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See Paris and... *found a business*? The impact of cross-cultural experience on opportunity recognition capabilities



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ABSTRACT

Internationally mobile individuals such as migrants and expatriates exhibit a higher level of entrepreneurial activity than people without cross-cultural experience. Current research suggests that this pattern is rooted in specific resources and institutional arrangements that increase the attractiveness of *exploiting* entrepreneurial opportunities. In this study, we provide an additional explanation: We argue that cross-cultural experience increases the ability to *recognize* entrepreneurial opportunities. This argument is supported by two complementary studies—a longitudinal quasi-experiment and a priming experiment. We find convergent evidence that cross-cultural experience increases a person's capabilities to recognize particularly profitable types of opportunities by facilitating the application of cross-cultural knowledge for the discovery of arbitrage opportunities and creative recombination.

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1. Executive summary

There is ample evidence that immigrants and return migrants are on average more likely to become entrepreneurs than the native population. Extant literature explains this effect primarily through (self-)selection processes. Many countries employ immigration policies that favor individuals with characteristics that are beneficial for entrepreneurship, such as business experience and a high level of education. Also, individuals who are willing to relocate to a foreign country may be positively self-selected for entrepreneurial mindsets and interest.

The research presented here looks at the phenomenon of immigrant entrepreneurs from a new angle. We suggest that cross-cultural experience itself may help internationally mobile individuals to develop skills and knowledge that augment their ability to identify entrepreneurial opportunities.

In Study 1, a longitudinal quasi-experiment on the opportunity recognition capabilities of 243 individuals before and after an international sojourn, we find that those who have gained cross-cultural experience identify more profitable opportunities (+17.4%). Members of the control group who lack such experience show no improvement over time. Study 2 explores this pattern further in a randomized priming experiment among 96 immigrant entrepreneurs. Results show that the positive effect of

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cross-cultural experience is mediated through the application of cross-cultural knowledge in “Kirznerian” arbitrage and “Schumpeterian” creative recombination.

Our study contributes to a number of research streams. It adds to literature on migrant entrepreneurship by identifying a new explanation for the above-average rate of entrepreneurial activity among immigrants and return migrants. It shows that immigrants and return migrants benefit from an increased ability to identify profitable entrepreneurial opportunities. Also, our results highlight the value of expatriate assignments for the development of human resources and provide a new viewpoint to the phenomenon of repatriate turnover.

Beyond that, the paper contributes to our understanding of the role of cross-cultural knowledge of founding teams in international entrepreneurship. While earlier research has suggested that such knowledge is beneficial in later stages of internationalization, our results show that cross-cultural experience can provide entrepreneurs a useful asset already at the start of their activities. One of the reasons for this effect is that cross-cultural experience does not just provide access to knowledge about a random set of products and services, but to a selection that has already been developed and successfully tested in a market.

Overall, our findings show that cross-cultural experiences can be a valuable resource for entrepreneurs and societies in general. Migration does not necessarily need to be a zero-sum game or a “war for talent”, with entrepreneurs moving from one country to the other and increasing entrepreneurial activity in one country at the expense of another. Instead, migration can help nurture opportunity recognition capabilities and have a net positive effect on entrepreneurship. With over 230 million temporary and permanent migrants worldwide (United Nations, 2013) this might represent an opportunity in its own right.

2. Introduction

Immigrant entrepreneurs such as Andrew Carnegie, Sergey Brin (Google) or Andrew Grove (Intel) are only the tip of the iceberg: individuals who have gained cross-cultural experience are more entrepreneurial than those who lack such experience. The former account for a disproportionately large share of small business entrepreneurs (Borjas, 1986; Levie, 2007; Portes and Zhou, 1996), founders of technology companies (Saxenian, 1999; Wadhwa et al., 2007a, 2007b), and start-up founders who pursue high-growth strategies (Chaganti et al., 2008). Recent data from the Global Entrepreneurship Monitor (Xavier et al., 2013) underlines the relevance of this phenomenon: the vast majority of the 69 countries surveyed report higher entrepreneurial activity among first-generation immigrants than among natives, especially in growth-oriented ventures. This pattern also extends to individuals who relocate temporarily. A disproportionately large number of individuals who have studied or worked abroad as students or expatriates choose an entrepreneurial career path once they return to their country of origin (McCormick and Wahba, 2001; Saxenian, 2005). Overall, the link between international mobility and entrepreneurial behavior appears surprisingly stable and robust against contextual variations. Given the high importance of entrepreneurship as a vehicle for economic growth (Audretsch and Thurik, 2001), increasing migration figures, with currently over 230 million temporary and permanent migrants worldwide (United Nations, 2013), and a heated public debate on the economic consequences of migration, it appears essential to understand the root causes of this phenomenon.

Extant research has explained the higher entrepreneurial activity among immigrants with selection effects (Borjas, 1987; Saarela, 2007). Many countries employ selective immigration policies, favoring characteristics which are beneficial for entrepreneurship, such as business experience and high levels of education (Mahroum, 2001; Wadhwa et al., 2007a, 2007b). Furthermore, there might be a “self-selection of entrepreneurial individuals among those who show the initiative to break up from their old country and start anew elsewhere” (Davidsson, 2006, p. 30). Since international mobility and entrepreneurial action are both characterized by higher risks and (presumably) higher returns than employment in the domestic labor market, individuals seeking novelty, risk, and achievement might be more inclined to choose both behaviors (Vandor, 2009). At the same time, institutional factors such as discrimination (Light, 1972) and the access to ethnic networks and markets (Aldrich and Waldinger, 1990; Sanders and Nee, 1996) further encourage immigrants to choose an entrepreneurial career.

We suggest that *cross-cultural experience itself* may help internationally mobile individuals to develop individual skills and knowledge that augment their ability to generate and implement entrepreneurial ideas. Rather than being a consequence of the individuals' innate entrepreneurial nature, such an effect would be the consequence of a cross-cultural experience (i.e. interaction with a community characterized by cultural and societal norms different from a person's native environment; Cross, 1995; Mutchnick et al., 2003) that nurtures entrepreneurial cognition. Initial evidence for this argument is provided in the literature on international entrepreneurship. Several studies have shown that cross-cultural experience can support entrepreneurs in spotting opportunities to internationalize existing ventures (e.g. Casillas et al., 2009; Crick and Spence, 2005; Nordman and Melén, 2008). The next step in this line of research is to investigate whether cross-cultural experience is also beneficial to the identification of initial entrepreneurial opportunities for new ventures in general, be it in a domestic or a foreign culture. We therefore ask whether and why cross-cultural experience leads to better general opportunity recognition capabilities (Shane and Venkataraman, 2000). Our core argument is that interacting with a different culture enhances the individual's knowledge base about products, services, and customer problems, which is beneficial to entrepreneurial opportunity recognition (Shane, 2000).

Answers to our research questions allow us to contribute to those streams of literature in which cross-cultural experience plays a role: *migrant entrepreneurship research*, in which scholars investigate why so many migrants engage in entrepreneurial activities (Aldrich and Waldinger, 1990; Busenitz and Lau, 1997; Light, 1972; Sanders and Nee, 1996); *expatriate research*, which focuses on the effects of long-term international relocations of managers (Carpenter et al., 2001; Fee and Gray, 2012; Yamazaki and Kayes, 2004), and *international entrepreneurship research*, which examines the knowledge resources of new international

ventures and their effects (Johanson and Vahlne, 1977, 2009; Oviatt and McDougall, 1994, 2005; Zahra and George, 2002). In addition, our research contributes to *entrepreneurial cognition* research, which is concerned with the role of knowledge in the identification of new business opportunities (Corbett, 2007; Shane, 2000; Shepherd and DeTienne, 2005).

Our findings rest on two complementary empirical studies. The first is a natural, longitudinal quasi-experiment in which we measured the opportunity recognition capabilities of a sample before and after a short-term cross-cultural experience and compared the difference with a control group without such an experience ($n = 243$). The second is a priming experiment with $n = 96$ long-term migrants in which we manipulated the awareness of their cross-cultural experience and then measured the extent to which the participants' opportunity recognition capabilities were different from those of the (randomly assigned) control group.

The remainder of this article is structured as follows: in Section 2, we develop hypotheses on the relationship between cross-cultural experience and opportunity recognition capabilities; in Section 3, we present the method and findings of our first study, and in Section 4, we proceed likewise with our second study. We close with a general discussion of the findings and their implications for both theory and practice.

3. Development of hypotheses

3.1. Cross-cultural experience and the recognition of profitable opportunities

Relocating to a different culture is an intense experience. The variety of new information can be challenging, as familiar behavioral and cognitive scripts suddenly do not fit the new environment. In fact, the first encounter with a new culture generates such a flood of information that it is often perceived as overwhelming and stressful (Furnham and Bochner, 1986). Tellingly, the first scholars of cross-cultural studies labeled this experience “culture shock” (Oberg, 1960). At the same time, cross-cultural experience provides strong learning stimuli and has been associated with the development of diverse cognitive properties like moral judgment or creativity (Endicott et al., 2003; Fee and Gray, 2012; Maddux and Galinsky, 2009). The root of such transformative processes is interaction with cultural differences, which include how people communicate, think, and value economic goods (Berry, 1997; Furnham and Bochner, 1986). In spite of globalization, the differences between countries in terms of products, services and customer preferences are still vast, and some scholars even argue that they are increasing (De Mooij and Hofstede, 2002).

We propose that these rich experiences also influence a person's capabilities to recognize entrepreneurial opportunities. These capabilities are assumed to vary between individuals and have been the subject of extensive scholarly work (Baron, 2006; DeTienne and Chandler, 2004; Shepherd and DeTienne, 2005; Shane, 2000; Shane and Venkataraman, 2000; and many others). It is understood as the ability to detect situations “in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than their cost of production” (Casson, 1982; Shane and Venkataraman, 2000, p. 220). While the exact nature of the opportunity identification process has been a subject of intense debate (e.g. Alvarez and Barney, 2010; Dimov, 2007, 2011), scholars of entrepreneurial cognition have developed an understanding that is very helpful for this study (Baron, 2006; Grégoire et al., 2010; McMullen and Shepherd, 2006): They describe opportunity recognition as a process in which signals from an objective reality (e.g. new customer needs) are processed, represented subjectively, and used to form beliefs about opportunities. These signals are decoded and interpreted in a process of structural alignment: New information is compared to existing knowledge, creating insights through the alignment of surface-level and structural relationships (Grégoire et al., 2010; Grégoire and Shepherd, 2012).

The opportunities detected in this process can vary along different dimensions (Amabile, 1996; Baron and Ensley, 2006; Dahlqvist and Wiklund, 2012; Franke et al., 2006; Mitchell and Shepherd, 2010). We focus on the *profitability* of the opportunities. We define profitability as the expected sales over a time horizon that allows a venture to compensate for initial investments (cp. Shepherd et al., 2000). Profitability is a “central feature” in extant conceptualizations of entrepreneurial opportunities (Baron and Ensley, 2006; p. 1333): In order to be commercially viable, an opportunity must offer the prospect that its returns will compensate for the opportunity costs of other alternatives, the lack of liquidity, the investment of the entrepreneur's time and money, and a premium for bearing uncertainty (Kirzner, 1973; Knight, 1921; Schumpeter, 1934; Shane and Venkataraman, 2000). Consequently, the expected return of a venture is a key determinant of the entrepreneur's decision to exploit an opportunity (Haynie et al., 2009; McMullen and Shepherd, 2006) and of the venture capitalist's decision to commit funding (MacMillan et al., 1986; Tyebjee and Bruno, 1984; Shepherd et al., 2000, 2003). Generally, the profitability of opportunities is central to entrepreneurship research (e.g. Casson, 1982; Kirzner, 1973; Schumpeter, 1934; Shane and Venkataraman, 2000).

We suggest that cross-cultural experience increases an individual's capabilities to identify profitable opportunities by expanding the accessible knowledge base. In the course of interacting with a culturally dissimilar environment, people will unavoidably encounter previously unknown products, services, and customer problems of another culture, and compare them with products and services which they are familiar with (Leung et al., 2008; Williams and Grégoire, 2015).¹ This way, they expand knowledge resources that have been found to benefit opportunity recognition capabilities (Shane, 2000; Shepherd and DeTienne, 2005; Grégoire and Shepherd, 2012; von Hippel, 1986). These specific types of knowledge offer a base to comprehend, extrapolate, and interpret new information (Shane, 2000), and support the alignment of structural similarities between prior and novel information which helps the identification nonobvious opportunities (Grégoire and Shepherd, 2012). A broader pool of knowledge

¹ Naturally, everyday life and media consumption will also bring about cross-cultural knowledge. However, we argue that actually living in a different country and the rich cross-cultural experience it provides is likely to have a stronger impact on cognition as it allows experiential learning (Yamazaki and Kayes, 2004).

has thus been shown to lead to beneficial outcomes in opportunity recognition, such as higher number of business opportunities (Gielnik et al., 2012; Shepherd and DeTienne, 2005), more original business ideas (Franke et al., 2014; Gielnik et al., 2012; Rodan and Galunic, 2004), and better sales performance (Gruber et al., 2008).² Therefore, we hypothesize:

Hypothesis 1. *Cross-cultural experience increases an individual's capabilities to identify profitable entrepreneurial opportunities.*

3.2. Kirznerian arbitrage and Schumpeterian creative recombination as mediators

We argue that the main mechanism behind the positive influence of cross-cultural experience on opportunity recognition is the application of cross-cultural knowledge about customer problems, markets and ways to serve them. This knowledge can be applied in two different ways:

First, cross-cultural knowledge can provide information about opportunities for *Kirznerian arbitrage*. On the basis of an Austrian understanding of opportunity recognition, Kirzner postulates that productive resources are unevenly distributed around the world and no individual actor has full information about market conditions (Kirzner, 1973). By increasing their stock of knowledge, entrepreneurs can discover more of these resources and thereby identify arbitrage opportunities for trade and imitation (Kirzner, 1973, 1997). The object of arbitrage can be a product or service, but also an entire business model (Teece, 2010). One well-known example of the latter is the work of Howard Schultz, entrepreneur and CEO of the US coffee giant Starbucks. Schultz is known for originating his idea in Milan, where he experienced Italian coffee houses for the first time and decided to replicate the business model and customer experience in the US (Koehn, 2002). Similarly, cross-cultural experience gives insights into formerly unknown customer problems, which have been pinpointed as an important resource in the identification of opportunities (Shane, 2000; Shepherd and DeTienne, 2005; von Hippel, 1986). Entrepreneurs can learn about customer problems in a foreign culture and directly match them with solutions in a culture they are familiar with. A key characteristic of Kirznerian arbitrage is that it does not require the creative recombination or alteration of goods or information (De Jong and Marsili, 2010). Entrepreneurs notice opportunities for trade or imitation without changing the product or service as such (Alvarez et al., 2013; Kirzner, 1973, 1997; Samuelsson and Davidsson, 2009).

Knowledge from cross-cultural sources is particularly valuable. After all, products and services idiosyncratic to foreign cultures have successfully gone through a selection process by an entrepreneur (who managed to turn the opportunity into a market offering) as well as the market (when the offering does not meet a demand, it will disappear from the market) (Ardichvili et al., 2003; Dimov, 2007; Eckhardt and Ciuchta, 2008). By tapping into such knowledge, entrepreneurs can build on the insight and experience of other entrepreneurs much in the way that researchers “stand on the shoulders of giants” when learning from earlier scholarly work. Summarizing these arguments, we form the following hypothesis:

Hypothesis 2a. *The relationship between cross-cultural experience and the capabilities to identify profitable opportunities is mediated by the arbitrage of cross-cultural knowledge about customer problems, markets, and ways to serve them (“Kirznerian” opportunity recognition).*

Second, a broader basis of knowledge also offers better ingredients for opportunity recognition through *creative recombination* (Levinthal, 1998; Schumpeter, 1934). For example, an entrepreneur can process such knowledge through conceptual combination to create novel ideas (McCrae, 1987; Ward et al., 1999; Ward, 1995, 2004). While the ability to perform conceptual combination is a “basic capacity, available to all of us” (Ward, 2004, p. 176), it is strongly influenced by the knowledge that is accessible to a person. The more knowledge “building blocks” individuals command, the more combinations they can explore cognitively, enabling the generation of more novel and original thoughts and business ideas (Gielnik et al., 2012; Weisberg, 1999). Empirical studies in creativity research have shown that cross-cultural experience can provide such additional knowledge and thereby support conceptual combination (Leung et al., 2008; Leung and Chiu, 2010; Maddux and Galinsky, 2009). Similarly, cross-cultural knowledge is also a rich resource for analogical reasoning, i.e. the mapping of knowledge from one domain to another (Ward, 2004). Even if the superficial characteristics of two domains are different, analogical reasoning allows a person to align structural characteristics and thereby gain unusual perspectives and insights (Gentner and Markman, 1997). Analogical reasoning has been identified as a very effective cognitive strategy for developing business ideas (Franke et al., 2014; Ward, 2004) and new products (Dahl and Moureau, 2002). The ability to access more divergent sources of knowledge thus supports the generation of more original business ideas (Franke et al., 2014). As one core characteristic of knowledge acquired in a cross-cultural experience is its dissimilarity from “domestic” knowledge (Furnham and Bochner, 1986), we reason that it also provides fertile ground for analogous reasoning.

These cognitive processes correspond to a Schumpeterian understanding of entrepreneurship. By applying creative cognition to cross-cultural knowledge about customer problems, markets and ways to serve them, the entrepreneur finds new combinations of resources and can create products that previously did not exist (Schumpeter, 1934; de Jong and Marsili, 2010). Rather than moving a market towards equilibrium through arbitrage, the entrepreneur puts “productive resources to uses hitherto untried in practice, and withdrawing them from uses they have served so far. This is what we call ‘innovation’” (Schumpeter, 1928, p. 379). Again, we note that the knowledge pool made accessible through cross-cultural experiences is particularly valuable, suggesting that it provides fruitful building blocks for creative recombination. Therefore, we suggest:

² From this intra-individual effect follows that individuals with such cross-cultural knowledge will be capable of identifying more profitable opportunities than individuals without cross-cultural knowledge but otherwise identical resources and skills.

Hypothesis 2b. *The relationship between cross-cultural experience and the capabilities to identify profitable opportunities is mediated by the creative recombination of cross-cultural knowledge about customer problems, markets, and ways to serve them (“Schumpeterian” opportunity recognition).*

4. Study 1: Longitudinal quasi-experiment

Many scholars have called for rigorous empirical approaches such as longitudinal studies and experimental designs in entrepreneurship research (e.g. Dimov, 2007; Coviello and Jones, 2004; Gaglio and Katz, 2001; Shane, 2000; Short et al., 2010). Such designs may help to disentangle complex causal relationships and to avoid some of the most aggravating biases affecting cross-sectional ex-post designs such as the fading of the memory of events due to the passage of time (memory decay), exaggerated ex-post assessments of the predictability of past events (hindsight bias), and low internal validity. Therefore, we use data from two complementary sources: Study 1, a natural, longitudinal quasi-experiment aiming to test H1 among returned short-term migrants, and Study 2, a priming experiment designed to replicate the test of H1 and to test H2a and H2b in a sample of immigrant entrepreneurs.

4.1. Design and sample

The natural event in the quasi-experiment was an exchange semester for students at the authors’ university, the Vienna University of Economics and Business. We employed two groups: the *experimental group* was enrolled in an international exchange program and studied abroad for a semester. The *control group* was formed in a way that accounts for the effects of maturation and other threats to internal validity. As in comparable studies (Carlson et al., 1991), the latter group was selected from among students at the same university who met the course requirements for an exchange but had not participated in one before or during the study. For both groups, opportunity recognition capabilities were measured twice at a temporal distance of more than one year, i.e. a few months before and after the experimental group’s semester abroad (Fig. 1).

We chose this design and setting for a number of reasons: first, the application of a quasi-experimental design allowed us to test our hypotheses with relatively high internal validity. Measuring the opportunity recognition capabilities of students before and after living abroad enabled us to avoid hindsight bias and memory decay. Through the comparison with a control group, we were able to account for biases stemming from the maturation of participants. Furthermore, the design allowed us to avoid sample selection biases due to immigration policies. While long-term immigration policies are highly selective in many countries, they are far more lax in the case of student exchanges, with refusal rates below 0.3% in this program. Finally, the stimulus chosen represents a common type of cross-cultural experience that is similar to both immigration and expatriation. Educational exchanges have become a major source of migration in OECD countries (Docquier and Marfouk, 2005; Mahroum, 2001), and educational migration is also very common among those who later become immigrant entrepreneurs. As Wadhwa et al. (2007b) found in a study of US immigrant start-up founders, over 52% had immigrated with the motive of pursuing higher education,

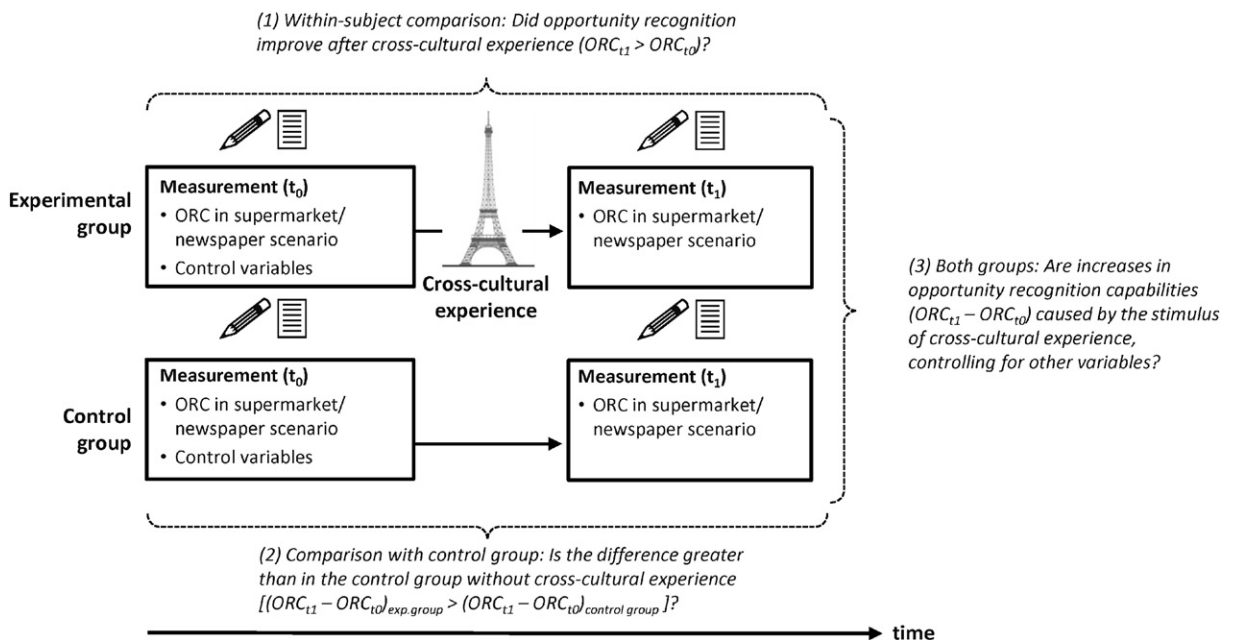


Fig. 1. Design of Study 1.

compared to only 1.6% who had come with the initial motive of starting a business. Thus, despite the specific characteristics of this form of migration, our treatment exhibits satisfactory external validity for common forms of short-term migration.

Students were contacted through the exchange program's e-mail database (experimental group) and a subset of the university's general mailing list (control group). Out of 2817 students who received the e-mail (experimental group: 595, control group: 2222), 462 submitted a full and valid questionnaire at t_0 , representing a response rate of 16.4%. Of those students, 256 completed the survey at t_1 (experimental group: 137, control group: 119), making for a retention rate of 55.4%, which appears more than acceptable given the typical dropout rates of longitudinal panels and the online setting of our study (Alderman et al., 2001; Deng et al., 2013). Nine cases were excluded due to reported IT problems and repeat participation. Another four cases were eliminated because the participants commented that they were actually considering implementing their business ideas and were therefore not willing to share them. We compared the full set of responses at t_0 and t_1 and found no significant differences that would point to biases through systemic loss of participants (Appendix B). Also, a comparison of early and late participants did not indicate any biases (Armstrong and Overton, 1977). Finally, we compared all variables between the experimental and control groups in order to identify group differences (Cook et al., 1979; see Appendix C). Five of the 14 variables showed some difference (age, gender, field of specialization, industry expertise, and national entrepreneurial activity) but did not correlate with the dependent variable. Nonetheless, we included them as statistical controls in all subsequent analyses (Rubin, 1974).

4.2. Experimental manipulation and manipulation check

The experimental "manipulation" was the students' participation in a study abroad program. During the program, students took courses in the regular curriculum of the host university and were required to complete a certain minimum amount of course work as well as additional classes for international students. The manipulation check questions at t_1 revealed that all members of the experimental group had indeed spent a semester abroad, visiting 34 different countries on six continents. The most frequent destinations included the US (22 stays), UK (18), France (14), and Korea (11). During their time abroad, the participants took an average of 4.3 courses and reported high degrees of interaction with the local culture. Among the participants, 87.8% reported that they were very interested in the way locals thought and lived, and 90.4% agreed that they were very interested in the way of life in the host country. 98.4% of the students had spent the majority of their time with people of a nationality different from their own. Consequently, the manipulation can be considered to provide a sufficient degree of cross-cultural experience.

4.3. Measurement

4.3.1. Opportunity recognition capabilities

Inspired by earlier task-based measures of opportunity recognition (Corbett, 2007; DeTienne and Chandler, 2004, 2007; Shane, 2000; Shepherd and DeTienne, 2005), we operationalized opportunity recognition capabilities as the ability of participants to identify a profitable opportunity in a given scenario. Using an online questionnaire, we presented a scenario to participants and asked them to identify and describe a profitable business opportunity (see Table 1). The agent who would exploit the opportunity identified in the scenario was standardized as a capable third person (i.e. not the subjects themselves). We designed the questions in this way in order to ensure that participants reported the best opportunity they could identify instead of filtering them on the basis of personal preferences (McMullen and Shepherd, 2006).

In order to avoid uncontrolled effects (e.g. participants starting to browse the Internet for ideas), we gave the subjects a total of seven minutes to complete the task, after which they were automatically directed to the next section. They could enter answers in an open online form without restrictions on the structure of the response. In addition, we alternated the two scenarios in order to avoid learning effects. Each participant was randomly assigned to one of these tasks at t_0 and then received the other one at t_1 . In order to assess the validity of our task-based measurement, we conducted a pilot study in which we asked $n = 28$ students to perform both tasks (in randomized order) and to estimate how many opportunities they had identified in their lifetime. The performances in both tasks correlated with each other ($r = 0.495, p < 0.1$) and with the number of opportunities identified by participants in general (supermarket: $r = 0.383, p < 0.1$, newspaper: $r = 0.335, p < 0.1$). This suggests that both tasks capture opportunity recognition capabilities in a satisfactory manner.

In the experiment, participants generated a variety of concepts, with the top-rated opportunities including automated self-ordering systems, markets for consumers with food allergies, payment systems, novel media distribution channels, and individualized newspapers.³ As in comparable studies (e.g. Corbett, 2007; DeTienne and Chandler, 2004; Gielnik et al., 2012; Shepherd and DeTienne, 2005), the outputs were evaluated by a pool of expert raters who were blind to the study's purpose, hypotheses, and data sources. The pool consisted of four experts with an average of 14 years of experience in the respective industries and entrepreneurship as well as experience in the evaluation of business ideas. Two of the raters were active in the venture capital industry at the time. After explaining the task, we gave the experts a list of opportunities in randomized order and asked them to indicate the degree to which each opportunity described of the profitability of each of the 486 descriptions (see Appendix A).

We asked experts to assess the profit potential of each idea. As in comparable research, we asked them to give a general assessment of profitability on a five-point Likert-type scale ranging from 0 ("not a profitable opportunity") to 4 ("a very profitable

³ Some anecdotal evidence for the realism of the task and the quality of answers is provided by the fact that two years after the first experiment, some of the ideas had actually been introduced on the Austrian market in ways comparable to those outlined by the participants.

Table 1
Opportunity recognition tasks.

<i>Newspaper task:</i> An entrepreneur wants to introduce a new daily newspaper on the Austrian market. It should be clearly distinguished from existing offers and attract many customers. Please give a suggestion for an innovative and feasible product or service that allows the entrepreneur to make a profit .
<i>Supermarket task:</i> An entrepreneur wants to open a new food supermarket in the first district of Vienna. It should be clearly distinguished from existing offers and attract many customers. Please give a suggestion for an innovative and feasible product or service that allows the entrepreneur to make a profit .

opportunity”). This measure is comparable to those used in studies on venture capitalist decision making (e.g. Shepherd et al., 2000, 2003) and on the opportunity evaluation process of entrepreneurs, in which related dimensions like “general desirability” and “value” are measured (e.g. Grégoire et al., 2010; Goktan and Gunay, 2011; Haynie et al., 2009). Experts received the same information as the participants about the exploiting agency and thus assessed the opportunities under the assumption that they would be exploited by a capable business entrepreneur. After the first ratings were completed, the raters had two more rounds to discuss and adjust ratings in order to achieve a satisfactory level of consistency (Linstone and Turoff, 1975). Inter-rater reliability was assessed by calculating Krippendorff’s α (Hayes and Krippendorff, 2007), which came to 0.62 (supermarkets) and 0.68 (newspapers). Given the difficulty of the tasks, this level of reliability can be regarded as satisfactory (Amabile, 1996).

4.3.2. Control variables

The control variables included age and gender, which have shown significant effects in previous studies on opportunity recognition (e.g. Davidsson and Honig, 2003; DeTienne and Chandler, 2007), as well as variables depicting task-related human capital and prior knowledge (see Appendix A): the enrollment of participants in international business and retail marketing study programs, prior experience in founding an enterprise (Davidsson and Honig, 2003; McCormick and Wahba, 2001), and citizenship. We measured general expertise in the industry addressed in each task at t_0 and t_1 using a one-factor scale developed for the study (Cronbach’s α t_0 : 0.79; t_1 : 0.72). Finally, one variable controlled for the sequence in which we assigned the tasks (newspaper or supermarket) to the participants. All items were measured through self-assessment using five-point Likert-type scales; binary scales for gender, founding experience, and citizenship; and a nominal scale for fields of study.

At the country level, we added the level of entrepreneurship activity as a covariate, serving as a proxy for potential environmental influences such as the presence of more entrepreneurial role models. We gathered this information from the 2012 edition of the Global Entrepreneurship Monitor (Xavier et al., 2013). For the eight countries where these values were not available, we took figures from the most recent available version of the Global Entrepreneurship Monitor.

We pre-tested the instrument ($n = 72$) with additional questions asking for feedback on the questionnaire. The results showed high levels of reliability and validity and inspired some minor changes in the wording of the questionnaire. Table 2 shows the descriptive statistics and correlations for Study 1.

4.4. Findings and discussion

Following the rationale outlined in Fig. 1, we first investigated the effect of the treatment on the opportunity recognition capabilities (ORC) of the experimental group (Table 3). A comparison of within-group changes between t_0 and t_1 shows a significant increase in the dependent variable (+17.4%). This means that cross-cultural experience increases the capabilities of the experimental group to identify profitable opportunities. At the same time, the performance of the control group hardly changed over time.

Next, we conducted a between-group comparison to see whether the level of increase in the experimental group was greater than in the control group. The results showed a significant difference of 0.33 ($p < 0.05$).

Table 2
Descriptive statistics and inter-correlation matrix (Study 1).

	Mean/frequency	SD	1	2	3	4	5	6	7	8	9	10
1. Opportunity recognition capabilities	1.68	0.89										
2. Gender	54% female	0.50	−0.02									
3. Age	24 years	4.72	0.04	−0.07								
4. Citizenship	10% non-Austrian	0.30	0.02	0.03	0.05							
5. Entrepreneurship experience	9%	0.28	0.03	−0.18 **	0.29 **	0.10 *						
6. Study focus: retail marketing	9%	0.29	0.00	0.09 *	0.12 **	0.09	0.01					
7. Study focus: international business	31%	1.35	0.00	−0.01	−0.26 **	0.07	−0.08	0.00				
8. Student exchange	52%	0.29	0.11 *	−0.16 **	−0.36 **	0.10 *	−0.03	−0.04	0.56 **			
9. Experiment scenarios	50% newspaper	0.50	0.07	0.06	0.02	0.11 *	−0.02	−0.06	−0.02	0.03		
10. Industry expertise	3.20	1.22	0.04	−0.04	−0.05	0.00	0.04	−0.05	0.05	0.11 **	−0.03	
11. Total entrepreneurship activity	9.46	2.51	0.02	0.09 *	0.04	−0.16 **	−0.07	−0.01	−0.27 **	−0.20 **	0.18 **	0.02

$n = 486$ measurements/243 cases, p : * < 0.05 , ** < 0.01 ; gender: 0 = male, 1 = female; citizenship: 0 = Austrian, 1 = non-Austrian; experimental scenarios: 0 = supermarket, 1 = newspaper.

Finally, we tested our prediction in a multilevel model, including control variables in order to account for the nested nature of the data (Heck et al., 2014). We modeled variations on three levels: within participants over time (level 1), between participants (level 2), and between countries (level 3). We calculated estimates using maximum likelihood estimation and computed $-2\log$ likelihood ($-2LL$) values to assess the model's fit. In this context, a smaller $-2LL$ value represents better model fit (Tabachnick and Fidell, 2001). As in comparable studies (e.g. Williams and Grégoire, 2015), we conducted chi-squared tests in order to assess the significance of changes between different models (Bryk and Raudenbusch, 1992).

The results and mean-centered coefficients are presented in Table 4. Model 1 shows the base model, including variables for age, gender, citizenship, field of study, founding experience, the scenario of the opportunity recognition experiment (newspaper or supermarket), industry experience, two binary variables for the time of measurement and cross-cultural experience, and entrepreneurial activity in the country. Model 2 tests our hypothesis by including an interaction term of time and treatment. This allows us to compare the growth trends between the treatment and control group systematically and to separate the treatment effect from the general effects of time and group membership (Heck et al., 2014, p. 167 ff.). The results show a positive effect on profitability ($b = 0.37, p < 0.05$). Overall, this confirms Hypothesis 1 that cross-cultural experience increases the capabilities to recognize profitable opportunities.

Study 1 has at least four noteworthy limitations. The first is the possibility of self-selection effects that inhibit internal validity (Davidsson, 2006). Study 1 is a *quasi*-experiment, not a clean experiment. Even though international exchanges are very common at the authors' university, meaning that many members of the control group will spend a semester abroad later in their studies,⁴ we cannot rule out the possibility of systematic group differences with regard to variables that also lead to better opportunity recognition capabilities (Vandor, 2009) or to a higher propensity to learn and improve those capabilities. The second limitation is the type of treatment. While studying one semester abroad is a common form of cross-cultural experience among return migrants (Docquier and Marfouk, 2005; Mahroum, 2001), it is likely to differ from the experience of longer-term migration. Third, we used students as subjects of our research. The use of student samples is not uncommon in entrepreneurship research and is often considered to provide acceptable levels of external validity for entrepreneurial cognition (e.g. Dimov, 2007; Shepherd and DeTienne, 2005). Nevertheless, the question remains whether the effects found among them can be generalized to other populations. Finally, and most importantly, Study 1 offers no insight into the cognitive strategies behind the influence of cross-cultural experience on opportunity recognition capabilities. Therefore, we designed a second study that allows us to test Hypotheses 2a and 2b and to replicate the findings from Study 1 among immigrant entrepreneurs in a complementary setting with a complementary method.

5. Study 2: Priming experiment among immigrant entrepreneurs

Obviously, it is difficult to set up an experiment in which a huge number of randomly assigned subjects is exposed to extensive cross-cultural experiences while the control group is not. Scholars who study the effects of cross-cultural experiences therefore often use priming experiments (Hong et al., 2000; Maddux et al., 2010; Maddux and Galinsky, 2009; Friedman et al., 2012). "Priming" refers to the temporary activation of mental concepts in order to increase their accessibility (Bargh et al., 1996; Bargh and Chartrand, 1998; Higgins, 1996). In priming experiments, researchers manipulate whether participants are exposed to a memory, word, or image (known as a "prime") related to a certain construct in order to measure the extent to which the participants' subsequent actions are affected by the primed construct (for a review, see Higgins, 1996). Priming studies offer the advantage that experimental groups can be composed at random, allowing researchers to investigate cognitive phenomena under clean experimental conditions with high internal validity even if the researched phenomenon itself does not allow strict randomization. By activating the cognitive concepts and knowledge associated with living abroad in a sample that has previously gained such experience, we expected to temporarily enhance self-concepts, memories, and knowledge which approximate the subjects' actual cross-cultural experience. Priming experiments are widespread in disciplines such as psychology and behavioural economics (e.g. Bargh et al., 1996; Vohs et al., 2006), and Baron and Ward (2004) and Grégoire and Lambert (2014) have suggested them as a suitable instrument for entrepreneurship research. Accordingly, studies by Gupta et al. (2014) and Walker (2011) have relied on priming experiments.

5.1. Study design and sample

As in the study by Maddux and Galinsky (2009, Study 3), participants took part in a supraliminal priming exercise in which they were aware of the task itself, but not of its purpose of exposing them to a priming stimulus (Bargh and Chartrand, 1998). We asked participants to imagine a scenario based on their experience and write about it for a few minutes. The scenario was a description of a typical afternoon in a professional context during a stay abroad (see Appendix D). As recommended in the literature, a control prime was designed as an exercise of similar length and complexity but was neutral in terms of the dimensions of interest in the study (Bargh et al., 1996). In the control prime condition, we asked participants to describe a typical afternoon running errands in Vienna (Fig. 2). A pretest ($n = 20$) suggested that the prime did indeed activate thinking about foreign concepts in the experimental group, while the control prime condition had neither a positive nor a negative effect on activating mental concepts related to the task or cross-cultural experience. Post hoc tests revealed no differences in the enjoyment of the priming task, in perceived difficulty, or in other control variables (Appendix E).

⁴ Roughly 60% of the graduates of the authors' university spend a semester abroad at an international partner school.

Table 3
Mean comparison (Study 1).

	Mean t_0	Mean t_1	$\Delta(t_1 - t_0)$	$\Delta(\Delta EG - \Delta CG)$
Opportunity recognition capabilities (H1)				
Experimental group	1.62	1.90	17.4%, $p < 0.01$	0.33, $p < 0.05$
Control group	1.59	1.54	−3.0%, n.s.	

$n = 243$; scale of dependent variable from 0 (not a profitable opportunity) to 4 (a very profitable opportunity).

In order to obtain a sample that offsets the limitations of Study 1, the study was conducted in two coworking office spaces for entrepreneurs, which are known for their high number of immigrant clients. Participants were contacted on the spot and through the mailing list of the coworking spaces. In order to avoid revealing the nature of the experiment, we labeled it as a study on “careers and cognition”. Participants were required to have lived and worked abroad for more than six months and to have several other characteristics in order to distract them from the purpose of the study. This was important because an indication of the research objective could have created an unintentional prime for *all* participants (cf. Hong et al., 2000). Instead, participants received seemingly unrelated tasks: The first was the randomly assigned priming condition (cross-cultural or control), followed by the opportunity recognition task, an interview, and a questionnaire. We collected a total of 100 complete cases. Four cases had to be excluded from the sample as participants indicated that they had not revealed their best idea in the opportunity task in order to protect their intellectual property. This left us with 96 cases for analysis (46 in the experimental condition, 50 in the control condition). Content analyses of the texts produced by participants during the priming exercise were run as a manipulation check and suggested that the primes had been effective in all cases.

All study participants were able to draw on a large pool of cross-cultural experience. Among the participants, 63% were born outside of Austria or were second-generation immigrants. Overall, 83.3% of the sample consisted of individuals who fall under the United Nations (1998) definition of long-term migrants and had moved to another country for at least one year. The participants included in the sample had gained experiences in 35 different countries, with Germany (19), the US (9), France (6), and Romania (6) being most common. A total of 90.5% stated that they had frequently seen products and services in the course of their cross-cultural experiences. These characteristics are important for the generalizability of results as well as the internal validity of the experiment, since the priming exercise draws on experiences which can only be made accessible if they are available in a person's memory (Higgins, 1996).

As expected, participants showed a high level of entrepreneurial activity. More than every second participant (51%) had previously (co-)founded a company, and 71.4% of these participants were still active in a managing position. A total of 53.1% were currently working or had previously worked in a start-up. In total, 93.5% of the participants were either (nascent) entrepreneurs or working in a start-up.

5.2. Measurement

To ensure comparability, we used the same instrument to measure opportunity recognition as in Study 1, namely, asking participants to identify an opportunity for a supermarket in Vienna. The output was rated in two rounds by three experts with regard to the profitability of the opportunities identified by the study participants (Krippendorff's $\alpha = 0.70$). The coders had an average

Table 4
Effect of cross-cultural experience on ORC (Study 1).

	M1	M2
Intercept	0.17	0.25
Control variables		
Gender	0.01	0.02
Age	0.08†	0.08†
Citizenship	0.01	0.01
Entrepreneurship experience	0.02	0.02
Study focus: retail marketing	0.01	0.00
Study focus: international business	−0.16	−0.16
Experiment scenarios	0.05	0.05
Industry experience	0.03	0.04
Total entrepreneurship activity	0.02	0.02
Independent variables		
Time	0.13	0.31*
Treatment group	0.37**	0.55**
Cross-level interaction		
Cross-cultural experience (time*treatment group) (H1)		0.37*
Model information criteria		
−2 log likelihood (−2LL)	1256.23	1251.83
Change in −2LL		4.40*
Akaike's information criterion (AIC)	1364.02	1366.81
Schwarz's Bayesian criterion (BIC)	1339.02	1350.81

$n = 243$, p : † < 0.1 , * < 0.05 , ** < 0.01 . All variables were mean-centered prior to analysis. Significances are 1-tailed for directed hypotheses. Scale of dependent variable from 0 (not a profitable opportunity) to 4 (a very profitable opportunity). Gender: 0 = male, 1 = female; citizenship: 0 = Austrian, 1 = non-Austrian; experimental scenarios: 0 = supermarket, 1 = newspaper.

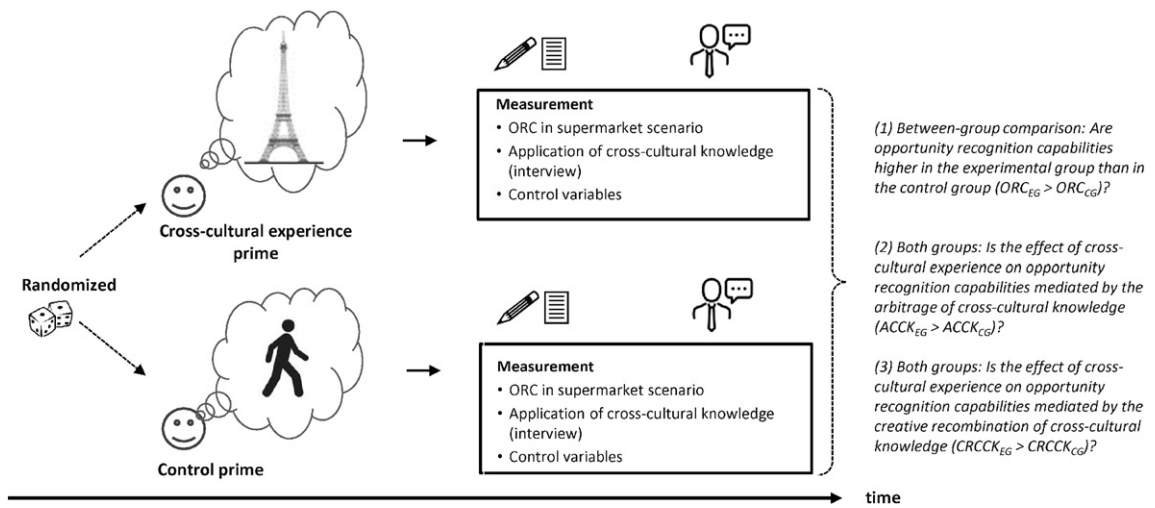


Fig. 2. Design of Study 2.

of 12 years of entrepreneurship and industry experience, including the evaluation of business opportunities. Highly rated opportunities included drive-through markets, supermarkets designed for particular diets, and novel pre-ordering systems.

In order to ascertain whether and how participants had applied cross-cultural knowledge in the opportunity recognition task, we conducted face-to-face interviews with all participants. We asked them to indicate how they had identified the opportunity and whether they had applied knowledge from foreign cultures in generating their opportunity. Participants were encouraged to give detailed answers. The lengths of responses varied between 1:20 and 12 min (mean: 3:20 min). The content of each interview log was rated independently by two coders (Krippendorff, 2004; Stemler, 2001) who determined whether two particular types of cognitive strategies had been applied: (1) the use of cross-cultural knowledge about customer problems, markets, and ways to serve them in the discovery of Kirznerian arbitrage opportunities, and (2) the application of such knowledge for the purpose of Schumpeterian creative recombination. In line with the literature described in Section 2.2, the application of cross-cultural knowledge in the form of arbitrage was understood as a cognitive strategy in which knowledge about solutions, customer problems, or markets from a cultural context other than Austria (the standardized target market in the scenario) was transferred in its entirety in order to identify an opportunity. For creative recombination, the coders assessed responses in two subcategories: first, whether the interviewees indicated any sort of conceptual combination that involved cross-cultural knowledge about customer problems, markets, and ways to serve them; and second, whether they had used such knowledge for analogous reasoning. Examples of categories and subcategories can be seen in Table 5. Coding was undertaken in two rounds, allowing coders to exchange experiences and adapt the coding book. Each case was assigned one category only (Holsti, 1969; Stemler, 2001). Each protocol was coded on a scale from 0 to 3 (ranging from no application to extensive application of the cognitive strategy). The two coders reached acceptable levels of agreement for both variables (Krippendorff's $\alpha = 0.67$ and 0.68).

The calculations included a number of control variables focusing on similar dimensions as in Study 1. Gender and age were included, as was an item measuring the highest completed level of education to account for its potentially beneficial effects on opportunity recognition (Arenius and De Clercq, 2005). Another item was included in order to control for the participants'

Table 5
Interview coding categories and examples.

Category 1. Application of cross-cultural knowledge for arbitrage
"Back in Maine, we had these great winter market selling organic produce from the area [...]; it would be great to introduce that to Vienna" (interview 81, direct transfer of solution)
"Innovative shop concepts such as [name of Asian supermarket chain] are missing in Vienna" (interview 61, direct transfer of solution)
"I got aware of the problem [...] in Canada. I could always buy things there only in enormous quantities, which was difficult for me in a single household" (interview 62, direct transfer of a problem)
Category 2. Application of cross-cultural knowledge for creative recombination
"When I saw the question... I thought of a supermarket in Holland which I had seen and that I felt was innovative. Then, I looked at the specific needs that the target group in Vienna would have and took the services and items from the Dutch market that were useful and added my own thoughts" (interview 96, conceptual combination)
"I have seen how they have tried to solve the logistics issue for restaurants and shops in Manhattan. [I] would not say [that] I copied that directly because the context is different but I tried to draw a parallel for Vienna and the supermarket" (interview 24, analogous reasoning)
"In France, I have seen supermarkets that were so big that all employees were wearing rollerblades [...] in my concept I also tried to use space as design concept to impress" (interview 3, analogous reasoning)

n = 96: Interview questions: "How did you come up with the idea? Have your experiences or knowledge from outside of Austria influenced the ideas? If so, how?"

engagement in a venture that they had (co-)founded themselves (Bosma et al., 2009). To capture prior working experience in areas related to the task, we asked participants how many months they had worked in the context of supermarkets and retail marketing. Participants were also asked to state the foreign country in which they had lived the longest. For this country, we added entrepreneurial activity values from the Global Entrepreneurship Monitor 2012 (Xavier et al., 2013). When these values were not available, we obtained figures from the most recent version of the Global Entrepreneurship Monitor or approximated them with the value of a structurally comparable neighboring country. Table 6 shows the descriptive statistics.

5.3. Results and interpretation

5.3.1. Test of hypotheses

First, we conducted a mean comparison of ORC between the two groups. The participants who had received the cross-cultural experience prime (experimental group, or EG) performed significantly better than participants in the control group (CG) in the task of identifying profitable opportunities (EG: 2.13, CG: 1.68, $p < 0.01$). This corresponds to a 26% higher performance of the experimental group than the control group.

In the next step, we tested our hypothesis in a multilevel model with the mean-centered coefficients for each variable (Table 7). Model 1 represents the base model including the covariates. As Model 2 shows, the group that received the experimental prime performed significantly better in terms of opportunity recognition capabilities ($b = 0.60$, $p < 0.01$), which confirms H1 and replicates the findings from Study 1.

Subsequently, we analyzed the effect of applying cross-cultural knowledge in the discovery of arbitrage opportunities (Kirznerian opportunity recognition) and creative recombination (Schumpeterian opportunity recognition). The findings show that members of the experimental group applied both arbitrage (EG: 0.85, CG: 0.30; $p < 0.01$) and creative recombination of cross-cultural knowledge (EG: 1.13, CG: 0.68, $p < 0.05$) more often than the control group. Model 3 shows the influence of both application strategies of cross-cultural knowledge on ORC. Both mediators exert a significant positive effect on ORC (arbitrage: $b = 0.26$, $p < 0.05$; creative recombination: $b = 0.24$, $p < 0.05$). The effects are of comparable strength, suggesting that Kirznerian arbitrage and Schumpeterian creative recombination are both equally effective ways to identify profitable opportunities with the help of cross-cultural knowledge.

In order to test the indirect effect, we employed Preacher and Hayes' (2004) INDIRECT SPSS bootstrapping macro. The results confirm the indirect effect on ORC. The 95% confidence intervals did not contain 0 (arbitrage: LL = 0.0120, UL = 0.1726; creative recombination: LL = 0.0011, UL = 0.1448). Additional calculations, however, show a significant increase in model fit from $-2LL = 267.44$ to 263.07 when the two mediators are collapsed ($p < 0.05$). This supports Hypotheses 2a and 2b and shows that cross-cultural experience stimulates the application of cross-cultural knowledge in the discovery of arbitrage opportunities and creative recombination, thereby allowing the entrepreneur to identify profitable business opportunities.

6. General discussion

In this article, we have investigated the effect of cross-cultural experience on entrepreneurial opportunity recognition capabilities in a longitudinal quasi-experiment and a priming experiment. The results of these two studies, which are complementary in terms of the methods employed, the nature of the cross-cultural experience, and the sample population, yield convergent evidence that cross-cultural experience improves a person's capabilities to identify profitable business opportunities. This effect results from applying cross-cultural knowledge about customer problems, markets, and ways to serve them as a means to discover arbitrage opportunities and to fuel creative cognition. We believe that these findings make a number of contributions to entrepreneurship theory and practice.

Table 6

Descriptive statistics and inter-correlation matrix (Study 2).

	SD	1	2	3	4	5	6	7	8	9	10	11
1. Opportunity recognition capabilities	1.89	0.80										
2. Gender	51% female	0.50	0.03									
3. Age	29 years	6.25	-0.01	-0.27 **								
4. Education	5.69	0.60	-0.21 *	0.09	-0.08							
5. Currently entrepreneur	36.5%	13.75	-0.01	-0.34 **	0.43 **	0.17 †						
6. Working experience: supermarkets	7.67	19.07	0.06	-0.12	0.00	-0.06	0.00					
7. Working experience: retail marketing	20.72	35.9	0.00	0.00	0.50 **	0.04	0.28 **	0.20 *				
8. Total entrepreneurial activity	9.17	0.50	0.13	0.19 †	-0.25 *	-0.01	-0.17 †	-0.16	-0.17 *			
9. Cross-cultural experience prime	48%	0.46	0.28 **	0.01	-0.06	-0.04	-0.03	0.16	0.02	0.00		
10. Application of arbitrage	0.56	1.13	0.11	-0.02	0.10	0.12	-0.03	0.05	0.29 **	-0.05	0.24 **	
11. Application of creative recombination	0.90	1.28	0.25 **	-0.11	0.14	-0.21 **	0.11	-0.04	-0.06	0.00	0.18 †	-0.35 **

$n = 96$, p : † < 0.1, * < 0.05, ** < 0.01; gender: 0 = male, 1 = female.

Table 7

Effect of cross-cultural experience prime on opportunity recognition capabilities (Study 2).

	M1	M2	M3
Intercept	0.13	0.43 †	0.10
Control variables			
Age	0.07	0.07	0.06
Gender	0.12	0.10	0.16
Education	−0.22 *	−0.21 *	−0.20 *
Currently an entrepreneur	0.08	0.07	0.10
Work experience: supermarkets	0.09	0.03	0.07
Work experience: retail marketing	−0.04	−0.04	−0.09
Total entrepreneurship activity	0.15	0.15	0.15
Independent variables			
Cross-cultural experience prime (H1)		0.60 **	0.38 *
Arbitrage of cross-cultural knowledge (H2a)			0.26 *
Creative recombination of cross-cultural knowledge (H2b)			0.24 *
Model information criteria			
−2 log likelihood (−2LL)	275.17	267.44	265.45
Change in −2LL		7.73 **	1.99
Akaike's information criterion (AIC)	279.17	271.44	269.45
Schwarz's Bayesian criterion (BIC)	284.01	276.35	274.32

$n = 96$, p : † <0.1, * <0.05, ** <0.01; all variables were mean-centered prior to analysis. Significances are 1-tailed for directed hypotheses. Scale of dependent variable from 0 (not a profitable opportunity) to 4 (a very profitable opportunity). Gender: 0 = male, 1 = female.

6.1. Contributions to migrant entrepreneurship research

As Shane and Venkataraman (2000) postulate, entrepreneurship should be understood as a process of both discovering and exploiting entrepreneurial opportunities. Until now, research on migrant entrepreneurship has largely focused on the second step of this process, arguing that immigrant entrepreneurship is caused by selection and self-selection effects (e.g. Borjas, 1987; Vandor, 2009), structural disadvantages (e.g. Light, 1972; Portes and Zhou, 1996), ethnic support networks (e.g. Aldrich and Waldinger, 1990; Sanders and Nee, 1996) or a cultural heritage (e.g. Busenitz and Lau, 1997).

Our findings are the first to address the role of opportunity recognition as a potential driver of the above-average entrepreneurial activity observed among immigrant entrepreneurs. These results suggest that an increased ability to recognize entrepreneurial opportunities might also contribute to this behavior among return migrants (Study 1) and immigrant entrepreneurs (Study 2). This offers a new, additional explanation for migrants' high willingness to engage in entrepreneurial activity (e.g. Levie, 2007; Portes and Zhou, 1996) and for the stronger growth orientation of immigrant-founded ventures (Chaganti et al., 2008; Xavier et al., 2013). Of course, this effect does not imply that every immigrant will discover profitable opportunities immediately upon setting foot in a new country. As a complex psychological process, opportunity recognition is influenced by a number of factors such as intentions, affect, access to social networks and financial means. As is the case with any other potential entrepreneur, the identification of an opportunity will also require some knowledge of the target market. However, our results suggest that under otherwise equal conditions, immigrants are better able to discover profitable opportunities than the native population.

Along the same lines, the relationship presented in this paper is also likely to be a driver of return migrant entrepreneurship (Filatotchev et al., 2009; McCormick and Wahba, 2001; Saxenian, 2005). As McCormick and Wahba (2001) point out, migrants who return to their home countries engage in entrepreneurial activities more often than non-migrants with otherwise similar characteristics and resources. Our study offers an explanation for this phenomenon and finds empirical support for it in Study 1. It thereby demonstrates that return migrants can not only capitalize on work experience and university degrees gained abroad (McCormick and Wahba, 2001) but also utilize non-formal knowledge about services and products to build themselves a future as business entrepreneurs.

6.2. Contributions to expatriate studies

The relevance of these findings also extends to the literature on expatriation. The results highlight the value of expatriate assignments as a tool for developing human resources. They demonstrate that the capabilities learned through such assignments go beyond general skills such as stress management or general creativity (Yamazaki and Kayes, 2004; Fee and Gray, 2012; Maddux and Galinsky, 2009). In addition, cross-cultural encounters enable the expatriate to improve a form of applied creativity, i.e. the ability to recognize more profitable opportunities. Our results suggest that this effect even arises when the increase in opportunity recognition capabilities is neither a conscious goal of the expatriate nor the sending organization. It appears likely that such effects could be further enhanced when they are part of the assignment's goals and design.

At the same time, the studies provide a new viewpoint on the phenomenon of repatriate turnover. A considerable number of repatriates leave their company soon after completing an assignment abroad (Lazarova and Caligiuri, 2002). Burer et al. (2013) recently asserted that expatriates are ideal candidates for entrepreneurship due to their international social and human capital endowment, arguing that this might be one of the reasons why they leave their companies. Our study builds on this point empirically: some repatriates may have simply discovered opportunities to become entrepreneurs.

6.3. Contributions to international entrepreneurship research

Oviatt and McDougall (2005, p. 540) called for a broad definition of international entrepreneurship as a field, describing it as “the discovery, enactment, and exploitation of opportunities—across national borders—to create future goods and services”. In this way, they suggest that an actor who discovers, enacts, evaluates, or exploits an entrepreneurial opportunity and crosses a national border in order to do so should be understood as an international entrepreneur. This definition has since been embraced by many scholars in the field (e.g. Di Gregorio et al., 2008; Mainela et al., 2014). Di Gregorio et al. (2008, p. 147) conclude that therefore a new venture should be considered as “international”, when it combines tangible or intangible resources across borders, even when its sales remain limited to a single, domestic market. Within this framework, our results also contribute to research on international entrepreneurship.

A number of scholars have argued that the cross-cultural experience of the organization and its management team is beneficial for early and successful internationalization (Bloodgood et al., 1996; Fernhaber et al., 2009; Oviatt and McDougall, 2005). One of the reasons for this relationship is the beneficial effect of cross-cultural knowledge on identifying *international* opportunities for already existing ventures and “born globals” (e.g. Casillas et al., 2009; Crick and Spence, 2005; Nordman and Melén, 2008). However, in this stream of literature “the opportunity in question is primarily the opportunity to internationalize and is not characterized as an entrepreneurial opportunity” (Mainela et al., 2014, p. 118). We extend this literature by showing that cross-cultural knowledge does not only benefit a company in the process of internationalization, but even earlier by improving its capabilities to identify *any* type of initial opportunity for a profitable venture. Such an opportunity can be found in an entrepreneur’s domestic environment (Study 1) or abroad (Study 2). This way, entrepreneurs can already gain a competitive advantage in either their domestic or foreign market at the start of their activities.

This insight also adds to our knowledge about the benefits of internationalizing early as a means of learning for an entrepreneur (De Clercq et al., 2012). Gaining experience in a foreign market may not only allow entrepreneurs to acquire skills and knowledge that support their success in international markets (Autio et al., 2000; Sapienza et al., 2006; Tolstoy, 2010), but also support them in the identification of opportunities in that respective market and increase their ability to identify more profitable opportunities in their home market.

6.4. Contributions to entrepreneurial cognition research

Finally, our article also provides fresh insights into the cognitive processes that allow entrepreneurs to identify entrepreneurial opportunities. Prior research has found that knowledge about markets, customer problems and ways to serve them constitute helpful types of knowledge in this process (Shane, 2000; Shepherd and DeTienne, 2005). Our studies show that cross-cultural experiences may represent a particularly rich source of such knowledge, as they increase the breadth of the entrepreneur’s knowledge pool. Beyond that, cross-cultural experience may not just provide access to a random set of products and services, but to a selection that has already been developed and successfully tested in a market (Ardichvili et al., 2003; Eckhardt and Ciuchta, 2008). The interviews in Study 2 offer further corroborative evidence: A number of respondents expressed that they had consciously chosen ideas that had already been implemented elsewhere in order to increase the likelihood of commercial feasibility and profitability in the target market (e.g. “*That idea is popular in several European markets, so I thought it would work in Austria as well*”). More importantly, this notion is supported by the finding in both studies that the application of cross-cultural knowledge allows the identification of more *profitable* opportunities.

Furthermore, we follow the call of Low and MacMillan (1988), Grégoire et al. (2010), and others to explore how entrepreneurs apply their knowledge to identify entrepreneurial opportunities. We identify two distinct cognitive strategies that are applied by migrant entrepreneurs to identify opportunities: Kirznerian arbitrage and Schumpeterian creative recombination. These results confirm previous research that has associated arbitrage (Anokhin and Vincent, 2014; Arentz et al., 2013) and creative cognition (Dahl and Moureau, 2002; Franke et al., 2014) with positive ideation outcomes. They also tie in with research from Grégoire et al. (2010) and Grégoire and Shepherd (2012), who describe opportunity recognition as process of structural alignment between knowledge about markets and ways to serve them. While we do not directly investigate the processes of structural alignment, it is often associated with the creative thought processes applied by participants for creative recombination (Dahl and Moureau, 2002; Gentner and Markman, 1997; Wisniewski and Love, 1998). Future work could investigate in more depth how entrepreneurs align superficial and structural features of the knowledge gained in domestic and foreign markets in order to identify opportunities.⁵

6.5. Practical implications

Our results open up interesting perspectives for policy and decision makers in entrepreneurship education, entrepreneurs, and migration policy. Entrepreneurship education at universities and schools has been shown to effectively improve the entrepreneurial intent, capability and later success of students in their careers (Martin et al., 2013; Souitaris et al., 2007). The findings suggest that universities striving to build entrepreneurial capabilities among their students may find an unexpected ally in the

⁵ In this context, the role of aligning higher-order structural relationships may be particularly interesting, as it facilitates the comparison of knowledge across superficially unrelated domains. The alignment of higher-order relationships is an essential process in analogical transfers (Gentner, 1983) and a “critical step” in opportunity recognition (Grégoire et al., 2010, p. 425). Future research could explore whether an increased focus on aligning higher-order relationships is a potential explanation for the merits of these cognitive strategies, which we identified in Study 2.

international studies department. By understanding study exchanges as an instrument to develop entrepreneurial cognition, universities can improve the effectiveness of their entrepreneurship strategy, e.g. by offering entrepreneurship and business development classes before or after the exchange experience. Similar implications can be drawn for entrepreneurs and organizations that seek to improve the entrepreneurial capabilities of their staff. Classic human resource management instruments such as expatriate assignments or international job rotation could be used to support opportunity recognition and to enrich corporate entrepreneurship programs.

The implications of our research also extend to the field of immigration policy. The [United Nations \(2013\)](#) estimate that there are over 230 million temporary and permanent migrants worldwide. A growing part of this group comprises highly skilled mobile talent, such as engineers, scientists, students and entrepreneurs who cross borders in order to access education, employment and new markets ([Mahroum, 2001](#)). Attracting such highly skilled talent is more and more understood as a “war for talent” between countries ([Brown and Tannock, 2009](#)). The criteria for passing as “highly skilled” tends to be selective and include characteristics such as formal degrees and wealth ([Mahroum, 2001](#)). The results of our study suggest that policies should also consider the tacit part of immigrants’ human capital: their cross-cultural experience and the associated knowledge of products, services, markets, and customer problems.

In addition to this small number of highly skilled individuals, our study points to the potential that may lie in a much larger group of immigrants and temporary migrants in general. Many are likely to possess knowledge about customer problems, products, and services in other cultures. Supporting them with programs for entrepreneurship awareness-raising and start-up incubation could help leverage their opportunity recognition capabilities into concrete entrepreneurial activity. The outcome of such efforts could be the empowerment and inclusion of these groups through entrepreneurship as well as job creation and welfare.

6.6. Limitations and opportunities for future research

In this study, we focused on rigorously testing the principal effect of cross-cultural experience on opportunity recognition capabilities and its mediation through the application of cross-cultural knowledge. Naturally, such an effort is accompanied by a number of limitations.

First, we studied opportunity recognition in a time-constricted setting in order to increase experimental control, and we concentrated on one particular aspect: the identification of profitable business opportunities. This means that we may not have observed all steps of the opportunity development process ([Ardichvili et al., 2003](#); [Dimov, 2007, 2011](#)), but only its initial step: the identification of an initial idea for a profitable venture. However, we believe that this first step may be a particularly important one in opportunity recognition, as it often contains the nucleus of a later venture and strongly influences the subsequent actions of the entrepreneur ([Lumpkin and Lichtenstein, 2005](#); [McMullen and Shepherd, 2006](#)). Moreover, this focus allows us to generate results that exhibit high comparability with earlier experiments ([Corbett, 2007](#); [DeTienne and Chandler, 2004, 2007](#); [Gielnik et al., 2012](#); [Shepherd and DeTienne, 2005](#)).

Second, we employed specific task scenarios. In our study design, the possible answers were confined to third-person opportunities for a standardized exploiting agent in one particular place and industry. This allowed us to generate comparable results for expert ratings and to eliminate biases due to differences in the exploiting agent ([McMullen and Shepherd, 2006](#)). However, this means that the instrument only captured improvements in opportunity recognition capabilities that were directly related to newspapers and food retail stores, irrespective of personal interests or capabilities.

Third, and on a related note, it is important to consider possible limitations of the dependent variable, which is based on ratings by experts such as venture capitalists. Such ratings are not uncommon in the evaluation of entrepreneurial opportunities, for which the ex-post assessment of economic outcomes would otherwise require years of patience and inevitably be influenced by parameters related to the opportunity exploitation processes and self-selection of participants (e.g. [Corbett, 2007](#); [DeTienne and Chandler, 2004](#); [Shepherd and DeTienne, 2005](#)). However, expert assessments can suffer from a number of biases, including overconfidence and overgeneralization (e.g. [Shepherd et al., 2003](#); [Zacharakis and Shepherd, 2001](#); [Tversky and Kahneman, 1974](#)), and the reliability and validity of such ratings can vary as a result. We acknowledge that risk and made some attempts to mitigate them in our study design. Our experts received detailed instructions and performed a number of trial runs to calibrate their ratings. All experts had to document their ratings in writing and were asked to give qualitative explanations for more complex cases. In addition, they knew from the beginning that there would be several rounds of rating with the option to exchange ideas with other experts and discuss difficult ratings ([Linstone and Turoff, 1975](#)). As [Arkes et al. \(1987\)](#) show, even the expectation of having to justify a judgment reduces overconfidence. Finally, the insights gained in these rounds were used to allow external reviews by the other raters and to provide the experts with personalized feedback ([Fischhoff and MacGregor, 1982](#)).

Fourth, as stated in the Introduction, selection effects are a likely occurrence in the field of migrant entrepreneurship. We therefore designed both studies with a view to minimizing the influence of selection, with Study 2 allowing the most rigorous form of experimental testing by applying a randomized priming experiment. In these attempts, however, it is not possible to compare the magnitude of selection and training effects directly. Future research should address this fundamental “nature or nurture” question with more elaborate research designs, as this could yield highly relevant insights for scholars, policy makers, and entrepreneurs.

Furthermore, given the complexity of the phenomena at hand, the generalizability of the results should be regarded with some caution. We are confident that the samples represent a complementary mix of short-term (Study 1) and long-term migrants (Study 2) and provide a good proxy for the cross-cultural experience of expatriates and entrepreneurs. However, both samples consisted of rather young, highly educated individuals who had gone abroad voluntarily. It is unclear whether similar effects

are present among other types of migrants, such as refugees or low-skilled workers. Further research would be needed in order to develop a deeper understanding of the patterns we have discovered. Such research efforts could differentiate more strongly with regard to the kind of experience (e.g. deliberate or forced), its intensity (e.g. short stays, long stays, multiple stays in different countries) and the specific cultural environment in the destination country.

Another limitation lies in the fact that mediation through arbitrage and creative recombination can only partially explain the main effect. Part of the variance remains unexplained, providing fertile ground for further research and inquiry. Future research could investigate how this experience affects other cognitive traits, such as entrepreneurial alertness (Gaglio and Katz, 2001) and increased openness to new experiences (McCrae, 1987). The interviews in Study 2 also provide some initial hints in this direction. Although the questions mainly concerned the use of knowledge, several respondents mentioned that living abroad had influenced their opportunity recognition capabilities in other ways. Three participants reported that they had developed stronger entrepreneurial alertness (“*Working abroad [...] meant constantly screening the environment, figuring out ways to make a living in the country. That was good training*”). Ten participants mentioned that their international experience had helped them to approach the opportunity task in an open-minded way (“*I have perceived that many things are done better or differently abroad. [...] This helps me to see the way we organise things in Austria as... less ‘binding’*”).

Finally, the effect sizes found in our studies are not particularly high. We calculated estimates of the partial eta-squared (η^2) for profitability as suggested by Cohen (1988) and Klauer (2001). In Study 1, the effect size for the pre-post mean comparisons in both groups reaches $\eta^2 = 0.033$ for profitability, which lies in the range of 0.01–0.04 and can thus be interpreted as a “small” effect size (Cohen, 1988). In Study 2, the effect sizes are $\eta^2 = 0.0778$ for profitability and $\eta^2 = 0.0675$ for the differences in the application of cross-cultural knowledge, all of which can be considered “medium” effect sizes (Cohen, 1988). According to Cohen (1988), η^2 values typically range between 0.01 and 0.09 in the social sciences. Of course, such interpretations must also consider the context and design of Study 1, which was conducted in a natural setting, and inevitably led to noise in the data. In Study 2, the difference between the two groups was “only” the prime, while both groups had cross-cultural experience. Against this background, we regard the effect sizes in both studies as sufficient to interpret the discovered patterns as relevant for academia and practice.

7. Conclusion

In conclusion, the results of this study imply that migration does not necessarily need to be a zero-sum game or a “war for talent”, with entrepreneurs moving from one country to the other and increasing entrepreneurial activity in one country at the expense of another. Instead, migration can help *nurture* entrepreneurial capabilities by fostering the application of cross-cultural knowledge that stimulates the identification of profitable opportunities. These abilities may manifest themselves in immigrant and return migrant entrepreneurship or other forms of entrepreneurial activity. In times where immigration is sometimes perceived as a menace, the insight that a higher level of immigration may result in an *overall* gain in entrepreneurial activity may constitute an opportunity in its own right.

Appendix A. Measurement scales (Study 1)

A.1. Opportunity recognition capabilities (t_0 and t_1)

(a) Newspaper task: An entrepreneur wants to introduce a new daily newspaper on the Austrian market. It should be clearly distinguished from existing offers and attract many customers. Please give a suggestion for an innovative and feasible product or service that allows the entrepreneur to make a profit. (b) Supermarket task: An entrepreneur wants to open a new food supermarket in the first district in Vienna. It should be clearly distinguished from existing offers and attract many customers. Please give a suggestion for an innovative and feasible product or service that allows the entrepreneur to make a profit (open-ended).

A.2. Expert rating of profitability (t_0 and t_1)

Does the text describe an opportunity that is appropriate to generate profits? (4 = very profitable opportunity, 0 = not a profitable opportunity).

A.3. Entrepreneurship experience (t_0)

Have you ever founded or co-founded an enterprise? (1 = yes, 0 = no).

A.4. Study focus (t_0)

Please indicate your field(s) and the focus of your studies. (Multiple choice).

A.5. Industry expertise

(1) I have a lot of expertise in connection with supermarkets/newspapers and media. (2) I consider myself an expert in connection with supermarkets/newspaper and media. (3) I have work experience in connection with supermarkets/newspapers. (4 = strongly agree; 0 = strongly disagree).

A.6. Citizenship

Which citizenship do you currently hold? (Multiple choice).

Appendix B. Between-group comparison of control variables for sample, including later dropouts (t_0) and the final sample (t_1) (Study 1)

	Sample t_0 ($n = 462$)		Sample t_1 ($n = 243$)		p
	Mean	SD	Mean	SD	
Gender	60% Male	0.50	47% Male	0.50	n.s.
Age	24.18	5.00	24.06	0.00	n.s.
Citizenship	11.4% non-Austrian	0.34	9.9% non-Austrian	0.30	n.s.
Entrepreneurship experience	1.92	0.28	1.91	0.28	n.s.
Study focus: retail marketing	0.05	0.22	0.06	0.23	n.s.
Study focus: international business	31.1%	0.46	31.1%	0.46	n.s.
Student exchange	49.3%	0.50	52.0%	0.50	n.s.

$n = 243$ and 463; ¹ = values at t_0 only available for $n = 243$; gender: 1 = female, 0 = male.

Appendix C. Between-group comparison of control variables for experimental group and control group (t_0) (Study 1)

	Experimental group ($n = 126$)		Control group ($n = 117$)		p
	Mean/frequency	SD	Mean/frequency	SD	
Gender	46% Female	0.49	62% Female	0.50	<0.05
Age	22.4 years	2.75	25.8 years	5.69	<0.01
Citizenship	12.9% non-Austrian	0.33	6.8% non-Austrian	0.25	n.s.
Entrepreneurship experience	8% (Co-)founders	0.27	9% (Co-)founders	0.29	n.s.
Industry expertise at t_0	3.38	1.18	2.94	1.40	<0.01
Industry expertise at t_1	3.25	1.04	3.17	1.21	n.s.
Study focus: retail marketing	8%	0.27	10%	0.30	n.s.
Study focus: international business	56%	0.50	4%	0.20	<0.01
Sequence of experiment scenarios	48% supermarket at t_0 , 52% newspaper at t_1	0.50	51% supermarket at t_0 , 49% newspaper at t_1	0.50	n.s.
Total entrepreneurship activity	8.97	3.41	9.97	0.27	<0.01
Student exchange	1.00		0		0.00 ¹

$n = 243$; ¹ = as predicted by hypotheses.

Appendix D. Measurement scales (Study 2)

D.1. Prime

Try to remember a situation when you were abroad for professional reasons (e.g. studies, work) [experimental condition]/ when you were running errands the last time in Vienna [control condition].

Think of the course of a typical afternoon. Which things do you see? How do you behave and how do other people behave? Try to fully immerse yourself in that scene. Describe the course of that afternoon in a way that someone else could understand your observations, feelings and thoughts as if he had been there himself.

D.2. Opportunity recognition capabilities

Supermarket task: An entrepreneur wants to open a new food supermarket in the first district in Vienna. It should be clearly distinguished from existing offers and attract many customers. Please give a suggestion for an innovative and feasible product or service that allows the entrepreneur to make a profit (open-ended).

D.3. Expert rating of profitability

Does the text describe an opportunity that is appropriate to generate profits? (4 = a very profitable opportunity, 0 = not a profitable opportunity).

D.4. Education

What is your highest completed level of education? (1) = elementary school, (2) compulsory school, (3) = junior high school, (4) = vocational training, (5) = vocational training college, (6) = senior high school, (7) = bachelor and master studies, (8) = PhD.

D.5. Currently an entrepreneur

Have you, alone or with others, ever tried to start a new business, including any self-employment or selling any goods or services to others? (1 = yes, 0 = no).

[If = 1:] Are you currently professionally active in one of these organizations? (1 = yes, 0 = no).

D.6. Work experience: supermarkets

How many months have you been working professionally (including internships and part-time work) in the context of food and/or supermarkets?

D.7. Work experience: retail marketing

How many months have you been working professionally (including internships and part-time work) in connection with retail marketing?

D.8. Task enjoyment (prime)

I enjoyed the task (4 = strongly agree; 0 = strongly disagree).

D.9. Task difficulty (prime)

The task was difficult (4 = strongly agree; 0 = strongly disagree).

D.10. Cross-cultural knowledge transfer (interview)

(1) How you did you solve the opportunity recognition task? (2) Would you say that your cross-cultural experience had any influence on how you approached the task?

Appendix E. Between-group comparison of control variables (Study 2)

	Cross-cultural prime (<i>n</i> = 46)		Control prime (<i>n</i> = 50)		<i>p</i>
	Mean/frequency	SD	Mean/frequency	SD	
Gender	51% female	0.51	50% female	0.51	n.s.
Age	28.7	6.6	29.4 years	5.9	n.s.
Education	5.67	0.7	5.62	0.50	n.s.
Currently an entrepreneur	34.8%	0.48	38%	0.49	n.s.
Work experience: supermarkets	10.8 months	26.0	4.8 months	8.2	n.s.
Work experience: retail marketing	19.2 months	40.3	21.5 months	31.8	n.s.
Total entrepreneurial activity	9.06	3.95	9.12	4.26	n.s.
Task enjoyment (prime)	4.09	0.93	3.82	1.17	n.s.
Task difficulty (prime)	2.39	1.22	2.34	1.24	n.s.

n = 96; ¹ = as predicted by hypotheses.

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