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Multicultural Experience Fosters Creative Conceptual Expansion

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Before you read on, take two minutes to draw a picture of an innovative kind of chocolate. Don't think too hard. Just draw it quickly.

This task was presented to the many designers, artists, and students from all over the world who took part in the Belgian chocolate initiative project organized by the Addict Creative Lab. When the famous Belgian chocolate company Isis Luxury approached this ethnically and functionally diverse group to brainstorm product branding and packaging strategies to enhance the product's marketability, Giovanna Massini, the Addict Creative Lab researcher who led the chocolate project, advised his lab members: "Chocolate in Belgium is an icon, like pasta in Italy. But why do we feel obliged by tradition? We must disturb the traditional shapes. We must create new combinations, new ingredients."

What did these designers do to revolutionize chocolate and challenge the traditional way we view this confection? Here are some novel ideas from the group: (a) chocolate molded picture frames to allow viewers to erase their beautiful details with their warm, playful hands; (b) daisy shaped chocolate with petals for plucking and the words "M'ama . . . non m'ama" ("She loves me, she loves me not") imprinted; and (c) engraved silver or gold rings surrounding chocolate centers; as the designer put it, "You can eat the chocolate out of the ring, or you can give the ring and the chocolate with it . . . It's a ritual."

This Belgian chocolate initiative was reported in an article on *BusinessWeek Online* titled "Thinking Outside the Chocolate Box" (Vadino, 2006). To some people, the ability to think outside the box seems sudden, intuitive, and without logic; creativity may leap into consciousness magically at times,

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or the illumination may never come. Creativity, however, is not as mysterious as it appears to be. As the Belgian chocolate example illustrates, creative ideas often emerge when individuals synthesize ideas from the knowledge traditions in different cultures or combine seemingly nonoverlapping ideas.

A wealth of empirical evidence has identified components of personality, affect, cognition, and motivation that facilitate or hinder creativity (see Amabile, 1996; Csikszentmihalyi, 1996; Sawyer, 2006; Simonton, 2000, 2003). To bring a fresh perspective into the existing literature on culture and creativity, the present chapter discusses how people's experience with multiple cultures can help break their routinized mindset and inspire them to take off their biased cultural "lens" when looking at the world. In this sense, multicultural experiences can be valuable intellectual resources for facilitating creative thinking. We argue that multicultural individuals are more adept at creative productions and more inclined to engage in creative processes, perhaps because these individuals have more experiences than do others with creative conceptual expansion – a key process that supports creativity according to the creative cognition approach (see the next section on Creative Cognition Approach).

Not everyone can capture the creative benefits of multicultural experiences, however. Individuals who do not have an open and accepting attitude toward foreign cultures may feel overwhelmed by unfamiliar cultural encounters. Likewise, not all multicultural encounters would bring creative benefits. When the situation puts people under time pressure or heightens existential concerns, the need for cultural conformity and hence the inclination to cling to familiar ideas in one's own culture will become salient, which in turn would hamper creative performance. Accordingly, it is useful to identify when people can benefit from their multicultural experiences and when they cannot. In this chapter, we will systematically examine the potential creative benefits of multicultural experiences and the boundaries of such benefits.

THE CREATIVE COGNITION APPROACH

In earlier definitions, creativity is usually defined as something new (Thurstone, 1952), as something nonconforming (Crutchfield, 1962), or as something that is surprising to people during the time of discovery (Barlett, 1958). Stein (1953) added to these definitions the appropriateness dimension of creativity – creativity is "a novel work that is accepted as tenable or useful or satisfying by a group at some point in time" (p. 311).

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Although definitions vary, creativity typically refers to the ability to produce products that are novel, high in quality, appropriate, and useful.

Other researchers have performed systematic analysis on the creativity-supporting processes that promote people's creative performance. The creative cognition approach is a scientific approach to studying creativity through examining the cognitive mechanisms that produce creative ideas (Finke, Ward, & Smith, 1992; Ward, Smith, & Vaid, 1997). According to this approach, every person has the potential to become creative as long as they *know* how to use the ordinary cognitive processes to produce extraordinary outcomes. In this view, the interplay of two kinds of cognitive processes is implicated in creative thinking – generative processes and exploratory processes (Finke et al., 1992). The generative processes involve *active memory retrieval or searching* of relevant information to generate candidate ideas with differing creative potentials. The explorative processes involve *careful scrutiny* of these candidate ideas to determine which ones should receive further processing (e.g., modification, elaboration, and transformation).

Conceptual expansion is a strategy that makes use of the generative and explorative processes to support creative activities (Ward, Patterson, Sifonis, Dodds, & Saunders, 2002; Ward et al., 1997). Creative conceptual expansion takes place when attributes of seemingly irrelevant concepts are added to an existing concept to extend its conceptual boundary (Ward et al., 1997). In psychology, researchers may create new instances of an old construct by adding to it ideas from another theory. For instance, in psychoanalytical theory, transference refers to unconscious redirection of feelings from one person to another. Chen and Andersen (1999) shed new light on this construct by reinterpreting it from a social–cognitive perspective, positing that transference occurs when positive or negative evaluation of a new person is assimilated into an activated representation of a significant other. The expansion of an idea with the use of previously separate ideas is crucial to creative performance.

Outcomes of conceptual expansion are associated with different degrees of novelty. If the concepts employed to expand an existing idea are typically or frequently associated with that idea, conceptual expansion will be less creative. On the contrary, higher creativity occurs when the two concepts involved in conceptual expansion are not normally seen as overlapping (Wan & Chiu, 2002). Recruiting seemingly nonoverlapping concepts in the conceptual expansion process is by no means easy, however. Past research has documented that people's creative imagination is highly likely to be structured by existing conceptual frameworks or commonly encountered exemplars. For instance, when developing novel coins, participants tend to

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include attributes of known coins in their designs (Rubin & Kontis, 1983). These stable cognitive structures are hard to break even if people were instructed to use their wildest imagination to come up with creative ideas. For example, although participants were given such explicit instructions to be creative in drawing novel creatures on Mars, their drawings were characterized by highly accessible Earth animal characteristics (e.g., eyes, legs). Thus, the alien creatures still remarkably resemble existing animals on planet Earth (Ward, 1994; Ward & Sifonis, 1997). In another study, Ward and colleagues (2002) found that two-thirds of participants reported relying on specific Earth examples to guide their creation of novel instances of animals, fruit, and tools. In other words, prior knowledge restricts creative thinking and makes it difficult for people to think outside the box.

CULTURE AND CREATIVITY

Being immersed in one's own culture is a double-edged sword. On the one hand, as noted in Part III of this volume, culture serves important psychological functions. Culture as a network of shared knowledge representations consists of learned conventions that help individuals in a society coordinate their social behaviors, define their self-identities, manage their existential terror, and provide firm answers to important questions that people encounter in life (Chapters 5–7, this volume). On the other hand, people who are deeply immersed in their culture have also acquired the learned routines or conventional knowledge in that culture, which, as noted in the previous section, may limit creative conceptual expansion (Rubin & Kontis, 1983; Ward, 1994; Ward et al., 2002). Apparently, a major constraint on creative conceptual expansion is the influence of highly accessible exemplars commonly found in everyday life. To the extent that culture consists of a set of preexisting, routinized, and chronically accessible ideas, it may limit the generation of creative thoughts (Leung, Maddux, Galinsky, & Chiu, 2008).

Multicultural Experiences Enhance Creativity

Like the experience of being immersed in one's own culture, the experience of being exposed to multiple cultures can also be a double-edged sword. When individuals encounter a foreign environment, they may experience culture shock. They may feel anxious, uneasy, and disoriented when things they are used to and have taken for granted (the language, food, movies, and music of the home culture) suddenly become out of reach. Although

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culture shock has its dark side, after the initial, difficult adaptation stages have passed, encountering a foreign culture can also provide an opportunity for acquiring new perspectives on problem solving.

As a result, whereas culture may limit creativity, multicultural experiences may foster creative expansion of ideas. For example, consider two ideas: A and B. Idea A has high categorical accessibility in Culture I and low categorical accessibility in Culture II, and the reverse is true for Idea B. An individual who has extensive experiences in both cultures may be able to retrieve both ideas from memory spontaneously. The simultaneous memory retrieval of different ideas can inspire people to reappraise a situation, question entrenched assumptions, and reduce mental rigidity. Moreover, by cognitively placing two different ideas in juxtaposition, people may be able to integrate the two ideas into a novel idea. Indeed, many instances of creative conceptual expansion in daily life result from integrating indigenous cultural exemplars from diverse cultures. For example, McDonald's in Taiwan serves a rice burger – beef or chicken sandwiched between buns made of rice. Whereas hamburger is a more common food item in Western cultures, rice is a more common staple food in Asian cultures. The two, however, can be creatively synthesized into rice burgers through creative conceptual expansion.

Theoretically, multicultural experiences can contribute to creative expansion in at least four ways. First, people learn new ideas and concepts from multicultural experiences. These ideas can be the inputs for creative expansion processes. The more new ideas people have, the more likely they are to come up with novel combinations (Weisberg, 1999). Through multicultural experiences, people are also exposed to a broad range of novel behavioral and cognitive scripts, which can increase cognitive complexity (Tadmor & Tetlock, 2006).

Second, each culture's established conceptions present to its own people structured and often routinized responses to the environment; these cognitive structures may be destabilized as people acquire alternative conceptions through their experiences in other cultures. Intuitively, it stands to reason that exposure to a different cultural environment can train individuals to rethink and question their long-held assumptions, give individuals access to ideas that are unconventional in their own culture, and break individuals' mental set. Third, having acquired and successfully applied novel ideas from a foreign culture, people with rich multicultural experiences may be prepared to recruit and seek out ideas from other diverse sources and use them as inputs in the creative processes. Finally, foreign cultures may contain values and beliefs different from or even in conflict with those in one's

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own culture. Incongruent concepts invite exploration into their interrelations, the outcome of which may extend and enrich the concepts in question (Ward, 2001). Thus, multicultural experiences can positively impact creativity by offering people the opportunities to spontaneously recruit seemingly discrepant ideas from unfamiliar cultures, cognitively place them in juxtaposition, and through creative insights integrate these ideas in novel ways. Higher creativity is more likely when the two concepts involved in conceptual expansion are not normally seen as overlapping – these seemingly non-overlapping concepts can sometimes be associated with two distinct cultural sources.

In short, multicultural experience may foster creativity by (a) offering access to novel ideas and concepts in other cultures, (b) destabilizing routinized knowledge structures and increasing the cognitive accessibility of relatively inaccessible knowledge, (c) increasing the psychological readiness to recruit ideas from unfamiliar sources and places, and (d) fostering synthesis of seemingly incompatible ideas from diverse cultures.

RESEARCH EVIDENCE FOR THE CREATIVE BENEFITS OF MULTICULTURAL EXPERIENCES

Indirect Evidence

Earlier research has provided some indirect evidence for the positive link between multicultural experiences and creativity. For example, research has consistently shown that bilingual persons outperform monolingual persons on creativity tests (e.g., Carringer, 1974; Lambert, Tucker, & d'Anglejan, 1973; Okoh, 1980). Evidence from other studies that examined the effect of culture on children's overall creativity also shows that bicultural children such as children from Hong Kong (Rudowicz, Lok, & Kitto, 1995) or those of Chinese-American descent (Huntsinger, Schoeneman, & Ching, 1994) outperform monolingual white American children on various creativity assessments. To the extent that bilingual competence is a proxy for multicultural experiences, this finding suggests that exposure to more than one culture is conducive to creativity. Specifically, bilingualism may enable people to understand and appreciate diverse, linguistically encoded cultural ideas.

There is also evidence that creativity is facilitated in groups that allow and even encourage the expression of dissenting views (Nemeth & Wachter, 1983) and in groups that contain members from diverse cultural backgrounds (Guimerà, Uzzi, Spiro, & Amaral, 2005; Levine & Moreland, 2004).

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The different views emanating from these groups can stimulate a reappraisal of the situation and widen people's perspectives (Nemeth & Kwan, 1987). Consideration of multiple alternatives coming from different knowledge traditions is conducive to generating novel points of view.

At the societal level, it has been documented that creative activity increases in places where people have been increasingly exposed to outside influences, whether through immigration, traveling or studying abroad, or learning from foreign teachers (Simonton, 1997). Living in diverse sociocultural environments that have a large number of politically fragmented states can also facilitate creativity (Simonton, 1975; Sorokin, 1969). As Simonton (2000) put it, "Nationalistic rebellion encourages cultural heterogeneity rather than homogeneity. Rather than everyone having to speak the same language, read the same books, follow the same laws, and so on, individuals are left with more options. These suggest that cultural diversity may facilitate creativity" (p. 155).

All these findings indicate that exposure to multicultural experiences lays the foundation for breaking mental set and boosting creative performance. The evidence for the creative benefits of multicultural experiences just reviewed is indirect and suggestive, however. Fortunately, more direct evidence for the positive link between multicultural experiences and creative conceptual expansion has recently started to emerge.

Direct Evidence

Causal Effects of Multicultural Experiences on Creative Productions

We have conducted the first controlled experiment to provide *direct* evidence for the causal effects of multicultural experiences on creative performance. These results have helped eliminate the alternative explanation in the previously reviewed correlational studies that creative people voluntarily seek out multicultural experiences. These results also rule out the possibility that the link between multicultural experiences and creativity is due to a third variable (e.g., bilingual competence and openness to experience increases both multicultural experiences and creativity).

The participants in this experiment were American college students of European descent. We manipulated participants' exposure to a foreign culture and assessed its *causal* impact on immediate and delayed creative performance (Leung & Chiu, in press). The experimental manipulation of foreign cultural exposure was administered in the first experimental session through showing respondents a 45-minute multimedia (with pictures, music, videos) PowerPoint presentation that depicted different aspects of

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one or two cultures. The slideshow materials covered a wide range of cultural facets including architecture, scenery, landscape, home decorations, furniture, apparel, cuisine, life, entertainment, recreation, music, movies, arts, and literature. Participants were randomly assigned to one of the five conditions: (a) American culture only, in which participants viewed a presentation of American culture; (b) Chinese culture only, in which participants viewed a presentation of Chinese culture only; (c) dual cultures, in which participants viewed a presentation of American and Chinese cultures back to back; or (d) fusion culture, in which participants viewed a presentation of a hybrid culture created by fusing American and Chinese cultures (e.g., McDonald's rice burger; *Reflection*, a Vanessa Mae music video); and (e) control condition, in which participants did not see a presentation. Subsequent to viewing the slideshow, participants in the four experimental conditions completed the first creativity task. Participants in the control condition did not see the presentation and proceeded directly to completing the creativity task. The study also included a second session that took place five to seven days later, in which a different creativity test was administered. The second creativity test allowed us to examine the durability of the creative effects of multicultural experiences.

Two features of this experiment are noteworthy. First, aside from manipulating whether participants were exposed to a foreign culture, the cultural exposure manipulation also manipulated *how* participants were exposed to a foreign culture (whether they were exposed to a foreign culture only in the Chinese slideshow condition or to a foreign culture and their own culture together in the joint and fusion slideshow conditions). This experimental setup could verify whether perceptual and cognitive juxtaposition of local and foreign cultures (vs. mere exposure to a foreign culture) is critical for promoting creative synthesis of ideas from diverse cultural sources.

Second, the two creativity tasks we used in this experiment did not require knowledge of American or Chinese culture. Thus, our results could not be explained simply by acquisition of knowledge about American or Chinese culture during the slideshow presentation. We assessed creative performance in the first session with a fairy tale rewriting task. Participants read a summary of the Cinderella tale and developed a new version of it for children in Turkey, a relatively unfamiliar culture to most European-American students. The participants were encouraged to use their wildest imagination to rewrite the story to make it creative, original, and coherent. Along with the summary of the original story, participants were also given some quick facts about Turkey's geographical location, climate, religion, economy, and industries and a narrative of Turkish people's everyday life.

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To avoid practice effects, a different creativity test was used in the second session that took place five to seven days later. In the second session, participants in the experimental conditions first provided some personal thoughts regarding the presentation materials that they saw in the previous session. Next, among other filler tasks, they were asked to construct two creative analogies of "time" (e.g., "Time is like a newspaper") and to describe the connections between time and the analogy.

Results indicated that the participants who watched a presentation of only American or only Chinese culture did not have better creative performance than the control participants. Those who watched the dual cultures or fusion culture presentation, however, had better creative performance than the control participants in both the first and second experimental sessions, which were at least five days apart.

Two implications of the results should be highlighted. First, as noted, the two creativity tasks did not require knowledge of American or Chinese culture (writing a fairy tale for Turkish children and constructing analogies of time). Nonetheless, the cognitive benefits of experiencing Chinese culture were obtained in participants' creative products on these tasks. This result suggests that the creative effects of multicultural exposure may come from the development or practice of higher-order cognitive skills, such as the tendencies to sample ideas from divergent sources, compare and contrast the sampled ideas to explore their interrelations, and attempt creative integration of seemingly unconnected ideas (Wan & Chiu, 2002; Ward, 2001).

Second, the creative benefits of multicultural exposure were found only when American and Chinese cultures were presented simultaneously (i.e., in the joint or fusion conditions). This finding suggests that experiencing a single culture, even if it is a foreign culture (e.g., Chinese culture to European Americans), is not sufficient to facilitate creativity. The result supports the creative cognition perspective and underscores the importance of placing divergent cultural ideas in cognitive juxtaposition for generating creative insights.

Linking Multicultural Experiences to Engagement in Creative Processes

The study of creativity can be approached from a product perspective as well as from the process perspective. Whereas the product perspective focuses on creative outcomes or performance, the process perspective attends to the creativity-supporting processes. As creativity is manifest in both creative performance and engagement in creative processes, the product and process perspectives complement each other.

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Our investigation, being inspired by the creative cognition approach, also aims to explicate *how* multicultural experiences may bring creative benefits, thus tapping into the creativity-supporting processes. To achieve this research goal, in one study we had European-American participants perform an idea sampling task that required them to develop a preliminary idea on happiness into a creative and original theory (Leung & Chiu, in press). At the beginning of the task, participants had the opportunity to consult ideas from American and other (Chinese and Turkish) cultures. Our major dependent measure was the preference to sample ideas from foreign cultures (vs. American culture). We predicted that extensiveness of multicultural experiences would be positively related to the tendency to sample ideas from other cultures.

To elaborate, participants were first presented with the following idea, allegedly taken from a psychology student's honor thesis: *People who have more friends are happier*. Their task was to write a short essay to expand the idea. They were encouraged to formulate their own creative ideas about happiness by seeking inspirations from the writings of esteemed scholars. In so doing, they could consult up to 7 (of 15) sayings about happiness, each written by an American, Turkish, or Chinese scholar. Brief background information of 15 scholars (5 American, 5 Turkish, and 5 Chinese) was presented. A sample scholar description is: "An American [Chinese or Turkish] researcher who has made several discoveries about human motivation." To ensure that participants' choices were not influenced by the specific contents of the background descriptions, in a pilot study, participants read the descriptions without the scholar nationality information and rated how likely they would consult each scholar's saying to better understand the nature of happiness. The scholar descriptions included in the current study did not differ on this measure in the pilot test. Furthermore, we counterbalanced the pairing of the scholar description and the scholar cultural identity: The scholar descriptions were divided into three sets of five descriptions, and each set was paired with American, Chinese, and Turkish scholars. Participants were randomly assigned to read one counterbalanced version of the descriptions.

After participants had indicated their choices, they received a set of sayings from the experimenter. The number of sayings in the set equaled the number of sayings requested by the participant. Unbeknownst to the participants, they received a set of sayings randomly selected from a pool of 15 sayings. These sayings were matched on ratings of familiarity, usefulness, originality, stimulation, persuasiveness, and creativity collected in a pilot study. A sample saying is "The secret of happiness is to make others believe

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they are the cause of it." Participants then wrote a short essay to expand the given preliminary idea on happiness with their chosen sayings.

Upon completing the idea sampling task, participants filled out a Multicultural Experience Survey that measured different aspects of multicultural exposures: (a) whether they spoke a foreign language, (b) the percentage of their lifetime they had lived outside their home State, (c) whether their father and mother were born outside the United States, (d) a self-report 10-point scale item on the extent of their exposure to a culture other than mainstream American culture, (e) the kind of cuisine served by their most favorite restaurants, (f) the ethnicity of their five favorite musicians, and (g) the ethnicity of their five closest friends. The survey appears to have high convergent and discriminant validity (see Leung & Chiu, 2008). Participants also filled out a creativity subscale of the Personal Value Scales (Scott, 1965) that measured their everyday creative behaviors. A sample item is "Developing new and different ways of doing things."

Recall that participants had a choice of consulting up to seven happiness sayings written by American, Turkish, or Chinese scholars in the idea sampling task. We found that participants with more extensive multicultural experiences tended to sample more ideas from foreign cultures (i.e., Turkish and Chinese sayings) in the task. In addition, the multicultural individuals had higher creativity score measured by the creativity subscale. This study showed that extensiveness of multicultural experiences is associated with the tendency to sample ideas from diverse cultures.

In another study, we examined another creativity-supporting process – the generation of normatively inaccessible ideas (Leung & Chiu, in press). To prepare for the study, we asked American college students to list five gifts that came to their mind if they were to offer a gift to an acquaintance, thus allowing us to establish the gift-giving norm in the sample. For all distinct gifts, we computed the dominance score by counting the number of participants who listed them (Ward et al., 2002). The higher the score, the more common the gifts are. We then recruited another group of participants from the same student population as the gift-giving norm study to take part in the main study. The main study involved the same gift-listing task and the Multicultural Experience Survey. Following Ward and colleagues (2002), we computed an average dominance/rank score of the five gift ideas generated; this score took into account how common the gifts were in the sample (i.e., the dominance score gathered from the gift-giving norm study) as well as how accessible the gifts were to the participants (i.e., how early they wrote down a certain gift on their list of five). In other words, a gift with a high dominance/rank ratio is one that many participants readily generated.

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We found that participants with greater exposure to foreign cultures had a lower dominance/rank score. This study supported our prediction that multicultural experience is associated with a tendency to generate ideas that are unconventional in their own culture.

To summarize the research findings reviewed thus far, multicultural experiences predict both creative outcomes and creative processes. It is positively related to performance in fairy tale writing and generation of creative analogies. It also predicts the tendency to recruit ideas from foreign cultures for creative idea expansion and to access unconventional knowledge from memory.

BOUNDARIES OF THE CREATIVE BENEFITS

Although there is clear evidence for the creative benefits of multicultural experiences, as mentioned at the beginning of this chapter, not everybody benefits from multicultural experiences, and the creative benefits are not actualized in all situations. Creativity researchers have emphasized the important role of individual differences and situational constraints on the development of creativity (Rhodes, 1987). These researchers posit that creativity should be understood as resulting from the interplay of personal and situational variables. The person perspective focuses on identifying individual-level variables that distinguish creative and less creative individuals, such as personality traits, affect, and motivation (see Amabile, 1996; Barron & Harrington, 1981; Csikszentmihalyi, 1996; Sawyer, 2006). The situation perspective seeks to explicate the facilitative and inhibitory effects of the environmental context (e.g., resources, time constraint, role models, situational norms and expectations) on creativity (Rhodes, 1987). According to Murray (1938), the influence of situational variables on creativity may come from objective aspects of the environment or individuals' subjective interpretations of it. Although the person and situation perspectives have been developed to guide the study of creativity, the same framework can be applied to understand the relationship between multicultural experiences and creativity.

The Person Perspective

Our research showed that multicultural experiences could enhance creativity, possibly because multicultural individuals are more inclined to engage in the creativity-supporting cognitive processes – sampling of ideas from diverse cultures and spontaneous generation of normatively inaccessible

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knowledge. Although these findings lend support to the idea that exposure to multicultural experiences can expand an individual's creative horizon, nevertheless, encountering a different culture can also be cognitively and emotionally demanding, particularly for some people.

One person variable that predicts the likelihood of benefiting from multicultural experiences is the personality trait of openness to experience. Openness to experience has been singled out as the personality dimension most closely linked to creative behaviors (Costa & McCrae, 1992; Feist, 1998; McCrae & Costa, 1997). Individuals with high openness to experience are those who are appreciative of novel ideas and new experiences, receptive to a variety of perspectives and thoughts, and unafraid of recruiting unconventional ways to deal with problems at hand; they are also artistic, inventive, and curious (Costa & McCrae, 1992; McCrae & Costa, 1997). Therefore, to individuals with a high level of openness, multicultural exposure may enhance their receptiveness to new ideas (Leung & Chiu, 2008). With a receptive mind-set, these individuals are more prepared to retrieve from memory unconventional ideas and use them in creative activities. Accordingly, we predict that openness to experience would facilitate multicultural learning. When people who are open to experiences are exposed to new cultural experiences, they tend to learn from these experiences and become creative.

On the contrary, to some people, exposure to multicultural experiences may evoke feelings of ambivalence and even culture shock (Hong, Wan, No, & Chiu, 2007; Chapter 12, this volume). We submit that individuals who are not open to new experience may appraise and experience multicultural encounters negatively. To manage these negative appraisals and feelings, these individuals may develop a mind-set that resists novel ideas and fall back on the conventionalized ideas in their own culture. Some recent research findings are consistent with this idea. For example, when open-minded Chinese undergraduates were exposed to symbols of American culture (vs. culture-unrelated pictures), they spontaneously adopted American practices in managing conflict. When close-minded Chinese undergraduates were shown the same symbols (vs. culture-unrelated pictures), they resisted American cultural practices and held on strongly to Chinese conflict management strategies (Fu, Morris, Lee, Chao, Chiu, & Hong, 2007; see also Chiu, Morris, Hong, & Menon, 2000).

Accordingly, we contend that multicultural experiences would have beneficial effects on creativity only among persons who are open to experience (Leung & Chiu, 2008). We predict that, among participants who are low on openness, having more multicultural experiences would be negatively

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associated with creativity. These individuals may find unfamiliar ideas from other cultures to be overwhelming, shocking, and even threatening. To manage these negative reactions, they may cling to the prevailing conventional ideas in their own culture and develop a mind-set that resists new ideas. As a result, they are likely to retrieve conventional or normatively accessible exemplars for use in creativity tasks.

In one study (Leung & Chiu, 2008), we examined the role of openness to experience in the relationship between multicultural experiences and creativity. Creativity was assessed as engagement in the creative process in one task and in creative production in another. Specifically, we used an exemplar generation task to assess the creative process of retrieving unconventional or normatively inaccessible exemplars in a certain conceptual domain, and an Unusual Uses Test (Guilford, 1959) to assess the creative outcome of coming up with unconventional uses of a common object – a performance measure of divergent thinking.

In the exemplar generation task, participants wrote down the first 20 occupations that came to mind. All distinct occupation exemplars were identified after eliminating close synonyms (e.g., taxi driver and cab driver) and those that reflected minor inflection variations (e.g., policeman and policemen) (Barsalou, 1985; Battig & Montague, 1969). An output precedence score was compiled for each distinct occupation exemplar. To obtain this score, we computed the reverse ordinal position of each occupation on all participants' lists. For example, for a given participant, if the occupation "lawyer" was on the second position among the 20 occupations listed, then "lawyer" received a score of 19 (i.e., 21 – 2). By taking the sum of the reverse ordinal positions of a certain exemplar ("lawyer") from all participants who had listed this exemplar, the output precedence score of this exemplar was obtained. Thus, an exemplar's output precedence score indicates how frequently the exemplar is listed as well as how quickly it comes to the mind of an average participant. That is, this score serves as a measure of normative accessibility (Barsalou, 1985). An exemplar with a high (low) output precedence score is one that is normatively accessible (inaccessible). The three most accessible occupations are doctor, lawyer, and teacher, and the three least accessible ones are dialect coach, optician, and knife maker.

In the Unusual Uses Test (Guilford, 1959), participants listed as many uses for garbage bags as possible without limiting themselves to any kinds of garbage bag or to any uses they had seen or heard about before. We were interested in two creativity indicators from this test. First, fluency or the ability to produce a larger number of unusual uses was measured by the total number of responses that participants generated in the test

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after eliminating repetitive responses. Second, flexibility or the ability to generate different kinds of unusual uses was measured by the total number of categories of unusual uses generated (e.g., containers, waterproof materials, arts, weapons, and furniture).

Participants' degree of multicultural experiences and openness to experience were assessed by the Multicultural Experience Survey and the Openness Scale in the NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). We first confirmed that multicultural experiences and openness represent two different constructs. Although individuals who are open to experience may voluntarily seek out more multicultural experiences than would persons who are less open, some aspects of multicultural experiences assessed in the Multicultural Experience Survey are experiences beyond personal control (e.g., parents' country of birth, the availability of foreign cultures in one's living environment). As expected, we found a low and nonsignificant positive correlation between the extent of multicultural experiences and openness to experience.

As predicted, the degree of multicultural experiences was positively linked to the tendency to generate normatively inaccessible exemplars as well as their creative performance on the Unusual Uses Test only among individuals who were open to experience. Among participants who were not open, having more multicultural experiences was associated with lower levels of creativity. In the face of overwhelming encounters with foreign cultures, less open individuals may not be psychologically prepared for accepting new ideas. Indeed, this argument is also supported by another recent study, which reported higher creative tendencies among individuals who are more able to adapt to a foreign culture while living abroad (Maddux & Galinsky, 2009). Therefore, people are more likely to benefit from multicultural experiences with a receptive mind-set and readiness to adapt.

The Situation Perspective

Multicultural experiences afford opportunities to think outside the box; these experiences can be valuable, creativity-enhancing cognitive resources. Not all multicultural individuals will benefit to the same degree from their multicultural experiences, however. For instance, being open to experience is important for actualizing the creative benefits of multicultural experiences. Furthermore, the situation perspective on the study of multicultural experiences and creativity holds that individuals may not benefit to the same degree from their multicultural experiences in *all* situations.

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In some situations, people feel pressured to adhere to the conventional norms of their own culture. In these situations, individuals (independent of their amount of multicultural experiences) would tend to resist ideas from foreign cultures. Two kinds of environments that have been found to motivate cultural conformity are (a) high time pressure environment (which increases the need for firm answers), and (b) mortality salient environment (which puts people under existential terror).

High Time Pressure Environment

Feeling time urgency in situations can increase people's need for cognitive closure (NFCC) or the need for firm answers (Heaton & Kruglanski, 1991; Kruglanski & Webster, 1996). Cultural conventions provide definite answers with high consensual validity. Individuals with high NFCC prefer firm answers and dislike ambiguities. Thus, these individuals are particularly motivated to follow cultural conventions (Fu et al., 2007). Specifically, high (vs. low) NFCC individuals are more likely to display culture-characteristic social perceptual styles (Chiu et al., 2000) and to readily retrieve from memory conventional exemplars of a conceptual category (e.g., high NFCC European Americans tend to retrieve apple vs. durian as an exemplar of fruit; Ip, Chen, & Chiu, 2006). High (vs. low) NFCC immigrants or sojourners adhere more strongly to their heritage culture and are more unsettled in the host culture, particularly when they move to the host culture with their conationals (Kosic, Kruglanski, Pierro, & Mannetti, 2004; Kashima & Loh, 2006). Finally, high (vs. low) NFCC American-Chinese bicultural individuals are less susceptible to situational cueing of culture-characteristic judgments – unlike their low NFCC counterparts, they do not make characteristically Chinese (American) judgments when primed with Chinese (American) cultural cues (Fu et al., 2007).

In one study, we assessed how likely people working under high or low time pressure situations would be willing to recruit ideas with foreign cultural origins in an idea sampling task (Study 4, Leung & Chiu, in press). The task, which measured the tendency to sample American versus foreign sayings to creatively expand a preliminary idea regarding the nature of happiness, was identical to the one described earlier. European-American participants either worked on the task at their own pace (low time pressure condition), or were regularly reminded by the experimenter to finish the task on time (high time pressure condition). When participants were not under time pressure, those with extensive multicultural experiences were more motivated to recruit sayings from relatively unfamiliar Turkish and

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Chinese cultures (vs. American culture). This association between degree of multicultural experiences and sampling of foreign sayings was reversed, however, when participants were placed under time pressure. For these participants, the more multicultural exposure they had, the less likely they were to recruit foreign ideas. A possible reason for this result is that individuals under time pressure desire firm answers rather than exploring foreign ideas that would engage divergent thinking. Individuals with rich multicultural experiences would expect ideas from foreign cultures to be particularly engaging. Thus, these individuals would be particularly motivated to avoid foreign ideas when they are under time pressure.

Mortality Salient Environment

In addition to a high time pressure situation, being exposed to a mortality salient situation may also limit multicultural individuals' receptiveness to foreign ideas. According to the Terror Management Theory (TMT; Greenberg, Solomon, & Pyszczynski, 1997; Greenberg, Pyszczynski, Solomon, Rosenblatt, Veeded, & Kirkland, 1990), when individuals are reminded of their eventual finitude, they experience existential terror (see Chapter 6, this volume). To cope with it, they increase their adherence to cultural conventions and through this strategy obtain a sense of symbolic immortality – the body may perish after death but the culture to which one belongs will continue to propagate (Solomon, Greenberg, Schimel, Arndt, & Pyszczynski, 2004). TMT researchers have garnered considerable evidence for this hypothesis. As shown in many studies, increasing the salience of mortality in a situation can result in stronger cultural identification (Kashima, Halloran, Yuki, & Kashima, 2004), more favorable responses to people who support their cultural worldview and less favorable responses to people who threaten it (e.g., Christians respond more positively to a fellow Christian than to a Jew Greenberg et al., 1990; American students respond more favorably to an exchange student who praises America than to a student who criticizes America Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994), and greater affective aversion toward creative activities (Arndt, Greenberg, Solomon, Pyszczynski, & Schimel, 1999).

In our study, we tested the moderation effect of mortality salience on the positive association between multicultural experiences and receptiveness to ideas from foreign cultures (Study 5, Leung & Chiu, in press). Participants took part in the same idea sampling task described earlier in this chapter. Before working on the task, however, half of the participants received the standard mortality salience manipulation used in the TMT research

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(Rosenblatt, Greenberg, Solomon, & Pyszczynski, 1989); they were asked to vividly visualize what would happen to their body as they died and after they died. The remaining participants were assigned to the control condition and were asked to describe the experience of dental pain. After completing the idea sampling task, participants completed the Multicultural Experience Survey. As past studies (Greenberg et al., 1997) showed that the mortality salience effect is particularly pronounced on perceived desirability of symbolic elements from outgroup cultures, participants also rated each sample saying on four attributes: persuasiveness, helpfulness, stimulation, and creativity on an 11-point scale.

Although the degree of multicultural experiences did not predict the likelihood of participants sampling foreign sayings, it was related to their evaluations of foreign versus American sayings. Specifically, in the mortality nonsalient condition, participants with richer multicultural experiences evaluated the American sayings significantly less positively and the foreign sayings significantly more positively. In the mortality salient condition, however, the amount of multicultural experience was not related to the relative evaluation of ideas from foreign (vs. American) cultures.

In summary, although multicultural experiences can increase creativity, there are limits to their creative benefits. When multicultural individuals are not open to new experiences, or when the situation evokes an NFCC or existential terror, the potential creative benefits of multicultural experiences are limited.

IMPLICATIONS FOR MANAGEMENT AND EDUCATION

Our research on multicultural experiences and creativity has important ramifications for both organizational innovation and student learning. As a result of the inherent cultural heterogeneity in multinational corporations, understanding intercultural dynamics has become increasingly critical in the management of these corporations (Jenn, Northcraft, & Neale, 1999; Williams & O'Reilly, 1998). When employees from different cultural backgrounds work as a team or in the same department, they will interact with each other frequently. This interaction provides to the employees one form of multicultural experience that can potentially increase their facility in generating novel ideas and creative problem solving. The same is true for employees who are sent to work or receive training in overseas offices.

Accordingly, human resources managers or specialists should recognize the positive aspects of the growing diversity of the workforce and put that diversity to good use to benefit both organizations and employees. Indeed,

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an increasing number of organizations have created a Chief Diversity Officer (CDO) position to address the pressing need to effectively manage workforce diversity in multicultural organizations (Johansson, 2005). With a deeper understanding of the psychology of multicultural experiences and creativity, diversity specialists can implement policies to motivate employees to integrate native and foreign cultural knowledge to boost cognitive and behavioral flexibility in response to the changing demands of intercultural business contexts. The finding that multicultural experiences can facilitate creativity can also be incorporated into the design of both cultural competence and creativity training programs for a wide range of purposes. Similarly, possible boundaries of the cognitive benefits of multicultural experiences should be recognized and considered in the formulation of human resources policies and strategies. Concrete recommendations on human resources management will be discussed in the next chapter (see Chapter 15, this volume).

The results reviewed in this chapter also have significant implications on education. Maehr and Yamaguchi (2001) once commented on cultural diversity and education, suggesting that educators should first recognize the positive features of cultural diversity. They also posit that the ultimate challenge is to transform school contexts that value diversity. To our knowledge, few studies have systematically explicated the potential beneficial role of multicultural experience in student learning (e.g., acquiring new perspectives and creative abilities). We hope that our research findings can convince educators and practitioners of the benefits of cultural diversity in the cognitive development of both majority and minority students and hence give educators and practitioners the confidence and motivation to promote learning in a multicultural education setting.

CONCLUDING REMARKS

In this chapter, we discussed how multicultural experiences can be a valuable cognitive resource in creative thinking. Specifically, multicultural experiences may promote creativity through preparing individuals to sample ideas from diverse cultural sources and providing them ready access to unconventional and normatively inaccessible knowledge. Nonetheless, we have also identified a personal factor (openness to experience) and some situational factors (time pressure and mortality salience) that could limit the creative benefits of multicultural experiences. Future research would likely identify other boundaries of the creative benefits of multicultural experiences. Thus, multicultural experiences do not always lead to creativity; sometimes, they

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may even hamper creativity. To maximize the potential creative benefits of multicultural experiences, it is important to place the right person in the right situation.

REFERENCES

Amabile, T. M. (1996). *Creativity in context.* Boulder, CO: Westview Press.

Arndt, J., Greenberg, J., Solomon, S., Pyszczynski, T., & Schimel, J. (1999). Creativity and terror management: Evidence that creative activity increases guilt and social projection following mortality salience. *Journal of Personality and Social Psychology*, *77*, 19–32.

Barron, F., & Harrington, D. M. (1981). Creativity, intelligence, and personality. *Annual Review of Psychology*, *32*, 439–476.

Barsalou, L. W. (1985). Ideals, central tendency, and frequency of instantiation as determinants of graded structure in categories. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *11*, 629–654.

Bartlett, F. C. (1958). *Thinking: An experimental and social study.* New York: Basic Books.

Battig, W. F., & Montague, W. E. (1969). Category norms for verbal items in 56 categories: A replication and extension of the Connecticut category norms. *Journal of Experimental Psychology Monographs*, *80* (3, Pt 2).

Carringer, D. C. (1974). Creative thinking abilities of Mexican youth: The relationship of bilingualism. *Journal of Cross-Cultural Psychology*, *5*, 492–504.

Chen, S., & Andersen, S. M. (1999). Relationships from the past in the present: Significant-other representations and transference in interpersonal life. In M. P. Zanna (Ed.), *Advances in experimental social psychology, Vol. 31* (pp. 123–190). San Diego, CA: Academic Press.

Chiu, C-y., Morris, M., Hong, Y., & Menon, T. (2000). Motivated cultural cognition: The impact of implicit cultural theories on dispositional attribution varies as a function of need for closure. *Journal of Personality and Social Psychology, 78*, 247–259.

Costa, R. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and NEO Five-factor Inventory (NEO-FFI) professional manual.* Odessa, FL: Psychological Assessment Resources.

Crutchfield, R. S. (1962). Conformity and creative thinking. In H. Gruber, G. Terrell, & M. Wertheimer (Eds.), *Contemporary approaches to creative thinking.* New York: Atherton.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention.* New York: HarperCollins.

Feist, G. J. (1998). A meta-analysis of the impact of personality on scientific and artistic creativity. *Personality and Social Psychological Review*, *2*, 290–309.

Finke, R. A., Ward, T. B., & Smith, S. M. (1992). *Creative cognition: Theory, research, and applications.* Cambridge, MA: MIT Press.

Fu, H., Morris, M. W., Lee, S., Chao, M., Chiu, C.-y., & Hong, Y. (2007). Epistemic motives and cultural conformity: Need for closure, culture, and context as determinants of conflict judgments. *Journal of Personality and Social Psychology*, *9*, 191–207.

https://doi.org/10.1017/CBO9780511779374.020 Published online by Cambridge University Press

Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeded, M., & Kirkland, S. (1990). Evidence for terror management theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural world view. *Journal of Personality and Social Psychology*, *58*, 308–318.

Greenberg, J., Pyszczynski, T., Solomon, S., Simon, L., & Breus, M. (1994). Role of consciousness and accessibility of death-related thoughts in mortality salience effects. *Journal of Personality and Social Psychology*, *67*, 627–637.

Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. In M. P. Zanna (Ed.), *Advances in experimental social psychology, Vol. 29* (pp. 61–139). New York: Academic Press.

Guilford, J. P. (1959). Traits of creativity. In H. H. Anderson (Ed.), *Creativity and its cultivation* (pp. 142–161). New York: Harper.

Guimerà, R., Uzzi, B., Spiro, J., & Amaral, L. A. N. (2005). Team assembly mechanisms determine collaboration network structure and team performance, *Science*, *308*, 697–702.

Heaton, A. W., & Kruglanski, A. W. (1991). Person perception by introverts and extroverts under time pressure: Need for closure effects. *Personality and Social Psychology Bulletin*, *17*, 161–165.

Huntsinger, C. S., Schoeneman, J., & Ching, W.-D. (1994). *A cross-cultural study of young children's performance on drawing and handwriting tasks.* Paper presented at the conference of the Midwestern Psychological Association, Chicago, IL.

Hong, Y.-y., Wan, C., No, S., & Chiu, C-y. (2007). Multicultural identities. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology*. New York: Guilford.

Ip, G. W.-m., Chen, J., & Chiu, C.-y. (2006). The relationship of promotion focus, need for cognitive closure, and categorical accessibility in American and Hong Kong Chinese university students. *Journal of Creative Behavior*, *40*, 201–215.

Jenn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict and performance in workgroups. *Administrative Science Quarterly, December*, 741–763.

Johansson, F. (2005). Masters of the multicultural. *Harvard Business Review*, *83*, 8.

Kashima, E. S., Halloran, M., Yuki, M., & Kashima, Y. (2004). The effects of personal and collective mortality salience on individualism: Comparing Australians and Japanese with higher and lower self-esteem. *Journal of Experimental Social Psychology*, *40*, 384–392.

Kashima, E. S., & Loh, E. (2006). International students' acculturation: Effects of international, conational, and local ties and need for closure. *International Journal of Intercultural Relations*, *30*, 471–485.

Kosic, A., Kruglanski, A. W., Pierro, A., & Mannetti, L. (2004). The social cognitions of immigrants' acculturation: Effects of the need for closure and reference group at entry. *Journal of Personality and Social Psychology*, *86*, 796–813.

Krugslanki, A. E., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review*, *103*, 263–283.

Lambert, W. E., Tucker, G. R., & d'Anglejan, A. (1973). Cognitive and attitudinal consequences of bilingual schooling: The St. Lambert project through grade five. *Journal of Educational Psychology*, *65*, 141–159.

https://doi.org/10.1017/CBO9780511779374.020 Published online by Cambridge University Press

Leung, A. K.-y., & Chiu, C.-y. (2008). Interactive effects of multicultural experiences and openness to experience on creativity. *Creativity Research Journal*, *20*, 376–382.

Leung, A. K.-y., & Chiu, C.-y. (in press). Multicultural experiences, idea receptiveness, and creativity. *Journal of Cross-Cultural Psychology*.

Leung, A. K.-y., Maddux, W. W., Galinsky, A. D., & Chiu, C.-y. (2008). Multicultural experience enhances creativity: The when and how? *American Psychologist*, *63*, 169–181.

Levine, J. M., & Moreland, R. L. (2004). Collaborations: The social context of theory development. *Personality and Social Psychology Review*, *8*, 164–172.

Maddux, W. W., & Galinsky, A. D. (2009). Cultural borders and mental barriers: The relationship between living abroad and creativity. *Journal of Personality and Social Psychology*, *96*, 1047–1061.

Maehr, M. L., & Yamaguchi, R. (2001). Cultural diversity, student motivation and achievement. In F. Salili & C.-y. Chiu (Eds.), *Student motivation: The culture and context of learning* (pp. 123–148). New York: Plenum.

McCrae, R. R., & Costa, P. T. (1997). Conceptions and correlates of openness to experience. In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 825–847). San Diego, CA: Academic Press.

Murray, H. (1938). *Explorations in personality*. New York: Oxford University Press.

Nemeth, C., & Kwan, J. (1987). Minority influence, divergent thinking and detection of correct solutions. *Journal of Applied Social Psychology*, *17*, 788–799.

Nemeth, C., & Wachter, J. (1983). Creative problem solving as a result of majority vs. minority influence. *European Journal of Social Psychology*, *13*, 45–55.

Okoh, N. (1980). Bilingualism and divergent thinking among Nigerian and Welsh school children. *Journal of Social Psychology*, *110*, 163–170.

Rhodes, M. (1987). An analysis of creativity. In S. G. Isaksen (Ed.), *Frontiers of creativity research: Beyond the basics* (pp. 216–222). Buffalo, NY: Bearly.

Rosenblatt, A., Greenberg, J., Solomon, S., & Pyszczynski, T. (1989). Evidence for terror management theory I: The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality & Social Psychology*, *57*, 681–690.

Rubin, D. C., & Kontis, T. C. (1983). A schema for common cents. *Memory and Cognition*, *11*, 335–341.

Rudowicz, E., Lok, D., & Kitto, J. (1995). Use of the Torrance Tests of Creative Thinking in an exploratory study of creativity in Hong Kong primary school children: A cross-cultural comparison. *International Journal of Psychology*, *30*, 417–430.

Sawyer, K. (2006). *Explaining creativity: The science of human motivation*. New York: Oxford University Press.

Scott, W. A. (1965). *Values and organizations: A study of fraternities and sororities*. Chicago: Rand McNally.

Simonton, D. K. (1975). Sociocultural context of individual creativity: A transhistorical time-series analysis. *Journal of Personality and Social Psychology*, *32*, 1119–1133.

https://doi.org/10.1017/CBO9780511779374.020 Published online by Cambridge University Press

Simonton, D. K. (1997). Foreign influence and national achievement: The impact of open milieus on Japanese civilization. *Journal of Personality and Social Psychology*, *72*, 86–94.

Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental, and social aspects. *American Psychologist*, *55*, 151–158.

Simonton, D. K. (2003). Scientific creativity as constrained stochastic behavior: The integration of product, person, and process perspectives. *Psychological Bulletin*, *129*, 475–494.

Solomon, S., Greenberg, J., Schimel, J., Arndt, J., & Pyszczynski, T. (2004). Human awareness of mortality and the evolution of culture. In M. Schaller & C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 15–40). Mahwah, NJ: Lawrence Erlbaum Associates.

Sorokin, M. I. (1969). *Society, culture, and personality*. New York: Cooper Square.

Stein, M. I. (1953). Creativity and culture. *Journal of Psychology*, *36*, 311–322.

Tadmor, C. T., & Tetlock, P. E. (2006). Biculturalism: A model of the effects of second-culture exposure on integrative complexity. *Journal of Cross-Cultural Psychology 37*, 173–190.

Thurstone, L. L. (1952). Creative talent. In L. L. Thurstone (Ed.), *Applications of psychology* (pp. 18–37). New York: Harper and Row.

Wan, W., & Chiu, C.-y. (2002). Effects of novel conceptual combination on creativity. *Journal of Creative Behavior*, *36*, 227–241.

Ward, T. B. (1994). Structured imagination: The role of conceptual structure in exemplar generation. *Cognitive Psychology*, *27*, 1–40.

Ward, T. B. (2001). Creative cognition, conceptual combination, and the creative writing of Stephen R. Donaldson. *American Psychologist*, *56*, 350–354.

Ward, T. B., Patterson, M. J., Sifonis, C. M., Dodds, R. A., & Saunders, K. N. (2002). The role of graded category structure in imaginative thought. *Memory and Cognition*, *30*, 199–216.

Ward, T. B., Smith, S. M., & Vaid, J. (1997). Conceptual structures and processes in creative thought. In T. B. Ward, S. M. Smith, & J. Vaid (Eds.), *Creative thought: An investigation of conceptual structures and processes*. Washington, DC: American Psychological Association Books.

Weisberg, R. W. (1999). Creativity and knowledge: A challenge to theories. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 226–250). Cambridge, England: Cambridge University Press.

Williams, K., & O'Reilly, C. (1998). The complexity of diversity: A review of forty years of research. In B. Staw & R. Sutton (Eds.), *Research in organizational behavior, Vol. 21* (pp. 77–140). Greenwich, CT: JAI Press.

Vadino, D. (2006). *Thinking outside the chocolate box: A conceptual Belgian project challenges the way we view chocolate*. Retrieved December 6, 2006, from http://www.businessweek.com/innovate/content/dec2006/id20061206_931012.htm?campaign_id=rss_daily.

https://doi.org/10.1017/CBO9780511779374.020 Published online by Cambridge University Press