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The Diversifying Experience-Creativity Model: Taking a Broader Conceptual View of the  
Multiculturalism-Creativity Link.

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## Abstract

We examine the multiculturalism – creativity link from the perspective of diversifying experiences research. Multicultural experiences can be construed as *diversifying experiences* - highly unusual and unexpected events or situations (e.g., unusual educational experiences, early life adversity) that push individuals outside the frameworks of their ordinary every-day lives, forcing them to embrace new and uncommon ideas. Our review identifies a range of diversifying experiences (e.g., multicultural exposure, unexpected adversity, violations of expectations) that have been found to influence creativity. We introduce the Diversifying Experience to Creativity Model (DECM), where we argue for a *curvilinear relationship* between diversifying experiences and creativity, whereby creativity improves as a result of moderate (but not low or high) levels of diversifying experiences. We also propose *adaptive personal resources* as the key moderator, and *threat and challenge appraisals* as the key mediators of the diversifying experience – creativity relation. When adaptive resources are high, moderate diversifying experiences are appraised primarily as a challenge, facilitating creativity, whereas when adaptive resources are low, moderate diversifying experiences are appraised primarily as a threat, derailing creativity. This broad and parsimonious theoretical framework can help clarify and expand research on when and why various diversifying experiences (including multicultural experiences) facilitate creativity.

Keywords: creativity, cognitive flexibility, divergent thinking, diversifying experiences, multiculturalism, genius

## The Diversifying Experience-Creativity Model: Taking a Broader Conceptual View of the Multiculturalism-Creativity Link.

Diversifying experiences - highly unusual and unexpected events or situations that push individuals outside the realm of “normality” - have long been associated with personal transformation and growth. Especially in recent years the cognitive consequences of such experiences gained much attention in psychological research. In particular psychologists have observed that unusual and unexpected life experiences, such as biculturalism, unexpected adversity or, more generally, exposure to schema-violations, force individuals to adopt new habits, values and cognitions, resulting in more flexible thinking and, via that, greater creativity (Crisp & Turner, 2011; Damian & Simonton, 2015; Leung, Maddux, Galinsky, & Chiu, 2008). But in spite of these optimistic findings, other studies have shown that unusual experiences and unexpected events can sometimes stifle flexible thinking (Baas, Nijstad, Boot, & De Dreu, 2016; Gocłowska, Baas, Crisp, & De Dreu, 2014; Liu, Liao, & Loi, 2012; Porath & Erez, 2009). This means that more research and more refined theorizing is needed in order to understand and predict when and why unusual and unexpected life events foster or diminish flexible thinking and creativity.

To address this issue, in the current paper we propose the Diversifying Experience Creativity Model (DECM): an integrative framework from which to analyze the relation between biculturalism, multicultural exposure, as well as other unusual and unexpected life events (developmental adversity, mental illness, schema-violations) and creative accomplishments. We define *diversifying experiences* as highly unusual and unexpected events or situations that push individuals outside the realm of “normality”, and require them to adopt new ways of thinking and new perspectives (Damian & Simonton, 2014; Ritter et

al., 2012). Diversifying experiences, such as sudden illness, or other types of unexpected difficulties are demanding, in that they require individuals to cognitively “adapt” or “accommodate” to their new circumstances (Crisp & Turner, 2011; Damian & Simonton, 2014). In this process, individuals are forced to reconsider the strategies, values, and perspectives that they have held so far, and embrace new ones, that are more fitting in the current context (Damian & Simonton, 2014; Tadmor, Galinsky, & Maddux, 2012). One such example is the process of immigrants adapting to new and unfamiliar values and behaviors when immigrating to a host culture (Gocłowska & Crisp, 2014). Another example is of those who experience hardship, and as a result adjust their goals and change their views of themselves and the world around them (Helson & Roberts, 1994; King & Hicks, 2006). To help predict *when* and *why* experiences like these influence creativity, we integrate research about various types of diversifying experiences (Damian & Simonton, 2015; Ritter et al., 2012), with the transactional theory of stress (a model explaining people’s reactions to stressful stimuli; Lazarus & Folkman, 1984). In the model we put forward several predictions regarding the core moderating and mediating factors that affect the diversifying experience-creativity relation.

In *Part I* of the paper we integrate studies on different types of diversifying experiences, and trace similarities in how those various experiences are related to flexible thinking and creativity. In doing so, we unveil to the reader the multiculturalism-creativity relation from a broader perspective, that includes all types of unusual, unexpected and demanding life experiences. We support our *integrative argument* with findings from a wide variety of studies, including studies on multiculturalism and bicultural identities, but also other phenomena, that have so far rarely been discussed in the context of multiculturalism research: unexpected adversity, episodes of mental illness, or violations of expectations. We

also discuss studies relying on different methodologies: survey data, both at the aggregate and at the individual level, and experimental studies.

In *Part II* we focus on understanding how the intensity of diversifying experiences links to creativity. We define the *intensity* of the diversifying experience as the extent to which an experience requires cognitive adaptation from the individual undergoing the experience. We conceptualize *intensity* in terms of “objective” properties of diversifying experiences, as this allows us to more clearly demarcate the diversifying experience itself (e.g., number of foreign countries lived in), from intra-individual processes that arise in reaction to that experience (e.g., feeling threatened by the demands of cultural adaptation). When discussing the role of diversifying experience *intensity* in the DECM model, we argue that the total intensity of one’s diversifying experiences has a *curvilinear* (inverted U-shape) relationship with creativity. While low intensity diversifying experiences rarely have a significant effect on creativity, medium intensity diversifying experiences are optimal for, and are associated with the highest level of creativity, while highly intense diversifying experiences can actually stifle creativity. We draw evidence for this argument from various domains of diversifying experiences: multicultural exposure, mental illness, or minority status.

To understand when and why various intensities of diversifying experiences link to greater individual creativity, in *Part III* of the paper we talk about the moderating role of *adaptive resources*, and the mediating role of *evaluations of the diversifying experience* as a *challenge* or a *threat*. In the theoretical model that we propose (see Figure 1), the interaction term of the intensity of diversifying experiences with the adaptive resources, constitute the predictor. Appraisal of challenge and threat are proposed as the mediators, and flexible thinking is our outcome.

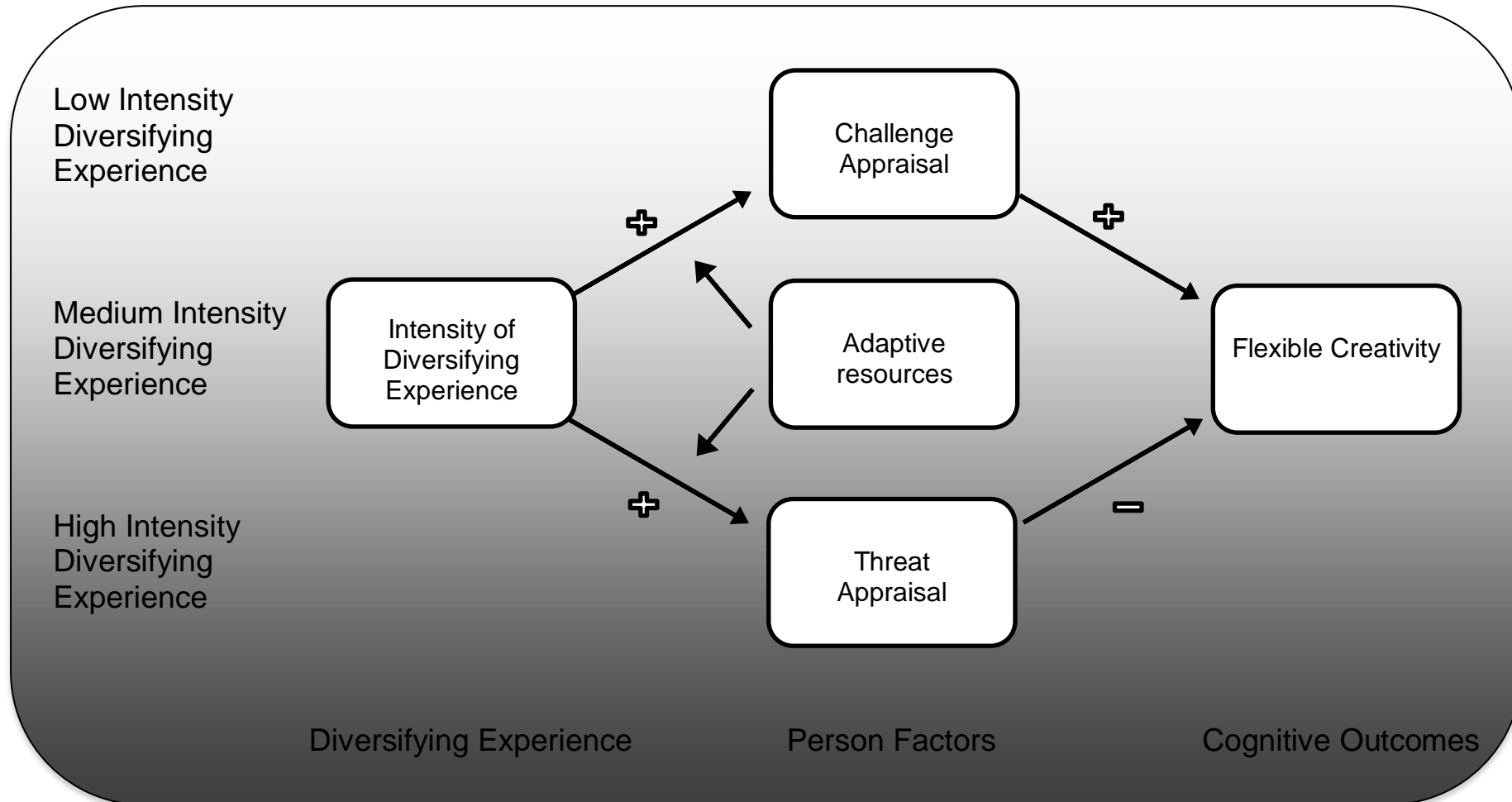
Note that our model discusses the intensity of diversifying experiences, but does not specify whether the various diversifying experiences are positive or negative in their nature. Instead, the model considers two mediating processes that are closely related to valence – challenge and threat appraisals. Challenge and threat appraisals constitute evaluations of one's ability to cope with situational demands. People appraise a situation as challenging, when they have sufficient adaptive resources to cope with that situation, and they appraise a situation as threatening, when they have insufficient adaptive resources. Because people who feel challenged perceive that they have the sufficient resources to deal with a diversifying experience, they are more likely to evaluate that experience in a positive way; because people who feel threatened perceive that they do not have the sufficient resources to deal with the diversifying experience, they are more likely to evaluate that experience negatively. Thus, the valence of the stimulus, in our model, is not an inherent property of the diversifying experience, but rather individuals' reaction to that experience. This state of affairs does not preclude that some experiences will be evaluated as downright threatening (and probably also negative, e.g., death in one's family), or challenging (and probably more positive, e.g., multicultural friendship). However, what is important, and at the core of the model, is the idea that evaluations of challenge and threat are the function of both the individual, with the adaptive resources that they have available, as well as of the diversifying experience, and especially the extent to which that experience puts demands on individuals.

In summary, the DECM model argues that intra-individual processes of challenge (vs. threat) appraisals, and subsequent benefits (vs. losses) to divergent thinking and creativity are most likely to be triggered among individuals who have sufficient (vs. insufficient) adaptive resources to successfully deal with the diversifying experience (Lazarus & Folkman, 1984). Throughout the paper, we will support this claim with research findings from various

domains of diversifying experiences, and with study results where adaptive resources and their constraints moderated the effect of diversifying experiences on creativity.

Our theoretical model and review of the literature will offer new insights about research on multicultural exposure and bicultural identity processes, and importantly, offer a new perspective that allows to integrate research on multicultural and bicultural experiences, with research on other diversifying experiences, into a parsimonious theory. The model will help the reader organize and understand what types of diversifying experiences are most likely to enhance creativity, and why. It will specify a central psychological moderator (adaptive resources) and mediating processes (threat and challenge appraisals) that regulate the diversifying experience-creativity relationship, thereby explaining which individuals are most likely to benefit from diversifying experiences. The model will also shed light on previous inconsistencies in the multicultural-creativity literature, where multiculturalism and experiences of diversity were sometimes found to increase, and sometimes to decrease flexible thinking (Gocłowska et al., 2014; Godart, Maddux, Shipilov, & Galinsky, 2015; Leung & Chiu, 2008; Tadmor & Tetlock, 2009). In other words, by utilizing the overarching framework of diversifying experiences to understand the link between multicultural experiences and creativity, the DECM model will help the reader recognize the key processes responsible for the relationship between diversifying experiences and creativity, and discover new avenues for empirical research.





*Figure 1. The Diversifying Experience-Creativity Model.* Diversifying experience intensity and the use of adaptive resources interact to predict threat and challenge appraisals, and in turn, creative flexibility. When adaptive resources are high, moderate diversifying experiences are appraised primarily as a challenge, increasing creativity, whereas when adaptive resources are low, moderate diversifying experiences are appraised primarily as a threat, leading to creative decrements. At low-to-medium intensity diversifying experiences will primarily be perceived as a challenge (increasing creativity), but at medium-to-high intensity threat appraisals are more likely to dominate (decreasing creativity).

## Part I: Diversifying Experiences Foster Creativity

### 1.1 Creativity benefits from “thinking differently”

Creativity brings into being something that is novel and useful (Amabile, 1996). Creative insights and products result from multiple cognitive processes, that include, most prominently, the ability to recognize and flexibly switch between various perspectives and approaches to problems (Nijstad, De Dreu, Rietzschel, & Baas, 2010). When thinking flexibly, people generate ideas across many semantic categories (e.g., the alternative uses task; Guilford, 1967), see problems from many perspectives (Tadmor et al., 2012), easily switch between these categories (Nijstad, Stroebe, & Loedwijkx, 2003), and display more ease in producing remote associations (Mednick, 1962).

Flexible thinking is bounded by what individuals have learned: habits and knowledge acquired in the family, at school, and via culture. For instance the mere presence of exemplars (Smith, Ward, & Schumacher, 1993), or stereotypes (Sassenberg & Moskowitz, 2005) acts as an anchor, constraining subsequent creative solutions in line with the content of the anchor, whereas experiencing something that is different and unusual, which violates the stereotype- and schema-derived expectancies, prompts flexible thinking and creativity (Gołowska, Crisp, & Labuschagne, 2013). Flexible, creative thinking often occurs when we learn how things are done (differently) in other cultures (Maddux, Adam, & Galinsky, 2010), learn to do things in non-schematic ways (Ritter et al., 2012), observe non-schematic individuals (Gołowska et al., 2013), or undergo non-normative life experiences (Damian & Simonton, 2015). Such types of experiences - *diversifying experiences* - have the potential to raise creativity, because they “cue out” schematic thinking. They require individuals to “accommodate” (Damian & Simonton, 2014, 2015), or “cognitively adapt” (Crisp & Turner,

2011) to the new experience: apply new norms, values and cognitions, leading, in the long term, to the development of a habitual tendency to see things from different perspectives (Tadmor et al., 2012).

But how do we know that diversifying experiences prompt creativity, and what types of diversifying experiences have been found to do so? We begin with a review of studies revealing how various diversifying experiences (multiculturalism, bicultural identities, diversity, unexpected adversity, mental illness, and violations of expectations) might relate to an “out of the box” thinking style, with benefits to creativity and innovation.

## **1.2 Bicultural Identities**

Much evidence for a diversifying experience-creativity link comes from studies on bicultural identities. A study of 20<sup>th</sup> century eminent personalities found that one-fifth of the analyzed creators were either first- or second-generation immigrants (Goertzel, 1978). When entering a new culture people become accountable to individuals from that culture, and this has consequences to their thought processes, self structure, and behaviors (for a recent review see Gocłowska & Crisp, 2014). Belonging to a narrow set of culturally homogenous groups, which is most peoples’ experience pre-immigration, demands little adaptation from individuals. But belonging to two or more cultures – which is the case of bicultural individuals – and being accountable to individuals from those cultures, is more demanding (Tadmor et al., 2012), and therefore constitutes a diversifying experience. Bicultural experiences require for individuals to suspend some of their existing assumptions, and adapt their attitudes, beliefs, and behaviors in line with those of the host culture that they have entered. Provided that individuals successfully deal with this adaptation demand, these type of experiences can lead to the development of more flexible cognition, and more creativity (Gocłowska & Crisp, 2014). For example, in the research of Tadmor et al., (2012), bicultural dual identifiers, but not individuals identifying with one culture only, were more creative, and

more flexible. Namely, they generated more creative ideas and demonstrated more *integrative complexity*, that is, the capacity and willingness to acknowledge the legitimacy of competing perspectives on an issue. This supports the idea that biculturalism might enhance flexible thinking and creativity.

### **1.3 Multicultural Exposure**

Aside from experiences that involve the development of a new, more complex identity structure, as is the case of bicultural individuals, also mere exposure to new cultures associates with increased creativity (Maddux, Bivolaru, Hafenbrack, Tadmor, & Galinsky, 2013), and recent evidence even suggests that these relationships might be causal. In the longitudinal research of Fee, Gray & Lu (2013), international aid workers from Australia and New Zealand, who were delegated to work in another country, experienced an increase in cognitive complexity 12 months following departure (measured against the pre-departure baseline). Another study showed that such effects occur not only relative to ones' pre-departure score, but also relative to the scores of individuals who did not go abroad (Fee & Gray, 2012). Finally, when researchers examined longitudinal changes in students undergoing a 10-month international MBA, regardless of whether the program was conducted abroad or not, they found that the degree of participants' "multicultural engagement" associated with a higher number of job offers at the end of the program, mediated via heightened integrative complexity (Maddux et al., 2013). This suggests that living and working in multicultural environments, even without significant adaptation to the new environment, would lead one to become bicultural and facilitate flexible and creative thinking.

## 1.4 Cultural Diversity

Beyond individual level outcomes, also country-level cultural diversity has been associated with greater creativity and innovation. According to macroeconomic data, in the US over a 10-year period from 2000 to 2010, foreign-born immigrants stimulated economic growth with their disproportionate degrees of eminent creativity and innovation (Peri, 2012). Although foreign-born immigrants represented only 13% of the US population, they accounted for 30% of all the patents granted, and for 25% of all the US Nobel Laureates (Peri, 2012). Cultural diversity was also found to benefit nation-wide innovation potential: according to Simonton's analyses (1997) throughout Japanese history, variation in the degree to which the country was open or not to foreign influences predicted eminent creativity in later generations. This research is important, because it suggests that the findings observed at the individual level, carry over to real-life creativity and innovation at the aggregate level.

Taken together, there is strong evidence that a broad range of multicultural experiences (biculturalism, multicultural exposure, and cultural diversity) prompt the abandonment of schematic thinking patterns, fostering cognitive skills through which multiple perspectives on a problem are acknowledged, learned, and integrated, and eventually leading to creative outcomes. Importantly, while the majority of studies testifying to this idea are correlational, evidence begins to emerge that these multicultural diversifying experiences have a *causal* effect (Fee, Gray, & Lu, 2013; Fee & Gray, 2012). In the next sections, we will suggest to expand the field's perspective on the multicultural-creativity link, by considering other types of diversifying experiences (e.g., developmental adversity, episodes of mental illness, and violations of expectations), that are also associated with flexible thinking and creativity.

### 1.5 Developmental adversity

Unusual childhood experiences of eminent artists, scientists and thinkers are a good testament to the idea that diversifying experiences link with creativity (Berry, 1981; Goertzel, 1978). Let us consider the example of Andy Warhol, the child of a Slovakian couple, born in Pittsburgh, Pennsylvania. Many elements of Warhol's biography make his life story unusual: Andy was the child of an immigrant family; at the age of eight, he developed Chorea, a rare disease of the nervous system, causing involuntary movements of the extremities, and leaving him bedridden for months. Biographers have attributed his odd demeanor, and his slight social maladjustment, to that period in his life (Ingram & Rae, 2014). And as if the long-term, debilitating illness, and missing out on school were not enough, at the age of 13 Andy lost his father. Later in his life, Warhol became one of the most successful commercial artists of his times. His concept of "pop art" paintings, focused on mass-produced commercial goods, like the Campbell's soup cans, testifies to his ability to perceive the mundane from a novel, creative perspective.

As is the case of Andy Warhol, eminent creators' biographies are often characterized by demanding childhood experiences. For instance archival research comparing a group of eminent individuals listed in Encyclopedia Britannica (vs. a control sample) indicated that they experienced parental loss significantly earlier, relatively to an ordinary sample (Eisenstadt, 1978). Other researchers linked eminent creativity to membership in cultural or religious minorities, having sickly dispositions, or having a history of unconventional training (Goertzel, 1978; Roe, 1953; Simonton, 1984). Recent historiometric analyses found that more developmental adversity (e.g., parental death, parental divorce, childhood physical illness, criminal record) associated with more lifetime creative achievement in a sample of 291 eminent African Americans (Damian & Simonton, 2015). Finally, in a study of literature Nobel Prize winners up to 1977, 30% of the sample had experienced parental death or

financial decline in their early life, relative to a much lower number of such occurrences in science laureates (Berry, 1981). Because literature, relative to science, requires higher levels of flexible and unconventional thinking, this suggests that early life adversity contributes especially to the flexible, divergent type of creativity that is at the core of our model (Simonton, 2009).

Importantly, studies have also suggested that adversity is most likely to impact creativity when it is *unpredictable*. In this research individuals who, as children, experienced *unpredictability* in the family home, were more adept at cognitive switching (Mittal, Griskevicius, Simpson, Sung, & Young, 2015), but the same effect was not found in those who experienced long-term hardship and poverty. This supports the argument about the effect of unpredictable diversifying experiences, because an unpredictable home environment (rather than long term but stable experience of poverty or low SES) should be characterized by highly unusual and unexpected events, and would require quick adaptations, and the employment of new perspectives on problems, and new ideas on how to solve those problems. Thus, we can conclude that especially *unexpected* developmental adversity has been associated with flexible thinking and creativity.

## **1.6 Psychological problems**

Mental illness is one type of diversifying experience that has received a great deal of attention. A rough estimate is that geniuses are about twice as likely to have experienced some kind of mental or emotional difficulties, compared to a matched baseline (Ludwig, 1995). Increased rates of schizophrenia, mood disorders and personality disorders have been discovered among eminent individuals whose theories contributed to paradigm shifts (which requires more flexible thinking), but not in those who incrementally developed existing paradigms (Ko & Kim, 2008).

These findings may at first seem hard to reconcile with the view that creativity is a sign of good mental health (Simonton, 2014b). How could mental illness be associated with creativity, if being happy and healthy is the key condition for functioning well in the society? While in the general population psychological health is positively related to creative performance (Bacon, 2005), this tendency is reversed in studies looking at eminent creators (Simonton, 2014b). These studies show that in gifted individuals, and creative professionals, productivity levels correlate positively with the incidence of mental problems (Ko & Kim, 2008; Simonton, 2014a, 2014b). One reason for this may be that eminent individuals possess high levels of adaptive psychological variables, and that such variables moderate the debilitating impact of mental illness. Factors such as intellect (e.g., IQ), social support, or wealth may moderate the effect of very intense diversifying experiences on performance, helping some (more privileged or gifted) individuals to adapt with greater ease (we return to this argument in Part 3 of the model, where we discuss moderating factors in more detail).

In sum, unexpected and unusual adversities may contribute to real life creative outcomes, such as the ability to create paradigm-shifting art, or to develop revolutionary theories. This work is very valuable, because it shows that diversifying experiences foster real live creative success – “Big C” creativity”. However, there are limitations to the conclusions that we can draw from archival studies. For instance, based on cross-sectional and archival data, it is very difficult to determine causality and which processes intervene in the relationship between diversifying experiences and creativity. Some insight into the question of causality, however, can be gained from experimental work that simulated diversifying experiences in the laboratory. In the section that follows, we turn to this experimental literature for providing our answers to these questions.



### 1.7 Schema-violating experiences

Violations of schema- and stereotype-based expectations lie at the heart of diversifying experiences. When people find themselves in demanding situations, schematic solutions that they have been employing previously are no longer sufficient to navigate reality. This often prompts a search for alternative answers, and increases the chance of embracing behaviors that are different from those used by default. Thus, individuals are “pushed out of normality”, and discover alternative ways of solving problems, learning to see things from different perspectives. Over time, having many diversifying (schema-violating) experiences expands people’s understanding of the world, and could increase their chances for real-life creative accomplishments (Crisp & Turner, 2011).

This process is well illustrated in studies that attempted to mentally simulate unusual, diversifying experiences, and measured subsequent creativity. For example Leung and Chiu (2010) invited undergraduates to watch a 45- minute long slide show that contained various combinations of cultural symbols. After watching images of American and Chinese symbols presented back to back, or pictures representing the American-Chinese fusion of cultures (e.g., a Vanessa Mae video, a rice-burger), participants’ responses were more creative, compared to a single-culture (American or Chinese), or a no slide-show control condition.

Other scientists tried to simulate diversifying experiences by asking participants to think of counter-stereotypes (Gocłowska et al., 2013; Vasiljevic & Crisp, 2013) — targets that violate peoples’ expectations about the traits that they should possess. In this research, thinking of counter-stereotypes lead to decreased schematic thought (Hutter & Crisp, 2005), greater flexibility (Experiment 1, Gocłowska, Crisp & Labuchagne, 2013), the generation of original ideas (Experiment 2, Gocłowska, Crisp & Labuchagne, 2013), and better solutions to insight problems (Gocłowska, Baas, Crisp, & De Dreu; Vasiljevic & Crisp, 2013). Other simulations of schema-violating experiences, that were found to elicit creativity, included

creating unusual combinations of physical concepts (Wan & Chiu, 2002), experiencing inconsistent body-mind states (Huang & Galinsky, 2010), or embracing of contradictory statements (Miron-Spektor, Gino, & Argote, 2011). Notably, a series of experiments by Ritter and colleagues (2012) explicitly used the term “diversifying experiences” in looking at the consequences of performing activities in an unusual, schema-violating way (Ritter et al., 2012, 2014).

In sum, studies from various domains of diversifying experience (multiculturalism, bicultural identities, developmental adversity, mental illness, and schema-violations) attest to the idea that unusual and unexpected events can sometimes increase flexible thinking and creativity. Although many studies suggest that that this effect is positive and linear, a careful analysis of the research literature reveals a range of boundary conditions to those effects: for instance the extent to which diversifying experiences influence creativity may depend on how intense those experiences are (Godart, Maddux, Shiplov, & Galinsky, 2014; Ritter et al., 2012), and whether people want to allocate resources to deal with those experiences (Gocłowska et al., 2014; Leung & Chiu, 2008). We explain some of these moderating factors in the sections that follow.

## **Part II: Diversifying Experiences Have a Curvilinear Effect on Creativity**

The studies reviewed so far suggest that diversifying experiences prompt more non-schematic, “out of the box” thinking. But these effects, as we will demonstrate, often depend on the intensity of diversifying experiences. Diversifying experience *intensity* entails a measure of the extent to which an experience requires adaptation from individuals. For instance, living in many foreign countries is a good example of diversifying experience intensity, because the more countries one will live in, the more adaptation is required of that person. Importantly, diversifying experience intensity is defined here in an objective sense, as

a property of the diversifying experience that is independent of individuals' evaluations of the experience.

Considering the role of diversifying experience intensity reveals a curvilinear effect on creative performance. While diversifying experiences of medium intensity seem to boost creative performance, when diversifying experiences become too intense, creativity may decrease (Godart et al., 2015; Simonton, 2014). In addition, when diversifying experiences have too little intensity, there is no demand to adapt and thus, creativity is not stimulated (Maddux & Galinsky, 2009; Ritter et al., 2012). This suggests that a curvilinear, inverted-U shape relationship may characterize the link between diversifying experiences and creativity.

### **2.1. Low to medium intensity diversifying experiences**

Many of the studies that we discussed so far suggest a positive relationship between the intensity of diversifying experiences, and benefits to creativity. For instance bicultural individuals who were highly identified with both of their cultures (and therefore likely experienced “diversification” to a greater extent)<sup>1</sup>, were more likely to benefit in terms of creativity, relative to individuals who were part of, but did not identify with their two cultures (Tadmor et al., 2012). Also other intensifying factors, such as the length of time spent living abroad (Maddux & Galinsky, 2009), the amount of interactions with host nationals during a stay abroad (Fee et al., 2013), and a greater engagement with the multicultural environment of one's MBA program (Maddux et al., 2013) contributed to greater creativity. In experimental work participants' flexibility increased only as a result of intense, immersive diversifying experiences, that happened in a virtual reality lab, but not when research

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<sup>1</sup> Even though we consider diversifying experience intensity to be an “objective” property of such experiences, sometimes we draw on research findings using more “subjective” measurements. For instance in the case of bicultural individuals, we consider dual identification as a proxy measure of intensity, because dual identification typically associates with greater amount of interactions with both cultures that one belongs to (Berry & Annis, 1974), and therefore with greater intensity.

participants watched the diversifying event as a movie filmed from the first person perspective (Ritter et al., 2012). This suggests that when people are disengaged, and when their experiences are brief and shallow, diversifying experiences are too weak and undemanding to trigger the processes that might have downstream consequences for flexible thinking and creative performance.

## **2.2. High intensity diversifying experiences**

While many of the studies published so far focus on a positive relation between diversifying experiences and creativity, evidence suggests that such a relationship is mostly true for diversifying experiences of medium intensity. When a certain “sweet spot” of intensity is crossed, a reversal of the diversifying experience-creativity link (i.e., the relationship becoming negative) can be observed. This reversal might be occurring because at very high intensities, diversifying experiences require a lot of adaptation, and individuals no longer can cope with those adaptation demands (we discuss the issue of mechanisms in more detail in Part 3 of the paper).

A good illustration of the curvilinear relation between diversifying experiences and creativity can be found in a study of expatriate fashion designers. Archival analyses of the achievements of fashion designers revealed that the amount of countries visited (breadth), number of years spent abroad (depth), as well as the cultural distance between countries that the designers lived in (distance) had a curvilinear relation with creativity (Godart et al., 2015). In particular, the results revealed that at low-to-moderate levels of diversifying experience intensity, creativity increased, but once a “sweet spot” was reached, creativity began to decrease. Interestingly, while a decrease (and therefore a full inverted U-shape) was observed for breadth and cultural distance, for depth the effects to creativity merely tapered off. Perhaps one of the reasons for this effect is that living abroad constitutes a diversifying experience only at the early stages of cultural adaptation, but once a person has lived in their

new country for some time, they become sufficiently integrated in the new culture, so that the living abroad experience is no longer a diversifying experience.

In either case, the above described reversal of the intensity – creativity relation at higher intensities of diversifying experiences (of breadth and distance) suggests that at some point diversifying experiences may be so demanding, that individuals are no longer able to cope with these experiences, leading to performance drops. Indeed, curvilinear effects like these are found across various other domains of diversifying experiences. In organizational research a curvilinear relationship (inverted U-shape) was found between abusive supervision (a form of hardship) and creativity (Lee, Yun, & Srivastava, 2013). And in an archival study of 204 eminent thinkers, writers, artists, and composers, most eminence occurred in those with a mild level of psychopathology, but when psychopathology was severe, performance dropped sharply (Simonton, 2014a).

Finally, researchers also found support for the inverted U-shape when diversifying experiences were found in a second, unrelated domain: minority experiences. Among eminent African-Americans, facing ongoing psychological and social difficulties due to their minority status, mental illness was less correlated with eminence than in a comparable sample of White Americans. When examining the prevalence of mental illness among Artists, only 16% of African American artists suffered from mental illness, while 68% mental illness sufferers were found in a comparable sample of White Americans (Damian & Simonton, 2015). In a second study, the effect of mental illness on creative eminence diminished when developmental adversity was controlled for, suggesting that mental illness and developmental adversity jointly contribute to greater creative eminence. This suggests that moderate level diversifying experiences constitute a “sweet spot”, with most benefit to creative achievement, thus supporting the idea that the link between diversifying experiences and creativity might be curvilinear (Damian & Simonton, 2015).

### **Part III: Cognitive Processes and Personal Antecedents**

A careful examination of research findings reviewed in the previous section suggests a possible curvilinear (inverted U-shape) relationship between diversifying experiences and creativity, but does not explain the driving mechanism behind this curvilinear relation. Because diversifying experiences demand of individuals to cope and adapt, they are comparable to stressful events, and integrating research on diversifying experiences, and on the appraisal of stressful events (transactional theory of stress, Lazarus & Folkman, 1984), could help us better understand *when* and *why* diversifying experiences foster creativity.

People's appraisals of potentially stressful situations shape performance in reaction to those situations: when an experience is appraised as a challenge, it is more likely to benefit performance, but when it is appraised as a threat, it may lead to performance detriments (e.g., Jamieson, Peters, Greenwood, & Altose, 2016). Thus, we argue that what matters most to creativity, in the context of diversifying experiences, is whether those experiences are evaluated as threatening or challenging. This does not preclude that some experiences will be seen as downright threatening or challenging. However our conceptualization takes into account the ambiguous nature of many diversifying experiences, and the possibility that effects to creativity depend not just on the diversifying experience, but also on the characteristics of the individual faced with that experience.

#### **3.1 Threat and Challenge Appraisals and Creativity**

According to Lazarus and Folkman (1986) a broad range of experiences, from potentially benign, to entirely catastrophic experiences, can trigger stress reactions in individuals. Stress is triggered especially during events that are novel, uncertain or unpredictable (Lazarus & Folkman, 1984, pp. 83–91), similar to those that occur during diversifying experiences. Psychological stress in this theory is understood in a narrow sense, as “a particular relationship between the person and the environment that is appraised by the

person as taxing or exceeding his or her resources and endangering his or her wellbeing” (1986, p. 19). Because diversifying experiences are unusual and unexpected, and can sometimes be perceived as taxing and exceeding one’s resources, appraisal theories are central to explaining the effect of diversifying experiences on creativity. However, research has yet to connect these two theories. According to the stress appraisal theory, stress arises *only if* individuals have insufficient coping resources. This means that connecting research on diversifying experiences with the transactional model of stress would lead us to conclude that diversifying experiences are threatening and stressful *only* when one’s coping resources are insufficient.

To understand how diversifying experiences affect creativity, we focus on the process of secondary cognitive appraisal, in which the diversifying experience is appraised as a *threat* or a *challenge*. This process is relevant for understanding diversifying experiences, as it can explain conflicting findings from previous research where diversifying experiences were found beneficial to some, but harmful to others (Gocłowska et al. 2014; Leung & Chiu, 2008). In appraisal theory, *secondary appraisal* refers to the cognitive assessment of one’s ability to successfully cope with a demanding situation (after that situation has already been identified via the *primary appraisal* process). In particular, when individuals see that they have the sufficient adaptive resources to deal with a demanding experience, they should consider this experience to be *challenging*. However, when individuals perceive that they *do not* have the sufficient resources to deal with the present demands, they may perceive the experience as *threatening*. Importantly, according to Lazarus and Folkman “threat and challenge are not necessarily mutually exclusive” (1984, pp. 83–91), they can operate in parallel, however in some situations one may play a more prominent role than the other, determining behavior and performance.

Integrating stress appraisal theory with research on diversifying experiences, we propose the following novel predictions. We expect that individuals are more likely to perceive low to medium intensity diversifying experiences (e.g., a sojourn abroad) chiefly as a challenge that they can successfully tackle. However, when faced with highly intense diversifying experiences (e.g., being a refugee in a foreign country), individuals are more likely to perceive the situation chiefly as threat which they do not have the necessary resources to cope with successfully, and which ultimately leads to rigid thinking.

There are strong reasons to believe that challenge (vs. threat) appraisals would link to greater (vs. lesser) creativity. Because challenge appraisals reflect a focus on realizing potential gains and opportunities (Tomaka, Blascovich, Kibler, & Ernst, 1997), associate with positive affect (Lazarus & Folkman, 1984), and with approach orientation (Schneider, Rivers, & Lyons, 2009), and since flexible and creative thinking benefits from these types of positive affective states (Baas, De Dreu, & Nijstad, 2008), the psychological state of challenge should help foster greater flexible and divergent thinking in response to unexpected, diversifying life events (for a similar argument see Gutnick, Walter, Nijstad, & De Dreu, 2012). We therefore hypothesize that an increase in challenge appraisals should mediate the positive relation between low-to-medium intensity diversifying experiences and creativity.

The opposite can be said about threat appraisals: threat appraisals can severely limit flexible information processing, as individuals become preoccupied with avoiding the negative consequences associated with a threat (Staw, 1981), leading to a narrow attention focus directed at the perceived source of this threat (Notebaert, Crombez, Van Damme, De Houwer, & Theeuwes, 2011). Threat is generally associated with an increased adherence to existing cognitive frameworks (Jonas et al., 2014), and a decreased likelihood of creative expansion (Leung & Chiu, 2010). Since threat appraisals are most likely to associate with



highly intense diversifying experiences, we hypothesize that threat appraisals may mediate the diminishing effect of highly intense diversifying experiences on creativity.

The prediction that challenge and threat appraisals will mediate the curvilinear relationship between diversifying experiences and creativity mirrors some existing research: for instance, challenge and threat perceptions of time pressure and job control have been found to correlate with daily levels of creativity in employees (Ohly & Fritz, 2010), and challenge appraisals have been shown to moderate the effect of abusive supervision on creativity (Liu, Liao, & Loi, 2012). These findings support the notion that the *subjective* meaning of a diversifying experience, expressed in terms of challenge and threat appraisals, could mediate the effect of diversifying experiences to creativity.

### **3.2 Adaptive resources as the key moderator**

But diversifying experiences do not operate in a vacuum: they are experienced by individuals, and those individuals will bring different skills and abilities into every situation. Imagine a highly skilled senior government official from the Philippines sent to a country that is high on cultural distance relative to his home country (e.g., the United Arab Emirates). Even though this individual is moving to a new culture, they are likely to have sufficient adaptive resources to cope with the sojourn, and this increases the likelihood that they will appraise the upcoming new move as a *challenge*. But for a relatively low status migrant worker, forced to immigrate due to economic constraints, and with no structural resources to support their upcoming move from the Philippines to the UAE, this same move may constitute a daunting prospect, leading to greater evaluations of *threat*, as adaptive resources do not match situational demands. This suggests that adaptive resources, which determine the “accommodating power” of an individual, will moderate the effect of diversifying experiences on challenge and threat appraisals, and in turn, creativity. Indeed, a careful investigation of the existing diversifying experiences research reveals some support for this

idea: some adaptive resources, as well as constraints on the use of those resources, were found to moderate the effect of diversifying experiences on creativity (Carson, Peterson, & Higgins, 2003; Gocłowska et al., 2014).

Several personality variables could aid individuals undergoing diversifying experiences, by providing additional resources for successfully dealing with these diversifying experiences. To mention a few, *self-sufficiency* and *ego strength* have been found to moderate the effects of psychopathology or immigration experiences on psychological functioning and creativity (Barron, 1963; Carson et al., 2003), and *neuroticism* was associated with a greater perception of threat associated with life's demands, such as starting a new job, or going to university, while *extraversion* associated with a less negative experience of such events (Lüdtke, Roberts, Trautwein, & Nagy, 2011). Other work has uncovered that demanding experiences increase creative performance in *low-anxiety* individuals, but are not significantly related to creative performance in high anxiety individuals (Byron, Khazanchi, & Nazarian, 2010), and that *avoidance motivation* moderates the effects of strain on performance (Roskes, Elliot, Nijstad, & De Dreu, 2013). Finally, a recent meta-analysis uncovered that propensity towards mental illnesses that are characterized by approach motivation (e.g., hypomania, positive schizotypy) associates with greater creativity, while propensity towards mental illnesses that are characterized by avoidance motivation (e.g., anxiety, negative schizotypy) associates with less creativity (Baas, Nijstad, Boot, & De Dreu, 2016). Taken together, these findings suggest that, in general, behavioral tendencies and personality traits related to approach motivation and positive affectivity constitute an adaptive resource, that may help garner benefits from diversifying experiences.

There is also some evidence that certain cognitive skills moderate the effect of diversifying experiences on creativity. In an earlier section of this paper we discussed the

unusually high prevalence of mental illness in creative geniuses, but not in the general population (Ko & Kim, 2008; Simonton, 2014a, 2014b). This suggests that something about geniuses – their personality, or perhaps their intelligence levels – offsets the negative effect of mental illness on performance. Intelligence in particular has been found to moderate the effect of unusual thinking patterns, such as low latent inhibition (the inability to filter out irrelevant stimuli), on creativity (Carson et al., 2003). While in moderate IQ individuals low latent inhibition could potentially lead to psychological problems (low latent inhibition associates with psychoticism), among those with high IQ it can contribute to exceptional creativity levels. This suggests that high intelligence compensates for the adverse effects of low latent inhibition that would otherwise lead individuals to underachieve (Carson et al., 2003).

This list of individual differences is not exhaustive, as various skills and abilities will be relevant to various types of diversifying experiences. Appraisal theory lists several adaptive resources (health, positive beliefs, problem-solving skills, social skills, social support and material resources; Lazarus & Folkman, 1984) that could potentially moderate the effect of diversifying experiences on creativity. To our best knowledge, these moderators have not yet been tested in research on diversifying experiences and creativity. In addition, some skills, like intelligence, may moderate all types of diversifying experiences; while others may be domain-specific. For instance stress reduction, relationship development, willingness to communicate, and cultural toughness are necessary for a successful expatriate experience (Mendenhall & Oddou, 1985), but whether these skills would moderate effects (to creativity) of other types of diversifying experiences remains unknown.

At times, even when individuals possess adequate adaptive resources to cope with a diversifying experience, they may be reluctant to utilize them because doing so would cause personal conflict and distress (Lazarus & Folkman, 1984). Lazarus and Folkman list several

possible constraints like these: from environmental constraints (e.g., institutional barriers), through cultural values (e.g., norms about when it's appropriate to use a certain resource), to personal agendas (e.g., need for closure and intolerance of ambiguity). There is some support in the literature that the third among those constraints – need for closure and intolerance of ambiguity – moderate the effect of diversifying experiences on creativity.

For instance, exposure to counter-stereotypes (as well as schema-violations) associated with greater creativity in people low in the need for structure (Gocłowska & Crisp, 2013), however when need for structure was high, creativity was hampered (Gocłowska et al. 2014). A similar effect has been uncovered in the studies of Leung and Chiu (2008), where multicultural experiences increased creativity only when openness to experience was high, but decreased creativity when openness to experience was low (Leung & Chiu, 2008). Openness to experience and a (low) need for structure entail people's willingness to engage with things novel and unusual, and may therefore regulate the extent to which people are *willing* to expend resources in the face of diversifying experiences. Similar results have been observed in studies measuring an openness towards diversity: for example, studies examining individuals' perceptions about the incompatibility of different cultures (Chua, 2012), the value of homogenous environments (Homan, van Knippenberg, Van Kleef, & De Dreu, 2007) or one's own bicultural identity integration (Saad, Damian, Benet-Martinez, Moons, & Robins, 2012) all show that the extent to which people are open and willing to engage with diversifying experiences moderates effects to creativity. Thus, recent accumulating evidence suggests that a general dislike of diversifying experiences (e.g., need for structure, low openness to experience, low openness to diversity) may restrain the extent to which people benefit from diversifying experiences, because it stops individuals from utilizing their adaptive resources in the face of those experiences. A similar idea has been expressed by

Crisp and Turner (2011) who argued that cognitive adaptation occurs only when perceivers are able and motivated to cognitively process schema-violating information.

Taken together, evidence from various lines of work suggests that adaptive resources (such as greater intelligence, or social skill), if they are applied, can up- and down-regulate the extent to which diversifying experiences breed creativity. These effects are likely mediated by challenge and threat appraisals, and testing this moderated mediation model is an important and necessary task for advancing theory on the diversifying experience-creativity link. Equally important, for future studies, is an exploration of the various interventions that could increase adaptive resources that people have to cope with diversifying experiences, or increase people's willingness to use those resources. Thus, testing targeted interventions, which ensure that people benefit and flourish, rather than feel threatened, overwhelmed and suffer from diversifying experiences, is an essential task for future research.

### Summary

Empirical studies using various methods suggest that a whole range of unusual life experiences, from multicultural exposure, to mental illness and life's adversities, associate with greater creative performance. But is this a simple linear relationship, true for all diversifying experiences, and all individuals? As recent research suggests the reality of diversifying experiences may indeed be more complicated, as the effects of diversifying experiences on creativity can be both positive *and* negative, depending on the intensity of the diversifying experience, and the utilization of adaptive resources to cope with these experiences (Damian & Simonton, 2014; Gocłowska et al.; Godart et al., 2015; Simonton, 2014a). To resolve these apparent inconsistencies, our model integrated findings from various research domains, and put forward three suggestions that explain when and why diversifying experiences influence creativity.

First, our model argued for a curvilinear link between diversifying experiences and creativity: at the lower end of the spectrum increments in diversifying experiences are positively linked to flexible thinking, but once a certain threshold of intensity is reached, diversifying experiences are no longer beneficial and may even stifle flexibility. Secondly, we suggested that challenge and threat appraisals mediate the effect of diversifying experiences to creativity, so that medium intensity diversifying experiences associate with more challenge appraisals, greater cognitive accommodation, and more creativity, but diversifying experiences that are too intense, or that exceed individual's coping ability, are more likely to be appraised as threatening, leading to problems in accommodation, and stalled creative performance. Last but not least, we argued that the extent to which individuals have sufficient adaptive resources to deal with a diversifying experience, and the extent to which they are not constrained in the use of those resources, should moderate the effect of diversifying experiences to challenge and threat appraisals, and to creativity. Taken together, we proposed a moderated mediation model (see Figure 1), where the interaction term of the intensity of diversifying experiences, and the available coping resources constitutes the predictor, challenge and threat appraisals are the mediators, and flexible thinking and creativity are the outcomes.

Importantly, by giving a central role to adaptive resources and subjective appraisals the DECM model advocated a person x situation perspective on diversifying experiences. Of course, some diversifying experiences are, on average, more likely to elicit challenge or threat appraisals, hence some of them will mostly boost, while others will mostly constrain performance. But because people differ in their reactions to diversifying experiences, individual differences need to be factored in. The same diversifying experience (especially when it is of medium intensity, e.g., working in a diverse team) may constitute, to some people and in some circumstances, either a challenge or a threat. Thus, to gain a really good

understanding of how diversifying experiences impact creativity, researchers need to ask:

*Will this diversifying experience, to this particular person, with their given resources, constitute a threat, or a challenge?* The answer to this question, in our view, holds the key to whether diversifying experiences increase divergent, flexible and creative thinking, or not.

### **Implications for Multiculturalism Research**

The main goal of the proposed model is to explain when and why all types of diversifying experiences contribute to greater creativity. Given the wide scope of the theory, a careful reader may question what use our broad approach is to research on the multiculturalism-creativity link. Our view is that the broad perspective taken by our model has several benefits to both theory and experimental work on the consequences (to creativity) of bicultural identities, and social and cultural diversity.

**Theoretical breadth.** From a top-down, theoretical angle, using the term diversifying experiences allows researchers to recognize, summarize and analyze the consequences (to creativity) of a wide range of phenomena: bicultural identities, multicultural exposure, country-level diversity, gender counter-stereotypes, low latent inhibition, episodes of mental illness, or developmental adversity. Many of those research domains are characterized by their own research cultures, with favorite research questions, variables, methods, and procedures. Integrating findings from these different fields broadens the range of methods available. The resulting theoretical model is therefore well informed, as it draws evidence on processes and antecedents from a broad range of research findings.

**Domain generality and specificity.** Our review suggests that various domain-general adaptive resources, such as IQ, self-sufficiency, or ego-strength, modulate the effect of diversifying experiences on creativity. Drawing from stress appraisal theories, resources as broad and external as social support or wealth could also play a role (Lazarus & Folkman, 1984). If multicultural experiences are a type of diversifying experience, it's worth testing if,

and which domain-general adaptive resources, and their constraints, interact with multicultural experience to predict greater creativity. It would also be worthwhile to isolate even more moderators, and compare their generality vs. domain specificity. One could imagine that some resources (e.g., power status, social support, wealth, intelligence) are beneficial in the face of most diversifying experiences, but other types of skills such as cross cultural intelligence (Chua, Morris, & Mor, 2012; Mor, Moris, & Joh, 2013) or language skills may work in a more proximal way. Understanding which adaptive resources are most helpful in the face of which diversifying experiences is a worthy research question - from both a theoretical, as well as a practical, intervention-oriented point of view.

**Diversifying experiences across domains.** Examining diversifying experiences across the board gives us more input from various research findings, and allows for the simultaneous consideration of diversifying experiences from many research domains. For example from the archival studies by Damian & Simonton (2015) we learn that minority status and mental illness are both diversifying experiences, and that they may work in an additive way: dealing with the experiences of being a minority member, or experiencing mental illness associate with creativity, but the combined total intensity of both of those diversifying experiences might be too demanding to cope with. This means that researchers investigating one type of diversifying experience, for instance multicultural exposure, will benefit from considering diversifying experiences in other life domains, as doing so will allow them to better understand the overall strain in participants' lives, and thus, better characterize the effects of diversifying experiences on creativity in a consistent framework.

**Evidence from various levels of analysis.** Third, considering all types of diversifying experiences in one model helps us appreciate the breadth of this phenomenon. Diversifying experiences associate with creativity in laboratory studies (Leung & Chiu, 2010; Ritter et al., 2012), in organizational contexts (Tadmor et al., 2012), in the life-long achievements of



eminent individuals (Damian & Simonton, 2015; Goertzel, 1978), and in country-level indicators of innovation (Simonton, 1997). When considering all this research from an integrated viewpoint, we immediately appreciate how strong the evidence is for causality in the link between diversifying experiences and creativity. Mental simulations that exposed research participants to counter-stereotypes (Gołowska et al., 2013), instructed participants to put together unrelated cognitive concepts (Wan & Chiu, 2002), or experience the laws of physics being broken (Ritter et al., 2012) may be hard to label as “multicultural experiences”, but have, in fact been designed with the intention of simulating the “diversifying” aspect of those experiences in an experimental setting. As a result, considering the overarching term of “diversifying experiences” allows us to appreciate that a whole range of phenomena, that involve real-life and simulated experiences of doing something differently, are linked to creative thought.

### **Ideas for Future Research**

Finally, a few caveats and suggestions for future research are in order. First, while our model focuses on the similarities between various diversifying experiences, it’s important to recognize that each diversifying experience has its own specific content that will affect creativity over and above the “diversifying experience” effect. Biculturalism is a good illustration. When living and working abroad people learn a new language, adjust to a new physical environment, and learn about the different ways in which the host society is organized. This means that aside from merely experiencing change they absorb new cultural content, and this content may in and of itself affect creativity. For example individuals from Northern Europe (typically higher on individualism) moving to one of the South European countries (typically more collectivistic) may experience drops in creativity as a result of adapting an interdependent cultural norm (Goncalo & Staw, 2006). In the same way, while the experience of social rejection may constitute a diversifying experience, it could also

increase people's need for uniqueness, and the subsequent generation of non-normative ideas, contributing additional variance over and above the experience of change and challenge (Kim, Vincent, & Goncalo, 2013). It is for reasons like that, that more understanding is needed of the differences between various diversifying experiences, and there is also need for clever research designs that will allow researchers to control content-specific influences, and separate these influences from those related to "diversifying experience" effects.

Secondly, while consistent evidence exists that flexible thinking can be trained as a result of diversifying experiences, it would be good to investigate other cognitive processes too. Creativity is almost immediately and stereotypically associated with flexible and divergent thought, but it also benefits from numerous other cognitive and motivational processes. For instance cognitive "persistence" - the deep exploration of ideas within one semantic category can also lead to creative performance (Nijstad et al., 2010), yet this variable is, with a few exceptions (Steffens, Gocłowska, Cruwys, & Galinsky, 2015), rarely tested in research on diversifying experiences. Unpredictable childhood adversity has been associated with greater cognitive shifting (akin to flexibility), but also decreased levels of inhibition (akin to persistence Mittal et al., 2015). It would be worthwhile testing whether increased cognitive flexibility, following diversifying experiences, comes at a cost to individuals' ability to focus and persist within one domain, or whether diversifying experiences allow people to adaptively switch between these two types of information processing. Another question, and one that others, before us, have already put forward (Gutnick, Walter, Nijstad, & De Dreu, 2012), is whether under conditions of threat appraisals, people may reach greater cognitive persistence, and creativity, specifically in the domain that allows them to avoid the threat in question (Baas, De Dreu, & Nijstad, 2011; Roskes, De Dreu, & Nijstad, 2012).

To conclude, the DECM model advocates a broad view of the multiculturalism – creativity link, and provides a theoretical framework explaining when and why diversifying experiences link with creativity. By bridging previously unlinked areas of research, using the overarching term of diversifying experiences should help us better understand when and why events strange and unexpected, such as those that occur during cultural adaptation and multicultural exposure, can enhance creativity, and foster human progress.

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