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THE COSTS OF AMBIENT CULTURAL DISHARMONY: INDIRECT INTERCULTURAL CONFLICTS IN SOCIAL ENVIRONMENT UNDERMINE CREATIVITY

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Intercultural tensions and conflicts are inevitable in the global workplace. This article introduces the concept of ambient cultural disharmony—indirect experience of intercultural tensions and conflicts in individuals' immediate social environment—and demonstrates how it undermines creative thinking in tasks that draw on knowledge from multiple cultures. Three studies (a network survey and two experiments) showed that ambient cultural disharmony decreased individuals' effectiveness at connecting ideas from disparate cultures. Beliefs that ideas from different cultures are incompatible mediated the relationship between ambient cultural disharmony and creativity. Alternative mechanisms such as negative affect and cognitive disruption were not viable mediators. Although ambient cultural disharmony disrupted creativity, ambient cultural harmony did not promote creativity. These findings have theoretical and practical implications for research in workplace diversity and creativity.

As pressures of globalization propel companies to innovate in a global multicultural context, it is increasingly important to cultivate a culturally diverse workplace to enhance employee creativity (Brimm, 2010). Creativity is commonly defined as the development of ideas or products that are both novel and useful (Amabile, 1983). Cultural diversity in a workplace ideally provides for the confluence of disparate ideas from different cultures; the appropriate combination of ideas and perspectives from different cultures potentiates creative solutions to pressing business problems in the global economy. Indeed, prior research has linked workplace cultural diversity (Cox, Lobel, & McLeod, 1991; Giambatista & Bhappu, 2010; McLeod, Lobel, & Cox, 1996; Stahl, Maznevski, Voigt, & Jonsen, 2010) and exposure to foreign cultures (Leung, Maddux, Galinsky, & Chiu, 2008; Maddux & Galinsky, 2009) to creative performance.

Yet the creativity benefits of forging a culturally diverse work environment are not always realized (O'Reilly, Williams, & Barsade, 1998). Scholars have long recognized that exposure to an out-group predicates the activation of negative stereotypes and biases against out-group members (Allport, 1954; Stephan & Stephan, 1985), leading to intergroup tensions and conflicts. As organizations become more culturally diverse, tensions and conflicts inevitably occur between people from different cultural backgrounds (Jehn & Mannix,

2001; Jehn, Northcraft, & Neale, 1999). When individuals from different cultures are unable to overcome their differences and manage their disagreements, ineffective communication hampers creative performance (Giambatista & Bhappu, 2010; Hackman, 1990; O'Reilly et al., 1998; Swann, Kwan, Polzer, & Milton, 2003).

The negative effects of intercultural tensions and conflicts on creativity, however, need not be restricted to those who are directly involved in these tensions or conflicts. Frost's (2003) analyses of toxic work environment suggest that insensitive attitudes and behaviors of managers and employees exert an insidious effect on people around them, decreasing their work performance. Thus, effects of intercultural tensions and conflicts could spill over, influencing uninvolved observers as well. For example, individuals may witness interpersonal conflicts between culturally different colleagues or business associates. Because these individuals are not directly involved in the conflicts, they have limited control over any resolution processes or outcomes of these conflicts, yet the toxicity associated with the conflicts can spill over, infecting their work environment more generally (Frost, 2003). Culturally disharmonious social environments such as these are not only awkward but also can have unexpected performance consequences for uninvolved parties and hence are worth investigation.

In this article, I introduce the concept of *ambient cultural disharmony* to denote the experience of indirect intercultural tensions or conflicts in an immediate social environment. I define disharmony as including both interpersonal tensions (strained relationships) and interpersonal conflicts (overt disagreements). These tensions and conflicts are ambient to a focal individual to the extent that he or she is aware of them but not personally involved in them. For clarity of theoretical exposition, I focus on disharmony within an individual's immediate social environment, including his/her social network. I propose that ambient cultural disharmony can undermine individuals' ability to make connections among ideas drawn from different cultures by promoting beliefs that ideas and values from disparate cultures are incompatible. Consequently, affected individuals are less creative at tasks that require combining ideas from multiple cultures, an important ability for innovating in a global context. Throughout this article, my primary focus is on *multicultural creativity*—defined as creativity that requires drawing on knowledge resources from diverse cultures.

My hypotheses rest on two key premises: First, when individuals observe intercultural disharmony among people in their immediate social environment, implicit beliefs that ideas and values from different cultures are incompatible become activated or increase. Second, implicit beliefs about cultural incompatibility influence individuals' subsequent performance in creativity tasks (Decker, 1980; Gioia & Manz, 1985). Specifically, when people believe that ideas from different cultures are incompatible, they are less able to simultaneously access knowledge from different cultures and draw connections among them to develop new ones. The thesis that ambient cultural disharmony can have negative impact on uninvolved individuals is consistent with organizational research arguing that individuals are embedded in larger social systems that influence their cognition, behaviors, and performance at work (Frost, 2003; Lilius, Worline, Maitlis, Kanov, Dutton, & Frost, 2008; Porath & Erez, 2009; Schneider & Reichers, 1983; Scott, 1992; Zhou, 2003).

In my investigation of ambient cultural disharmony, I define culture broadly, as encompassing ethnic and national cultures (Cox, 1993; Ely & Thomas, 2001). Specifically, I adopt the definition of culture as collective programming of their minds that distinguishes members of one group or category of people from others (Hofstede, Hofstede, &

Minkov, 2010). People from different cultural groups adhere to different shared social norms, knowledge, values, and traditions, resulting in disparate ideas and perspectives about a given problem. Surface demographic differences such as nationality or ethnic background correspond to deeper differences in people's knowledge of the world (Chua, Morris, & Mor, 2012). For the present research, with its focus on people's ability to combine knowledge from different cultures, the exact type of surface demographic marker (ethnicity or nationality) is less important than the fact these different surface demographic markers reflect different knowledge bases and intellectual resources stemming from disparate cultural groups. Exposure to indirect conflicts between people from different cultural groups undermines an individual's general ability to connect ideas from different cultures.

Overall, this research makes three key theoretical contributions. First, by introducing the concept of ambient cultural disharmony, this research departs from conventional approaches to studying how people deal with intercultural conflicts by investigating how people are impacted by intercultural conflicts in which they themselves are not involved. Extant literature on intercultural relations has thus far paid scant attention to how individuals perceive intercultural dynamics in their social environment, leading scholars to overlook an insidious process by which individuals may be negatively impacted by intercultural tensions and conflicts that surround them. The emphasis on the *ambient* aspect of intercultural disharmony opens up new lines of inquiry in research on intercultural relations and multicultural teams.

Second, this research advances current understanding of how creative thinking might be *hampered* by a culturally diverse social environment. Conventional wisdom suggests that cultural diversity is generally positive, because it brings together people with different perspectives, informed by their different cultural experiences and knowledge. Although scholars widely acknowledge that cultural diversity begets creativity as long as collaborators overcome intercultural communication difficulties and conflicts, no research has looked at the effect of indirect intercultural conflicts. My research on ambient cultural disharmony shows that the effects of intercultural conflicts are more diffused than one might realize. These conflicts have indirect negative effects on people's multicultural creativity, contributing to theories at the intersection of intercultural relations and creativity.

Third, this research highlights a psychological mechanism that influences the extent to which people can harness diversity for creative performance. When people endorse beliefs that cultures are incompatible as a result of exposure to intercultural disharmony in their immediate social environment, the purported positive link between cultural diversity in workplaces and creativity is undermined. The identification of this mechanism can help scholars design interventions to mitigate the negative effects of ambient cultural disharmony. I elaborate on these and other related contributions in the discussion.

THEORY DEVELOPMENT

Although workplace cultural diversity accords creativity advantages in theory, whether or not this benefit is realized depends on numerous other factors. When individuals who disagree can engage in constructive debate and appreciate others' perspectives, they may be able to harness their differences to generate creative solutions, a process some management scholars have called "creative abrasion" (Leonard & Swap, 1999; Nonaka, 1994). Other research has shown that the positive effects of cultural diversity on creativity are realized only when miscommunication and conflicts among individuals from different cultures are smoothed over (Giambatista & Bhappu, 2010; Hackman, 1990; Swann et al., 2003).

Cultural psychologists have further identified other factors that moderate the link between exposure to diverse cultures and creativity, such as individuals' openness to foreign cultures (Leung & Chiu, 2008) and their effectiveness in intercultural learning (Maddux, Adam, & Galinsky, 2010). A common theme that underlies this body of research is that cultural diversity is a seedbed for intercultural anxiety, tensions, and conflicts because of differences in world-views, values, and norms (Jehn & Mannix, 2001; Stephan & Stephan, 1985). Whenever individual or situational factors accentuate or make salient intercultural difficulties, the creativity benefits of cultural diversity are likely to be mitigated.

In keeping with the notion that cultural diversity can be productive only if conflicts are effectively managed, existing research on intercultural conflicts has focused on understanding their causes (Gelfand, Nishii, Holcombe, Dyer, Ohbuchi, & Fukuno, 2001; Katz & Hass, 1988; Taylor & Moghadam, 1987) and how they can be resolved (Berco-

vitch & Houston, 2000; Lebow & Stein, 1987; Tinsley, 1998). A small but growing body of research examines how the broader culturally diverse community in which individuals are embedded influences them (Brief et al., 2005; Brief, Butz, & Deitch, 2004; Pugh, Dietz, Brief, & Wiley, 2008). For instance, Pugh et al. (2008) found that the racial composition of the community in which an organization is embedded matters. An increase in a community's share of racial minorities diminishes the positive effects of a diverse workforce on fostering employees' shared attitudes toward the organization's diversity policies. Brief et al. (2005) found that the more white individuals perceive intercultural conflicts in the community in which they live, the more negatively they respond to workplace diversity. These researchers reasoned that this effect was due to the prejudice that the intercultural conflicts in the community foster in individuals; these individuals then carry their prejudice to their workplace.

Despite existing effort to examine how intercultural relations in broader social environments impact organizational outcomes, the literature in this area is still relatively sparse. Yet this is an important line of inquiry because, as proposed in embedded intergroup relations theory, interpersonal relations based on group identity are influenced by the dynamics of intergroup relations in a larger organizational context (Alderfer, Alderfer, Tucker, & Tucker, 1980; Alderfer & Smith, 1982). Here, I extend this body of work by examining how individuals react to intercultural conflicts in which they themselves are not personally involved, focusing on the impact on an outcome critical to many business organizations: creativity.

It is important to note that creativity is not necessarily about producing a completely new idea or product, one that never existed before; rather, creativity often involves combining existing ideas in new ways that are useful for solving practical problems (Baughman & Mumford, 1995; Chua & Iyengar, 2008; Hofstadter, 1985; Koestler, 1964; Mobley, Doares, & Mumford, 1992; Weick, 1979). To solve problems creatively in a global multicultural context, problem solvers need to first see nonobvious connections among ideas from different cultures, a form of insight. In this research, I focus on this critical aspect of creativity: —the ability to connect ideas that were previously not connected.

Effects of Ambient Cultural Disharmony

One way to investigate the effects of ambient cultural disharmony on people's ability to connect ideas is via the lens of implicit beliefs. Social psychologists have long argued that people are naïve scientists who observe the "social world" and generate theories to make sense of it (Chiu, Hong & Dweck, 1997; Dweck, 1999; Heider, 1958; Kelly, 1955; Murphy & Medin, 1985). These lay theories (or implicit beliefs) are meaning systems that people use in their everyday lives to interpret and evaluate their social environment. This argument is consistent with a tradition of research on "sense-making" in organizations in which sense-making can take the form of building accounts to help individuals understand and give meaning to their experiences in an uncertain environment (Currie & Brown, 2003; Weick, 1995).

Scholars have examined various kinds of implicit beliefs, such as whether human intelligence is fixed or malleable (Dweck & Leggett, 1988) and whether race is biologically based and hence unchangeable (Chao, Chen, Roisman, & Hong, 2007; Hong, Chao & No, 2009; No, Hong, Liao, Lee, Wood, & Chao, 2008). Of particular relevance to the present research are people's implicit beliefs about racial or cultural essentialism (Chao et al., 2007; Hong et al., 2009). Essentialism refers to the belief that social categories (such as gender and culture) possess deep underlying qualities, resulting in immutable group attributes (Haslam, Rothschild, & Ernst, 2000). Specifically, *cultural essentialism* refers to beliefs that cultural characteristics are relatively innate and unchangeable (Chao et al., 2007; Chao, Okazai, & Hong, 2011; Hong et al., 2009). However, like many implicit theories that people use to make sense of the world, cultural essentialism is not static. For example, No et al. (2008) manipulated Asian American participants' beliefs about whether racial characteristics are fixed or malleable. These researchers argued that competing theories about racial or cultural essentialism coexist in people's mind but differ in their relative chronic accessibility. Situational stimuli may temporarily increase accessibility of one theory over the other.

Drawing on prior research on implicit beliefs, I propose that people hold implicit beliefs about whether ideas and values from disparate cultures are compatible. These implicit beliefs are related to cultural essentialism beliefs in that people who endorse the view that culture is composed of un-

changeable fundamental characteristics are also likely to believe that ideas from disparate cultures are incompatible; cultural essentialism implies that ideas from one culture cannot be easily "morphed" or adjusted to fit with ideas from other cultures.¹ I further propose that beliefs about whether cultures are compatible have both chronic and variable aspects. While people's chronic beliefs about cultural compatibility may be a function of their prior and ongoing intercultural experiences, these beliefs can also be temporarily altered by environmental stimuli. Thus, when people witness intercultural disharmony in their immediate social environment (e.g., within their social network), their beliefs that ideas and values of disparate cultures are inherently incompatible become activated or increase, influencing subsequent behaviors.

What performance consequence does endorsing beliefs that ideas from different cultures are incompatible have on individuals who hold the different beliefs? Research on biculturals, or, individuals who have extensive experience in two cultures, has found that how these individuals think about the compatibility of the cultures they know influences their creativity (Cheng, Sanchez-Burks, & Lee, 2008). Some biculturals whose experience navigating between two cultures has been negative believe that the cultures in question are incompatible (Benet-Martínez, Leu, Lee, & Morris, 2002; Vivero & Jenkins, 1999). For these individuals, the two cultures they have experienced are distinct and mutually exclusive and should be kept separate. When biculturals consider the two cultures they know as incompatible, their ability to simultaneously access and combine ideas from these cultures suffers, decreasing their creativity (Cheng et al., 2008). For instance, Cheng et al. found that Asian-Americans who believe that features of Asian culture and American culture should be kept separate and cannot be combined were judged to be less creative when asked to create fusion recipes using both Asian and American ingredients. Building on this research, I posit that when individuals experience cultural disharmony in their immediate social en-

¹ It is important to note that cultural essentialism and beliefs about cultural incompatibility are related but distinct constructs. Cultural essentialism is fundamentally about the nature of culture (how fixed or malleable it is), whereas belief in cultural incompatibility is about whether ideas and knowledge from different cultures are compatible. Cultural essentialism is one but not the only antecedent to beliefs about cultural incompatibility.

vironment, beliefs that ideas from different cultures are not compatible and cannot be easily combined become activated or are increased; consequently, their ability to connect ideas from disparate cultures is diminished, undermining multicultural creativity.

Hypothesis 1. The indirect experience of intercultural conflicts or tensions in an individual's social environment (ambient cultural disharmony) decreases the individual's ability to associate ideas from different cultures (and hence, decreases multicultural creativity).

Hypothesis 2. Beliefs that ideas from disparate cultures are incompatible mediate the negative relationship between the experience of ambient cultural disharmony and an individual's ability to associate ideas from different cultures (and hence, mediate multicultural creativity).

Does the experience of ambient cultural disharmony undermine creative thinking in general? Building on the above hypotheses, I argue that this is unlikely. To the extent that the effects of ambient cultural disharmony on multicultural creativity flow through beliefs about cultural incompatibility, general creativity that does not require combining ideas from diverse cultures should not be affected. However, because other mediating mechanisms may be involved, as I later discuss, this possibility cannot be ruled out. I empirically explore the effects of ambient cultural disharmony on general creative thinking.

Ambient Cultural Harmony

If the experience of ambient cultural disharmony undermines individuals' ability to connect ideas from disparate cultures during creative work, does the experience of ambient cultural *harmony* promote this ability? While this is certainly a possibility, I expect that the effects of ambient cultural disharmony on multicultural creativity are likely to be stronger than the effects of ambient cultural harmony. Psychological research has shown that people processing social information tend to exhibit negativity bias (see Rozin and Royzman [2001] and Baumeister, Bratslavsky, Finkenauer, and Vohs [2001] for reviews). Specifically, perceivers tend to pay greater attention and give more weight to negative aspects of other people and events, as opposed to their positive attributes. This is because negative information signals potential threats and

danger and hence receives more thorough processing and contributes more strongly to perceivers' final impression and decision making than positive information (Baumeister et al., 2001). An asymmetric effect for exposure to ambient cultural disharmony versus harmony is likely to result. Individuals exposed to ambient cultural harmony might not pay enough attention to this social information that they would form stronger beliefs that ideas from different cultures are highly compatible. Hence, I do not propose any specific effect for exposure to ambient cultural harmony on creative thinking. Nevertheless, effects of ambient cultural harmony were examined in one of the studies reported on below.

EMPIRICAL STRATEGY

I tested the above hypotheses in three studies that operationalize ambient cultural disharmony and creativity in different ways. Study 1, an ego-centric network survey, demonstrates that the more negative intercultural ties (i.e., tension or conflict among culturally different social contacts) characterize relationships among members of an individual's social network (Labianca & Brass, 2006; Labianca, Brass, & Gray, 1998), the less effective that person is at associating concepts arising from different cultures.

Additionally, Study 1 examines the potential moderating effects of an individual's prior cultural essentialism beliefs on the relationship between ambient cultural disharmony (an environmental stimulus) and the ability to connect ideas from different cultures. The purpose is to explore whether beliefs about cultural incompatibility is activated or shaped (i.e., increased) by ambient cultural disharmony. If cultural incompatibility beliefs are being *activated*, "high cultural essentialists" (those who believe that cultural characteristics are relatively innate and unchangeable) should respond more strongly to ambient cultural disharmony. Since high-cultural-essentialism individuals are likely to believe that cultures are incompatible, these beliefs are more accessible and thus more easily activated by situational stimuli such as the experience of ambient cultural disharmony. If cultural incompatibility beliefs are *shaped* by ambient cultural disharmony, "low cultural essentialists" should respond more strongly. Low-cultural-essentialism individuals have weak and malleable beliefs about cultural incompatibility and thus more likely to be shaped by situational experience of

intercultural dynamics. Of course, both processes could be operating at the same time—that is, beliefs are being both activated and shaped. Nevertheless, it is interesting to see which process exerts the stronger effect.

Study 2, a priming experiment, tested the mediating mechanism involving beliefs about cultural incompatibility (Hypothesis 2). An experimental approach helps ascertain causality in a proposed effect. Study 3 further examines alternative mechanisms involving negative affect and cognitive disruption, which I elaborate below. Study 3 also investigates whether the experience of indirect intercultural *harmony* may increase creative performance. Collectively, these three studies aimed to provide evidence for my core hypothesis (Hypothesis 1) and explore the underlying mechanisms.

STUDY 1

Participants and Procedure

One hundred sixty-three participants (38 percent were men, and average age was 33.7 years), recruited from a general population subject pool in the United States via MTurk,² completed a two-part study: an online social network survey and a remote associates test (RAT), an instrument widely used to measure creativity (Kaufman & Sternberg, 2006; Mednick, 1962). I used two versions of the RAT to assess (a) general creativity and (b) creativity that calls for combining knowledge or ideas from multiple cultures. Eighty-five percent of the participants self-identified as Americans, and 4 percent identified themselves as British; the remaining 11 percent were citizens of countries such as Germany, Ireland, and Puerto Rico. Sixty-six percent of participants were white, 5.8 percent, Asian, and the rest, of other ethnicities (Black, Latino, and Middle Eastern).

The social network survey asked participants to identify up to 15 significant members of their social

networks (in any setting). After listing significant members of their social networks, participants were further asked to identify individuals in their networks with whom they had less positive relationships. Specifically, participants were told that “it is inevitable in life that we are sometimes surrounded by people with whom we do not get along well. Please list individuals whom you would prefer to avoid contact. Indicate only the initials of these individuals so that we don’t know who they are.” If an individual the participant wished to list was identified earlier in the solicitation of significant network members, the same initials had to be used to avoid duplication. This procedure allows me to later capture the extent to which participants had direct negative intercultural ties.

Participants then characterized each relationship (by, e.g., frequency of interaction) and provided demographic information about each contact (e.g., gender, nationality, ethnicity). Contacts’ cultural backgrounds were specified by their nationality as well as their ethnicity (with categories taken from the US census). Of the listed contacts, 80 percent were Americans, and the remainder were citizens of diverse countries, such as Denmark, India, Somalia, and Finland. Sixty-seven percent of the listed contacts were white; 7.7 percent, black; 4.5 percent, Asians (Chinese, Japanese, Korean); and the rest of other ethnicities such as Latino, and Middle Eastern. Two individuals were considered to be from different cultures if they differed on either one of these surface demographic variables.

Participants also characterized their contacts’ relationships with one another by completing a half-matrix. In particular, they specified whether each pair of social contacts had positive or negative ties. Negative ties between people—those characterized by dislike, intentional avoidance, or even attempts at harm—were treated as indicators of interpersonal disharmony in the participants’ social networks. Such ties capture both tensions and conflicts in interpersonal relationships. Of the participants, 33.7 percent reported one or more negative ties among their listed network contacts. This method of surveying participants’ social network has precedent in management research (Chua, Ingram, & Morris, 2008).

I counterbalanced the order in which participants completed the network survey and the RAT. Specifically, about half the participants completed the RAT before the network survey. This approach allowed me to rule out the alternative explanation that any effect found was more associated with

² Prior research has shown the MTurk worker pool to be representative of the general population of the United States, albeit with slightly more education and a slightly lower income (Paolacci, Chandler, & Ipeirotis, 2010). Buhrmester, Kwang, and Gosling (2011) found in a recent study that data collected from MTurk met or exceeded the psychometric standards associated with published research. MTurk participants were also found to be more demographically diverse than standard internet samples and typical American college student samples.

priming than with the experience of indirect intercultural conflicts in an individual's social network. A ten-minute filler task involving solving mathematical puzzles was included between the network survey and the RAT to further separate the two tasks.

Measures

Ambient cultural disharmony. I operationalized ambient cultural disharmony using the extent to which an individual is embedded in a social network that contains intercultural tensions and conflicts. Specifically, I computed the degree of ambient cultural disharmony in participants' networks using a density measure of negative ties among contacts (Chua et al., 2008). I first counted negative ties among pairs of contacts with differing cultural backgrounds. I then divided this number by the number of possible ties among all listed contacts (for N contacts, the number of possible ties among contacts is $N[N - 1]/2$) to derive a measure of the density of negative ties among culturally different contacts. This proportion-based measurement of density is commonly used in social network analysis (Marsden, 1990). A density measure is apt here because it captures a participant's experience of intercultural conflicts in his or her network with respect to *all* network member relationships, including absent relationships. The more intercultural negative ties in an individual's social network, the more salient ambient cultural disharmony is to him or her, providing the context for the activation or increase of beliefs about intercultural incompatibility.³

³ To further ascertain the validity of this network measure of ambient cultural disharmony, I developed and administered a self-reported four-item scale to capture perceptions of ambient cultural disharmony to a separate sample of 50 participants who completed a similar network survey. Items of this scale include (a) "Around me, people I know often blame members of other cultural groups for their problems," (b) "Around me, conflict between people I know often took on under cultural undertones," (c) "How often do your friends of different cultural background get into conflicts?" (d) "People of different cultural backgrounds around me often disagree with each other" ($\alpha = .69$). Results indicate that this measure of ambient cultural disharmony is highly correlated to the network measure using density of indirect different-culture negative ties ($r = .64, p < .01$). The disattenuated correlation is .77. These findings should

Remote associates tests. Participants were given ten minutes to complete the RAT, which is widely used in psychological and organizational research to measure individuals' ability to make connections among apparently disparate concepts (Bowden & Beeman, 1998; Fong, 2006; Mednick, 1962; Zhong, Dijksterhuis, & Galinsky, 2008). For example, Fong (2006) used the RAT to examine the effects of emotional ambivalence on creativity. The RAT is an ideal measure for the present research because it directly taps individuals' ability to connect disparate ideas. A typical RAT consists of a series of three words; the testee is asked to produce a fourth word related to all three. For the three words *falling*, *actor*, and *dust*, for example, the fourth word would be *star*. I used a traditional version of the RAT and a new multicultural version. The traditional version consists of the 12 sets of words used in Zhong et al.'s study. The multicultural version consists of 12 sets of words that I generated with the assistance of three graduate students. The defining feature of the multicultural RAT is that the three prompts, when combined with the fourth word, designate concepts or phenomena drawn from different cultures. For example, the prompts *Berlin*, *street*, and *great*, when combined with the answer *wall*, refer to the Berlin Wall (German), Wall Street (American), and the Great Wall (Chinese). Performing well on this test calls for multicultural knowledge and, importantly, the ability to make connections among concepts from these diverse sources. The items used in the traditional and multicultural RAT appear in Table 1. The two sets were randomly combined to form a single test of 24 items. The Appendix describes the development and pretesting of the multicultural RAT. Results from these pretests offers confidence about the validity of the multicultural RAT measure as it is found to be positively associated with relevant outcomes such as combining ideas from multiple cultures during creative work.

Cultural essentialism. I measured cultural essentialism using eight items adopted from Chao and Farh's research (2012). Sample items include "Although people can act differently, the core ethno-cultural characteristics they hold cannot be changed much," "Ethno-cultural characteristics is something very basic about a person, they cannot be changed," "The ethnic culture a person is from

afford greater confidence that the network measure of ambient cultural disharmony is a valid one.

TABLE 1
Traditional and Multicultural RAT Items

Traditional RAT		Multicultural RAT	
Triad	Answer	Triad	Answer
Light, birthday, stick	Candle	Walk, cake, race	Moon
Cross, rain, tie	Bow	Ire, green, Thai	Land
Boot, summer, ground	Camp	Middle Eastern, square, highland	Dance
Catcher, food, hot	Dog	Pearl, Thames, Kwai	River
Health, taker, less	Care	American, swiss, munster	Cheese
Down, question, check	Mark	Saw, wick, cold	War
Carpet, alert, ink	Red	Forbidden, angels, Quebec	City
Blank, list, mate	Check	Roman, state, British	Empire
Test, runner, map	Road	Swan, Ontario, Maggiore	Lake
Wheel, hand, shopping	Cart	Monkey, gate, triangle	Golden
Wagon, break, radio	Station	Queen, sea, china	Red
Man, glue, star	Super	French, American, Boer	Revolution or war

^a RAT is remote associates test.

(e.g., Chinese, American, Japanese), determined the kind of person they would be (e.g., outgoing and sociable or quiet and introverted); not much can be done to change the person,” “Everyone, no matter who they are, can significantly change their ethno-cultural characteristics (e.g., being violent, being assertive, being submissive)” (reversed scored). Cronbach’s alpha for this scale is .92.

Control Variables

I controlled for several factors that might influence an individual’s ability to associate disparate ideas. At the individual level, I controlled for participants’ openness to new experience (Gosling, Rentfrow, & Swann, 2003) and language ability. Past research has found that people who are open to new experiences tend to be more creative (George & Zhou, 2001; McCrae, 1987). Because the RAT is dependent on English proficiency, I measured whether English was a participant’s native language (1 = “native language”; 0 otherwise) and the participant’s SAT verbal scores.

At the network level, I controlled for network size (number of contacts listed) and degree of cultural heterogeneity (using Blau’s (1977) heterogeneity index). Larger networks might expose individuals to more disparate ideas, increasing their creativity. Recent research has shown that cultural diversity in networks can positively influence creativity (Chua, 2011). Because nonnegative indirect relationships might influence the results, I also computed the density of culturally different positive ties (among social contacts) using the same

formula as for ambient cultural disharmony. Further, I controlled for relationships between culturally similar contacts using the same density measures of indirect negative ties and positive ties. Finally, I measured the following variables to rule out alternative explanations for Hypothesis 1.

Direct intercultural negative ties. Recall that participants listed contacts whom they did not get along well with and preferred to avoid. I derived the number of direct intercultural negative ties by counting the number of direct negative ties that each participant had with contacts who of a different cultural background from him or her (i.e., different nationality and/or ethnicity). I aimed to show that ambient cultural disharmony exerts a negative effect on multicultural RAT scores independently of individual’s own negative intercultural experiences.

Prior multicultural experiences. Multicultural experiences can manifest in different forms. Following Maddux and Galinsky (2009), I measured amount of time (number of months) that individuals spent abroad. I also administered two other measures of multicultural experiences: The first, a multicultural experience scale adopted from Leung and Chiu (2010), taps the extent to which individuals engage in various activities involving foreign cultures, such as listening to foreign music and eating foreign cuisines, having foreign friends, and speaking foreign languages. Answers to these various questions are transformed into a score between 0 and 8. The larger the number, the greater the multicultural experience (refer to Leung and Chiu [2010] for details on items and scoring). The second measure of multicultural expe-

rience was a history of intercultural contact scale adapted from van Dick et al. (2004). For the present study, I focused on measures of past frequency of intercultural contact in various social settings, such as work, neighborhood, and school (1 = “never,” 6 = “very often”) and whether these interactions were perceived to be positive—that is, as based on equal status, pleasant, cooperative, and voluntary (1 = “not at all correct,” 6 = “fully correct”).

Global identity. Prior research has shown that individuals with integrated bicultural identity are better able to connect ideas from disparate cultures than those with conflicted bicultural identity (Cheng et al., 2008). In the present study, only 27 percent of the participants self-identified as biculturals. Hence, instead of controlling for bicultural identity integration, I used a more general measure of global identity (Buchan, Brewer, Grimalda, Wilson, Fatas, & Foddy, 2011). This three-item measure taps the extent to which individuals see themselves as citizens of the world. Sample items include “I define myself as a member of the world as a whole” and “I feel attachment to the world as a whole.” Cronbach’s alpha for this scale is .89. For participants who completed both measures of bicultural identity integration and global identity, these two variables are moderately correlated at .22 ($p < .05$). It is plausible that the greater an individual’s global identification, the more effective he or she is at connecting ideas from different cultures.

Analyses and Results

Table 2 presents the descriptive statistics and correlations for key variables in this study.

I analyzed the data at the participant level with ordinary least square regression; results appear in Table 3. Multicultural RAT score is the dependent measure in models 1–4, and traditional RAT score is the dependent measure in models 5–8. Because the two scores are correlated (both measure remote association of disparate ideas), I controlled for one version when the other was the dependent variable. This approach allowed me to focus on the unique variance captured by each RAT score. Analyses without controlling for the other version of RAT yielded identical patterns of results.

Model 1 indicates that traditional RAT scores are positively associated with multicultural RAT scores ($b = 0.45, p < .01$). Direct intercultural negative relationships ($b = -0.02, n.s.$) and cultural essentialism ($b = -0.09, n.s.$) have negative but nonsignificant associations with multicultural RAT

scores. Model 2 adds the key predictors of ambient cultural disharmony (indirect intercultural negative ties among social contacts). As I hypothesized, ambient cultural disharmony in participants’ networks has a negative effect on their multicultural RAT scores ($b = -2.45, p < .05$). To test whether this effect is moderated by individuals’ prior cultural essentialism beliefs, model 3 includes an interaction term between ambient cultural disharmony and cultural essentialism beliefs. Results indicate a significant interaction effect ($b = 2.01, p < .05$) wherein the negative association between ambient cultural disharmony and multicultural RAT scores is stronger for individuals with lower cultural essentialism beliefs. This pattern of interaction is depicted in Figure 1. Simple slope analyses indicate that the negative effect of ambient cultural disharmony on multicultural RAT scores is significant for individuals with low cultural essentialism ($b = -6.24, p < .01$) but is not significant for those with high cultural essentialism ($b = -1.85, n.s.$). The main effect of ambient cultural disharmony on multicultural RAT scores remain significant ($b = -2.42, p < .05$) in this model. Model 4 controls for the order in which the RAT and the network survey were presented to participants by including a term coded 1 if the network survey preceded the RAT and 0 otherwise and an interaction involving this variable and ambient cultural disharmony. The key results remain significant (main effect of ambient cultural disharmony: $b = -4.04, p < .01$; interaction effect between ambient cultural disharmony and cultural essentialism beliefs: $b = 1.96, p = .05$).⁴

Models 5–8 present the corresponding results and analyses for traditional RAT scores on which ambient cultural disharmony has no impact (model 6: $b = 1.60, p > .10$). These findings suggest that

⁴ I conducted further analyses to explore whether the results were consistent when I focused only on direct and indirect cross-national ties. In other words, contacts that differed only on ethnicity but not nationality were not counted when identifying different culture ties. The results are consistent with the findings reported above. Specially, ambient cultural disharmony has a negative effective on multicultural RAT ($b = -2.81, p = .09$). There is also an interaction between ambient cultural disharmony and cultural essentialism ($b = 1.93, p > .10$) wherein the effect of ambient cultural disharmony on multicultural RAT appears stronger for those with low cultural essentialism ($b = -3.53, p = .06$) than for those with high cultural essentialism ($b = -0.39, p > .10$).

TABLE 2
Study 1: Descriptive Statistics and Correlations

Variable	Mean	s.d.	Minimum	Maximum	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Multicultural RAT	2.58	1.90	0	9.00																		
2. Traditional RAT	4.24	2.71	0	12.00	0.67*																	
3. Density of indirect different-culture negative ties (ambient cultural disharmony)	0.08	0.13	0	0.80	-0.09	-0.02																
4. Density of indirect different-culture positive ties	0.29	0.26	0	1.00	.11	.04	.19*															
5. Density of indirect same- culture negative ties	0.04	0.08	0	0.72	-.15*	-.06	.16*	-.16*														
6. Density of indirect same- culture positive ties	0.18	0.21	0	1.00	-.10	.07	-.16*	-.14	.30*													
7. Number of contacts (network size)	11.47	5.08	6	30.00	-.11	-.20*	-.06	.21*	.11	-.07												
8. Number of direct intercultural conflicts	0.87	1.76	0	15.00	-.04	-.09	.04	-.02	-.08	-.09	.28*											
9. Openness	5.38	1.31	0	7.00	-.01	.00	-.03	.02	-.12	-.14	.07	-.19*										
10. English is native language	0.97	0.18	0	1.00	.05	.04	.09	.11	.06	-.04	-.04	-.16*	-.03									
11. Verbal SAT scores	568	86	340	790	.15*	.09	-.04	.02	-.17*	-.08	-.04	.05	.03	-.14*								
12. Total time spent abroad (months)	28	88	0	710	.06	-.06	-.01	.06	-.12	-.11	-.01	.02	.08	-.25*	.10							
13. Global identity	2.98	0.78	1	4.00	-.02	-.04	-.14	.13	-.19*	-.11	.06	-.14	.26*	-.09	.15*	.05						
14. Cultural essentialism	4.19	1.12	1.25	6.00	.04	.05	-.04	-.10	-.11	-.04	-.02	-.09	.11	.02	.02	-.06	.07					
15. Multicultural experience scale	1.21	0.70	0	3.20	.18*	.08	.05	.14	-.26*	-.23*	.11	.20*	.15*	-.16*	.23*	.21*	.22*	.09				
16. Intercultural contact frequency	3.77	1.32	1	6.00	.02	.00	.09	.16*	-.16*	-.18*	.14	.06	.27*	-.10	.12	.13	.23*	.09	.38*			
17. Intercultural positive contact	5.06	0.90	2	6.00	.12	.08	.08	-.07	-.15*	-.03	.04	-.02	.24*	-.01	.02	.06	.20*	.14*	.26*	.27*		
18. Network cultural heterogeneity	0.59	0.26	0	1.00	.15	-.04	.28*	.47*	-.41*	-.70*	.03	.06	.06	.03	.11	.05	.27*	.01	.26*	.32*	.09	

* $p < .05$

TABLE 3
Study 1: Regression Results^a

Variables	Multicultural RAT				Traditional RAT			
	1	2	3	4	5	6	7	8
Intercept	-1.47 (1.56)	-1.62 (1.54)	-1.65 (1.53)	-0.94 (1.55)	3.83 ⁺ (2.04)	3.92 ⁺ (2.04)	3.95 ⁺ (2.03)	3.97 ⁺ (2.08)
<i>Key predictors</i>								
Density of indirect different-culture negative ties (ambient cultural disharmony)	-0.09 (0.11)	-0.09 (0.11)	-0.07 (0.11)	-0.08 (0.11)	-0.01 (0.15)	-0.01 (0.15)	-0.02 (0.15)	-0.02 (0.15)
<i>Interaction</i>								
Ambient cultural disharmony × cultural essentialism			2.01* (1.00)	1.96* (0.99)			-1.33 (1.37)	-1.30 (1.37)
<i>Control</i>								
Traditional RAT	0.45** (0.05)	0.45** (0.05)	0.44** (0.05)	0.43** (0.05)				
Multicultural RAT								
Density of indirect different-culture positive ties	-0.03 (0.06)	-0.13 (0.59)	-0.28 (0.59)	-0.44 (0.59)	0.77** (0.09)	0.79** (0.09)	0.80** (0.09)	0.81** (0.09)
Density of indirect same-culture negative ties	-0.80 (1.61)	0.52 (1.68)	0.68 (1.66)	0.25 (1.66)	-0.44 (2.11)	-1.27 (2.23)	-1.39 (2.24)	-1.36 (2.26)
Density of indirect same-culture positive ties	-0.36 (0.91)	-0.24 (0.89)	-0.20 (0.88)	-0.34 (0.88)	0.67 (1.19)	0.59 (1.19)	0.57 (1.19)	0.62 (1.20)
Number of contact (network size)	0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)	-0.01 (0.03)	-0.06 ⁺ (0.03)	-0.06 ⁺ (0.03)	-0.06 (0.03)	-0.05 (0.03)
Number of direct intercultural negative ties	-0.02 (0.08)	-0.03 (0.08)	-0.04 (0.08)	-0.04 (0.08)	-0.03 (0.10)	-0.03 (0.10)	-0.02 (0.10)	-0.03 (0.10)
Network cultural heterogeneity	0.86 (0.93)	1.62 ⁺ (0.97)	1.66 ⁺ (0.96)	1.55 (0.996)	-0.86 (1.22)	-1.37 (1.31)	-1.43 (1.31)	-1.43 (1.31)
Openness	-0.11 (0.11)	-0.20 (0.10)	-0.09 (0.10)	-0.11 (0.11)	0.18 (0.14)	0.17 (0.14)	0.16 (0.14)	0.18 (0.14)
English is native language	1.00 (0.96)	1.08 (0.95)	1.05 (0.94)	0.82 (0.94)	-2.08 ⁺ (1.25)	-2.15 ⁺ (1.25)	-2.13 ⁺ (1.25)	-2.16 ⁺ (1.26)
Verbal SAT	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Total time spent abroad (months)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01* (0.00)	-0.01* (0.00)	0.01* (0.00)	-0.01* (0.00)
Global identity	-0.03 (0.17)	-0.09 (0.11)	-0.16 (0.17)	-0.13 (0.17)	-0.05 (0.22)	0.01 (0.23)	0.01 (0.23)	0.02 (0.23)
Multicultural experience scale	0.25 (0.21)	0.30 (0.21)	0.35 ⁺ (0.21)	0.44* (0.21)	0.09 (0.27)	0.05 (0.28)	0.02 (0.28)	-0.05 (0.29)
Intercultural contact frequency	-0.07 (0.11)	-0.06 (0.10)	-0.05 (0.10)	-0.05 (0.10)	0.02 (0.14)	0.02 (0.14)	0.01 (0.14)	0.03 (0.14)
Order (network survey administered before RAT)	0.14 (0.14)	0.17 (0.14)	0.17 (0.14)	-0.36 (0.24)	-0.01 (0.19)	-0.03 (0.19)	-0.03 (0.19)	-0.05 (0.19)
Order × ambient cultural disharmony								
R^2	0.36	0.38	0.39	0.40	0.36	0.36	0.36	0.36

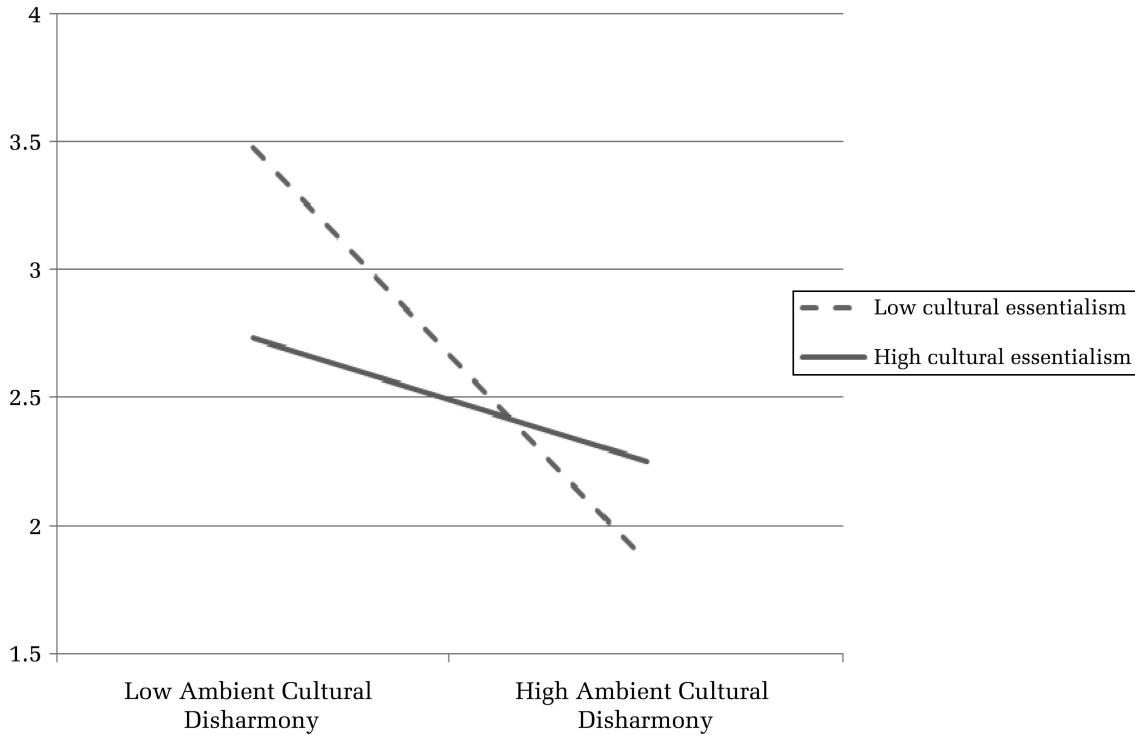
^a N = 163. Unstandardized regression coefficients are shown, with standard errors in parentheses.

⁺ p < .10

* p < .05

** p < .01

FIGURE 1
Study 1: Interaction between Ambient Cultural Disharmony and Cultural Essentialism Beliefs



ambient cultural disharmony does not affect general creativity.

Discussion

Study 1 provides evidence that when people have indirect intercultural negative ties in their social networks, they are less effective at combining ideas from disparate cultures, supporting Hypothesis 1. The study further shows that this relationship is moderated by individuals’ cultural essentialism beliefs. Individuals who have weaker beliefs that cultures are inherently unchangeable are more easily influenced by indirect intercultural conflicts in their social environment. This finding favors the hypothesis that individuals’ cultural incompatibility beliefs are more likely to be shaped (i.e., increased) rather than activated by ambient cultural disharmony. Regardless of the precise cognitive process, however, this finding lends credence to the hypothesis that beliefs about cultural incompatibility may be the mechanism linking ambient cultural disharmony and the ability to connect ideas from different cultures (Hypothesis 2).

It is interesting that *direct* cultural disharmony is not a significant predictor of multicultural cre-

ativity. One explanation has to do with how people make attributions. When people experience direct intercultural disharmony involving themselves, they are more likely to make external and specific attributions wherein the other person is at fault (Hess, Adams, & Kleck, 2009; Jones & Nisbett, 1972). Additionally, people directly involved in the conflict have private information about possible sources of the conflict (Jones & Nisbett, 1972). As such, the individuals’ own cultural background is unlikely to be featured as the only cause of the disharmony. Conversely, when people observe indirect intercultural disharmony, they are likely to make more dispositional and global attributions involving the protagonists (Ariyanto, Hornsey, & Gallois, 2009; Kelley, 1973; Kelley & Michela, 1980), especially when the observers do not have private information about the nature of a conflict or when the conflict involves out-group members. Consequently, observers are more likely to attribute the disharmony to the protagonists’ cultural backgrounds and form the general beliefs that cultures are not compatible.

Another explanation could be that people may have greater confidence in their own abilities to work across cultural lines than in others’ abilities

to do so (e.g., Larrick, Burson, & Soll, 2007; Suls, Lemos, & Stewart, 2002). Hence, when they experience direct cultural disharmony, they are unlikely to attribute the disharmony to cultural differences that inherently implicate their own cultural adaptability. But when they observe cultural disharmony among other people, it is easy to conclude that these individuals are inept at handling cultural conflicts, strengthening the belief that cultures are inherently incompatible.

A strength of Study 1 is that it measured ambient cultural disharmony in participants' natural immediate social environment—their social networks. This measure demonstrates the external validity of the ambient cultural disharmony construct. Study 1 is, however, cross-sectional and thus unable to ascertain causality between the ambient cultural disharmony and the outcome variable. Another limitation is that I did not directly test participants' cultural knowledge; thus, the results for the multicultural RAT could be in part driven by how much participants already knew about other cultures prior to the study. The next two studies take an experimental approach to address these issues.

STUDY 2

Study 2 extends the prior study in three ways. First, I primed ambient intercultural conflicts to demonstrate causality for the proposed hypothesis. Second, I measured the mediating mechanism of perceived incompatibility between values and ideas from disparate cultures. Third, to supplement the RAT, I measured creativity using an idea generation task. This additional measure is useful in that it provides further evidence that the new version of multicultural RAT is related to creativity in a real-world setting. Furthermore, it taps a dimension of creativity—usefulness—that is not captured by the RAT measures.

Study 2 employs a two by two between-person design (same culture vs. different culture; ambient conflict vs. harmony) to assess the effect of ambient intercultural conflict on creativity. The prediction is that participants' perception of incompatibility between cultures will be heightened only when they are in the ambient intercultural conflict experimental condition, which dampens their ability to be creative in a multicultural context.

Participants and Procedure

One hundred eighty-eight participants (36% men, average age 33.8 years), recruited from a general population subject pool in the US via MTurk, completed an online decision-making survey. Eighty-seven percent identified themselves as Americans, 74.7 percent, as white, 7.3 percent, as black, and 7.1 percent, as Asian. Participants were randomly assigned to one of four experimental conditions. For the ambient intercultural conflict condition, I primed participants by asking them to recall a recent conflict between two contacts from different cultural backgrounds who disliked each other. Because participants were not personally involved in the recalled conflicts, these conflicts are ambient to them. In the ambient intercultural harmony condition, participants recalled a friendly interaction between two contacts from different cultures who liked each other. In the ambient same-culture conflict condition, participants recalled a conflict between two contacts from the same culture who disliked each other; in the ambient same-culture harmony condition, participants recalled a friendly interaction between two persons from the same culture who liked each other. In all four conditions, participants were told to select contacts with whom they had good positive relationships. Participants then described the interactions (without naming the individuals involved), specifying what was at issue and the cultural backgrounds of the protagonists. In the ambient conflict (same and different culture) conditions, I also asked participants what caused the conflict. Following the prime, participants completed a measure of cultural incompatibility along with other personality questionnaires. They then completed the RATs and generated ideas for a business case.

Measures

Creativity. I assessed creativity using two measures. The first was the multicultural and traditional RAT, using the same test items as in Study 1. The second called for generating ideas about a business treated in a business case (Chua & Eccles, 2010). Participants read an abridged version of the case, which concerns a global fashion house, Shanghai Tang, that designs clothes for a multicultural clientele. Clothes from Shanghai Tang tend to combine Chinese design elements with modern Western styles to create a fusion look. I asked participants, "Based on what you know about the com-

pany in this write-up, what design ideas would you recommend for the 2011 fall collection? The ideas should be novel and appealing to customers from around the world. Generate as many ideas as possible.” Participants generated an average of 4.37 ideas.

Two independent expert coders with experience in design (one had worked as a fashion designer; the other had an advanced degree in design) assessed each idea’s creativity (1 = “not at all creative,” 7 = “extremely creative”). Coders were briefed about the Shanghai Tang case and the products the company makes. Specifically, they were told that Shanghai Tang fashion involves combining Chinese cultural elements and modern Western cultural elements so as to appeal to an international customer base while retaining the brand “DNA,” “Chinese luxury.” Hence, a creative design idea for Shanghai Tang is one that involves combining Chinese and other cultural elements in a way that appeals to customers. Ideas were defined as creative if they were both new and useful (Amabile, 1982); here, “useful” meant potentially appealing to customers. I then derived two measures of creativity: (a) the average creativity rating of a given participant’s ideas and (b) the rating of his or her most creative idea. The intraclass correlation of the two coders’ average creativity ratings was .78, and that for the rating of the most creative idea was .88. Agreement of the two coders’ average creativity ratings was .68 ($p < .01$) whereas that for the rating of the most creative idea was .81 ($p < 0.01$). Given these acceptable reliability and agreement statistics, I aggregated the coders’ ratings.

Beliefs about cultural incompatibility. I measured beliefs about whether ideas from different cultures are incompatible using three items ($\alpha = .64$; 1 = “not at all agree,” 7 = “completely agree”): “As I learn more about other cultures, I see many irreconcilable differences in the values and ideas espoused by these cultures”; “The more I learn about other cultures, the more I see tensions among them”; and “Among the cultures I am familiar with, there is a limit to how far ideas from these cultures can be combined.”

Manipulation Checks

In response to questions posed after the prime, participants rated the extent to which the interactions they recalled were harmonious and positive. They also rated their level of discomfort regarding the interaction. All questions were rated on the

scale 1, “not at all,” to 7, “to a great extent.” Appropriately, the recalled interactions in the ambient conflict conditions were viewed as less harmonious ($F[1, 184] = 66.50, p < .01$; $\text{mean}_{\text{ambient conflict}} = 3.26, \text{mean}_{\text{ambient harmony}} = 5.17$) and less positive ($F[1, 184] = 84.12, p < .01$; $\text{mean}_{\text{ambient conflict}} = 3.32, \text{mean}_{\text{ambient harmony}} = 5.35$) than those in the ambient harmony conditions. Participants also reported more discomfort in the ambient conflict conditions than in the ambient harmony conditions ($F[1, 184] = 28.36, p < .01$; $\text{mean}_{\text{ambient conflict}} = 4.36, \text{mean}_{\text{ambient harmony}} = 2.52$). There was no interaction effect with same versus different culture manipulation on these ratings.

I also reviewed the cultural backgrounds indicated by participants when they were asked to recall intercultural interactions (conflict and harmony) and found that the protagonists involved were indeed of different ethnicity or nationality. In fact, 84 percent of the recalled interactions involved individuals who were originally from different countries (per response to a question on country of origin).

Analyses and Results

Preliminary analyses. Table 4 reports the descriptive statistics of the main outcome variables in Study 2. Regression analyses indicate that the average creativity of ideas is positively associated with the multicultural RAT ($b = 0.15, p < .05$) and

TABLE 4
Study 2: Means and Standard Deviations^a

Variables	Ambient Harmony	Ambient Conflict
<i>Traditional RAT</i>		
Same culture	4.85 (2.95) ^b	4.50 (2.64) ^b
Different culture	4.22 (2.49) ^b	2.89 (2.51) ^c
<i>Multicultural RAT</i>		
Same culture	2.68 (1.63) ^d	2.93 (1.77) ^d
Different culture	2.74 (1.78) ^d	1.74 (1.33) ^e
<i>Average creativity rating</i>		
Same culture	2.69 (1.07) ^f	3.17 (1.54) ^f
Different culture	2.73 (1.33) ^f	2.19 (1.14) ^g
<i>Creativity rating of most creative idea</i>		
Same culture	3.49 (1.57) ^h	4.01 (1.97) ^h
Different culture	3.64 (1.95) ^h	2.69 (1.65) ⁱ
<i>Beliefs in cultural incompatibility</i>		
Same culture	3.72 (1.07) ^k	4.05 (1.04) ^k
Different culture	3.35 (1.19) ^k	4.60 (1.14) ^l

^a Means in cells sharing the same superscript are not significantly different.

the traditional RAT ($b = 0.07, p = .08$). The creativity rating of the most creative idea generated by each participant is also positively associated with both the multicultural RAT ($b = 0.16, p = .07$) and the traditional RAT ($b = 0.11, p = .05$). The positive associations between RAT scores and creativity ratings are understandably moderate because the measures focus on different aspects of creativity: the RAT is about connecting disparate ideas, whereas creativity ratings take into consideration novelty and usefulness of ideas generated. Nevertheless, taken together, these results indicate that both RAT scores are predictive of creativity. Importantly, multicultural RAT scores appear to be positively associated with the generation of creative fashion ideas that require combining elements from different cultures, suggesting that the multicultural RAT is indeed related to creativity in a multicultural context.

Traditional RAT scores. A two-by-two ANOVA using the traditional RAT score as the dependent variable revealed two significant main effects: scores were lower in the different-culture conditions (mean = 3.60, s.d. = 2.58) than the same-culture conditions (mean = 4.69, s.d. = 2.80; $F[1, 184] = 8.27, p < .01$);⁵ scores were also lower in the ambient conflict conditions (mean = 2.63, s.d. = 2.68) than in the ambient harmony conditions (mean = 4.51, s.d. = 2.72; $F[1, 184] = 4.67, p < .05$). The interaction, however, was not significant ($p = .21$).

Multicultural RAT scores and creativity ratings. Of key interest in this research are the multicultural RAT scores and creativity ratings. Consistently with findings from Study 1, the results for

the multicultural RAT showed a significant interaction between the experimental conditions ($F[1, 184] = 6.65, p = .01$): scores were significantly lower for participants were in the ambient intercultural conflict condition (mean = 1.74, s.d. = 1.33) than for those in each of the other three conditions (same-culture ambient conflict: mean = 2.93, s.d. = 1.77; different-culture ambient harmony: mean = 2.74, s.d. = 1.78; same-culture ambient harmony: mean = 2.68, s.d. = 1.63). The same patterns of interaction were observed for the design creativity ratings (average creativity rating: $F[1, 184] = 7.44, p < .01$; creativity rating of most creative idea: $F[1, 184] = 7.80, p < .01$). Superscripts in Table 4 indicate whether reported means differ across the different conditions.

Perceived cultural incompatibility. As expected, perceived cultural incompatibility is higher in the ambient intercultural conflict condition than in each of the other three conditions ($F[1, 184] = 7.45, p < .01$). Although there is a main effect for disharmony wherein participants in the disharmony conditions reported higher perceived cultural incompatibility than those in the harmony conditions ($F[1, 184] = 22.38; p < .01$), further analyses revealed that the means in same-culture ambient harmony and same-culture ambient disharmony conditions are not significantly different. There is no main effect for same-culture versus different-culture conditions.

Mediation analyses. Following the approach stipulated by Edwards and Lambert (2007), I next conducted moderated mediation analysis to demonstrate that only the intercultural (but not intracultural) condition that primed recall of ambient conflict (as opposed to harmony) promoted beliefs that ideas from different cultures are incompatible and that these beliefs undermine creative thinking on tasks drawing on knowledge from multiple cultures. Using SPSS macros specified by Preacher, Rucker, and Hayes (2007), I found that the indirect effects of exposure to ambient conflict on two creativity outcome variables to be significantly different for the same-culture versus different-culture conditions. Specifically, the bias-corrected confidence interval (CI) for the moderated indirect effects did not include zero for the multicultural RAT (95% CI = -0.52 to -0.02) and the ratings of each participant's most creative idea (95% CI = -0.47 to 0.02). The bias-corrected confidence interval for the average creativity rating dependent variable was however not significant (95% CI = -0.35 to 0.02).

⁵ This main effect is primarily driven by the lower traditional RAT scores for participants in the intercultural conflict condition. It is interesting that Study 2 revealed patterns of results for traditional RAT that parallel those for multicultural RAT and creativity ratings, but Study 1 showed effects of ambient cultural disharmony only on multicultural RAT ratings. One explanation is that the specific manifestation of ambient cultural disharmony matters. Study 1 operationalized ambient cultural disharmony via the extent to which individuals are embedded in indirect intercultural negative ties, whereas Study 2 primed participants about one specific intercultural conflict among their associates. It is plausible that the second operationalization might have made ambient cultural disharmony especially salient to the participants, given that they had to describe the conflict, resulting in the effects on multicultural RAT spilling over to the traditional RAT.

TABLE 5
Study 2: Results of Stepwise Regressions for Mediation^a

Variables	Beliefs in Cultural Incompatibility: Model 1	Creativity Outcome ^b	
		Model 2	Model 3
<i>(A) Multicultural RAT^c</i>			
Ambient intercultural conflict prime	1.24** (0.23)	-1.00** (0.32)	-0.67 (0.35)
Beliefs in cultural incompatibility			-0.26* (0.14)
<i>R</i> ²	0.22	0.08	0.11
<i>(B) Average creativity ratings^c</i>			
Ambient intercultural conflict prime	1.24** (0.23)	-0.54* (0.25)	-0.27 (0.28)
Beliefs in cultural incompatibility			-0.22* (0.11)
<i>R</i> ²	0.22	0.04	0.07
<i>(C) Creativity ratings of most creative idea^c</i>			
Ambient intercultural conflict prime	1.24** (0.23)	-0.95** (0.36)	-0.52 (0.40)
Beliefs in cultural incompatibility			-0.34* (0.15)
<i>R</i> ²	0.22	0.06	0.09

^a Coefficients are unstandardized; numbers in parenthesis are standard errors.

^b The study has three types of creativity outcomes: multicultural RAT, average creativity ratings, and creativity ratings of most creative idea.

^c Dependent variables.

* $p < .05$

** $p < .01$

I further conducted mediation analyses focusing on intercultural interactions. Table 5 shows the detailed stepwise regressions for each dependent variable. Model 1 shows that my ambient intercultural conflict prime increased the belief that cultures are incompatible ($b = 1.24$, $p < .01$). Model 2 shows that the ambient intercultural conflict prime significantly decreased multicultural RAT scores and both creativity ratings. When the variable for the beliefs about cultural incompatibility is entered into the regression (model 3), the effects in model 2 completely disappear, suggesting full mediation effects. Further tests using bootstrapping procedures (Shrout & Bolger, 2002) with 5,000 iterations showed that these indirect effects were significant, as the 95% bias-corrected confidence interval excluded zero. Specifically, beliefs about cultural incompatibility fully mediate the effect of ambient intercultural-conflict prime on the multicultural RAT (95% bias-corrected CI = -0.76 to -0.04), average creativity ratings (95% bias-corrected CI = -0.60 to -0.02), and ratings of each participant's most creative idea (95% bias-corrected CI = -0.95 to -0.07).

Feelings of discomfort did not mediate the effect between ambient intercultural conflict prime and creativity, suggesting that the experience of negative affect associated with observing conflicts is not a likely alternative mechanism. I consider and test the account involving negative affect more directly

in the next study using a broader measure of negative affect. Taken together, results from this study provided clear support for Hypothesis 1 and some initial evidence for Hypothesis 2.⁶

Supplementary analyses. Does the specific content of ambient intercultural conflict matter in shaping individuals' beliefs about cultural incompatibility and creativity? To address this question, I recruited two research assistants who were blind to the hypotheses to code whether or not the issues involved in the recalled conflicts were related to culture. Correlations between the two coders' ratings were high (0.98), and differences were resolved by discussion. Of the issues in the intercultural conflict recall condition, 68 percent were about culture. An example of a conflict that was about culture indicated that the partners involved were ignorant of the other's cultural values. An example of a conflict that was not about culture attributed the conflict to differences in personality. However, whether or not an ambient intercultural conflict was regarding culture did not have any

⁶ I also repeated all the above analyses using only data in which the recalled interactions involved individuals from different national cultures (84%). That is, I excluded participants who recalled different culture interactions involving ethnic differences but not national differences. The patterns of results were the same as the findings reported.

significant effect on all three outcome variables, suggesting that the specific content of ambient intercultural conflict does not matter as much as the mere occurrence of conflicts between people from different cultures.

Two other assistants also coded the reported conflicts, categorizing them as either relationship or task conflict on the basis of Jehn (1995)'s definitions. An example of a task conflict is one wherein two individuals cannot agree on the choice of actor for a college stage production; an example of a relationship conflict is one in which two individuals dislike each others' personal habits. I found that 33 percent of the recalled conflicts were task-related, whereas 74 percent were relationship oriented; 11 percent of the conflicts involved both task and relationship. Importantly, the type of conflicts did not systematically influence the effects of ambient cultural disharmony on the various creativity dependent variables.

ALTERNATIVE MECHANISMS

Thus far, I have demonstrated that ambient cultural disharmony decreases individuals' ability to connect ideas from disparate cultures, undermining multicultural creativity. I also showed that beliefs about cultural incompatibility mediate this effect. The relationship between ambient cultural disharmony and the ability to connect ideas from disparate cultures need not, however, be explained by a single mechanism. I next consider two other potential mechanisms. One mechanism has to do with negative affect. When individuals observe intercultural conflicts in their environment, they might experience negative emotional arousal such as discomfort, anxiety, and awkwardness. If two individuals in conflict are friends with an observer, the observer will find himself or herself in a psychologically tense situation. Indeed, in keeping with balance theory (Heider, 1958), disharmony among people with whom one has positive relationships creates social imbalance and psychological tensions. Specifically, Heider posits that people prefer balanced to imbalanced social relationships because the latter are cognitively more effortful to cope with. Social imbalances are often associated with psychological tensions. Even in situations in which observers do not know the individuals in conflict, negative affect can still arise through emotional contagion, the tendency to feel the emotions experienced by others (Barsade, 2002; Hatfield, Cioppo, & Rapson, 1993). Given that people in con-

flikt inevitably experience a range of negative emotions (e.g., injustice, anger, and anxiety), observers may consciously or unconsciously "catch" these emotions.

Ample evidence links negative affect with diminished work performance. For example, Ellis and colleagues demonstrated that individuals induced with negative affect engaged in more selective cognitive processing (Varner & Ellis, 1998) and had impaired cognitive functioning, such as decreased effectiveness in using prior knowledge (Ellis, Varner, Becker, & Ottaway, 1995). Hence, ambient cultural disharmony can diminish ability to connect ideas from diverse cultures through the pathway of negative affect.

A second potential mechanism has to do with cognitive disruption. According to theories of cognitive processes, individuals have limited mental capacity and attentional resources, so they must allocate these resources to or withdraw these resources from the range of activities that they are engaging in at a given time (Kahneman, 1973; Kanfer & Ackerman, 1989). When individuals experience intercultural conflicts in their social environment, they may divert precious mental resources to process these conflicts. For example, individuals may try to understand the causes of the conflicts or think about ways to help resolve them. Given the intercultural nature of the conflict, individuals may also ruminate about social tensions in society. Because creative insights require extensive cognitive search and processing (Boden, 1994), cognitive disruptions arising from experiencing indirect intercultural conflicts distract individuals from effectively accessing cultural knowledge and seeing novel connections among them.

STUDY 3

The next study, a laboratory experiment, extends the prior studies in four ways. First, it tested two other potential mechanisms: negative affect and cognitive disruption. Second, it directly exposed participants to cultural disharmony between two individuals whom they did not know. This approach tests the generalizability of my theory, examining whether ambient cultural disharmony applies to intercultural conflicts involving strangers. Additionally, it strengthens internal validity by controlling for idiosyncratic differences in individuals' experience of intercultural conflicts, given that participants are exposed to the same experimental conditions. Third, I extended the two-by-

two experimental design used in Study 2 to include a neutral condition, resulting in a two-by-three design (same culture vs. different culture; ambient conflict, vs. neutral, vs. harmony). The objective was to examine whether the experience of cultural harmony would produce a positive effect on an individual's ability to connect ideas from different cultures. Fourth, Study 3 has a different measure of creativity. Instead of the RAT, I used an idea generation task that challenged participants to come up with business ideas that would simultaneously fill unmet needs in two esoteric cultures. A major advantage of this measure over the RAT is that, because the two cultures presented are unfamiliar to the participants, it controls for the influence of prior cultural knowledge.

Participants and Procedure

Two hundred sixty-four students (48% men; average age, 23 years), recruited from a large East Coast university, participated in an entrepreneurship idea generation study. Upon arrival at the laboratory, participants completed a five-minute individual difference questionnaire. This was followed by a prelude to the creativity task wherein they were asked to read a document describing two cultures (see the description of the creativity task below). Participants were then presented with a list of 15 word pairs and given five minutes to memorize them (see the description of the cognitive disruption measure below). Upon completion, I randomly assigned participants to their experimental condition (see the description of manipulations below). This was followed by a memory recall test, additional survey questions to measure the mediators, and an idea generation task. Participants were thanked, paid (\$25), and dismissed from the laboratory after they had completed the idea generation task.

Manipulation

Participants were randomly assigned to one of six conditions based on the two-by-three factorial experimental design. They were either exposed to a same-culture interaction or an intercultural interaction (two factors) and to one of three kinds of interaction (harmony, conflict, and neutral) (three factors). Specifically, participants viewed a two minute video clip of two men interacting at a meeting. In the clip for the disharmony condition, the two appeared to disagree about the topic at

hand (whether or not to promote a high-performing but interpersonally inept manager); for the harmony condition, the pair appeared to be in agreement and discussion was friendly. For the neutral condition, the two individuals simply talked about the given topic without expressing any significant emotions or body language that would suggest a conflict or harmonious relationship. These video clips were specifically produced for the present study. The intercultural interaction video clips consisted of an Asian male actor and a white male actor; the same-culture interaction video clips consisted of either two Asians or two whites. These actors were recruited from a local theater community and trained to enact each of the three types of interaction (harmony, conflict, and neutral). Specifically, each pair of actors was briefed about each type of interaction and rehearsed several times in front of a production crew, a research assistant, and the remaining actors. The group gave suggestions (on facial expression and body language) to the actors for enacting the given interaction as realistically as possible. For example, for the conflict interaction, actors were told to maintain physical distant and perform body gestures that suggest disagreement (e.g., shaking one's head) and anger (e.g., banging the table). Each interaction was shot three to four times (until the group was satisfied with the performance), and the best clip was later chosen for the study.

Participants were told that the video clip they were about to view was shot in a separate study involving workplace interaction and that the two individuals involved were members of the local community. The video clip was recorded during an unrelated study on workplace dynamics, and participants' role was to help assess the nature of the interactions they observed in the video clip. To ensure that the content of the conversation did not impact the result, audio was turned off during the viewing. Thus, participants could only discern the nature of the interaction from the facial expressions and body language of the actors.

After viewing the video clip, the participants answered five questions regarding the interaction they saw that would later serve as the manipulation checks. Questions were "To what extent do the two individuals appear to be in conflict?"; "To what extent do the two individuals appear to dislike each other?"; "To what extent do the two individuals appear to have a positive harmonious relationship with each other?"; "To what extent do the two individuals appear to like and enjoy each

other's presence?"; and "To what extent do the two individuals appear to have a neutral relationship?" Participants also indicated whether the two individuals were of the same or different cultural backgrounds.

Measures

Beliefs about cultural incompatibility. I used the same measure as in Study 2. The scale ($\alpha = .79$) was administered after participants were exposed to the experimental condition and had completed the negative affect measures.

Negative affect. I measured negative affect with the negative affect subscales of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). This scale ($\alpha = .84$), which taps emotional states such as distress and anxiety, was administered immediately after participants were exposed to the experimental condition.

Cognitive disruption. Following Porath and Erez (2007), I used a memory recall task to measure cognitive disruption. Participants were given a list of 15 word pairs to memorize (e.g., "bank-milk" and "foot-tree") prior to exposure to the experimental condition. They were told that they would be given one of the words from each word pair and asked to recall the other word later in the study. This task is commonly used to test disruption of cognitive processes such as memory and attention (Ashcraft, 1989; Eysenck & Keane, 2003). The recall portion of the task was administered after exposure to the experimental condition and completion of the cultural incompatibility beliefs and negative affect measures but before the idea generation task. The higher the number of correctly recalled words, the lower the cognitive disruption.

Creativity task. Participants read about two cultures: the Ewenki (Mongolian) and the Jivaro (South American). These cultures were selected because they were not well-known and thus likely to be unfamiliar to the participants. The description of each culture (about two pages long) indicated details such as language, religion, folklore, living conditions, family life, cuisine, education, and rites of passage.

Participants then read that as the world economy became increasingly globalized, many companies were propelled to not only constantly innovate but to innovate in a global context. In this context, I asked participants to generate ideas for potential new products or services that could be successfully sold in *both* the Ewenki and Jivaro cultures. The

ideas should be new to each culture and effectively address an unmet need in the respective society. Participants were asked to generate as many ideas as possible. For each idea, they had to explain how it would address an unmet need in each culture.

I measured creativity using several approaches. The first approach—external expert ratings—is similar to that used in Study 2. I recruited two expert raters with considerable entrepreneurial experience (both had been involved in one or more start-ups and one had founded his own business abroad) to judge the ideas generated in this study, rating creativity as a function of both novelty and usefulness. Raters were specifically told that an idea was considered creative if it they assessed it to be new on the basis of their professional experience and if it fulfilled unmet needs in both the Ewenki and Jivaro cultures. Each rater independently rated the creativity of the listed ideas (1 = "not at all creative," 7 = "extremely creative"). The intraclass correlation of the two experts' average creativity ratings was .90, and that for the rating of the most creative idea was .89. Agreement of both the two experts' average creativity ratings and that for the rating of the most creative idea was .82 ($p < .01$). Given these acceptable reliability and agreement statistics, I aggregated the two experts' ratings across the ideas generated to derive an average creativity score for each participant. As in Study 2, I also derived the creativity rating of the most creative idea generated by each participant.

To supplement this measure of creativity, I further measured the creativity of each participant with two objective indicators. First, a trained research assistant counted the number of nonredundant ideas generated. The more ideas a participant was able to come up with that introduced an innovation to both cultures, the greater his or her ability to see connections between two different cultures. Idea count represents a *fluency* measure of creativity (Diehl & Stroebe, 1987; Rietzschel, Nijstad, & Stroebe, 2007). Second, the assistant counted the frequency with which each idea appeared in the entire set of ideas generated in the study. He accomplished this by first going through the entire set of ideas, grouping similar ones into categories. I then assigned each idea a frequency score based on the number of similar ideas generated for this idea's category. For example, a total of 46 participants advocated introducing internet or some form of similar computer technology to these two cultures. Thus, ideas that involve these themes are given a frequency score of 46. An example of a unique idea

(a score of 1) was introducing a long-burning fuel, as the Jivaro culture relies on the firewood of the surrounding area and the Ewenki culture believes that fire should never go out. This measure of idea frequency represents an *originality* measure of creativity (Diehl & Stroebe, 1987; Rietzschel et al., 2007). The less frequently a certain idea has been concurrently conceived by others, the more original it is deemed to be. I next computed an average originality score for each participant by summing the frequency of occurrence of the ideas, dividing it by the total number of ideas generated. The lower the score, the higher the participant's average originality.

Manipulation Checks

Analyses of responses to the manipulation check questions indicated that all participants correctly perceived the two individuals in the intercultural condition to be of different cultures and those in the same-culture condition to be of the same culture. The two individuals in the conflict condition video clips were perceived to be in greater conflict and dislike each other more than those in the neutral and harmony conditions (perceived conflict: $F[2, 261] = 240, p < .01$, conflict condition, mean = 5.82, s.d. = 1.25; neutral condition, mean = 2.46, s.d. = 1.39; harmony condition, mean = 2.06, s.d. = 1.05; perceived dislike: $F[2, 261] = 97.72$, conflict condition, mean = 4.20, s.d. = 1.38; neutral condition, mean = 1.96, s.d. = 1.08; harmony condition, mean = 1.81, s.d. = 1.33). The individuals in the harmony condition video clips were perceived to have more harmonious relationships with each other and to enjoy and like each other more than the individuals in the conflict and neutral conditions (perceived harmonious relationship: $F[2, 261] = 217.74, p < .01$, harmony condition, mean = 5.84, s.d. = 1.05, conflict condition, mean = 2.39, s.d. = 1.12, neutral condition, mean = 5.03, s.d. = 1.21; perceived enjoyment and liking: $F[2, 261] = 176.72, p < .01$, harmony condition, mean = 5.73, s.d. = 1.06, conflict condition, mean = 2.44, s.d. = 1.16, neutral condition, mean = 4.24, s.d. = 1.21). Finally, the individuals in the neutral condition video clips were more likely perceived to be in a neutral relationship, compared to those in the conflict and harmony conditions (perceived neutral relationship: $F[2, 261] = 47.95, p < .01$, neutral condition, mean = 5.09, s.d. = 1.70; conflict condition, mean = 3.17, s.d. = 1.52; harmony condition, mean = 2.99, s.d. = 1.55). I further analyzed

whether the manipulation check variables differ for the Asian–Asian and white-white dyads in the same-culture conditions. Results did not reveal any material difference, so I combined these two types of same-culture interaction videos. Taken together, these results indicated that the video clips presented the various forms of social interaction as intended.

Analyses and Results

Table 6 presents the means and standard deviations of the key dependent variables and potential mediators. Table 7 presents the regression results involving the experimental conditions and their interactions. Models 1 to 4 focused on the four creativity outcome variables. Models 1 and 2 show that exposure to intercultural interaction had marginally positive effect on the average creativity ratings of ideas ($b = 0.43, p < .10$) and the creativity ratings of the most creative idea ($b = 0.57, p < .10$) respectively. For the creativity ratings of the most creative idea, there is also a positive effect due to exposure to harmonious interactions ($b = 0.93, p < .01$). Model 3 indicates that exposure to intercultural interactions had a positive effect on the number of ideas generated ($b = 0.51, p < .05$), as did exposure to harmonious interactions ($b = 0.61, p < .05$). Importantly, there was significant interaction effect between exposure to intercultural interaction and exposure to conflict for all four outcome variables (average creativity ratings of ideas: $b = -1.04, p < .01$; creativity ratings of most creative idea: $b = -1.53, p < .01$; number of ideas generated: $b = -1.06, p < .01$, and average frequency of ideas: $b = 16.08, p < .01$). As can be seen in Table 6, the pattern of interaction is such that the creativity outcome variables were all lower in the intercultural conflict condition, compared to each of the other conditions. Overall, these findings suggest that when exposed to ambient cultural disharmony, individuals generated fewer as well as less creativity and original ideas in a task that required simultaneously taking into consideration two cultural perspectives. There is hence support for Hypothesis 1.

As for mediators, model 5 in Table 7 indicates a significant effect on beliefs about cultural incompatibility on the part of the interaction between exposure to intercultural interaction and exposure to conflict ($b = 1.38, p < .01$). Participants in the ambient intercultural conflict condition were more likely to endorse the belief that ideas from dispa-

TABLE 6
Study 3: Means and Standard Deviations^a

Variables	Ambient Harmony		Neutral		Ambient Conflict	
<i>Average creativity ratings</i>						
Same culture	3.90	(0.65) ^b	3.68	(1.40) ^b	3.50	(1.27) ^b
Different culture	4.01	(0.82) ^b	4.11	(1.25) ^b	2.89	(1.32) ^c
<i>Creativity ratings of most creative idea</i>						
Same culture	4.82	(0.92) ^d	3.89	(1.70) ^d	3.85	(1.69) ^d
Different culture	4.90	(1.09) ^d	4.46	(1.46) ^d	2.89	(1.68) ^e
<i>Number of ideas</i>						
Same culture	3.17	(1.31) ^f	2.56	(1.26) ^f	2.54	(1.29) ^f
Different culture	3.37	(1.46) ^f	3.07	(1.16) ^f	2.00	(1.03) ^g
<i>Average idea frequency</i>						
Same culture	37.59	(14.91) ^h	39.30	(16.42) ^h	40.48	(15.02) ^h
Different culture	37.26	(19.26) ^h	37.72	(15.02) ^h	54.98	(39.06) ⁱ
<i>Beliefs in cultural incompatibility</i>						
Same culture	3.65	(1.57) ^j	2.88	(1.28) ^k	3.06	(1.27) ^k
Different culture	2.98	(1.35) ^k	2.95	(1.20) ^k	4.52	(1.26) ^l
<i>Negative affect</i>						
Same culture	14.45	(4.60) ^m	13.60	(5.20) ^m	14.01	(4.72) ^m
Different culture	13.61	(5.54) ^m	13.76	(4.07) ^m	15.00	(7.36) ^m
<i>Cognitive disruption (recall score)</i>						
Same culture	7.88	(5.29) ⁿ	8.77	(4.59) ^{n,o}	9.38	(4.11) ^{n,o}
Different culture	9.15	(4.45) ^{n,o}	10.12	(4.04) ^o	8.41	(4.05) ^{n,o}

^a Means in cells sharing the same superscript are not significantly different.

rate cultures are incompatible than were participants in each of the other experimental conditions (see Table 6 for means). There were, however, no similar interaction patterns for the other two mediators, negative affect and cognitive disruption (see models 6 and 7, respectively), suggesting that they are unlikely mediators. These findings are consistent with the argument that ambient cultural disharmony does not affect creativity in general; if negative affect and cognitive disruption were mediators, general creativity would be impacted.

If exposure to ambient cultural disharmony disrupts creative thinking, what about exposure to ambient cultural *harmony*? Results from the present study did not reveal any systematic effect on creativity for exposure to intercultural harmony. Interestingly, model 5 in Table 7 revealed a main effect of exposure to harmony on beliefs about cultural incompatibility ($b = 0.77, p < .01$). An examination of the means in Table 6 suggests that this effect might be driven by exposure to ambient *same-culture* harmony—that is, seeing people of same cultural backgrounds in a harmonious relationship could inadvertently imply that disparate cultures might be less compatible.

The pattern of results for Study 3 revealed thus far suggested that, consistently with Study 2, cul-

tural incompatibility beliefs is a viable mediator for the relationship between exposure to ambient cultural disharmony and creativity. I next tested this hypothesis using Edwards and Lambert's (2007) first-stage moderated mediation approach. In this study, whether or not an observed interaction was between people of the same or of different cultural background “moderates” the effects of ambient disharmony on creativity. Specifically, I expected that exposure to ambient conflict (compared to neutral interactions) leads to stronger beliefs of cultural compatibility and hence lower creativity only when the observed conflict involves people of different cultures. Results support this assertion. Using SPSS macros specified by Preacher et al. (2007), I found the conditional indirect effect of exposure to ambient conflict on creativity to be significant when the interaction involved people of different cultures in that the bias-corrected confidence interval for these effects did not include zero (average creativity ratings of ideas: 95% CI = -0.56 to -0.01 ; creativity ratings of most creative ideas: 95% CI = -0.70 to -0.01 ; number of ideas: 95% CI = -0.50 to -0.04 ; average frequency of ideas: 95% CI = 0.45 to 15.33). When the observed interaction involved people of the same culture, the indirect effects were not significant as the bias-

TABLE 7
Study 3: Regression Results^a

Independent Variables ^c	Dependent Variables ^b				Mediators		
	Model 1: Average Creativity Ratings	Model 2: Creativity Ratings of Most Creative Idea	Model 3: Number of Ideas	Model 4: Average Idea Frequency	Model 5: Cultural Incompatibility Beliefs	Model 6: Negative Affect	Model 7: Cognitive Disruption
Exposure to intercultural interaction	0.43 (0.24) [†]	0.57 (0.31) [†]	0.51 (0.26)*	-1.58 (4.39)	0.74 (0.27)	0.16 (1.10)	1.35 (0.92)
Exposure to harmony	0.22 (0.24)	0.93 (0.31)**	0.61 (0.26)*	-1.71 (4.39)	0.77 (0.27)**	0.86 (1.10)	-0.89 (0.92)
Exposure to conflict	-0.16 (0.23)	-0.04 (0.29)	-0.02 (0.25)	1.18 (4.24)	0.18 (0.27)	0.51 (1.06)	0.61 (0.89)
Harmony × different culture	-0.32 (0.35)	-0.48 (0.44)	-0.31 (0.38)	1.25 (6.39)	-0.75 (0.40) [†]	-1.01 (1.60)	-0.84 (1.34)
Conflict × different culture	-1.04 (0.24)**	-1.53 (0.44)**	-1.06 (0.38)**	16.08 (6.33)*	1.38 (0.40)**	0.73 (1.59)	-2.31 (1.33) [†]
R ²	0.10	0.17	0.11	0.07	0.16	0.01	0.02

^a $n = 264$. Coefficients are unstandardized; numbers in parenthesis are standard errors.

^b For model 3, higher values indicate greater fluency. For model 4, higher values indicate lower originality.

^c For exposure to intercultural interaction, 1 = “different culture,” 0 = “same culture.” I used two indicators (harmony and conflict) to denote the three interaction types. Harmony was coded 1 if a condition involved exposure to harmonious interactions; conflict was coded 1 if the condition involved exposure to conflicts. Both indicators were 0 in the condition involving exposure to neutral interactions.

[†] $p < .10$

* $p < .05$

** $p < .01$

corrected confidence interval included zero (average creativity ratings of ideas: 95% CI = -0.16 to 0.04; creativity ratings of most creative ideas: 95% CI = -0.20 to 0.05; number of ideas: 95% CI = -0.14 to 0.04; average frequency of ideas: 95% CI = -0.58 to 3.85). Negative affect and cognitive disruption were not viable mediators in similar analyses. All indirect effects were analyzed with the bootstrapping approach involving 5000 interactions.

Table 8 shows the mediation analyses focusing on the different-culture conditions. Model 1 indicates the exposure to ambient intercultural conflict increases beliefs of cultural incompatibility ($b = 1.57, p < .01$). Model 2 shows that exposure to ambient intercultural conflict decreases the average creativity of ideas generated ($b = -1.22, p < .01$), creativity ratings of the most creative idea ($b = -1.57, p < .01$), number of ideas ($b = -1.07, p < .01$), and the originality of ideas ($b = 17.26, p < 0.01$). Model 3 adds the mediator, revealing that the detrimental effects of ambient cultural disharmony either weakened (average creativity ratings of ideas, creativity ratings of most creative idea, and number of ideas) or completely disappeared (idea frequency). Taken together, these analyses provide

evidence that beliefs about cultural incompatibility mediate the effect of ambient cultural disharmony on creativity.

GENERAL DISCUSSION

Three studies using different research paradigms (a network survey and two experiments) support the thesis that intercultural disharmony in individuals’ immediate social environment promotes beliefs that ideas and values grounded in different cultures are incompatible, undermining creativity that requires connecting ideas from multiple cultures (multicultural creativity). The effects of ambient cultural disharmony on such creativity were not mediated by negative affect or cognitive disruption. Although the presence of ambient cultural disharmony disrupts creative thinking, the presence of ambient cultural harmony did not appear to promote creativity. These studies have implications for research in cultural diversity and creativity as I shall elaborate.

It is worth mentioning how the present research departs from Porath and Erez’s (2009) research showing that witnessing rudeness reduced observers’ performance on routine tasks as well as cre-

TABLE 8
Study 3: Stepwise Regression Analyses for Mediation

Variables	Beliefs in Cultural Incompatibility: Model 1	Creativity Outcome ^a	
		Model 2	Model 3
(A) <i>Average creativity ratings</i> ^b			
Ambient intercultural conflict exposure ^c	1.57** (0.27)	-1.22** (0.29)	-0.77* (0.32)
Beliefs in cultural incompatibility			-0.29* (0.11)
<i>R</i> ²	0.29	0.19	0.25
(B) <i>Creativity ratings of most creative idea</i> ^b			
Ambient intercultural conflict exposure ^c	1.57** (0.27)	-1.57** (0.35)	-0.95* (0.40)
Beliefs in cultural incompatibility			-0.40** (0.14)
<i>R</i> ²	0.29	0.20	0.28
(C) <i>Number of ideas</i> ^{b, d}			
Ambient intercultural conflict exposure ^c	1.57** (0.27)	-1.07** (0.24)	-0.68* (0.28)
Beliefs in cultural incompatibility			-0.25* (0.10)
<i>R</i> ²	0.29	0.20	0.26
(D) <i>Average idea frequency</i> ^{b, e}			
Ambient intercultural conflict exposure ^c	1.57** (0.27)	17.26** (6.49)	7.83 (7.52)
Beliefs in cultural incompatibility			6.01* (2.60)
<i>R</i> ²	0.29	0.08	0.07

^a The study has four types of creativity outcomes: average creativity ratings, ratings of most creative idea, number of ideas, and average idea frequency.

^b Dependent variable.

^c Compared to a neutral condition.

^d A greater value equals higher fluency.

^e A greater value equals lower originality.

* $p < .05$

** $p < .01$

ative tasks. First, rudeness or incivility is not the same as ambient cultural disharmony. I conceptualize ambient cultural disharmony as tensions and conflicts between people of different cultures. Such disharmonious interpersonal relationships however may or may not involve rudeness or incivility. For example, two people could dislike each other without expressing their sentiments rudely. Conversely, rudeness may or may not be intentional or motivated by conflicts. In most of the Porath and Erez (2009) studies, rudeness occurs between relative strangers (e.g., an experimenter and a participant); thus there is no clear indication of dislike or disagreement between the individuals involved. Second, the present research focuses on cultural disharmony, which involves not just negative interpersonal experiences between individuals, but also intergroup relations. When observing negative interactions between individuals of different cultures, people inevitably experience intergroup conflicts. Third, my research examines a mechanism that is not examined in Porath and Erez (2009)—namely, beliefs about cultural incompatibility. The identification of this mechanism goes beyond pro-

cesses such as negative affect and cognitive disruptions examined by Porath and Erez.

Theoretical Implications

This work has theoretical implications for several streams of research. First, I introduced the concept of ambient cultural disharmony. The emphasis on the *ambient* aspect of intercultural disharmony represents a significant departure from how most scholars have been thinking about intercultural relations, in that they have tended to focus on understanding the sources of and finding resolution for conflicts (e.g., Gelfand et al., 2001). The present findings stimulate research in intercultural relations and multicultural workgroups to examine how individuals are affected by various kinds of intercultural relational dynamics in which they are not personally involved. For example, it is plausible that intercultural organizational citizenship behaviors in an immediate social environment (e.g., coworkers going to great lengths to help colleagues of a different culture complete their assignments) might lead people to engage in similar behaviors.

My approach is, however, consistent with organizational diversity climate research in emphasizing that the larger social system in which individuals are embedded influences individuals' cognition and behaviors (Kossek & Zonia, 1993; Pugh et al., 2008; Schneider & Reichers, 1983; Scott, 1992). Rather than measuring climate (perceptions shared by a community of individuals) per se, this research examines individuals' own experience of indirect social relationships. A major contribution here is the demonstration that how culturally different others in one's social environment interact with each other can have unintended negative consequences for individuals' creative thinking.

Study 3 involved exposure to ambient intercultural conflict between strangers as opposed to individuals whom participants personally knew (Studies 1 and 2). The finding that the detrimental effects of ambient cultural disharmony on creativity still hold suggests that effects of ambient cultural disharmony need not be restricted to people a focal individual knows, increasing the generalizability of the effects.

It is interesting that, in Study 2, whether or not the content of ambient intercultural conflicts among associates was about culture did not moderate the proposed effect of ambient cultural disharmony. One might have predicted that to the extent the content of the indirect conflict was about cultural issues, the negative impact on creativity would be stronger. Yet I did not find support for this prediction. Perhaps because most (68%) of the recalled ambient intercultural conflicts in Study 2 were about culture, observations for which the intercultural conflicts involved noncultural issues were insufficient, thus reducing the power of the statistical test. Another explanation is more theoretical and interesting. That is, the mere occurrence of intercultural conflict in the study environment was sufficient to elicit beliefs about cultural incompatibility because people implicitly attribute the root causes of observed intercultural conflicts to culture, even though on the surface the issues were not about culture.

Relatedly, the concept of ambient cultural disharmony also advances research on multicultural teams and workgroups. Most research effort in multicultural teams has focused on membership composition, or the extent that teams are culturally diverse (Cheng, Chua, Morris, & Lee, 2012; Earley, 1993; Earley & Mosakowski, 2000; O'Reilly et al., 1998). Those following this line of research can draw on my findings to better understand how

specific configuration of interpersonal relationships in multicultural teams might affect creative outcomes. For example, two multicultural teams might have the exact same membership profile, but the one that contains a negative intercultural relationship (i.e., two members of different cultures do not get along) might have lower creative performance during global work not only because of lower team cohesion but also because of lower individual creativity due to the effects of ambient cultural disharmony.

More broadly, the idea of ambient cultural disharmony is also relevant to recent research on asymmetric conflict in teams that encompasses group conflict asymmetry (the degree to which members differ in their perceptions of the level of conflict in their group) and individual conflict asymmetry (whether a member perceives more—or less—conflict than other group members) (Jehn, Rispens, & Thatcher, 2010). A central argument in this work is that individual members who perceived more conflict than others were less effective in their work performance because they were more distracted and less motivated. My theory about ambient cultural disharmony expands this theoretical formulation, suggesting that perception of certain types of conflicts might invoke team members' beliefs about whether or not ideas from different sources are compatible, which might in turn influence individual members' ability to combine diverse ideas to generate innovative solutions.

A second key contribution of the present studies is that they inform and extend creativity research. Most creativity research to date has focused on factors that promote individual and group creativity (see Hennessey and Amabile [2010] for a review). Conditions that undermine creativity are relatively less examined. Mannix and Neale (2005) found that group diversity often has negative effects on creativity because it creates social division. The present research is consistent with this finding but suggests a different explanation: the negative effect of ambient cultural disharmony on creative thinking suggests that individuals need not be personally involved in social conflict to experience a diminution of creativity.

Additionally, this research also bears on emerging evidence that experiencing a sense of conflict or tension can trigger novel associations of ideas, a precursor to creativity (Huang & Galinsky, 2011; Miron-Spektor, Gino, & Argote, 2011; Proulx & Heine, 2009). For instance, Proulx and Heine (2009) found that people primed with

an absurd story are more motivated to seek patterns of association in novel environments because a perceived threat to their meaning system motivates them to restore a sense of meaning. Miron-Spektor et al. (2011) argued that individuals who adopted paradoxical frames would be more creative than their counterparts who did not because the former were more effective at integrating contradictions. My findings suggest an opposite effect than seen in this stream of work, suggesting instead that the experience of ambient cultural disharmony as a source of conflict undermines remote association and creativity. The inconsistency of these findings suggests that the particular type of conflict and associated psychological mechanism matter. One explanation is that absurd stories and paradoxical frames encourage integrative complexity, the cognitive ability to make sense of and reconcile contradictory ideas or perspectives (Suedfeld, Tetlock, & Streufert, 1992; Tuckman, 1966). Conversely, ambient cultural disharmony motivates people to shut down the search for connections and patterns involving ideas from different cultures because they have come to believe that such intercultural connections are not feasible. This effect is similar to the psychological experience of biculturals who segment rather than integrate their disparate cultural identities, undermining creativity that requires drawing on knowledge from the two cultures they know (Cheng et al., 2008). In light of these possibilities, future research on the effects of experienced conflict on creativity should, therefore, be precise about the type of conflict experienced and its resultant psychological effects.

Third, this research highlights a psychological mechanism involving people's implicit beliefs about whether ideas from different cultures are inherently compatible. The identification of this mechanism can help researchers explore interventions to circumvent the negative effect of ambient cultural disharmony. For example, when individuals encounter ambient cultural disharmony, they could be encouraged to be more mindful of and more actively monitor their cultural assumptions, a process sometimes referred to as "cultural metacognition" (Chua et al., 2012). The heightened awareness of cultural assumptions might help dampen the formation of beliefs that cultures are incompatible.

More broadly speaking, my identification of cultural incompatibility beliefs as a mechanism that undermines multicultural creativity also suggests

that situational stimuli that can induce individuals to believe whether or not certain classes of ideas and perspectives are compatible may be drivers of creative collaboration and even innovation diffusion. For example, if social science researchers are exposed to an environment that suggests that disparate fields model human behaviors and motivations in inherently distinct and incompatible ways (e.g., Gintis, 2007), they are less likely to engage in effective interdisciplinary research. Prior research has shown that cognitive boundaries between different medical professions retarded the spread of innovation in the health care sector because each profession operated within its own knowledge boundaries (Ferlie, Fitzgerald, Wood, & Hawkins, 2005). Thus, one way to encourage interdisciplinary idea sharing, research, and collaboration might be to identify and remove environmental (ambient) factors that engender beliefs about idea incompatibility.

Methodological Innovation

A notable innovation in the present research is the development of a new multicultural version of the RAT. The traditional version of the RAT has been widely used in organizational and psychological research to measure creativity and remote associative thinking (Fong, 2006; Zhong et al., 2008). Yet, while useful, the traditional RAT does not allow researchers to examine how well individuals can connect ideas from diverse cultures, an antecedent to creativity in a global context. The current effort to develop a multicultural RAT is a useful starting point for studying remote association of concepts drawn from different cultures. Because the multicultural RAT requires knowledge about diverse cultures around the world, I would recommend that this test be administered in conjunction with a cultural knowledge test taken at a different time prior to the test.

Practical Implications

Cultural diversity is routinely invoked as a driver of innovation and improved performance for both individuals and organizations (Ely & Thomas, 2001; Richard, 2000; Richard, Barnett, Dwyer, & Chadwick, 2004; Thomas, Ravlin, & Wallace, 1996; Watson, Kumar, & Michaelsen, 1993). This research shows that cultural diversity, though indeed contributory to innovation (Giambatista & Bhappu, 2010; Stahl et al., 2010), must be carefully managed

in practice, especially when the desired outcome is creative thinking and innovation in a global multicultural context. As individuals cultivate multicultural networks to harness the power of diverse cultural ideas for innovation, they need to be mindful that it is not only their own intercultural relationships that matter but also those indirect relationships among their culturally different network contacts. When their immediate social environment reeks of intercultural conflicts, individuals' ability to connect ideas from different cultures can be compromised. Thus, individuals would be well served if they could, to the extent possible, help their different culture associates get along better with one another.

The unexpected finding in Study 3 that exposure to ambient same-culture harmony appears positively associated with stronger beliefs about cultural incompatibility also has some practical implications. Specifically, this finding implies that people whose social environment consists primarily of culturally homogeneous individuals in good relationships with one another might inadvertently develop implicit beliefs that people from different cultural backgrounds do not mix well with one another. This effect further underscores the importance of promoting culturally diversity and harmony in the workplace and society.

The implications of the present research potentially transcend cultural disharmony between individuals in social networks and work groups. It is plausible that events that elicit perceptions of intercultural disharmony impact employees uninformed in such disputes. For example, when a company faces a lawsuit charging racial discrimination, employees who are not involved in this dispute might come to believe that people from different backgrounds just cannot get along. The dispute thus not only undermines the company's diversity policies but also its ability to innovate. Hence, companies that hire a culturally diverse workforce should actively manage perceptions about events that impinge on intercultural relations within the organizations.

Limitations and Future Research

The key strengths of the present research are that it combines different methods and uses an experimental approach (Studies 2 and 3) to establish causality. The use of the multicultural RAT also allows for direct measurement of individuals' ability to connect ideas from diverse cultures. However, the

data used in the three studies were not drawn from organizational contexts; thus the external validity of the findings needs to be further verified. Future research should aim to replicate the findings in a field setting.

Future research can also extend the present studies in several other ways. First, the multicultural RAT is a nascent version; more multicultural RAT items could be generated and tested to expand the instrument. New items should draw on as many cultures as possible and be validated with populations from different countries. With more items, tests with varying levels of difficulties can be constructed.

Second, although the present research did not find evidence of negative affect or cognitive disruption as underlying mechanisms, future research could explore other explanations for the negative effect of ambient cultural disharmony on creative thinking. It is plausible, for example, that when different-culture contacts are in conflict, specific aspects of a focal individual's own relationships with them might change (e.g., avoiding discussion of ideas that might remind a given social contact of his or her conflict with another social contact), restricting the flow of new ideas and creativity.

Third, although the present studies clearly demonstrated the effects of ambient cultural disharmony on creativity, it is not clear how such disharmony would manifest in practice. How salient or strong must ambient cultural disharmony be for its effects to be material? How long lasting are the effects of exposure to ambient cultural disharmony? In the network study (Study 1), participants were not explicitly primed with intercultural conflicts; they were simply asked to furnish details about their social networks. In doing so, participants inadvertently provided the critical information about intercultural relationships in their networks. Yet this variable has significant effects on the multicultural RAT scores. Hence, it seems likely that ambient cultural disharmony cues need not be especially strong for it to have an impact on creative thinking. Study 1 also suggests that individual differences such as beliefs about cultural essentialism might play a role. To the extent that individuals believe that cultures are fixed, situational exposure to ambient cultural disharmony might not have as strong an effect on creativity.

The question of how long lasting the effects of exposure to ambient cultural disharmony are might be more complicated to address. I speculate that

both individual differences and situational factors play a part. For example, the exposure may influence individuals with high cultural essentialism longer than it influences those with low cultural essentialism (although the effects are weaker) because such exposures are consistent with their prior beliefs: people remember schema-consistent information better than schema-inconsistent information. Additionally, exposure to intense intercultural conflicts (e.g., riots or wars) probably has longer-lasting effects than exposure to smaller conflicts. Future research should further examine the degree to which ambient cultural must be salient to an observer for its effect to materialize and how long such effects last.

Fourth, future research should further investigate the finding that low cultural essentialists are more influenced by ambient cultural disharmony than high cultural essentialists. One explanation is that high cultural essentialists already have strong and fixed beliefs about cultural incompatibility and hence the situational stimuli of ambient cultural disharmony have limited impact in increasing it further, acting in a way akin to a ceiling effect. Conversely, low cultural essentialists have weak and malleable beliefs about cultural incompatibility and therefore there is more room for such beliefs to grow as a result of exposure to ambient cultural disharmony. Indeed, psychologists who studied implicit theories about whether or not human characteristics (e.g., social identity, intelligence, and moral character) are malleable often find that individuals who held low essentialism beliefs (i.e., they believe in high malleability of human characteristics) are more strongly influenced by experimental manipulation of situational moderators (Hong et al., 2004; No et al., 2008). These findings make sense in that low essentialists are by definition more malleable in their beliefs about a given domain than high essentialists (Haslam et al., 2000).

Yet this explanation leaves open the question of how high cultural essentialists are influenced by ambient cultural disharmony. If high cultural essentialists tend to have strong beliefs about cultural incompatibility, then the experience of ambient cultural disharmony should activate these beliefs, leading to lower multicultural creativity (Verplanken & Holland, 2002). In Study 1, the effect of ambient cultural disharmony on the multicultural RAT was negative but not statistically significant for high cultural essentialists. One plausible explanation is that the ambient cultural disharmony did not fully activate the implicit beliefs of cultural

incompatibility of the high cultural essentialists. It is possible that high cultural essentialists may not experience ambient cultural disharmony the same way as low cultural essentialists. For high cultural essentialists who already have prior beliefs about cultural incompatibility, ambient intercultural conflicts and tensions are expected and not particularly surprising or even salient; therefore, they may not have noticed them as much as low cultural essentialists. Conversely, ambient cultural disharmony is more likely to be experienced as a novel stimulus for low cultural essentialists and is hence highly salient. Indeed, priming research suggest that people pay more attention to and are more affected by novel environmental stimuli (Berlyne, 1960; Langer, Fiske, & Taylor, 1976). Future research should investigate how high versus low cultural essentialists experience and perceive the same degree of ambient cultural disharmony. For example, an experiment could be conducted to see if low cultural essentialists are more sensitive to and thus better able to detect ambient intercultural conflicts than high cultural essentialists.

Fifth, as alluded to in the practical implications section, the concept of ambient cultural disharmony can be extended beyond interpersonal tensions and conflicts in an immediate social environment. Future research can extend the present work by investigating effects of ambient cultural disharmony that arise from intercultural conflicts at different levels of analysis, such as between work groups, organizations, and even nations. For example, at the national level, constant disagreements between nations might well have implications for creativity and innovation processes at the individual level. A marketing executive tasked to promote an American product in China might be less creative in doing so because observing the ongoing disagreements between China and the US (e.g., over trade and currency issues) in the news media may have primed him or her to think that the two cultures are incompatible.

Conclusion

Individual and organizational success in the 21st century depends on the ability to think creatively in a global setting (Brimm, 2010). Recent research has affirmed the positive effects of exposure to multiple cultures on creativity (Leung et al., 2008; Maddux & Galinsky, 2009). But intercultural disharmony in the workplace and societies at large are inevitable, and most is not directly under individ-

uals' control. This research represents an important step toward understanding how a disharmonious multicultural social environment can undermine individuals' creativity.

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APPENDIX

The Multicultural RAT

Development

Three graduate students helped generate test items for the multicultural RAT. All three had extensive multicultural experience (they were either biculturals or had grown up in multicultural societies), had lived abroad for more than a year, and had traveled widely. These assistants were introduced to the traditional RAT and then tasked to generate similar test items with the additional requirement that the three stem words, when combined with a fourth word (the answer), must either originate in three distinct cultures or draw on a global context. As in the traditional RAT, there should be only one or at most two correct answers (because of synonyms). A total of 50 sets of words were generated and screened to ensure that this criterion was met. Obscure items were rejected. The remaining 30 items were pretested with 25 culturally diverse participants. Items deemed too difficult (no one got them correct) or too easy (everyone got them correct) were dropped. The resulting 12 test items (see Table 1), embodied ideas from such diverse countries and regions as Canada, China, Europe, the Middle East, Southeast Asia, and the US.

Pretests

I subjected these 12 test items to a series of further tests. In the first round, I administered the 12 items to a new sample of 53 participants (51% men; average age, 21.5 years), 32.8 percent of whom were Americans; the rest were from Canada, China, Haiti, India, Russia, Taiwan, the United Kingdom, and Vietnam. Overall, participants averaged 3.32 correct answers out of 12 (s.d. = 1.94), suggesting that the test was fairly difficult. The rate of correct answers for each item ranged from 3 to 88 percent. I also found that gender, age, and US citizenship did not predict performance on the multicultural RAT.

In a second round of testing, 224 participants (50% men; average age, 21.6 years) completed both the multicultural and the traditional RAT, along with a ten-item, Big Five factors measure of personality (Gosling et al., 2003). The participants also performed the task of constructing a recipe for a chicken dish using a list of ingredients typical of six different cultures represented by local restaurants (American, Chinese, Indian, Chinese, Japanese, Korean, and Thai). The results indicated that performance on the two forms of the RAT was moderately correlated at .45 ($p < .01$). Neither RAT score was predicted by the Big Five personality measures. Correct answers on the multicultural RAT ranged from 0 to 8 (66.7%) out of 12, with an average score of 3.54 (29.5%) (s.d. = 1.71). On the traditional RAT, correct answers ranged from 0 to 10 (83.3%) out of 12, with an average score of 4.91 (40.9%) (s.d. = 2.25). To test whether scores on the multicultural RAT predicted the use of ingredients from multiple cultures in a recipe, an assistant

coded the ingredients in each recipe by counting the number of cultures represented. For example, if a participant's recipe used ingredients drawn from Thai, American, and Korean cultures, the count was three. If a recipe used only ingredients drawn from a single culture (e.g., American), the count was one. I then regressed the number of cultures featured in a recipe on the participant's score on the traditional and multicultural RAT. Multicultural RAT scores significantly predicted the use of ingredients from multiple cultures ($b = 0.17$, $t = 2.23$, $p < .05$). The higher participants scored on the multicultural RAT, the more they used ingredients from different cultures in their recipes. Traditional RAT scores were not predictive of this outcome variable ($b = -0.01$, $t = -0.10$, $p = .92$). This finding suggests that the multicultural RAT differs from the traditional RAT in that it has predictive validity for associated outcomes that involve combining ideas from multiple cultures.

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