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"Going Out" of the Box: Close Intercultural Friendships and Romantic Relationships Spark Creativity, Workplace Innovation, and Entrepreneurship

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The present research investigates whether close intercultural relationships promote creativity, workplace innovation, and entrepreneurship—outcomes vital to individual and organizational success. We triangulate on these questions with multiple methods (longitudinal, experimental, and field studies), diverse population samples (MBA students, employees, and professional repatriates), and both laboratory and real-world measures. Using a longitudinal design over a 10-month MBA program, Study 1 found that intercultural dating predicted improved creative performance on both divergent and convergent thinking tasks. Using an experimental design, Study 2 established the causal connection between intercultural dating and creativity: Among participants who had previously had both intercultural and intracultural dating experiences, those who reflected on an intercultural dating experience displayed higher creativity compared to those who reflected on an intracultural dating experience. Importantly, cultural learning mediated this effect. Extending the first 2 studies, Study 3 revealed that the duration of past intercultural romantic relationships positively predicted the ability of current employees to generate creative names for marketing products, but the number of past intercultural romantic partners did not. In Study 4, we analyzed an original dataset of 2,226 professional repatriates from 96 countries who had previously worked in the U.S. under J-1 visas: Participants' frequency of contact with American friends since returning to their home countries positively predicted their workplace innovation and likelihood of becoming entrepreneurs. Going out with a close friend or romantic partner from a foreign culture can help people "go out" of the box and into a creative frame of mind.

Keywords: culture, close relationships, creativity, innovation, entrepreneurship

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In 1891, a Polish woman left Warsaw for the first time to study abroad in Paris. While there, she fell in love with and married a Frenchman. In the subsequent years, the two of them worked shoulder-to-shoulder as they discovered radioactivity, a scientific advancement that earned both Marie and Pierre Curie a Nobel Prize. The creative benefits of close intercultural relationships extend beyond scientific breakthroughs to artistic and entrepreneurial accomplishments. For example, when Steve Jobs was studying Japanese Zen Buddhism with Kobun Otogawa in San Francisco, they met almost every day and went on retreats every few months (Isaacson, 2011). As is well known, Jobs later instilled the "simplicity" philosophy of Zen into the design of Apple products, which has been vital to Apple's commercial success.

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Despite such anecdotes, little research has investigated whether intercultural social relationships can indeed spark creativity, innovation, and entrepreneurship. This oversight is puzzling, because intercultural relationships are increasingly ubiquitous (*The Economist*, 2016), creativity and innovation are essential for the contemporary workplace (Zhou & Hoever, 2014), and entrepreneurship is a critical catalyst for economic growth (Shane & Venkataraman, 2000). Using a combination of longitudinal, experimental, and field studies, the present research aims to fill this gap by investigating whether and how two types of intercultural social relationships—intercultural friendships and romantic relationships—foster creativity, workplace innovation, and entrepreneurship.

The current studies offer several important contributions. First, we contribute to work on expatriates and multicultural experiences. Although past studies have linked living and working abroad with enhanced creativity (Godart, Maddux, Shipilov, & Galinsky, 2015; Maddux & Galinsky, 2009), little research has explored how *social relationships* between individuals from different cultures might affect creativity. This is an important omission because intercultural social relationships are an essential component of many multicultural experiences. Moreover, thanks to the rise of globalization, more and more people are able to experience foreign cultures through intercultural social connections without leaving their home countries. Second, despite the unprecedented growth of intercultural social relationships, the present research represents one of the few empirical attempts to study their psychological consequences. Third, although a wealth of research points to the significance of social relationships inside and outside the workplace (Duffy, Ganster, & Pagon, 2002; Duffy, Scott, Shaw, Tepper, & Aquino, 2012; Shaw et al., 2011; Zellars, Tepper, & Duffy, 2002), little work has examined how *intercultural* social relationships might influence important work-related outcomes such as creativity and innovation. Relatedly, whereas the literature on work-life interface has mostly focused on the role of familial relationships (for a review, see Greenhaus & Powell, 2006), the current research investigates the effects of friendships and nonmarital romantic relationships. Fourth, we contribute to research on creativity by assessing creativity not only with well-established divergent and convergent thinking tasks that are high in internal validity, but also with two real-world outcomes directly relevant to organizations—entrepreneurship and workplace innovation. In so doing, we fill a previously acknowledged gap in the literature concerning how individual experiences can impact what is known as the "Big C" creativity (Simonton, 1994), or creativity that contributes to the development and prosperity of organizations and societies (Maddux, Leung, Chiu, & Galinsky, 2009; cf. Godart et al., 2015).

We integrate these varied literatures by exploring which particular aspects of intercultural relationships are conducive to creativity. Specifically, the present research compares the effects of (a) the duration of intercultural relationships, (b) the frequency of contact of intercultural relationships, and (c) the number of intercultural relationships. As a result, the current studies advance the emerging work on the differential effects of the depth versus the breadth of multicultural experiences (Cao, Galinsky, & Maddux, 2014; Godart et al., 2015; Lu et al., 2017). Overall, we illustrate how close intercultural social relationships can promote creative performance and entrepreneurial activities.

The Importance of Creativity, Innovation, and Entrepreneurship

Creativity—the ability to generate ideas that are both novel and useful (e.g., Amabile, 1983; Oldham & Cummings, 1996)—is vital to individual and organizational success. In a survey of over 1,500 CEOs from 60 nations and 33 industries, creativity was ranked over integrity and global thinking as the most important leadership quality (IBM, 2010). When appropriately integrated with labor and capital, creative ideas can turn into innovations (Zhou & Hoever, 2014). Workplace innovations empower an organization to survive and thrive in dynamic environments that present unforeseen challenges and opportunities (Anderson, De Dreu, & Nijstad, 2004). According to a McKinsey Global Survey of over 1,400 corporate leaders around the world, more than 70% listed innovation as a top-three priority of their organizations (Barsh, Capozzi, & Davidson, 2008).

Relatedly, entrepreneurship—defined as the process of discovering, evaluating, and exploiting economic opportunities to produce future goods and services—is the engine of economic growth and prosperity (Shane & Venkataraman, 2000). Compared to other types of economic activities, entrepreneurship typically requires creative thinking. For example, Baum and Locke (2004) suggest that the form of human capital most valuable to founding a venture is the ability to identify and mobilize resources from diverse domains and to recombine them in novel ways. In short, "novel and useful ideas are the lifeblood of entrepreneurship" (Ward, 2004, p. 174).

How Intercultural Social Relationships Increase Creativity: The Role of Cultural Learning

A growing body of research has found that multicultural experiences, such as living and working abroad, can increase individuals' creative thinking (Franzoni, Scellato, & Stephan, 2014; Godart et al., 2015; Leung, Maddux, Galinsky, & Chiu, 2008; Maddux & Galinsky, 2009). Importantly, however, living and working abroad are not the *only* kinds of multicultural experiences.

As one understudied aspect of multicultural experiences, intercultural social relationships are increasingly common throughout the world. For example, the number of international students worldwide has skyrocketed from 2 million to 4.5 million since 2000, and is anticipated to balloon to over 7 million by 2025 (*The Economist*, 2016). PwC's "Talent Mobility 2020" report revealed that the number of international expatriates had increased by 25% over the past 10 years and predicted a further 50% increase by 2020 (PricewaterhouseCoopers, 2010). According to the Yearbook of Immigration Statistics, from 1996 to 2006 the United States doubled the number of immigrants admitted as spouses of U.S. citizens from 169,760 to 339,843, in spite of a decrease in the total number of newly registered marriages. Similarly, while 19,458 German citizens married a noncitizen in 1960, 50,686 did in 1995 (Statistisches Bundesamt, 1997). Despite these trends, little empirical research has studied the psychological consequences of social relationships that occur across cultures.

In the current research, we adopt the creative cognition approach (Finke, Ward, & Smith, 1992; Leung et al., 2008; Smith, Ward, &

Finke, 1995) to theorize that intercultural social relationships can spark creativity. While some creativity research focuses on the personality traits conducive to creativity (e.g., openness to experience, tolerance of ambiguity; for a review, see Feist, 1998), the creative cognition approach argues that "creative processes are not much different from those cognitive processes that produce our everyday mundane activities" (Leung et al., 2008, p. 171) and that all individuals can train their minds to be more creative (Finke et al., 1992; Weisberg, 1993). For example, being exposed to more diverse ideas can increase the creative content of the mind (Maddux & Galinsky, 2009). Additionally, strategies that alter the processes of cognition, such as inducing a promotion-oriented regulatory focus (Friedman & Förster, 2001) and activating a counterfactual mindset (Kray, Galinsky, & Wong, 2006), have also been shown to enhance creativity.

Based on this creative cognition approach, we propose that intercultural social relationships can increase creativity by promoting cultural learning. Consistent with the existing literature (Maddux, Adam, & Galinsky, 2010), we define cultural learning as the acquisition of new information and understanding about the assumptions, beliefs, customs, norms, values, or language of another culture.

We posit that intercultural relationships can provide the cultural learning that shapes both the content and the processes of creative cognition. In terms of the *content* of creative cognition, intercultural relationships provide opportunities for individuals to learn about disparate concepts and ideas from different cultures, which they can then draw upon to synthesize novel and useful insights (Leung et al., 2008)—as exemplified by how Steve Jobs learned Zen principles from Kobun Otogawa and later applied them to Apple's design mantra ("Simplicity is the ultimate sophistication"; Isaacson, 2011). The notion that intercultural relationships can expand an individual's creative capacity is also supported by self-expansion theory (Aron & Aron, 1986), which suggests that the shared experiences afforded by social relationships can lead individuals to integrate the perspectives, traits, and identities of their counterparts into their own self-concepts. Moreover, a host of studies in the social network literature have demonstrated that network diversity is conducive to creative ideas (Burt, 2004; Chua, 2015; Perry-Smith, 2006). Intercultural ties not only facilitate the flow of new information from intercultural partners, but also signal general open-mindedness to observers from the home culture, who in turn are more apt to share novel content with the subject (Chua, 2015).

With regard to cognitive processes, the cultural learning enabled by intercultural relationships can enhance individuals' *cognitive flexibility* and *complexity* (Maddux, Bivolaru, Hafenbrack, Tadmor, & Galinsky, 2014; Tadmor, Galinsky, & Maddux, 2012). When people are immersed in *intra*-cultural social relationships (e.g., a romantic relationship with someone from one's home country), their creativity tends to be constrained by the conventions and routines of their home culture. In contrast, when people engage in intercultural social relationships, they are prompted to scrutinize the different underlying assumptions and schemas in both cultures. For instance, an American host might be offended if a Chinese guest left food on her plate (because American culture views it as a disapproval of the meal)—until the Chinese friend explains that in Chinese culture, leaving food on one's plate is a signal of gratitude that a guest has been well fed (Seligman, 1999). Such cultural learning allows both sides to recognize that different cultural scripts underlie the same surface behavior and, as a result, to approach future situations with greater cognitive flexibility and complexity (Maddux et al., 2014; Tadmor et al., 2012).

In addition, cultural learning can shape the very personality traits associated with creativity. For example, intercultural social relationships can transform individuals to become more open to diverse experiences and more tolerant of ambiguous concepts, both of which facilitate the absorption of creative content (Feist, 1998). Furthermore, fMRI research has revealed that the level of acculturation to a foreign culture correlates with the strength of certain brain activities (Hedden, Ketay, Aron, Markus, & Gabrieli, 2008), suggesting that cultural learning may even alter the neurological structures related to the cognitive content and processes of creativity.

The Importance of *Close* Intercultural Relationships

Thus far, we have theorized that intercultural social relationships can increase creativity by facilitating cultural learning. However, we do not expect that all intercultural social relationships are equally conducive to creativity. Instead, we propose that for intercultural relationships to generate the necessary cultural learning that elevates creativity, they must be sufficiently close and meaningful.

In the existing literature on the creative benefits of foreign experiences, one consistent finding is that the *depth* of foreign experiences is a critical driver of creativity. For example, Maddux and Galinsky (2009) found that time spent living abroad predicted increases in creativity, whereas time spent traveling abroad did not. Similarly, a study of the world's top fashion houses revealed that, compared to the number of foreign countries in which fashion directors had worked (i.e., breadth), the number of years that they had worked abroad (i.e., depth) was a stronger predictor of the creativity of their firms' fashion lines (Godart et al., 2015). This is because deeper rather than broader foreign experiences allow individuals to learn and incorporate new content and processes of thinking into the self (Godart et al., 2015).

In a similar vein, we theorize that the closeness of intercultural social relationships is particularly important for cultural learning and thus creativity. The present research investigated the creative benefits of two types of *close* intercultural social relationships: intercultural friendships and romantic relationships. Both anecdotal and empirical evidence suggests that, compared to other nonfamilial relationships (e.g., supervisor-subordinate, peer coworker, client), friendships and romantic relationships tend to be closer because they are more voluntary, intimate, and personalized. In contrast to work relationships, friends treat each other as unique and whole persons rather than simple role occupants (Wright, 1984), which provides both context and motivation for more substantive personal connections. Rather than merely exchanging work-related information, close friends engage with each other at a deeper level through the disclosure of personal information, demonstrating mutual trust, and reciprocating help and emotional support (Sias & Cahill, 1998; Wright, 1984). Similar to close friendships, romantic relationships often represent some of our closest social relationships. In light of the triangular theory of love (Sternberg, 1986), romantic relationships are typically characterized by intimacy, passion, and commitment, all of which are

conducive to learning and integrating the other's perspectives and identities into one's own self-concept (Aron & Aron, 1986; Aron, Aron, Tudor, & Nelson, 1991).

Given the proposition that the closeness of intercultural relationships may be critical to cultural learning and thus creativity, we hypothesize that the duration and the frequency of contact of intercultural relationships will be more predictive of an individual's creativity than the number of intercultural relationships. This is because duration and contact frequency are better proxies for the closeness of an intercultural relationship. Compared with someone who dates a new foreigner every month, a person who is committed to a long-term intercultural romantic relationship has more opportunities and incentives to learn about another culture. Likewise, the more contact two intercultural friends have with each other, the more chances they have to assimilate and draw upon ideas from both cultures to synthesize novel and useful insights (Leung & Chiu, 2010). As an intercultural relationship grows, each individual may also become more deeply embedded in the other's social network via interactions with friends and family members, further promoting cultural learning and creativity.

Overview of the Present Research

Using diverse samples (MBA students, employees, and professional repatriates), mixed methodologies (longitudinal, experimental, and field studies), and both laboratory and real-world measures of creativity, the present research examined the link between close intercultural social relationships and creativity. Study 1 was a longitudinal study that explored whether the experience of dating a foreigner during an MBA program led to an increase in creativity. To examine the causal relationship between intercultural dating and creativity, Study 2 randomly assigned participants, all of whom had previously had both intercultural and intracultural dating experiences, to reflect on either an intercultural or intracultural dating experience before assessing their creative performance. In addition, we tested whether cultural learning mediated the link from intercultural dating to creativity. Extending the first two studies, Study 3 instructed current employees to brainstorm new product names, and compared the duration versus the number of their past intercultural romantic experiences as predictors of creativity. As a comparison, Study 3 also contrasted intercultural dating with intracultural dating. Finally, Study 4 examined the creative benefits of intercultural *friendships*. Using a survey of 2,226 repatriates who had significant work experience abroad in the U.S., we investigated whether their frequency of contact with American friends since returning to their home countries positively predicted (a) their likelihood of becoming entrepreneurs in their home countries and (b) their workplace innovation in their home countries.

Below we report all the studies that we have conducted on the relationship between intercultural social relationships and creativity. In all studies, we report all conditions, creativity measures, and data exclusions. All study materials and procedures were reviewed and approved by the Institutional Review Board (Study 1: INSEAD N°2520-322R, "Multicultural Experiences and Creativity"; Studies 2 and 3: Columbia University AAAQ0014, "Intercultural Dating and Creativity"; Study 4: Stanford University #21178, "The Global Careers and Global Knowledge Survey").

Study 1: Longitudinal Evidence for the Effect of Intercultural Dating on Creativity

In a two-phase longitudinal study, we tracked students across a 10-month MBA program to examine the effect of intercultural romantic relationships on creativity. We predicted that the experience of intercultural dating during the program would lead to an increase in creativity from matriculation to graduation.

Method

Participants and design. One hundred and fifteen MBA students (31 female; mean age = 28.6 years) from a top international business school voluntarily participated in the two-phase study for a chance to win 1 of 10 iPad 2s. We attempted to recruit as many MBA participants as possible. The participant sample represented 39 nationalities.

Participants completed Phase 1 of the study at the beginning of the program in early September and Phase 2 at the end of the program in late June. We excluded six participants from data analysis for not completing all measures of creativity at both phases.

Intercultural dating. At Phase 2, participants responded to the following question, "Did you date anyone from a culture other than your own while at the program?" Twenty-two percent of participants ($N = 24$) reported that they had dated someone from another culture.[1]

Creativity measures. Both phases of the study used three distinct tasks to assess the two critical dimensions of creativity: divergent and convergent thinking (e.g., Cropley, 2006; Kaufman & Sternberg, 2010; Lu, Akinola, & Mason, 2017). Divergent thinking occurs when a person's thoughts move spontaneously in diverse directions to generate *multiple* creative ideas (Mednick, 1962). In contrast, convergent thinking occurs when someone arrives at an "Aha!" moment (Kounios & Beeman, 2009) and identifies the *unique* or *best* solution to a clearly defined problem (Cropley, 2006).

Alternative Uses Task. To measure divergent thinking, we employed the widely used Alternative Uses Task (AUT; Guilford, 1967). At Phase 1, participants had two minutes to generate as many creative uses as they could for a brick. At Phase 2, they had two minutes to generate as many creative uses as they could for a box. In keeping with past studies (e.g., Gino & Wiltermuth, 2014; Tadmor et al., 2012), we assessed creative performance on the AUT by having independent raters code responses for fluency (i.e., the total number of uses; $ICC(2)_{fluency\_brick} = .99$, $ICC(2)_{fluency\_box} = .99$), flexibility (i.e., the total number of unique categories of uses; $ICC(2)_{flexiblity\_brick} = .89$, $ICC(2)_{flexiblity\_box} = .88$), and novelty ($ICC(2)_{novelty\_brick} = .99$, $ICC(2)_{novelty\_box} = .94$).

Remote Associates Test. To measure verbal convergent thinking, we employed the commonly used Remote Associates Test (RAT; Mednick, 1962). The RAT presents three cue words and

[1] Participants also listed the nationalities of their five closest friends in the MBA program. We counted the number of foreign friends listed by each participant ($M = 4.06$, $SD = 1.06$). We did not include this variable in regression analyses because it suffered from a limited range and a ceiling effect: 75.2% of participants indicated four or five friendships as intercultural and over 40% indicated all five friendships as intercultural.

asks the subject to conceive a fourth word that is logically associated with each of those three words (e.g., manner, round, tennis → table). At each study phase, participants attempted five RAT problems (see Appendix A). Their performance was measured by the total number of RAT problems solved correctly.

Insight problems. Third, to measure insight convergent thinking, we adopted two puzzles that required "thinking out of the box." At Phase 1, participants had three minutes to solve the nine-dot puzzle (Kershaw & Ohlsson, 2004; see Appendix B). At Phase 2, participants had three minutes to solve the coin puzzle (see Appendix C).

For each of the three types of creativity measures, the tasks were pretested to be similar in difficulty at Phase 1 and Phase 2. We did not counterbalance the creativity measures due to the concern that participants might discuss them between the two study phases.

Control variables. We accounted for a variety of potentially confounding variables in our regression analyses. First, we assessed demographic and personality control variables pertinent to creativity: age, gender, and Big-Five personality traits (five-point Likert scale; Gosling, Rentfrow, & Swann, 2003). Second, since the MBA experience might differ for international versus domestic students, we controlled for whether a participant was a domestic student (11.0%). Furthermore, since intellectual performance might positively predict both creativity and the ease of securing a dating partner, we controlled for GPA. In a similar vein, we controlled for pre-MBA annual salary (in €1,000) as an indicator of wealth. Finally, at Phase 1 we used a three-item measure (α = .69) to assess cultural "colorblind" beliefs (adapted from Wolsko, Park, & Judd, 2006), which might affect the extent to which participants were open to close intercultural relationships (Morris, Chiu, & Liu, 2015). The three items were: "The various nationalities in the world are more similar to one another than they are different," "People should realize that nationalities carry very little real meaning—we are all equals," and "I want my children to learn that all people are basically the same—even though their nationality may be different" (five-point Likert scale: 1 = *strongly disagree*, 5 = *strongly agree*).

Results

Descriptive statistics and bivariate correlations are displayed in Table 1.

Composite score of creativity. For both Phases 1 and 2, we standardized the five creativity measures (i.e., AUT fluency, AUT flexibility, AUT novelty, number of correct RAT problems, whether insight problem was solved) and averaged them to compute a composite score of creativity (α_{Phase1} = .78, α_{Phase2} = .70).

Following the common econometric approach, we present a progression of regression models with additional control variables added at each step to demonstrate the robustness of the effect of our key predictor variable (i.e., intercultural dating). Controlling for the Phase 1 composite creativity score, intercultural dating alone positively predicted the Phase 2 composite creativity score (Table 2, Model 1: B = .39, SE = .13, p = .005). This effect remained significant when we further accounted for Big-Five personality traits (Table 2, Model 2: B = .36, SE = .14, p = .010) and the other control variables (Table 2, Model 3: B = .48, SE = .14, $p < .001$). Finally, in a trimmed model that retained only the variables that were significantly correlated with the Phase 2 composite creativity score, intercultural dating remained a significant predictor (Table 2, Model 4: B = .43, SE = .13, p = .001).

Robustness checks. To scrutinize the robustness of the relationship between intercultural dating and creativity, we conducted casewise diagnostics and identified one outlier that was more than three standard deviations away from the mean Phase 2 composite creativity score. In the full model, the effect of intercultural dating remained significant even after we excluded this outlier (B = .51, SE = .14, $p < .001$).

As a further robustness check, we computed a composite score with just the four *continuous* creativity measures (i.e., AUT fluency, AUT flexibility, AUT novelty, and number of correct RAT problems) for both Phases 1 and 2 (α_{Phase1} = .84, α_{Phase2} = .78). The above results were replicated: Controlling for the Phase 1 composite creativity score, intercultural dating positively predicted the Phase 2 composite creativity score—whether alone (B = .45, SE = .15, p = .004), in the full model (B = .51, SE = .16, p = .002), or in the trimmed model (B = .50, SE = .15, $p < .001$).

As detailed in Table 3, the effect of intercultural dating on each Phase 2 creativity measure (fluency, flexibility, novelty, RAT, and insight problem) was also *individually* significant when accounting for their respective Phase 1 score (e.g., for Phase 2 AUT fluency, we controlled for Phase 1 AUT fluency) and the other control variables.

Discussion

Using a longitudinal design, Study 1 found that intercultural dating predicted an increase in both divergent and convergent forms of creativity over time. Across all creativity measures, participants who dated individuals from other cultures exhibited superior creative performance at Phase 2 (controlling for creative performance at Phase 1).

Study 2: Experimental Evidence for the Effect of Intercultural (vs. Intracultural) Dating on Creativity

To establish a causal link between intercultural dating and creativity, Study 2 employed an experimental method. Since it is impractical to randomly assign people to date someone from a foreign country or their home country, we examined whether reflecting on an intercultural dating experience versus an intracultural dating experience would temporarily increase creativity. The dynamic constructivist approach to culture and cognition (Hong, Ip, Chiu, Morris, & Menon, 2001; Hong, Morris, Chiu, & Benet-Martínez, 2000) suggests that when both intercultural and intracultural experiences are cognitively available to a person, their relative accessibility determines which type of experience will have a greater influence on subsequent thoughts and behaviors. For example, when priming individuals—all of whom had previously lived abroad—to recall and write about either an experience of living abroad or an experience of living in their hometown, Maddux and Galinsky (2009, Study 3) found that the former group temporarily exhibited higher creativity than the latter group (see also Cao et al., 2014; Maddux et al., 2010).

Adopting the same methodology, we recruited a sample of participants who had previously had both intercultural and intracultural dating experiences, and asked them to write about either a past intercultural or intracultural dating experience before measuring their creativity. The selection criteria and experimental design thus controlled for the dating experiences of our sample and varied only the type of romantic relationship that participants reflected on. In light of

Table 1
Descriptive Statistics and Correlations (Study 1)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Intercultural dating (1 = yes)	.22	.42																							
2. T1 composite creativity score	.00	.73	.00																						
3. T2 composite creativity score	.00	.68	.24	.49																					
4. T1 AUT fluency	8.92	3.25	−.03	.90	.46																				
5. T2 AUT fluency	9.67	3.36	.18	.40	.88	.44																			
6. T1 AUT flexibility	6.13	1.73	−.17	.83	.36	.80	.35																		
7. T2 AUT flexibility	6.92	2.13	.10	.44	.85	.46	.88	.42																	
8. T1 AUT novelty	14.72	6.13	−.02	.92	.52	.95	.47	.83	.50																
9. T2 AUT novelty	19.40	7.31	.14	.51	.90	.51	.93	.41	.90	.57															
10. T1 RAT	2.08	1.47	.15	.54	.30	.31	.13	.24	.12	.32	.20														
11. T2 RAT	1.92	1.24	.29	.15	.34	.09	.01	−.02	.01	.10	.05	.43													
12. T1 insight problem	.47	.50	.08	.47	.14	.21	.09	.17	.10	.25	.17	.09	−.04												
13. T2 insight problem	.29	.46	.10	.12	.40	.05	.11	.04	.05	.09	.13	.10	.04	.16											
14. Openness to experience	3.90	.65	−.02	.07	−.10	.02	−.09	−.06	−.13	.04	−.08	.07	−.11	.18	.09										
15. Conscientiousness	3.48	.93	.10	−.12	.01	−.06	.03	−.18	−.02	−.08	.00	.03	.06	−.15	−.04	−.05									
16. Extraversion	3.57	.95	−.03	.13	−.04	.09	−.06	.15	.00	.12	−.05	.03	.05	.06	−.06	.21	−.10								
17. Agreeableness	3.02	.64	.07	.01	.13	.04	.08	.02	.09	−.01	.09	−.01	.03	.02	.14	−.07	−.10	−.01							
18. Emotional stability	3.38	.86	−.20	.10	.01	.07	−.03	.11	.03	.02	.02	.16	−.08	.00	.08	−.01	−.02	−.09	.21						
19. Age	28.63	2.08	−.19	−.06	.05	−.05	.04	−.02	.05	−.01	.06	−.11	−.08	−.04	.11	.13	−.18	−.03	−.15	−.02					
20. Gender (1 = male, female = 0)	.72	.45	−.25	.16	.09	.15	.01	.18	.13	.14	.05	−.06	−.08	.18	.18	−.02	−.16	.03	.00	.18	.19				
21. Colorblind beliefs	3.38	.90	−.11	−.03	.21	−.03	.17	−.11	.15	.03	.22	.07	.07	−.06	.08	.10	.22	.06	−.06	−.03	.21	−.17			
22. Domestic student (1 = yes)	.11	.31	−.12	−.08	−.18	.01	−.18	.02	−.15	−.05	−.19	−.14	−.10	−.15	.03	−.15	−.04	−.11	.06	.05	.03	.16	−.16		
23. Pre-MBA salary (€1,000)	67.26	34.33	−.05	.21	.13	.14	.03	.18	.07	.14	.07	.25	.16	.04	.11	.08	.07	.18	.05	−.01	.10	.13	−.06	−.01	
24. GPA	3.27	.38	.05	.29	.07	.24	.06	.23	.09	.23	.12	.15	−.03	.20	−.01	−.02	.09	−.05	−.11	.18	−.14	.18	−.17	.00	.25

Note. |*r*| larger than .19 are significant at $p < .05$; |*r*| larger than .25 are significant at $p < .01$.

Table 2
Linear Regression Analyses on the Composite Creativity Score at T2 (Study 1)

Variable	Model 1	Model 2	Model 3	Model 4
Composite creativity score at T1	.45*** (.08)	.45*** (.08)	.44*** (.08)	.46*** (.07)
Intercultural dating (1 = yes)	.39** (.13)	.36** (.14)	.48*** (.14)	.43** (.13)
Openness to experience		−.10 (.09)	−.16† (.09)	
Conscientiousness		.02 (.06)	.00 (.06)	
Extraversion		−.05 (.06)	−.08 (.06)	
Agreeableness		.11 (.09)	.13 (.09)	
Emotional stability		−.02 (.07)	.01 (.07)	
Age			.04 (.03)	
Gender (1 = male, 0 = female)			.13 (.14)	
Colorblind beliefs			.18* (.07)	.19** (.06)
Domestic student (1 = yes)			−.26 (.17)	
Pre-MBA salary (€1,000)			.00 (.00)	
GPA			−.15 (.16)	
R^2	.29	.31	.43	.35
Overall F	21.86***	6.45***	5.13***	19.16***

Note. Unstandardized regression coefficients are displayed, with standard errors in parentheses.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

our theoretical reasoning, we hypothesized that, compared to participants who wrote about an intracultural dating experience, participants who wrote about an intercultural dating experience would be more likely to reactivate their past cultural learning experiences, and thus to display higher creativity. In other words, we predicted that cultural learning would mediate the effect of recalling an intercultural versus intracultural dating experience on creativity.

Method

Participants and design. We recruited 128 participants from Amazon Mechanical Turk (MTurk) to complete the study. Participants qualified for the experiment only if they had dated both someone from a foreign country and someone from their home country. All participants identified the United States as their home country. We excluded 17 participants who indicated having participated in a study before that involved the RAT and three participants who failed to follow instructions, leaving 108 participants for the purpose of data analysis. Among the 108 participants (50.0% female; mean age = 34.3 years, 88.0% heterosexual), 75.0% self-identified as White, 10.1% as Black/African American, 6.4% as Hispanic/Latino, 3.7% as Asian, and 4.6% as Other.

Experimental manipulation. At the beginning of the study, participants first answered two questions about their dating experiences: (1) Have you dated anyone from a foreign country? If so, how

Table 3
Regression Analyses on Individual Creativity Measures (AUT, RAT, and Insight Problem) at T2 (Study 1)

Variable	AUT Fluency	AUT Flexibility	AUT Novelty	RAT	Insight Problem B	Insight Problem Wald Statistic	Insight Problem Exp(B)
Creativity measures at T1	.47*** (.10)	.59*** (.12)	.64*** (.10)	.33*** (.09)	.60 (.53)	1.28	1.82
Intercultural dating (1 = yes)	1.58* (.77)	1.13* (.49)	3.00* (1.50)	.80** (.30)	1.15† (.62)	3.42	3.16
Openness to experience	−.75 (.48)	−.47 (.31)	−1.50 (.93)	−.25 (.18)	.37 (.40)	.89	1.45
Conscientiousness	.05 (.35)	.03 (.22)	−.05 (.67)	−.01 (.13)	−.08 (.28)	.09	.92
Extraversion	−.37 (.33)	−.15 (.21)	−.97 (.64)	.05 (.12)	−.34 (.27)	1.66	.71
Agreeableness	.46 (.51)	.29 (.32)	1.34 (.98)	−.04 (.19)	.55 (.40)	1.91	1.74
Emotional stability	−.10 (.39)	.06 (.25)	.31 (.76)	−.09 (.15)	.25 (.32)	.61	1.29
Age	.19 (.17)	.06 (.11)	.33 (.32)	−.01 (.06)	.10 (.14)	.54	1.11
Gender (1 = male, 0 = female)	−.02 (.75)	.49 (.48)	.25 (1.46)	.17 (.28)	1.01 (.67)	2.25	2.73
Colorblind beliefs	.61 (.38)	.51* (.24)	1.78* (.73)	.05 (.14)	.43 (.31)	1.92	1.53
Domestic student (1 = yes)	−1.82† (.96)	−1.04† (.61)	−3.76* (1.86)	−.03 (.36)	.43 (.78)	.31	1.54
Pre-MBA salary (€1,000)	−.00 (.01)	.00 (.01)	.00 (.02)	.00 (.00)	.01 (.01)	1.43	1.01
GPA	−.01 (.91)	−.23 (.58)	.56 (1.77)	−.47 (.34)	−.78 (.73)	1.14	.46
R^2	.32	.32	.45	.30			
Overall F	3.19***	3.10***	5.45***	2.81**			
−2 Log likelihood					105.72		
Nagelkerke R^2					.22		

Note. Unstandardized regression coefficients are displayed, with standard errors in parentheses.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

many? (2) Have you dated anyone from your own country? If so, how many? We programmed the survey such that those participants who did not report having had *both* types of dating experiences were immediately disqualified from continuing the study. After verifying that participants had had both intercultural and intracultural dating experiences, we instructed them to describe a dating experience in as much detail as they could within 5 minutes. By random assignment, participants wrote about either an intercultural or intracultural dating experience. In both conditions, participants were prompted to describe where their partner was from, what they had done together with their partner, what they had learned from their partner, interactions with their partner's friends and family, whether they were more similar or dissimilar to their partner, and so forth.

Cultural learning versus noncultural learning. Independent judges blind to the experimental conditions coded whether each essay contained any description of cultural learning (1 = yes, 0 = no; Cohen's kappa = .98) and any description of noncultural learning (1 = yes, 0 = no; Cohen's kappa = .93). More specifically, "cultural learning" was considered present if a participant explicitly described learning about another culture (e.g., "I learned a lot about his Hindu culture and the family values and traditions that they hold dear"; "I learned a lot about Japanese customs and cultures and I ended up interested in mochi"; "I learned how to make Haitian food"). By contrast, "non-cultural learning" was considered present if a participant explicitly described learning in noncultural domains (e.g., "I have learned to become more tolerant and patient"; "I learned many things from her, the value of hard work, dedication and striving to always be kind and fair with people"; "I learned to not give up and make no excuses"). An essay would receive a "1" for both cultural and noncultural learning if both were described.

Creativity task. To assess creativity, we used one of the measures from Study 1: the Remote Associates Test (RAT). Participants had up to 5 minutes to complete a maximum of 15 RAT problems (see Appendix D). This was the only creativity measure we collected in Study 2.

Results

Creativity. As predicted, participants in the intercultural condition correctly solved significantly more RAT problems (M = 8.07, SD = 3.35) than did those in the intracultural condition (M = 6.56, SD = 3.26; $t[106] = 2.39$, $p = .019$, $d = 0.46$). This difference remained significant even after controlling for the number of words in each essay, $t[106] = 2.29$, $p = .024$.[2]

Cultural learning. Not surprisingly, participants in the intercultural condition were significantly more likely to write about *cultural* learning (57.4%) than were those in the intracultural condition (3.7%; $\chi^2[1, N = 108] = 36.70$, $p < .001$); in contrast, participants in the intercultural condition were significantly less likely to write about *noncultural* learning (27.8%) than were those in the intracultural condition (72.2%; $\chi^2[1, N = 108] = 21.33$, $p < .001$).

Mediation by cultural learning. Importantly, cultural learning positively predicted the number of RAT problems solved correctly ($B = 2.30$, $SE = .67$, $p = .001$), whereas noncultural learning did not ($B = -.52$, $SE = .65$, $p = .43$). This effect of cultural learning remained significant even after controlling for the number of words in each essay ($B = 2.19$, $SE = .69$, $p = .002$). A bootstrapping analysis with 5,000 iterations (Preacher & Hayes, 2008) revealed that cultural learning fully mediated the effect of experimental condition on RAT performance (bias-corrected 95% CI = [.1447, 2.1559]).

Discussion

Study 2 found that participants achieved superior creative performance when reflecting on an intercultural dating experience versus an intracultural dating experience. Thus, this study provides causal evidence for the effect of intercultural dating on creativity. Moreover, mediation analyses suggest that intercultural dating promotes creativity because it allows for cultural learning (Maddux et al., 2010).

Study 3: The Duration Versus the Number of Intercultural Relationships as Predictors of Creativity

Study 3 extended the first two studies in several notable ways. First, whereas Studies 1 and 2 only examined the overall experience of intercultural dating, Study 3 compared two aspects of intercultural dating: the duration versus the number of intercultural romantic relationships. Because duration is a proxy for the closeness of intercultural relationships, and because sufficient closeness is indispensable for cultural learning, we hypothesized that duration would be a stronger predictor of creativity than the number of intercultural relationships. As a comparison, we also measured the duration and the number of *intra*-cultural relationships. Second, to examine the generalizability of our findings, we recruited a sample of current employees. Third, to ground our findings in an organizational context, we tested participants' ability to generate creative names for new marketing products.

Method

Participants and design. We recruited 163 current employees from MTurk to participate in the study. Participants qualified for the study only if they were currently employed. All participants identified the United States as their home country. We excluded 22 participants who failed to follow instructions (e.g., their product names were not all one-word) or had missing variables, leaving 141 participants for the purpose of data analysis. Among the 141 participants (53.9% female; mean age = 36.4 years, 92.9% heterosexual), 83.7% self-identified as White, 5.0% as Black/African American, 4.3% as Asian, 3.5% as Hispanic/Latino, and 3.5% as Other.

Participants first completed a product name generation task that measured creativity, then reported their intercultural and intracultural dating experiences, and lastly responded to demographic and personality control variables.

[2] Participants also indicated the extent to which they had adapted themselves to the partner described in the essay (1= *not at all*, 5 = *very much*). The intercultural condition indicated marginally lower adaptation (M = 3.02, SD = 1.07) than the intra-cultural condition (M = 3.35, SD = 1.05; $t[106] = -1.70$, $p = .106$, $d = 0.31$). This was not surprising given that it is generally more difficult to adapt to individuals from other cultures. This adaptation measure did not correlate with the creativity measure ($r = -.04$, $p = .68$).

Intercultural and intracultural romantic relationships. In reporting their past romantic relationships, participants indicated the number of individuals they had dated from foreign countries, the duration of each intercultural relationship in months (which we summed as the total duration of intercultural dating), the number of individuals they had dated from their home country, and the duration of each intracultural relationship in months (which we summed as the total duration of intracultural dating). The order of the four questions was counterbalanced.

Creativity task. In order to measure creativity in a more organizationally relevant manner, we adapted a divergent thinking task from Rubin, Stolzfus, and Wall (1991). Specifically, we asked participants to imagine that they were interviewing with a top marketing firm, and part of the interview involved assessing their aptitude for business and potential as employees (Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). They were instructed to create three one-word names for each of three product categories: pasta, nuclear element, and pain reliever. To facilitate their idea generation, six examples were provided for each category (see Kray et al., 2006). Importantly, for each of the three categories, the examples had two *common endings*: All of the pasta examples ended in "na" or "ni" (e.g., lasagna, rigatoni), all of the nuclear element examples ended in "on" or "ium" (e.g., radon, plutonium), and all of the pain reliever examples ended in "ol" or "in" (e.g., tylenol, bufferin). In keeping with past studies (Galinsky et al., 2008; Kray et al., 2006; Rubin et al., 1991), we operationalized creativity as the total number of names that did not share the endings of the supplied examples ($M = 3.33$, $SD = 2.36$).

Control variables. At the end of the survey, we measured demographic and personality control variables pertinent to creativity: age, gender, sexual orientation, education, annual salary (in $1,000), the number of languages spoken fluently, and Big-Five personality traits (seven-point Likert scale; Gosling et al., 2003).

Results

Descriptive statistics and bivariate correlations are displayed in Table 4.

As predicted, the duration of intercultural relationships alone significantly and positively predicted creativity (Table 5 Model 1: $B = .03$, $SE = .01$, $p = .005$). In contrast, creativity was not significantly predicted by the number of intercultural relationships, the duration of intracultural relationships, or the number of intracultural relationships (all three ps $> .05$).

When we entered all four independent variables into a simultaneous regression, the duration of intercultural dating remained a significant predictor of creativity (Table 5 Model 2: $B = .02$, $SE = .01$, $p = .022$), while the other three variables remained nonsignificant (all ps $> .05$). The effect of intercultural dating duration persisted when we further accounted for Big-Five personality traits (Table 5 Model 3: $B = .02$, $SE = .01$, $p = .037$) and the other control variables (Table 5 Model 4: $B = .03$, $SE = .01$, $p = .021$).

There was no significant quadratic relationship between the duration of intercultural relationships and creativity ($B = -.00$,

Table 4
Descriptive Statistics and Correlations (Study 3)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Creativity	3.33	2.36																
2. Duration of intercultural relationships	7.62	22.27	.23															
3. Number of intercultural relationships	.47	.81	.14	.56														
4. Duration of intra-cultural relationships	111.10	99.22	−.13	−.06	−.04													
5. Number of intra-cultural relationships	4.07	3.03	−.15	.07	.04	.38												
6. Openness to experience	5.26	1.25	−.10	−.02	.05	.08	.21											
7. Conscientiousness	5.59	1.12	.00	−.09	−.11	.08	.08	.18										
8. Extraversion	3.89	1.60	.04	−.02	.05	−.01	.04	.23	−.02									
9. Agreeableness	5.38	1.18	.05	.09	−.02	.06	.20	.39	.37	.09								
10. Emotional stability	4.98	1.35	.01	−.03	−.03	.14	.19	.17	.49	.26	.41							
11. Age	36.42	10.47	.00	−.02	.07	.43	.30	.00	.09	.06	.12	.18						
12. Gender (1 = male, 0 = female)	.46	.50	−.07	.08	.12	−.14	.06	−.06	.00	.14	−.13	.17	.00					
13. Sexuality (1 = heterosexual, 0 = other)	.93	.26	.06	.00	.13	−.09	.07	−.30	−.11	−.06	−.10	−.07	−.01	.15				
14. Bicultural (1 = bicultural, 0 = monocultural)	.06	.25	.09	.15	.35	.01	.09	−.04	.01	.05	.04	.00	.02	.05	.07			
15. College degree or higher	.66	.48	.06	.19	.23	−.07	.02	.08	−.04	.14	.02	.00	.05	−.03	.15	.00		
16. Languages	1.18	.48	.09	.19	.32	−.18	−.12	−.08	−.02	.02	−.08	−.11	−.17	−.08	.04	.51	.17	
17. Salary ($1,000)	48.90	59.46	.02	−.02	.05	.20	.09	.03	.05	.18	.03	.12	.09	.08	.10	−.01	−.02	−.01

Note. $|r|$ larger than .16 are significant at $p < .05$; $|r|$ larger than .22 are significant at $p < .01$.

Table 5
Linear Regression Analyses on the Creativity (Study 3)

Variable	Model 1	Model 2	Model 3	Model 4
Duration of intercultural relationships	.03** (.01)	.02* (.01)	.02* (.01)	.03* (.01)
Number of intercultural relationships		.05 (.29)	.10 (.30)	−.02 (.34)
Duration of intra-cultural relationships		−.00 (.00)	−.00 (.00)	−.00 (.00)
Number of intra-cultural relationships		−.12 (.07)	−.12 (.07)	−.13† (.08)
Openness to experience			−.21 (.18)	−.14 (.20)
Conscientiousness			.04 (.21)	.04 (.21)
Extraversion			.10 (.13)	.09 (.14)
Agreeableness			.18 (.20)	.08 (.21)
Emotional stability			.02 (.18)	.06 (.19)
Age				.02 (.02)
Gender (1 = male, 0 = female)				−.58 (.44)
Sexuality (1 = heterosexual, 0 = other)				.59 (.87)
Bicultural (1 = bicultural, 0 = monocultural)				.78 (1.01)
College degree or higher				−.03 (.45)
Languages				−.19 (.52)
Salary ($1,000)				.00 (.00)
R^2	.05	.09	.10	.12
Overall F	7.97**	3.18*	1.64	1.10

Note. $N = 141$. Unstandardized regression coefficients are displayed, with standard errors in parentheses.
† $p < .10$. * $p < .05$. ** $p < .01$.

$SE = .00$, $p = .92$), nor between the number of intercultural relationships and creativity ($B = -.19$, $SE = .22$, $p = .41$). The interaction of the number of intercultural relationships (mean-centered) and the duration of intercultural relationships (mean-centered) was not significant either ($B = .00$, $SE = .02$, $p = .82$).

Discussion

Building upon the first two studies, Study 3 contrasted the effect of intercultural versus intracultural romantic relationships, as well as the effect of the duration versus the number of both types of relationships. Consistent with our theory and the growing consensus that the depth of multicultural experiences is the key predictor of creativity, the duration of intercultural dating emerged as the critical predictor of creativity—even after accounting for a host of pertinent control variables. Of course, other unmeasured predictors of creativity were likely at play as indicated by the R-squared values of the regression models. Overall, the results supported our hypothesis that the duration of intercultural relationships positively predicts creative performance.

Study 4: Field Evidence for the Effect of Intercultural Friendships on Entrepreneurship and Workplace Innovation

The purpose of Study 4 was threefold. First, to further investigate the generalizability of our findings, we recruited a sample from yet another population—professional repatriates who had worked in the U.S. before returning to their home countries. Second, whereas the first three studies focused on the effect of intercultural romantic relationships, Study 4 examined another type of intercultural relationship: intercultural friendships. We predicted that the frequency of contact between participants and their foreign friends would positively predict creative outcomes because the more interactions individuals have with their foreign friends, the more opportunities they have to engage in cultural learning (Maddux et al., 2010) and to synthesize diverse cultural perspectives to generate creative insights (Leung & Chiu, 2010). Third, the first three studies employed cognitive tasks that have been widely used and validated in the creativity literature (i.e., Alternative Uses Task, Remote Associates Test, insight problems, product name generation task). Although these tasks have high internal validity, they may lack external validity (Runco & Sakamoto, 1999). Thus, it is unclear whether the effect of intercultural social relationships would generalize to the "Big C" creativity (Simonton, 1994), or creative outcomes that are highly important for organizations. To address this concern, we investigated whether these professional repatriates' frequency of contact with American friends since returning to their home countries was conducive to (1) entrepreneurship and (2) workplace innovation.

Method

Participants and design. The survey was conducted with the help of a nonprofit professional exchange organization called Global Exchange (GlobalEx), which is designated by the U.S. Department of State to sponsor J-1 visas for skilled foreign nationals. The J-1 visa allows non-U.S. nationals who have had education and training in a professional field (e.g., software engineering, management) to work for a host organization in the U.S. for between 3 and 24 months. Although several subcategories of the J-1 visa exist, GlobalEx sponsors only "intern" and "trainee" J-1 visas, which are functionally similar and only issued to skilled workers with higher education and professional work experience (age range: 21–35).

Between 1997 and 2013, GlobalEx sponsored the J-1 visas of 10,951 individuals from 120 different countries, who worked in over 2,000 small- to large-sized companies in the U.S. (e.g., Google, Merrill Lynch). A total of 3,840 recipients of J-1 visas

sponsored by GlobalEx ("alumni") completed the survey (response rate = 35.1%). On average, they had spent 305.83 days (SD = 175.46) in the U.S. under a J-1 visa. There was no statistically significant difference between respondents and nonrespondents in basic demographics, such as age, gender, and country of origin.

The survey mainly covered respondents' work experiences in the U.S., career activities in their home countries since return, and their attitudes and beliefs about the U.S. and their home countries. Importantly, for the 2,226 respondents (36.0% female; M = 32.20 years, SD = 6.53) who had already returned to their home countries (N = 96), the survey contained information about their ongoing friendships with the Americans whom they had met while working in the U.S., as well as information about respondents' activities both inside and outside the workplace in their home countries since their return.

Intercultural friendships. All respondents reported the frequency of contact with their American friends since they returned to their home countries (7-point Likert-type scale: 1 = *never*, 2 = *less than once a month*, 3 = *once a month*, 4 = *2–3 times a month*, 5 = *once a week*, 6 = *2–3 times a week*, 7 = *daily*; M = 2.98, SD = 1.60). We interpret contact frequency as an indicator of the strength of a respondent's ties to their American friends.

Creativity measures: entrepreneurship and workplace innovation. We used two variables to measure real-world creativity. The first variable—entrepreneurship—was a binary variable that captured whether a respondent had founded a business since returning to his or her home country (14.6% said "yes"). Four of the 2,226 respondents interpreted this question as also referring to self-employment through contract work, so we coded their responses as "no."

Our second creativity variable examined non-entrepreneur respondents' workplace innovation in their home countries. Specifically, the survey asked them to describe the most recent instance in which they made a suggestion to change or introduce some practice in the workplace of their home countries. Examples include a software engineer who recommended a new way of conducting peer code review or an architect who introduced a novel method of organizing project blueprints. For this dependent variable, we limit our analysis to the 1,412 respondents who reported making such a workplace suggestion. After describing the suggestions, these respondents indicated the extent to which they agreed with the statement, "This suggestion creates an entirely new practice in my company" (7-point Likert scale: 1 = *very much disagree*, 7 = *very much agree*; M = 4.87, SD = 1.48). We interpreted higher values of this variable to signal greater workplace innovation.

Control variables. We accounted for a variety of potentially confounding variables in our regression analyses. First, we controlled for each respondent's age, gender, and education. Second, we controlled for the number of days respondents worked in the U.S. under the J-1 visa as well as the amount of time elapsed since they returned to their home countries. Third, we controlled for the respondent's cultural intelligence based on a five-question battery (e.g., "I can describe the ways that behaviors differ across cultures"; 7-point Likert scale: 1 = *very much disagree*, 7 = *very much agree*; α = .86; Earley & Ang, 2003). Fourth, we assessed each respondent's job embeddedness in the U.S., because the extent to which they felt they had fit in with their workplace and community abroad might have influenced both their tendency to develop intercultural friendships and their creativity (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001; Wang, 2015). Specifically, participants responded to eight items such as "I fit with my host company's culture" and "I thought of where I lived in the U.S. as home" (7-point Likert scale: 1 = *very much disagree*, 7 = *very much agree*; α = .89).

In models predicting *non-entrepreneurs*' workplace innovation in their home country, we further controlled for their current job embeddedness in their home country (e.g., "I fit with this company's culture" and "I think of the community where I live as home"; 7-point Likert scale: 1 = *very much disagree*, 7 = *very much agree*; α = .90). This control variable was not included in models predicting entrepreneurship because most of the *entrepreneurs* in our sample did not work under an employer after returning to their home countries; as such, they did not answer this question on the survey. On the other hand, in models predicting entrepreneurship, we further included (1) a binary measure of whether the respondent had started a business prior to working in the U.S. (1.9% of respondents) and (2) a measure of the respondent's overall desire to start a business prior to working in the U.S. (5-point Likert-type scale: 1 = *not at all*, 5 = *definitely*). Because these two questions were only relevant to the entrepreneurs, we did not include them as control variables in models predicting non-entrepreneurs' workplace innovation.

Since all variables were self-reported, it is possible that our results suffered from common method biases. To address this potential issue, we followed Podsakoff, MacKenzie, Lee, and Podsakoff (2003), who recommend controlling for common method biases in survey data using an unmeasured latent method factor. Thus, we loaded all of the survey-related (i.e., nondemographic) variables into a single factor to include as a control variable in our regression models. Finally, because the survey data represent an international sample, we included a fixed-effect for each of the respondents' home countries to control for any country-specific heterogeneity. The top five home countries represented in our sample were Germany (14.3%), France (9.3%), China (8.2%), India (5.4%), and Japan (3.9%).

Results

Descriptive statistics and bivariate correlations are displayed in Table 6.

Table 7 details the two logistic regression models predicting respondents' entrepreneurship. As expected, contact frequency with American friends positively predicted entrepreneurship—whether alone (Table 7 Model 1: B = .08, SE = .04, $Wald$ = 4.67, p = .031) or in the full model that accounted for all the control variables (Table 7 Model 2: B = .11, SE = .05, $Wald$ = 5.79, p = .016). There was no significant quadratic relationship between contact frequency and entrepreneurship (B = .01, SE = .02, p = .65).

Table 8 presents the two linear regression models predicting non-entrepreneurs' workplace innovation. Contact frequency with American friends positively predicted workplace innovation—whether alone (Table 8 Model 1: B = .12, SE = .03, $p < .001$) or in the full model (Table 8 Model 2: B = .09, SE = .03, p = .002). There was no significant quadratic relationship between contact frequency and workplace innovation (B = .01, SE = .02, p = .58).

Table 6
Descriptive Statistics and Correlations (Study 4)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Frequency of contact with American friends	2.98	1.60															
2. Became an entrepreneur after return (1 = yes)	.15	.35	.05														
3. Workplace innovation	4.87	1.48	.16	.08													
4. Common method factor	.00	1.08	.20	.00	.14												
5. Age	32.20	6.53	−.18	.07	.06	−.06											
6. Gender (1 = male, 0 = female)	.64	.48	−.01	.01	.00	.02	.08										
7. Some undergraduate (1 = yes)	.35	.48	−.04	.10	−.03	.02	.17	−.05									
8. Bachelor's degree (1 = yes)	.43	.50	.09	−.06	.07	.01	−.24	−.01	−.62								
9. Graduate degree (1 = yes)	.22	.42	−.06	−.05	−.06	−.03	.09	.06	−.40	−.47							
10. Cultural intelligence	6.09	.68	.16	.10	.13	.45	−.09	−.10	.01	.00	−.01						
11. Days since return to home country	1585.70	1223.51	−.24	.18	−.02	−.04	.53	−.05	.42	−.28	−.15	.03					
12. Days lived in the U.S.	305.83	175.46	.05	.14	.10	.02	.25	−.02	.35	−.22	−.15	.06	.32				
13. Job embeddedness in the U.S.	5.66	.84	.19	−.03	.13	.96	−.03	.04	.01	.02	−.03	.28	−.05	.02			
14. Job embeddedness in home country	5.41	.87	.07	.08	.10	.23	.00	.02	−.01	.04	−.04	.13	.01	.05	.23		
15. Prior entrepreneurial desire	2.48	1.37	.10	.24	.11	.01	−.13	.08	.08	−.01	−.08	.13	−.06	−.01	.00	.02	
16. Prior entrepreneurial experience	.02	.14	−.03	.13	.09	.03	.02	.04	.02	−.03	.01	.00	−.06	−.01	.03	.04	.29

Note. |*r*| larger than .05 are significant at $p < .05$; |*r*| larger than .08 are significant at $p < .01$.

Table 7
Logistic Regression Analyses on the Likelihood of Becoming an Entrepreneur After Return (Study 4)

Variable	Model 1	Model 2
Frequency of contact with American friends	.08* (.04)	.11* (.05)
Common method factor	−.12* (.05)	.09 (.35)
Age		.02 (.01)
Gender (1 = male, 0 = female)		.08 (.16)
Education: graduate degree		.22 (.20)
Education: some undergraduate		−.41* (.18)
Cultural intelligence		.08 (.15)
Days since return to home country		0.56*** (0.10)
Days lived in the U.S.		.22** (.08)
Job embeddedness in the U.S.		−.36 (.42)
Prior entrepreneurial desire		.54*** (.05)
Prior entrepreneurial experience		.63 (.39)
Home country fixed effects		Included
−2 Log likelihood	−920.68	−718.45
Nagelkerke R^2	.11	.29
N (respondents)	2226	2226

Note. Unstandardized regression coefficients are displayed, with standard errors in parentheses. "Bachelor's degree" is the reference category for education. See Table S1 for detailed statistics of home country fixed effects.
* $p < .05$. ** $p < .01$. *** $p < .001$.

In addition, it is noteworthy that the length of work experience in the U.S. also positively predicted both entrepreneurship (Table 7 Model 2: $B = .22$, $SE = .08$, $Wald = 7.80$, $p = .005$) and non-entrepreneurs' workplace innovation (Table 8 Model 2: $B = .15$, $SE = .05$, $p = .004$) in the full models, replicating past findings (Godart et al., 2015; Maddux & Galinsky, 2009).

Table 8
Linear Regression Analyses on Non-Entrepreneurs' Workplace Innovation (Study 4)

Variable	Model 1	Model 2
Frequency of contact with American friends	.12*** (.03)	.09** (.03)
Common method factor	.18*** (.04)	.40† (.23)
Age		.03** (.01)
Gender (1 = male, 0 = female)		.10 (.10)
Education: graduate degree		−.16 (.12)
Education: some undergraduate		−.22† (.12)
Cultural intelligence		.00 (.10)
Days since return to home country		−.10 (.06)
Days lived in the U.S.		.15** (.05)
Job embeddedness in the U.S.		−.33 (.28)
Job embeddedness in home country		.07 (.05)
Home country fixed effects		Included
R^2	.04	.18
Overall *F*	22.83***	2.32***
N (respondents)	1143	1138

Note. Unstandardized regression coefficients are displayed, with standard errors in parentheses. "Bachelor's degree" is the reference category for education. See Table S2 for detailed statistics of home country fixed effects.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

Extending the first three studies, Study 4 demonstrated that the frequency of contact with foreign friends positively predicted two organizationally meaningful creative outcomes—entrepreneurship and workplace innovation. These findings highlight the applicability and generalizability of our theoretical framework that the closeness of an intercultural social relationship is a critical driver of creativity.

General Discussion

The current research has discovered the creative benefits of close intercultural relationships. Across multiple methodologies (longitudinal, experimental, and field studies), diverse samples (MBA students, employees, and professional expatriate returnees), and both laboratory and real-world measures of creativity, we found that close intercultural romantic relationships and friendships predicted important creative outcomes. As a two-phase longitudinal study, Study 1 found that MBA students who dated someone from another culture during their program performed better on both divergent and convergent forms of creativity at Phase 2 (accounting for creative performance at Phase 1 and other control variables). Using an experimental design, Study 2 revealed that reactivating a past intercultural dating experience led to higher creativity than reactivating a past intracultural dating experience; importantly, this effect was mediated by cultural learning. Comparing the duration versus the number of both intercultural and intracultural romantic relationships, Study 3 found that only the duration of intercultural relationships significantly predicted the ability of current employees to generate creative names for marketing products. Extending the preceding findings to the "Big C" creativity (Simonton, 1994), Study 4 found that professional repatriates' frequency of contact with American friends positively predicted both entrepreneurship and workplace innovation back in their home countries.

Theoretical Contributions

The present work contributes to the literature in several important ways. The core of our contribution is the integration of five separate literatures: culture, close relationships, creativity, innovation, and entrepreneurship. We have connected these varied literatures with a simple yet profound finding: Close intercultural relationships help spark creativity, innovation, and entrepreneurial activities.

Drawing upon the creative cognition approach (Finke et al., 1992; Smith et al., 1995), we provide the first empirical evidence that intercultural romantic relationships and friendships can enhance creativity by facilitating cultural learning. Whereas past research has focused on experiences abroad, the present research examined the effects of intercultural *social relationships*. By identifying intercultural romantic relationships and friendships as unique and concrete multicultural activities that enhance creativity, we shed light on why experiences abroad are conducive to creativity, and why certain individuals become more creative than others even when exposed to the same foreign environment (Leung et al., 2008). Whether abroad or at home, individuals may elevate their creativity by learning and integrating different cultural perspectives via meaningful social relationships.

Second, we extend the emerging literature on the differential effects of deep versus broad multicultural experiences (Cao et al., 2014; Godart et al., 2015; Lu et al., 2017) by demonstrating that the duration and the frequency of contact of intercultural relationships positively predicted creativity and entrepreneurship, whereas the number of intercultural relationships did not. Closer intercultural relationships provide more opportunities for individuals to learn about another culture at a profound level and to integrate it with their own culture (Godart et al., 2015; Maddux et al., 2010; Maddux & Galinsky, 2009; Tadmor et al., 2012). By interacting with individuals from other cultures at a deep level, people can self-expand by broadening their cultural perspectives and identities (Aron & Aron, 1986; Hong et al., 2001), thereby producing creative insights. Overall, the current findings are consistent with prior work showing that the depth of foreign experiences is a stronger predictor of creativity than the breadth of those experiences (Godart et al., 2015).

Third, in illustrating the creative merits of multicultural experiences, past studies (e.g., Maddux & Galinsky, 2009) have mostly employed traditional cognitive tests (e.g., AUT, RAT, insight problems), which may lack external validity. In addition to capturing creativity through both divergent and convergent thinking tasks, we also demonstrated the effects of intercultural relationships on entrepreneurship and workplace innovation—two real-world creative outcomes critical to the field of industrial and organizational psychology. In doing so, we have identified two more constructs shaped by multicultural experiences.

Practical Implications for Individuals

Due to the rise of globalization, multicultural experiences are increasingly valued by companies and schools alike. As a result, an unprecedented number of employees and students go abroad to discover insights into other cultures and develop new perspectives. Although intercultural social relationships have been growing across the world, most international employees and students still socialize with and date individuals from their home country (Trice, 2004). Because of their shared cultural background, it is often tempting and comforting for expatriates to "stick together" with their cultural in-groups and speak in their mother tongues (McPherson, Smith-Lovin, & Cook, 2001)—whether running errands, completing group assignments, attending social events, or touring the host country. Ironically, the soaring number of expatriates makes it even easier for them to get by within their home-culture "comfort zone," which may explain why so many long-time residents in enclaves such as Chinatowns, Koreatowns, Greektowns, Little Havanas, or Little Italies cannot speak the local language, let alone develop close friendships or romantic relationships with individuals from the local culture (Logan, Zhang, & Alba, 2002). Furthermore, because foreign living and working experiences are often temporary, some individuals may be unmotivated to invest in intercultural relationships that they expect will dissolve in the future (San Martin, Swaab, Sinaceur, & Vasiljevic, 2015).

Against such backdrops, the present research offers a compelling reason for people to go out of their comfort zone to develop meaningful and long-lasting relationships with individuals from other cultures. While not everyone has the resources and opportunity to go abroad, they could strive to develop meaningful

intercultural relationships via meet-ups (e.g., language exchange programs) within their home city. Importantly, the current findings suggest that people cannot simply "collect" intercultural relationships at a superficial level, but instead must engage in cultural learning at a deep level. When in an intercultural relationship, an individual should not eschew cultural differences but rather embrace them, because such differences enable one to discern and learn the underlying assumptions and values of both the foreign culture and the home culture (Cheng & Leung, 2013; Leung & Chiu, 2010). Without close social interactions, it can be difficult for individuals to juxtapose and synthesize different cultural perspectives to achieve cultural learning and produce creative insights.

Practical Implications for Organizations

How can organizations capture the potential creative benefits (e.g., workplace innovation, entrepreneurship) afforded by close intercultural relationships? We propose a two-step process to cultivate intercultural relationships that are close.

To facilitate intercultural relationships, the first step for organizations is to cultivate an intercultural environment by opening the door to individuals from different cultures. For example, to enhance cultural diversity in the workplace, organizations could develop more exchange programs between offices in different countries. In addition, organizations could provide more financial and logistical support for international employees in the challenging process of obtaining work visas and residency permits. From a public policy perspective, the U.S. remains the only developed country that taxes citizens on income earned abroad (Newlove, 2016), which can deter them from seeking foreign experiences. Thus, making organizational, visa, and taxation policies more conducive to intercultural exchanges may be one way to foster cultural diversity in the workplace.

Having ensured an adequate level of cultural diversity for intercultural interactions, the second step for organizations is to nurture *close* relationships among employees from different cultures. When intercultural relationships are mismanaged, they can breed discomfort, mistrust, and conflict due to cultural barriers and differences (Montalvo & Reynal-Querol, 2005; Putnam, 2007), which explains why people generally favor intracultural romantic relationships and friendships in the first place (McPherson et al., 2001; Titzmann & Silbereisen, 2009). Instead of forcing international employees to suppress their cultural values and assimilate to the host culture, organizations could encourage inclusive multiculturalism (Galinsky et al., 2015) by highlighting the benefits of cultural differences for both cultural in-groups and out-groups (Jansen, Otten, & van der Zee, 2015). Firms could facilitate deep intercultural relationships through shared activities, both inside and outside the workplace. At work, managers could assign foreign and domestic employees to work together on tasks that require cooperation, thereby reducing intergroup bias and barriers (Gaertner, Mann, Dovidio, Murrell, & Pomare, 1990). Outside of work, language exchange programs not only allow both parties to improve language skills, but also bring them closer through self-disclosure and mutual support. As they transition from mere colleagues to closer friends, employees will have more opportunities to engage in cultural learning at a deep level, thereby sparking creative insights.

Limitations and Future Directions

As one of the first attempts to understand the consequences of *intercultural* social relationships, the current work has several limitations that can stimulate future research. Although three of our studies documented the positive effects of intercultural romantic relationships on creativity across different methods and population samples, we only conducted one study on the effects of intercultural friendships. Thus, more research is needed to triangulate on the creative benefits of close intercultural friendships. Second, since only one of our studies provided evidence for the mediating role of cultural learning, future research should study this and other potential mediators in greater depth, while also exploring potential moderators. For example, the cultural distance between two countries may moderate the positive effect of close intercultural relationships on creativity, with close intercultural relationships being particularly conducive to cultural learning and creativity if the two individuals are from countries with greater cultural distance (e.g., Canada and China) versus less cultural distance (e.g., Canada and the U.S.).

Future research could also explore the effects of intercultural relationships on other important social and psychological outcomes. In light of the recent research on multicultural experiences, socializing with a large number of friends from diverse cultures may reduce intergroup bias (Tadmor, Hong, Chao, Wiruchnipawan, & Wang, 2012), heighten generalized trust (Cao et al., 2014), and increase tolerance of non-normative behaviors (Kinias, Kim, Hafenbrack, & Lee, 2014). On the other hand, a broad network of intercultural friendships may provide weaker surveillance of the self (Brass, Butterfield, & Skaggs, 1998) and also foster moral relativism (Lu et al., 2017), both of which could increase unethical behaviors. Such questions await future investigations.

Conclusion

The current research demonstrates that close intercultural relationships can foster creativity, workplace innovation, and entrepreneurship. Going out with a close friend or romantic partner from a foreign culture can help people "go out" of the box and into a creative frame of mind.

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Appendix A

Study 1 Remote Associates Test

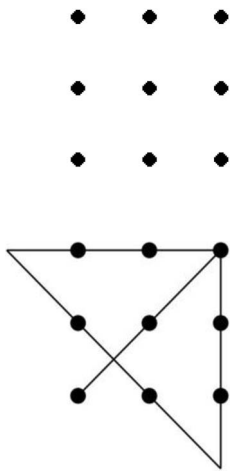
Word 1	Word 2	Word 3	Solution
Phase 1			
Blank	White	Lines	Paper
Thread	Pine	Pain	Needle
Envy	Golf	Beans	Green
Barrel	Root	Belly	Beer
Pure	Blue	Fall	Water
Phase 2			
Magic	Plush	Floor	Carpet
Stop	Petty	Sneak	Thief
Chocolate	Fortune	Tin	Cookie
Broken	Clear	Eye	Glass
Chamber	Staff	Box	Music

Appendix B

9-Dot Puzzle

Below are nine dots. Your challenge is to draw four straight lines that connect all of the dots without picking your pen off the paper. You can start from any position and draw the lines one after the other, but you cannot lift up your pen.

Solution:

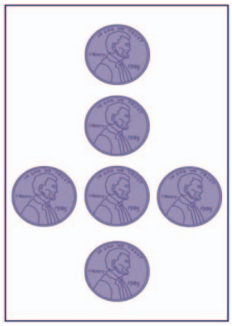


(*Appendices continue*)

Appendix C

Coin Puzzle

How can you move only one coin to make two rows (in any direction) of four coins each?



Solution: Place the top (or bottom) coin on top of the coin in the middle.
See the online article for the color version of this appendix.

Appendix D

Study 2 Remote Associates Test

Word 1	Word 2	Word 3	Solution
Blank	White	Lines	Paper
Magic	Red	Floor	Carpet
Thread	Pine	Magnetic	Needle
Stop	Petty	Sneak	Thief
Envy	Golf	Beans	Green
Chocolate	Fortune	Tin	Cookie
Barrel	Root	Belly	Beer
Broken	Clear	Eye	Glass
Gun	Salt	Fall	Water
Chamber	Staff	Box	Music
Sharp	Blue	Cake	Cheese
Hall	Car	Swimming	Pool
Square	Cardboard	Lunch	Box
High	Book	Foot	Note
Gold	Stool	Tender	Bar

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