Hansemark, 2003; Lüthje & Franke, 2003; Remhof et al., 2014). A pilot-study with 28 students identified the most reliable items for the main study. For both scales, long versions were tested (8 items for WTR, 14 items for nAch), using 7-point Likert-type scales to indicate degrees of agreement. In each case, the five items with the highest factor loadings were selected for the main study. To avoid common method bias and order effects, personality scales were presented in mixed order and contained reverse coded items (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In the main study, the two scales reached acceptable levels of reliability (Cronbach’s $\alpha = 0.635$ for WTR; $\alpha = 0.751$ for nAch), especially considering the reduced inter-scale correlations associated with mixed item order (Podsakoff et al., 2003).

Entrepreneurship at T1. Mirroring the measurement of migration, entrepreneurship was first measured as an intention. Specifically, respondents were asked to assess the likelihood that they would start a company in the course of their lifetimes on a scale from 0% to 100%, with answer options at 20% intervals (Krueger, Reilly, & Carsrud, 2000). Subsequently, a variable was added to measure whether respondents

Table 2
Unmediated effect of all dependent variables (Hypothesis 1)

	Entrepreneurship: intention		Entrepreneurship: preparatory action		Entrepreneurship: long-term action	
	M1	M2	M3	M4	M5	M6
<i>Control variables</i>						
Gender	-0.20***	-0.20***	-0.10***	-0.09***	0.06	0.07
Age	-0.08**	-0.08**	-0.03	-0.03	-0.01	0.03
Disposable income	0.03	0.03	0.10***	0.08***	0.06	0.04
Number of children	0.06*	0.06*	0.07*	0.07**	-0.11	-0.10
Raised abroad	0.06*	0.06*	0.01	0.00	0.00	-0.01
Entrepreneurship: education	0.15***	0.15***	0.07**	0.07**	0.00	0.00
Entrepreneurship: prior experience	0.29***	0.29***	0.44***	0.44***	0.29**	0.29**
Inverse Mills ratio: email					-0.08	-0.04
Inverse Mills ratio: social networks					0.16	0.10
GDP per capita (country level)					-0.10*	-0.06
Entrepreneurial activity (country level)					-0.02	0.05
<i>Voluntary international migration</i>						
Intention		0.06*				
Preparatory action				0.13***		
Long-term action						0.21***
<i>Model information criteria</i>						
R ²	0.180	0.184	0.268	0.285	0.131	0.166
Adjusted R ²	0.176	0.180*	0.264	0.281***	0.104	0.137***

Ordinary least square regression; standardized coefficients and 2-tailed significances are reported; n = 1,385 for M1-M4, n = 360 for M5 and M6; p: † < 0.1, * < 0.05, ** < 0.01, *** < 0.001. Gender: 0 = male, 1 = female.

Table 3
Mediation model for behavioral intentions (Hypotheses 2 and 3)

Control variables	M (Willingness to take risks)		M (Need for achievement)		Y (Entrepreneurship: intention)	
	Coeff.	p	Coeff.	p	Coeff.	p
International migration: intention	0.308	<0.001	0.198	<0.001	-0.037	0.136
Gender	-0.143	<0.001	-0.077	0.004	-0.155	<0.001
Age	0.002	0.949	-0.179	<0.001	-0.051	0.070
Disposable income	0.081	0.002	0.045	0.105	0.006	0.820
Number of children	0.023	0.393	0.044	0.127	0.048	0.063
Raised abroad	0.054	0.029	0.039	0.136	0.041	0.082
Entrepreneurship: education	0.094	<0.001	0.094	0.003	0.110	<0.001
Entrepreneurship: prior experience	0.089	<0.001	0.069	0.013	0.258	<0.001
Willingness to take risks	—	—	—	—	0.227	<0.001
Need for achievement	—	—	—	—	0.148	<0.001
<i>Model information criteria</i>						
R ²	0.169		0.084		0.266	
F	34.922		15.720		49.839	
<i>Indirect effects of X on Y</i>						
	Effect	SE	LLCI	ULCI		
Total	0.099	0.127	0.076	0.125		
Willingness to take risks	0.070	0.011	0.050	0.092		
Need for achievement	0.029	0.007	0.016	0.045		

Ordinary least square regression; standardized coefficients and probability values are reported; below: indirect effect are tested through bootstrapping (n of samples = 5,000), effect sizes, standard errors and the 95% confidence interval of effects are reported; n = 1,385; gender: 0 = male, 1 = female.

Table 4
Mediation model for preparatory action (Hypotheses 2 and 3).

Control variables	M (Willingness to take risks)		M (Need for achievement)		Y (Entrepreneurship: preparatory behavior)	
	Coeff.	p	Coeff.	p	Coeff.	p
International migration: preparatory behavior	0.215	<0.001	0.131	<0.001	0.119	<0.001
Gender	-0.149	<0.001	-0.081	0.003	-0.078	0.001
Age	-0.004	0.888	-0.183	<0.001	-0.033	0.237
Disposable income	0.065	0.017	0.036	0.201	0.079	0.002
Number of children	0.022	0.432	0.426	0.142	0.070	0.006
Raised abroad	0.052	0.040	0.038	0.150	0.000	0.985
Entrepreneurship: education	0.099	<0.001	0.098	<0.001	0.061	0.008
Entrepreneurship: prior experience	0.085	0.002	0.067	0.017	0.434	<0.001
Willingness to take risks	—	—	—	—	0.064	0.013
Need for achievement	—	—	—	—	0.003	0.922
<i>Model information criteria</i>						
R ²	0.120		0.062		0.289	
F	26.311		11.275		55.746	
<i>Indirect effects of X on Y</i>						
	Effect	SE	LLCI	ULCI		
Total	0.014	0.006	0.003	0.026		
Willingness to take risks	0.014	0.005	0.004	0.025		
Need for achievement	0.000	0.003	-0.006	0.006		

Ordinary least square regression; standardized coefficients and probability values are reported; below: indirect effect are tested through bootstrapping (n of samples = 5,000), effect sizes, standard errors and the 95% confidence interval of effects are reported; n = 1,385; gender: 0 = male, 1 = female.

had undertaken preparatory actions for entrepreneurship. Using examples of typical milestones in early-stage entrepreneurship (Davidsson & Honig, 2003), respondents were asked to indicate, on the usual 7-point scale, their degree of agreement with the statement: “I have already taken first steps towards starting a business (e.g., conducted market research, written a business plan, talked to investors)”.

Entrepreneurship at T2. In order to generate the dependent variable entrepreneurship: long-term action, the profiles of the 360 usable cases identified by the procedure outlined in Section 4.1 were screened for mentions of self-employment and company founding between T1 and T2. To ensure validity, entries were carefully researched in all data sources and by two independent raters. After the first round, raters reached acceptable levels of agreement (Cohen’s κ = 0.64). Subsequently, cases were revisited in a second round and discussed until agreement was reached. The number of entrepreneurial activities was then summed to calculate the dependent variable. For the purpose of robustness checks, an additional, binary variable was calculated, indicating whether a respondent had started any number of businesses over the time period (1), or not (0).

Control variables. Controls were included for variables previously shown to influence the propensity for entrepreneurship or migration,

including age and gender, number of children, disposable income and entrepreneurship education. A binary variable also captured whether respondents were involved in starting a company at T1 or had been before that. Participants were also asked whether they had spent parts of their early life outside Austria. This allowed controlling for prior migration experiences in which self-selection is unlikely, as the migration decision was presumably taken by the respondent’s parents. All these control variables were measured at T1.

In order to account for the effects of different host country environments on entrepreneurship, two country-level controls were additionally included in the models predicting entrepreneurial action in the T2 sample: GDP per capita (World Bank, 2013) was included to control for the level of economic development in a country (McMullen, Bagby, & Palich, 2008). Many studies have documented a negative relationship between economic development and entrepreneurial activity, suggesting that development increases opportunity costs for entrepreneurship (McMullen et al., 2008; Thai & Turkina, 2014). Furthermore, the percentage of entrepreneurs in the national workforce as measured by the Global Entrepreneurship Monitor (2013) was also included as a general proxy for beneficial environmental influences on entrepreneurship, such as the presence of more entrepreneurial role models (Vandor & Franke,

Table 5
Mediation model for long-term action (Hypotheses 2 and 3).

Control variables	M (Willingness to take risks)		M (Need for achievement)		Y (Entrepreneurship: long-term action)	
	Coeff.	p	Coeff.	p	Coeff.	p
Voluntary international migration: long-term action	0.165	0.002	0.152	0.004	0.181	0.001
Gender	0.124	0.461	0.239	0.165	0.053	0.745
Age	0.120	0.260	-0.114	0.296	0.008	0.936
Disposable income	0.148	0.050	0.028	0.721	0.018	0.809
Number of children	-0.046	0.513	0.060	0.402	-0.097	0.156
Raised abroad	0.074	0.185	0.038	0.503	-0.020	0.720
Entrepreneurship: education	-0.024	0.887	-0.094	0.583	0.002	0.989
Entrepreneurship: prior experience	-0.066	0.510	-0.116	0.259	0.302	0.002
Inverse Mills ratio: email	-0.268	0.040	-0.039	0.769	0.005	0.971
Inverse Mills ratio: social networks	0.507	0.048	0.435	0.097	0.029	0.907
GDP per capita (country level)	—	—	—	—	-0.055	0.288
Entrepreneurial activity (country level)	—	—	—	—	0.041	0.436
Willingness to take risks	—	—	—	—	0.151	0.006
Need for achievement	—	—	—	—	-0.006	0.904
<i>Model information criteria</i>						
R ²	0.128		0.084		0.185	
F	5.137		3.204		5.593	
<i>Indirect effects of X on Y</i>						
Total	Effect	SE	LLCI	ULCI		
Willingness to take risks	0.024	0.012	0.003	0.049		
Need for achievement	0.025	0.011	0.006	0.049		
	-0.001	0.008	-0.017	0.014		

Ordinary least square regression; standardized coefficients and probability values are reported; below: indirect effect are tested through bootstrapping (n of samples = 5,000), effect sizes, standard errors and the 95% confidence interval of effects are reported; n = 360. Gender: 0 = male, 1 = female.

2016). For both variables, data was selected from the median year 2012.

Finally, steps were taken to account for the possibility of bias deriving from the nature of the T2 sample. Since data could be collected only if T1 respondents had supplied an email address indicating their name and had created a XING or LinkedIn account, each of these decisions represents a potential source of self-selection bias (Heckman, 1979). To account for this, inverse Mills ratios were calculated for both characteristics and added to the analyses of T2 data (Heckman, 1979; Smits, 2003). Following the recommendation of Smits (2003) for avoiding multi-collinearity, two “selection restriction” variables were added as predictors for calculating inverse Mills ratios. One indicated whether respondents had participated in the raffle, and the other whether they were studying economics. These variables were selected because they were significant predictors of, respectively, leaving an email address with their name and having a social network account, but not of the dependent variable. They were added in the selection model and omitted from the final model (Smits, 2003).

5. Results

This section begins by discussing the study results regarding the relationship between voluntary international migration (VIM) and entrepreneurship (Section 5.1). In Section 5.2, the mediation effects of

the personality traits willingness to take risks (WTR) and need for achievement (nAch) are examined. Finally, Section 5.3 presents the results of further analyses and robustness checks.

5.1. Test of main effect (Hypothesis 1)

Table 1 presents the means, standard deviations and correlations for all variables used in the analyses. To test Hypothesis 1, ordinary least square regressions were conducted, assessing the relationship between VIM and entrepreneurship. The results are shown in Table 2, where M1 indicates Model 1, and so on. Models 1, 3 and 5 represent the base models for entrepreneurial intentions, preparatory action and long-term action including the covariates, whereas Models 2, 4 and 6 additionally include the intention, preparatory action and long-term action variables for VIM as independent variables. As Model 2 shows, intentions to emigrate are linked positively and significantly to intentions to start a business ($\beta = 0.06, p < 0.05$). Model 4 confirms this pattern for preparatory action, with respondents who had started to prepare for international migration also being significantly more likely to engage in preparation for entrepreneurship ($\beta = 0.13, p < 0.001$). Finally, the hypothesis was tested for long-term action, using the number of companies started as dependent variable (Model 6). Again, respondents who had chosen to migrate internationally between T1 and T2 were more likely to start businesses during this time ($\beta = 0.21, p < 0.001$). Overall, these findings confirm Hypothesis 1.

5.2. Test of mediation hypotheses (Hypotheses 2 and 3)

Next, mediated regression analyses were conducted to test whether the relationship between VIM and entrepreneurship was mediated by WTR and nAch (Hypotheses 2 and 3). As in related research (e.g., Lorenz et al., 2018), calculations were carried out using the PROCESS macro for SPSS (Hayes, 2018). As suggested by Hayes (2018) and Kenny, Kashy, and Bolger (1998), mediation was tested by calculating: (i) the influence of independent variables and co-variables on the mediator; (ii) the effect of the mediator on dependent variables; and (iii) the indirect effect via the mediation path through bootstrapping. Following the reasoning of Hayes (2018) and Kenny et al. (1998), comparisons of effect strengths between the full model with and without mediators (Baron & Kenny, 1986) are not reported. However, the Baron and Kenny (1986) criteria for partial mediation would be fulfilled in all cases in which mediation is claimed.

For the two ordinal dependent variables, entrepreneurial intentions and preparatory action, ordinary least squares path analyses were conducted. As shown in Table 3, participants with higher international migration intentions displayed higher levels of both WTR ($a = 0.308, p < 0.001$) and nAch ($a = 0.198, p < 0.001$). These two variables were also associated with stronger entrepreneurial intentions ($b = 0.227, p < 0.001$; $b = 0.148, p < 0.001$). The confidence interval (95%) for the indirect effects ($ab = 0.07$ for WTR, $ab = 0.029$ for nAch) did not contain the value zero for either of them (WTR 0.050 - 0.092; nAch 0.016 - 0.045, based on 5,000 bootstrap samples). A significant indirect effect was thus confirmed for both variables. A similar analysis was conducted for the relationship between the actions preparatory to international mobility and to entrepreneurship (Table 4). Here, mediation was fully supported for WTR ($a = 0.215, p < 0.001, b = 0.064, p < 0.05, ab = 0.014, CI: 0.004 - 0.025$). Notably, there was evidence for this indirect effect, as well as for a direct effect of preparatory action for VIM on preparatory action for entrepreneurship ($c' = 0.119, p < 0.001$). However, results for the preparatory action variables did not provide support for a mediation role of nAch ($a = 0.131, p < 0.001, b = 0.003, n. s., ab = 0.0003, CI: -0.006 - 0.006$).

Finally, the mediation hypotheses were tested for long-term actions, using migration between T1 and T2 as independent variable and the number of entrepreneurial ventures started in that time period as dependent variable (Table 5). Again, respondents who had emigrated

displayed higher WTR ($a = 0.165, p < 0.01$), which in turn was associated with entrepreneurship ($b = 0.151, p < 0.01$) and exerted a significant indirect effect ($ab = 0.025, CI: 0.006 - 0.049$). VIM was also associated with higher nAch ($a = 0.152, p < 0.01$), but this variable did not correlate with entrepreneurship ($b = -0.001, n. s., ab = -0.001; CI: -0.017 - 0.014$). After accounting for the self-selection effect explored in this paper as well as control variables, there remained an unexplained direct effect of VIM on entrepreneurship ($c' = 0.181, p < 0.01$).

Overall, the findings thus confirm Hypothesis 2, suggesting that willingness to take risks does indeed mediate the relationship between voluntary international migration and entrepreneurship. Hypothesis 3 was only partially confirmed. While need for achievement was found to be a mediator for the relationship between migration and entrepreneurship intentions, it did not mediate relationships between migration and entrepreneurship when they were measured as preparatory actions or long-term actions.

5.3. Further analyses

5.3.1. Results for permanent migrants and return migrants

The data measured in T2 also allowed for a specific analysis of migrants who had emigrated permanently. The sub-sample comprises of 51 permanent migrants who had moved to countries such as Germany, the UK, and the US (see Appendix B for details). Within this group, 15 permanent migrants started businesses while living abroad. Their enterprises were situated in the respective host countries and active in different industries including IT, media, real estate, finance, travel and arts. In line with earlier research that has highlighted the international orientation of many migrant entrepreneurs (Neville et al., 2014), analyses of company websites suggested that 10 of the 15 businesses were catering to international clients and markets.

Repeating the analyses outlined in Section 5.1 and Section 5.2 allowed comparing this group with the 265 non-migrants in the sample. Results confirmed the previously found patterns. Ordinary least square regressions showed a significant direct relationship between VIM and entrepreneurship ($\beta = 0.15, p < 0.05$; see Appendix C, Table C1), thereby confirming Hypothesis 1. Mediation analyses and bootstrapping (Hayes, 2018) confirmed a mediation effect for WTR ($a = 0.131, p < 0.05$; $b = 0.115, p < 0.1$; $ab = 0.015$; $CI: 0.0003 - 0.0374$), but not for nAch ($a = 0.116, p < 0.05, b = -0.014, n. s., ab = -0.002, CI: -0.0170 - 0.0118$), thereby supporting Hypothesis 2 but not Hypothesis 3 (see Appendix C, Table C2). Analysis showed an additional direct effect of VIM on entrepreneurship ($c' = 0.140, p < 0.05$), suggesting that the mediation effect of WTR does partially, but not completely explain the relationship between VIM and entrepreneurship.

5.3.2. Results for return migrants

Analyses were also repeated for the sub-sample of voluntary international migrants who had lived and worked abroad for 12 months or longer but later relocated to Austria. The sub-sample consisted of 44 individuals, who had previously moved to and lived in Germany (8), Belgium (4), Spain (4) and other countries (see Appendix B for details). Out of these respondents, 19 started businesses between T1 and T2: 15 did so after returning to Austria, four while living abroad. Out of the latter, three continued running their businesses in Austria after returning. In the fourth case, the business was continued by others without further involvement of the founder. The ventures were active in a wide range of industries, such as IT, catering, consulting, and trading of pharmaceutical products. Eight of these businesses were operating on international markets, e.g., offering export consulting or trading.

A comparison between the 44 temporary migrants in this sub-sample and the non-migrant group ($n = 265$) again provides support for a direct relationship between migration and entrepreneurship, and thus Hypothesis 1 ($\beta = 0.22, p < 0.001$; see Appendix D, Table D1). Similarly, mediation and bootstrapping analyses confirmed mediation for WTR ($a = 0.140, p < 0.05$; $b = 0.144, p < 0.05$; $ab = 0.02$; $CI: 0.003 - 0.044$), but

not for nAch ($a = 0.116, p < 0.05, b = 0.012, n. s., ab = 0.001, CI: -0.012 - 0.016$), thereby supporting Hypothesis 2 but not Hypothesis 3 (see Appendix D, Table D2). Once more, an additional direct effect ($c' = 0.203, p < 0.01$) demonstrated that WTR is also a partial mediator for the relationship between VIM and return migrant entrepreneurship in this sample.

Additional exploratory analyses were conducted to compare personality and entrepreneurship between the permanent migrant and return migrant subsamples. Results showed no significant differences between these two groups (see Appendix E). This suggests that unlike the initial decision to emigrate, the decision to return to the home country was not associated with self-selection effects for WTR and nAch in this sample.

5.3.3. Further robustness checks

In order to test the robustness of these results, various checks were carried out. For long-term action, calculations were repeated using a binary coding of the entrepreneurship variable indicating whether a business had been started or not. A logistical regression with standardized values confirmed Hypothesis 1 ($\beta = 0.35, p < 0.05$; Appendix F, Table 1). Hypotheses 2 and 3 were tested using a logistical path model (Hayes, 2018; Appendix F, Table 2), which confirmed earlier results. Mediation was fully supported for WTR ($a = 0.165, p < 0.01$; $b = 0.461, p < 0.01$; $ab = 0.076$; $CI: 0.014-0.172$), but not for nAch ($a = 0.152, p < 0.01, b = -0.102, n. s., ab = -0.016, CI: -0.069-0.036$). The additional direct effect of VIM on entrepreneurship remained significant ($c' = 0.299, p < 0.05$). For the variable capturing migration intentions, a robustness check was undertaken using two additional items with slightly different wordings that also suggest concrete time horizons for work migration ("I am willing to live and work outside Austria for up to 5 years" and "I am willing to live and work outside of Austria for longer than 5 years"). Results for both variables again confirmed Hypotheses 1, 2 and 3.

6. Discussion

This section begins with a summary of results and a discussion of the findings for need for achievement (Section 6.1). I then proceed to discussing the study's main contributions to research on migrant entrepreneurship (Section 6.2), return migrant entrepreneurship and integration (Section 6.3), as well as implications for management and policy (Section 6.4). The last section highlights limitations and implications for further research (Section 6.5).

6.1. Summary of results

This study has developed and tested the hypothesis that those who engage in voluntary international migration (VIM) are more entrepreneurial because of their personalities. Building on entrepreneurial personality theory, it has argued: (i) that, as a result of self-selection, voluntary international migrants have a higher willingness to take risks (WTR) and need for achievement (nAch) than individuals who do not migrate; and (ii) that these traits contribute to their increased inclination to become entrepreneurs. The hypotheses were tested on a sample of 1,385 students, using survey data and observational data drawn from two professional social networks. Results showed a clear link between VIM and entrepreneurship as measured by behavioral intentions, preparatory activities, and long-term action. They further confirmed that, in all three cases, as well as in sub-samples of permanent and return migrants, this relationship was mediated by higher WTR, while nAch was found to be a mediating factor for intentions but not for behavior. Overall, this suggests that personality-based self-selection, especially with respect to WTR, does indeed contribute to entrepreneurial activity among voluntary international migrants.

Interestingly, while VIM was a good predictor of higher nAch whichever indicator was used, high achievers were not significantly

more likely to start a business. This is surprising since earlier research has frequently found nAch to predict not only entrepreneurial intentions but also actions (Collins et al., 2004; Stewart & Roth, 2007). There are two potential explanations for this finding. The first is provided by the original work of David McClelland (1961), McClelland, (1965), who described nAch as a driving force in achieving manageable goals involving moderate risk. However, empirical evidence of the failure rates and psychological costs of entrepreneurship indicates that the risks associated with this career are not moderate, but very high (Delmar & Shane, 2004; Fairlie et al., 2016; Markman & Baron, 2003; Ucbasaran et al., 2013). This could mean that entrepreneurship does not provide a good person-environment fit for individuals with high nAch.

The second potential explanation derives from Mischel's (1973) contention that the effects of personality on behavior are more pronounced in "weak" situations, where behavioral cues are ambiguous and individuals have several options. This description certainly applies to one's general intent to become an entrepreneur at some point in life, as measured in the study by the variable *entrepreneurship: intention*. The actual process of starting a company, however, is a "stronger" situation in which contextual factors play a more prominent role (e.g., the availability of entrepreneurial opportunities). This notion is supported by Frank et al. (2007), who find that personality traits explain up to 20% of variance in entrepreneurial intentions, but only 5% of variance in start-up probability. It therefore appears plausible that the effect of nAch may be suppressed with respect to start-up actions, as environmental influences become more important. Either way, the results align with earlier research proposing that nAch might not be as significant an influence on entrepreneurship as commonly believed (Hansemark, 2003).

6.2. Contributions to research on migrant entrepreneurship

In recent years, migrant entrepreneurship researchers have discussed a compelling idea: due to self-selection into migration, immigrants could differ from non-migrants with respect to personality traits that increase their likelihood to become entrepreneurs (Constant & Zimmermann, 2006; Neville et al., 2014). Empirical support for this proposition has however been scant, with studies on migrant personality either not focusing on entrepreneurship (e.g., Remhof et al., 2014) or comparing the majority population with immigrants in the host country, which provides no possibility to test for self-selection (Liebig & Sousa-Poza, 2004). At the same time, plausible arguments could be made against personality-based self-selection as a relevant influence on migrant entrepreneurship. Amongst other things, the influence of personality tends to be diminished in heteronomous situations in which choices are limited, such as migration (Bhugra, 2004; Mischel, 1973). Moreover, risk homeostasis theory would predict that after having taken a substantial risk by migrating, migrants are subsequently likely to avoid risk in the host country (Kushnirovich et al., 2018). In view of this, a number of scholars have concluded that there is no evidence to support any effects of personality and self-selection on migrant entrepreneurship (Bonin et al., 2009; Kushnirovich et al., 2018; Naude et al., 2017).

Against this background, this paper has revisited and theoretically developed the personality-based self-selection hypothesis for WTR and nAch. Part of the novelty of the study lies in its design, which allowed a robust test of the hypothesis: the measurement of entrepreneurship among non-migrants provided comparison data for personality and entrepreneurship from the country of origin which is "essential to evaluate the nature of migrant selection" (Chiquiar & Hanson, 2005). This helped avoiding the type of confounding factors that make comparisons of the majority population and immigrants so problematic for testing self-selection, such as the influence of policy and preexisting personality differences (Chiquiar & Hanson, 2005; Liebig & Sousa-Poza, 2004). In addition, the use of intention and preparatory activities variables as well as long-term actions in the country of origin and the host country allowed testing with high internal and external validity (Cook & Campbell, 1979). Finally, the sequential measurement of personality (in

T1) and long term actions (in T2) permitted analyzing the causes and effects of self-selection while reducing reverse causality concerns (Mokhtarian & Cao, 2008).

The findings extend the theoretical framework about antecedents of migrant entrepreneurship (Aliaga-Isla & Rialp, 2013; Dheer, 2018) and illustrate that personality-based self-selection does indeed contribute to migrant entrepreneurship. They reveal that individuals who migrate display higher levels of WTR and nAch, and that these traits play a role in explaining immigrants' inclination to start new ventures. Adding this insight to our understanding of the drivers of migrant entrepreneurship offers some distinct advantages. First, migrant entrepreneurship research has been criticized for a lack of attention to its central actor, the entrepreneur (Aliaga-Isla & Rialp, 2013; Elo et al., 2018; Dheer, 2018). This paper heeds the call to integrate this perspective into the study of the antecedents of migrant entrepreneurship which has traditionally paid more attention to contextual factors like discrimination and ethnic networks (Aliaga-Isla & Rialp, 2013; Dheer, 2018; Ma et al., 2013). Without diminishing the importance of the latter, this study highlights the merits of research that takes a particular interest in individual actors and their personality, allowing to identify previously overlooked influences on behavior.

Second, the results can help avoid biased results due to self-selection effects in future empirical research on migrant entrepreneurship. If not accounted for, the correlation of WTR and (partially) nAch with both migration and entrepreneurship can create an endogeneity bias (see Mokhtarian & Cao, 2008, for the analogous case of residential self-selection). Ignoring self-selection effects can thereby easily lead to erroneous conclusions and the overestimation of the influence of the environment (e.g. host country policies, residential co-location of migrants) on entrepreneurship (cp. Mokhtarian & Cao, 2008). The results indicate that studies comparing entrepreneurship between migrants and non-migrants or different groups of migrants should therefore control for personality differences, even if this is not the primary focus of the research.

Finally, it has been argued that personality traits do not only influence whether businesses are started, but also which types of opportunities entrepreneurs choose to exploit (Rauch & Frese, 2007). Recent work has shown that migrant entrepreneurs tend to exploit risky opportunities and enter competitive industries and geographic locations (Kerr & Kerr, 2016; Morgan, Sui, & Baum, 2018). As Kerr and Kerr (2016) point out, self-selection of international migrants with a higher tolerance for risk is a potential explanation for this pattern. While this study has not directly analyzed opportunities, the results lend some support to this proposition, showing that self-selection indeed leads to higher WTR among voluntary international migrants and that this does influence their actions as entrepreneurs.

6.3. Contributions to research on return migrant entrepreneurship and integration

The findings presented in this paper also contribute to research on entrepreneurship among return migrants. This type of entrepreneurship has received increased attention over the past years, as return migrants have been found to be more entrepreneurial than non-migrants in their countries of origin, leading to positive economic and social impact (Ammassari, 2004; Batista et al., 2017; Demurger & Xu, 2011; Naude et al., 2017; Wahba, 2015). The phenomenon is usually attributed to the particular networks, resources and cognitive capabilities acquired by migrants while abroad (Lu et al., 2017; McCormick & Wahba, 2001).

The results of this study suggest that also in the case of voluntary return migrants, higher levels of willingness to take risks caused by self-selection is a previously overlooked driver of the phenomenon. It has been noted that unlike permanent migrants, return migrants undergo self-selection twice: once to emigrate and once to return (Batista et al., 2017; Wahba, 2015). Findings suggest that in the case of WTR, the first selection step is the critical one. Unlike the decision to emigrate, the

decision to return is not associated with additional (positive or negative) self-selection effects in this sample.

To conclude, the role of personality in integration is not limited to entrepreneurship. WTR and need for achievement (nAch) are both valued characteristics in the labor market. Moreover, migrants' motivations can be important cognitive resources in the integration process, because they affect how migrants subjectively perceive and react to objective barriers to their career development (Cerdin et al., 2014; Zikic, 2015). A stronger motivation to succeed can, for instance, promote productive problem-solving strategies that help to overcome hurdles (Zikic et al., 2010). Migrants can also utilize such motivational resources to build up language skills, local networks and human capital, thereby increasing their chances of integrating successfully (Al Ariss & Syed, 2011; Cerdin et al., 2014). High levels of WTR and nAch can complement the motivations to integrate. As stable personality traits, they can promote the perception of objective barriers as surmountable challenges (nAch) and help muster the will to take them on (WTR). Prior work has pointed in this direction, for example by associating risk-taking with better integration of international migrants (Tucker, Bonial, & Lahti, 2004) and higher career adaptability among refugees (Obschonka, Hahn, & Bajwa, 2018). The comparatively high levels of WTR and nAch among voluntary international migrants may thus have beneficial effects on their integration into the host society in a more general sense.

6.4. Managerial and policy relevance

The findings of this study also have managerial implications. First, from a human resource perspective, they highlight the potential of voluntary international migrants for roles that involve innovation and entrepreneurship (Dabic, González-Loureiro, & Harvey, 2015). In addition to possessing favorable characteristics, such as creativity, metacognitive skills and the ability to find profitable business ideas (Lorenz et al., 2018; Vandor & Franke, 2016), such migrants, so the study suggests, may also be relatively willing to take risks, making them a good fit for entrepreneurial and other difficult tasks. The strong association of voluntary international migration with need for achievement is also noteworthy. While results suggest that this trait does not necessarily promote entrepreneurial action, need for achievement has been associated with other desirable outcomes such as higher organizational commitment, prosocial behavior and better work performance (Baruch et al., 2004; McClelland, 1961). Thus, in contrast to previous research (Tharenou, 2013), the findings imply that voluntary international migrants may actually provide human resource managers with a very promising pool of candidates.

From a policy perspective, this paper joins previous work in highlighting the entrepreneurial potential of international migrants (Fairlie & Lofstrom, 2015; Kerr & Kerr, 2016; Levie, 2007; Wadhwa et al., 2007). The findings suggest that the entrepreneurial potential among international migrants may extend well beyond the small population of already successful entrepreneurs who are often the target group for policies to attract entrepreneurs, e.g., through special visa and support programs (Ley, 2003). Because of self-selection, many voluntary migrants who already live in the country are likely to possess personality traits making them intrinsically more likely to start businesses. Public policy should therefore support these nascent and early-stage migrant entrepreneurs with funding, training, access to work spaces, and in navigating the administrative processes associated with starting a business (Rath & Swagerman, 2016). All in all, such policy efforts could provide a path for the social and economic integration of business founders while creating welfare and jobs.

Finally, for policy makers in countries with net emigration, the relationship described here may also pose challenges since it shows that entrepreneurial talent can become part of a "brain drain". While economies in the countries of origin are still likely to benefit from emigrants' entrepreneurial activities in the form of trade and remittances, they are also likely to experience less job creation and economic spillovers than

host countries (Fairlie & Lofstrom, 2015). In response, many countries have started initiatives to stimulate return migration, some of them explicitly aimed at potential entrepreneurs. These programs provide access to capital, co-working spaces and other incentives for emigrants who decide to return home (Vandor & Franke, 2018). From a personality perspective, such entrepreneurship initiatives seem promising: insofar as they provide a work environment characterized by risk and achievement, they offer a path that will likely be perceived as a good fit by many international migrants.

6.5. Limitations and further research

Naturally, the study presented in this paper comes with some limitations. From a theoretical perspective, it is important to note again that its hypotheses are based on the assumption that migrants and entrepreneurs act voluntarily. This may not hold in "strong situations" (Mischel, 1973), such as forced migration due to war, extreme poverty or natural catastrophes, or in situations of total exclusion from the labor market, as was historically the case for so-called "middleman minorities" (Bonacich, 1973). Under such circumstances, external influences are likely to inhibit individuals' opportunities to align their life and career decisions with their personalities. In extreme cases, for example when staying in a crisis region is riskier than leaving, the relationships described here could even be reversed. Similarly, family reunification is not likely to promote self-selection among the children of migrants who may have only limited influence on the decision to emigrate. On the other hand, some authors have argued that even in "strong" situations individuals have a degree of voluntary choice, which could allow personality to exert an effect (Boneva & Frieze, 2001). Overall, this provides fertile ground for future scholarly inquiry into personality-based self-selection and entrepreneurship among different groups of international migrants, such as refugees and families, and into the moderating role of situational strength. A related point is that the study's hypotheses assume that individuals' migration decisions are influenced by the match between personality and the anticipated environment (Chatman, 1989; Lent et al., 1994; Zhao et al., 2010). However, the study only measured the personality part of the interaction and did not provide a measure of the perceived environment. Further research could overcome this limitation by also capturing international migrants' perceptions of migration and entrepreneurship.

From an empirical standpoint, too, the study has limitations. To begin with, the sample consists of university students and graduates from Austria which represents a particular cultural and political context. Given Austria's EU membership and favorable migration agreements with many other countries, the sample had comparatively easy access to work opportunities abroad. Moreover, students are often encouraged to go abroad by their universities which may have influenced their decision making processes as well as the overall level of international mobility in the sample. Therefore, caution should be applied when extrapolating findings to other contexts, in particular to forced migrants, for which the paper makes no claims. Even so, there is no reason to believe *per se* that the mechanism of personality-based self-selection would not be applicable to other types of voluntary international migrants (e.g., low-skilled), or to other cultural or ethnic groups. Prior research across a number of different contexts has supported the study's theoretical foundations in entrepreneurship (Brandstätter, 2011; Stewart & Roth, 2007; Rauch & Frese, 2007) and migration (Boneva et al., 1998; Remhof et al., 2014; Van Dalen & Henkens, 2007, 2012,). Nevertheless, more research is needed to explore these effects in different cultural and economic contexts.

Another limitation derives from the fact that data on long-term behavior was gathered through observation in professional social networks. This has advantages over other approaches to information collection, as outlined in Section 4.2. However, such data proved to have its own drawbacks; specifically, it did not allow capturing a number of variables such as personality, marital status and number of children in

T2. As a result, the model could not take account of any changes in these variables between T1 and T2. It is also possible that the T2 data omitted information which subjects deemed unfitting for their public images. Related to this, given the popularity of professional social media among job seekers, respondents who were looking for employment opportunities were probably more likely to update their profiles than those who were not, which may have led to an overrepresentation of individuals with more dynamic careers in the T2 sample. Several measures were taken to counteract these biases, as described in Section 4.1 and Section 4.4, including the introduction of inverse Mills ratios into the model and additional web searches about respondents' careers and places of residence. Likewise, is also worth noting that the hypotheses were also tested with two other dependent and independent variables (intention, preparatory action) collected at T1, which are not susceptible to the biases mentioned. Nonetheless, future research is needed to better understand the long-term implications of personality-based self-selection on entrepreneurship among voluntary migrants.

7. Concluding remarks

The results presented in this paper serve as a useful reminder of the entrepreneurial potential among international migrants. That is especially important in light of developments around the world in past decades. Between 1960 and 2015, the number of individuals living outside their country of birth more than tripled, from 71 million to over 272 million (United Nations, 2017), and in recent years, global migration has reached unprecedented levels. At the same time, international migration has become a topic of heated political and public debate. Even in traditionally migration-friendly countries, such as the United Kingdom and the United States, the positive economic and social impact of migration has been questioned. The findings of this study suggest that, in the area of migrant entrepreneurship, positive assessments of migration are still warranted. In spite of significant barriers (e.g., language difficulties, discrimination and lack of resources), international migrants start businesses as frequently as, or even more often than non-migrants. This study suggests that this may not always be a reaction to disadvantages and discrimination, but that migrants can also build on unique resources and advantages such as an entrepreneurial personality. For many societies, supporting migrants to unfold this entrepreneurial potential, rather than hindering migration and integration, may represent an entrepreneurial opportunity in its own right.

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The authors report no declarations of interest.

Appendix A. Supplementary data

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