

THE RELATIONSHIP BETWEEN CREATIVITY AND CULTURAL
DIVERSITY: COGNITIVE, MOTIVATIONAL AND IDEOLOGICAL
DETERMINANTS

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ABSTRACT

The argument that diversity enriches society is a common feature in public, political and academic discourse. Recent research has provided some empirical support for this idea with the finding that people who challenge traditional group boundaries (e.g., migrants, women in stereotypically incongruent occupational roles) can experience enhancements to their creative performance. In this thesis I test a new theoretical model, based on social categorization theory, which provides some precise conditions under which the experience of social and cultural diversity will be most beneficial to creative performance. Nine studies yielded support for this model, and the assertion that social and cultural diversity, when experienced in a way that challenges stereotypic expectations, can lead to enhanced creativity. Furthermore, the studies supported the notion that such stereotypically challenging diversity works through a cognitive process of inconsistency resolution that initially decreases, but with repeated engagement enhances, creative performance. The findings of this thesis support calls for further integration of social cognitive and cross-cultural perspectives, and explain why people may be initially resistant to diversity, but how in the longer term the experience can yield considerable benefits for individuals, groups and society at large.

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OVERVIEW

A recent IBM poll of 1,500 CEOs worldwide identified creativity as the No.1 “leadership competency” of the future (IBM, 2010). Creativity lies at the heart of personal and professional success. In education and in industry an ability to think ‘outside of the box’ is critical for problem solving, progress, change and innovation. Many contemporary psychologists agree that everyone has creative potential (e.g., T. B. Ward, Smith, & Finke, 2008), and that encouraging greater creativity is universally valued for individuals, groups and organizations (Amabile, 1996). But are there broader social conditions that promote creativity; and, if there are, how can we understand individuals’ psychological reaction to those conditions? One of the most exciting and intriguing developments in recent work has been the idea that creativity can be enhanced through the experience of social and cultural diversity. While this idea has opened up a critically important new line of enquiry, psychologists are only beginning to understand the processes and qualifying conditions that determine this relationship.

This thesis examines the idea that a special kind of diversity, one that challenges existing preconceptions about groups in society, can lead to increased cognitive flexibility and, through this, enhance creativity. In this thesis, I will present a novel psychological model of the impact of social and cultural diversity on creative performance, provide an extended analysis of the conditions that must be satisfied in order for diversity to promote creativity, and apply the concept of diversity-driven creativity to a wider range of contexts than previously been considered. The findings that the experience of “challenging diversity” can boost individuals’ creativity has important implications for

psychologists' efforts to understand the creative process; it also has considerable implications for both public and political debate on the economic and social value of an increasingly diverse multicultural society.

The ideas underlying this thesis are based upon social categorization theory. Categorizing self and others is a powerful mental operation, and the way in which people process information about others has considerable impacts on subsequent judgment and behaviour (Fiske & Taylor, 1990). But the way people categorize others is changing: in a globalized world where traditional boundaries have given way to increasingly complex representations of identity, people travel abroad and interact with individuals that they would not traditionally have been able to meet. As the number of international migrants in the world moves beyond 190 million (Population Division, 2006), it is becoming increasingly difficult to predict nationality from accent or skin colour.

This raises a number of questions: What implications does this new social reality have for how people perceive and process information about others, and how they use that information to form judgments? One may also ask: Is this increasing social diversity a good thing? Should politicians, policy makers and the public welcome the increasingly pluralistic society? These are questions that have dominated scholarly, political and public discourse in the early years of the 20th century. Some have argued that multicultural diversity results in poor intergroup relations and negative outcomes for individuals (Schlesinger, 1992; Rudmin, 2003). But others have advocated the opposite idea: That encouraging individuals to maintain distinct cultural, ethnic and religious identities within an inclusive society can yield considerable social and personal benefits (Berry, Kalin, & Taylor, 1977; Lambert & Taylor, 1990;

Yinger, 1994; LaFramboise, Coleman & Gerton, 1993; Maddux & Galinsky, 2009). The work reported in this thesis will help to reconcile these opposing views.

Increasing migration (e.g., to Europe or the US) brings about not only additional workforce, money or skills, but also cultural richness, an exchange of values and traditions, music or even cuisine – all of which have less measurable, but highly important impacts for the society. Every day millions of people in the UK interact with individuals of a different religion, nationality, or skin colour. People are surrounded by ideas and objects originating from different countries: they order an Indian curry, attend salsa classes, listen to Reggae music and explore the “Eastern European” shelf in a local supermarket. These new, unfamiliar stimuli combine with familiar and ordinary, to form new qualities expressed in music, literature, art or architecture; it makes people’s lives incredibly rich and of better, novel quality.

Recent findings in social psychology support the assertion that multiculturalism and international experiences can benefit individuals on a most important of human characteristics - creativity (Leung & Chiu, 2008). The establishing of this relationship is exciting and intriguing – but also presents a whole range of new questions: How does multiculturalism contribute to creativity? Do diversity experiences change the way people think about the world, or does the way people think push them to experience more and more diversity? Does improved creativity in people with extensive multicultural experience occur due to a change in values, or improvements in cognitive functioning? This thesis is all about answering such questions; it will outline and review existing findings on why multicultural experiences lead to enhanced

creativity, and suggest a novel conceptualization of those findings. In so doing I will explore the implications of increasing social diversity for the way in which people think about the world, the implications of these cognitive changes, and what these changes could mean for public and political debates into the value of multicultural diversity.

The thesis will begin with a review of current research and theory on creativity and diversity. These are multidisciplinary pursuits, of interest and importance not only for psychology but also scholars in fields ranging from art, to anthropology, to marketing and to politics. Similarly, to discuss their relationship within the realm of psychology, it is necessary to bridge a gap between many disciplines, to mention a few: cognitive psychology, individual differences, social cognition, and intergroup relations. This thesis will draw on all of those disciplines to build some general assumptions and hypotheses, introduce nine studies, and explain their findings against what was hypothesized and what is known from psychological literature.

Chapter 1 will discuss how contemporary social psychologists understand creativity, and explain how that understanding has informed the current thesis. In Chapter 2 I will then review recent findings of a link between multicultural experiences and creativity and try to pinpoint a common process that could account for the beneficial effects on creativity. Chapter 3 will present a re-analysis of data collected independently of this PhD research project, which provided the basis for the current investigation. Two studies are reviewed that address the question of causality in the multiculturalism-creativity literature. The studies reported reveal that the experience of living abroad boosts creativity independently of pre-existing motivations to engage in multicultural

experiences, but also that the extent of the uplift is contingent upon individuals' epistemic motivations.

Chapters 4 and 5 focus on the question: Why, and under what circumstances, will the experience of diversity that challenges existing expectations lead to enhanced creative performance. These chapters will introduce the “challenging diversity” hypothesis (Crisp & Turner, in press). This idea derives from research on multiple categorization: A paradigm based on the observation that in a multicultural world people no longer perceive social categories in a dichotomous, black-and-white manner. According to multiple categorization theory race, gender, occupation or nationality no longer covary, and people are increasingly exposed to category combinations, which are unusual, and often surprising and counter-stereotypical (Crisp & Hewstone, 2007). According to the challenging diversity hypothesis, multicultural experiences that challenge existing stereotypes can trigger an inconsistency resolution process. Repeated engaging in this process can lead to cognitive adaptation in the form of enhanced inhibitory abilities. These abilities can correspondingly benefit creative performance, particularly on tasks that require participants to set aside existing, prototypical ideas in favour of thinking “outside of the box”.

The remaining chapters will empirically test the prediction that experiencing stereotypically challenging diversity will enhance creative performance consistent with the above hypothesis. Chapters 6 and 7 will present six studies that investigated whether counter-stereotypical primes (representing challenging diversity) have predictable impacts on creativity. The first three studies (Chapter 6) test the idea that counter-stereotypical primes lead initially

to decrements in creativity due to executive resource consumption. However, as I show in later studies (Chapter 7), this effect occurs only in individuals with little prior exposure to counter-stereotypical diversity. In individuals with long-term multicultural experiences, counter-stereotypical primes elicit enhanced creativity. Chapter 8 will present two final studies investigating the role of a multicultural ideology in determining people's reactions to counter-stereotypical diversity. In Chapter 9 I summarize the findings of the work carried out for this thesis, forge links between these results and the wider literature on the multiculturalism-creativity relationship, and suggest further lines of inquiry to understand how, when and why the way in which people form impressions of others is related to creative performance.

CHAPTER 1: THE SOCIAL PSYCHOLOGY OF CREATIVITY

This chapter will present the current state of creativity research, with focus on the social psychological approach to creativity. In particular, I will define creativity, and discuss three classic approaches to creativity research. I will then focus on the last decade of findings of social psychological research on creativity, and discuss five important implications which are highly relevant to the current thesis. These implications include the ideas that (1) creativity is a normative property of human thought, (2) creative production can be achieved through cognitive flexibility and effort, (3) any contextual effects to creativity will likely be contingent upon individual differences in motivated information processing and (4) that increments to creative performance can be demonstrated through priming procedures. I will also briefly discuss the idea that (5) different operationalizations of creativity capture different aspects of creative performance.

As a universally valued characteristic, one of the key goals of researchers has been to understand how to foster peoples' potential for creativity. The study of creativity has been a key endeavour for psychologists over the last 50 years (Guilford, 1967; Mumford, 2003). Scholars of creativity have asked whether it is innate (Galton, 1869; Simonton, 1999), whether is it a stable personality characteristic (Barron & Harrington, 1981; Feist, 1998), and how it can be encouraged in groups and individual decision making (Amabile, 1996; Hunter, Bedell, & Mumford, 2007). Contemporary work agrees that everyone has creative potential (T. B. Ward et al., 2008), and that encouraging

greater creativity is universally valued for individuals, groups and organizations (Amabile, 1996).

Prominent researchers in the field agree that there are two important components to the definition of what is creative. Firstly, creativity is the ability to produce work that is novel, original and unexpected; secondly, such work needs to be appropriate - meaning useful and taking account of constraints of the task (e.g., Amabile, 1996; De Dreu & Nijstad, 2008; Sternberg & Lubart, 1993). In other words, new ideas and products are creative, but only to the extent that they make sense and are usable for the purpose intended.

Psychologists utilize a multiplicity of creativity measures. These could be levels of eminence across creative individuals' life (Simonton, 1997, 1999; Tadmor, Galinsky, & Maddux, 2010) or, more suitable for laboratory settings, measures of a given aspect of creativity; for instance divergent production (Gilhooly, Fioratou, Anthony, & Wynn, 2007) or the ability to form insight (Bowden & Jung-Beeman, 2003; Kounios & Beeman, 2009). Such measures often derive from different viewpoints on the nature of human creativity, and although correlated, may tap on different mental operations that drive creative performance.

CLASSIC APPROACHES TO CREATIVITY

Historically, three approaches have exerted most influence on the development of a scientific study of creativity: the psychometric, cognitive and social-personality approaches. The psychometric approach, as advocated by Guilford in his presidential APA address (Guilford, 1950), was one of the first attempts to explain creative processes using research conducted on ordinary

people, rather than eminent figures. Furthermore, this approach provided psychologists with easy to administer, objective measures of creativity. These may include the Unusual Uses Test (Guilford, 1967), a task in which participants are asked to find alternative uses of everyday objects, or the Torrance Tests of Creative Thinking (Torrance, 1974) which can be scored for fluency (total number of responses), flexibility (number of different categories used among responses), originality (the uniqueness, or statistical rarity of a response) and elaboration (amount of detail in the response). By calling to research non-eminent samples, and offering objective measurement tools, the psychometric approach helped to somewhat demystify the notion of creativity, recognize its independence from the notion of intelligence, and spark interest in measuring and researching creative abilities.

A second approach, the cognitive study of creativity aims at explaining the mental representations and processes underlying creative thought. Representatives of this field typically claim, that creativity involves ordinary, observable cognitive processes such as the ability to understand, modify and combine concepts (Finke, 1996; T. B. Ward, 1994, 2001, 2007; T. B. Ward, Patterson, Sifonis, Dodds, & Saunders, 2002). Creative outcomes rely on these everyday, measurable thought processes, and creative thinking is an essential property of normative human cognition, and open to empirical investigation (T. B. Ward et al., 2008). Importantly for the present research, the cognitive approach explains how people generate new, original ideas through a process of recombining existing concepts, and the resulting production of new, emergent qualities (Hampton, 1997; Thagard, 1997; Wilkenfeld & Ward, 2001). As I

show in later chapters of the current thesis, this mechanism may account for observed improvements in creativity following diversity experiences.

Thirdly, creativity has been the target of research of personality and social psychologists. Work in this field focused mainly on personality variables, motivation and socio-cultural environment as sources of creativity. Creativity has been found to be related to personality traits such as independence of judgment, self-confidence, attraction to complexity, aesthetic orientation and risk-taking (for a review see Barron & Harrington, 1981) and to intrinsic motivation (Amabile, 1996; Amabile, Hill, Hennessey, & Tighe, 1994). In the social-personality approach (most relevant to the current investigation) creativity is a confluence of different psychological elements.

Amabile (1996) described creativity as resulting from a combination of domain-relevant knowledge and abilities, creativity-relevant skills and intrinsic motivation. Domain-relevant knowledge is understood as information relevant to the field in which a person is working, as well as the technical skills or 'talents' necessary in that field. This aspect of creativity relies on the individuals' innate cognitive abilities and perceptual or motor skills, as well as on their experiences of formal and informal education. The second component, creativity-relevant skills include a cognitive style that involves coping with complexities and breaking one's mental set during problem solving, knowledge of heuristics for generating novel ideas and a conducive work style characterized by concentrated effort, an ability to set aside problems, and high energy. The third aspect, intrinsic motivation encompasses an individuals' attitude towards the task and perceptions of their own motivation to engage in that task. To be creative, individuals need to be intrinsically motivated, but it is

equally important that the environment is free of any extrinsic concerns (Amabile, 1983, 1996).

In Amabile's componential model, each component is necessary for creativity to occur. If only one of the components is present, creative production may not occur. For instance, even when highly expert in a topic, an individual will not perform creatively if they are not intrinsically motivated to do the task – one component is not sufficient for creativity in and of itself. The model makes a good job of summarizing, on a very general level, many processes that may need to be taken into account when thinking of creative production, and these processes will be referred to in the chapters of the current thesis when discussing possible antecedents and processes of creative production.

All three approaches are important to a thorough understanding of creativity. Combining knowledge of creativity measurement (psychometric approach), with knowledge of cognitive processes (creative cognition), and of how personality and social factors interplay to determine creativity (social-personality approach), should allow researchers for a broad understanding of how creativity works, and how it can be improved upon. But such integrative approaches have so far been rare. In the words of Sternberg and Lubart (2008) "If you look at research that investigates both cognitive and social-personality variables at the same time, you will find only a handful of studies" (Sternberg & Lubart, 2008, pp 9). This state of affairs is changing, as increasing numbers of social psychologists attempt to integrate knowledge from multiple fields to understand how creativity works (e.g., Förster, Friedman, Butterbach, & Sassenberg, 2005; Leung, Maddux, Galinsky, & Chiu, 2008; Markman, Lindberg, Kray, & Galinsky, 2007; Wan & Chiu, 2002). In the next section, I

will report some of those most recent studies, and explain how they have informed the research presented in my thesis.

SOCIAL PSYCHOLOGY AND CREATIVITY OVER THE LAST DECADE

Over the last decade creativity became the focus of experimental studies by social psychologists and social cognition researchers. These studies investigated the role of moods and motivations (De Dreu, Baas, & Nijstad, 2008; De Dreu, Nijstad, & van Knippenberg, 2008), regulatory foci (Friedman & Förster, 2001), processing styles (Chirumbolo, Mannetti, Pierro, Areni, & Kruglanski, 2005; Chirumbolo, Mannetti, Pierro, & Kruglanski, 2004; Rietzschel, De Dreu, & Nijstad, 2007), construal level (Förster & Dannenberg, 2010; Förster, Friedman, & Liberman, 2004), counter-factual thought (Kray, Galinsky, & Wong, 2006; Markman, Lindberg, Kray, & Galinsky, 2007), ‘thinking different’ (Förster, Friedman, Butterbach, & Sassenberg, 2005), positions of power (Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008), love and sex (Griskevicius, Cialdini, & Kenrick, 2006) and multicultural experiences (Leung & Chiu, 2008, 2010; Leung, Maddux, Galinsky, & Chiu, 2008; Maddux, Adam, & Galinsky, 2010; Maddux & Galinsky, 2009; Tadmor, Galinsky et al., 2010). Although an in-depth discussion of all findings related to these foci is beyond the scope of this thesis, the above studies have informed the thinking in the current thesis in some specific ways and this will be discussed below. The following section outlines five important, summative implications of this work, which informed the current project.

I: Creativity is no Longer Exclusive to Lone Geniuses

Today, conceptions of creativity represent it as a universal quality or ability that is characteristic of all people and, more importantly, can be improved upon. Gone is the idea of creative geniuses (Galton, 1869); creativity today is understood as an important aspect of everyday life; research on creativity can and should be applied outside academia. This approach conflates with the lay idea of creativity as something that lies at the heart of personal and professional success. In contemporary minds, an ability to think “outside of the box” is critical for problem solving, progress, change and innovation first, at school, and later in life, in industry. For instance, the IBM report cited at the start of this thesis stated, “CEOs now realize that creativity trumps other leadership characteristics. Creative leaders are comfortable with ambiguity and experimentation. To connect with and inspire a new generation, they lead and interact in entirely new ways” (IBM, 2010, p. 23).

Many researchers recognize this need for “everyday” creativity - for instance creative cognition researchers emphasize that the creative capacity is an essential property of normative human cognition (T. B. Ward et al., 2008). Similarly, those practicing a social psychology approach discuss creative solutions to real-life, meaningful problems (Rietzschel, Nijstad, & Stroebe, 2007), in negotiation settings (De Dreu, Giacomantonio, Shalvi, & Sligte, 2009; De Dreu & Nijstad, 2008), or look at individuals’ innovation and creativity levels at work (Tadmor, Galinsky et al., 2010).

II: Creativity Requires Flexibility and Effort

The second assumption important for the present research is that to perform creatively people need a degree of flexibility, accompanied by effort. A recent model of creative performance - the Dual Pathway to Creativity Model (DPCM; Baas, De Dreu, & Nijstad, 2008; De Dreu, Baas, & Nijstad, 2008) proposes that creative ideas and solutions are a function of two factors: flexible information processing and persistence. The flexible pathway manifests itself in divergent thinking, using inclusive categories and switching easily between those categories, while the persistence path captures the notion that to score highly on creativity tasks individuals additionally need to persist and engage in more deliberative information processing.

This model captures the idea that creativity occurring through enhanced cognitive flexibility is prone to certain boundary conditions: Individuals must have the ability and be (to some minimum extent) motivated to produce these ideas (Amabile, 1996; Amabile et al., 1994; De Dreu, Nijstad et al., 2008; De Dreu & West, 2001). On one hand, creativity can be achieved through more flexible thinking and open-mindedness; on the other hand it also relies on effort and deliberation, and so flexibility may not be enough to boost creativity, especially when individuals cannot, or feel less motivated to persist on the task. Consequently, when participants are not motivated (for instance the task is difficult or not relevant) or lack cognitive capacity (e.g., when distracted; Chirumbolo et al., 2005; Chirumbolo et al., 2004; Kasof, 1997), enhanced creativity may not be observed. How a lack of cognitive capacity can hamper creativity will be discussed in more detail in Chapters 4-5 and evidenced in Studies 3 and 4 of the current thesis.

III: Individual Differences in Information Processing

Because creativity relies simultaneously on cognitive flexibility as well as effort, it will be to an extent sensitive to general individual differences in how people process information. Epistemic motivations, or habitual ways of information processing, can influence people's creativity, and interact with environmental cues to predict creative performance. Chirumbolo and colleagues (Chirumbolo, Mannetti, Pierro, & Kruglanski, 2004) investigated how the epistemic motivation towards closure influenced people's creativity in small group interactions. For instance groups consisting of individuals with higher levels of need for closure performed less creatively, compared to those with lower levels of need for closure. The same effects occurred when need for closure was manipulated via time pressure. Another study demonstrated how people intolerant of ambiguity generated fewer ideas, and their ideas were less unique (Zenasni, Besançon, & Lubart, 2008). Consistent with these findings, creative thinking has been associated with complexity (Quinn, 1980), the ability to look at problems from new, unusual perspectives (Duncker, 1945) and to withhold pre-emptive judgments and solutions (Getzels & Csikszentmihalyi, 1967). In sum, in general terms a preference for complex and deep thinking, toying with ideas, being open-minded will aid creativity, while quick and shallow processing and an aversion to ambiguity may result in less creative products.

Epistemic motivations will often moderate environmental impacts on creativity: The same stimuli may be conducive to creativity in those with epistemic motivation, but detrimental to those without. For instance a study investigating the multiculturalism-creativity link showed that when people who

are less open to experience face multiculturalism, they produce less unusual uses of an object and have a greater tendency to generate normatively accessible exemplars (Leung & Chiu, 2008). I will explore this issue further in later chapters of this thesis by demonstrating how need for cognitive closure (Study 2) and personal need for structure (Study 5) moderate the impact of diversity on creativity.

IV: Creative Performance Can be Primed

The past decade has seen an unprecedented wave of research using primes to elicit creative performance. Priming describes “the effects of prior context on the interpretation of new information” (Fiske & Taylor, 2008, p. 60). In a typical priming study, an experimental procedure activates a mental association (e.g., the idea of dieting) in the participant, to see if increased accessibility of the activated concept, behaviour or emotion will produce changes to performance on a subsequent task (e.g., a more negative evaluation of unhealthy food). Because creative problem solving and idea generation are based on ordinary mental processes (T. B. Ward et al., 2008) and can be fostered and improved upon through the right environmental factors (Amabile, 1996), any cues that people have learned to associate with creativity could potentially elicit creative performance. For instance, the idea of non-conformity and ‘deviancy’ was found to be associated with higher creativity: when asked to think of a punk rather than an engineer (i.e., primed with the idea of a punk) individuals solved more creative insight problems and fewer analytic problems (Förster et al., 2005). In a similar vein, to demonstrate the idea that living abroad boosts creativity, Maddux and colleagues primed individuals by asking

them to think about a time when they have lived abroad. Following this living abroad prime, creative performance improved across a variety of measures (Maddux et al., 2010; Maddux & Galinsky, 2009). Even priming romantic motivations can lead to increases in creativity. Griskevicius and colleagues asked participants to select a potential romantic partner from an array of faces, and write down a scenario for an ideal date with that person. Following this priming procedure individuals wrote more creative stories, and demonstrated a better ability to find remote associations (Griskevicius et al., 2006). Similar effects were found when researchers have primed mental procedures, rather than concepts. Within construal level theory (Förster & Dannenberg, 2010), boost to creative performance were demonstrated through procedurally activating a broad focus of attention (Friedman, Fishbach, Förster, & Werth, 2003), promotion focus (Friedman & Förster, 2000, 2001) or temporal distance (Förster et al., 2004). Finally, priming high power too increased individuals' creativity (Galinsky et al., 2008). The studies presented in the current thesis have used a mixture of cross-sectional sampling and priming procedures as independent variables.

V: Different Operationalizations of Creativity

Creativity measures employed in experimental research can sometimes capture different aspects of creativity, or different ways of achieving creative ends, and it could therefore be expected that the same independent variables will show different effects on multiple measures of creativity. Cases of such dissociations do not necessarily imply that the effects are not reliable, but rather that different processes might be at play. For instance, creativity is often

operationalized as the ability to find different, unusual uses of an object (Gilhooly et al., 2007; Guilford, 1950) or as the ability to form remote associations (the remote associates test, Mednick, 1962; Mednick & Mednick, 1967). However, recent studies have shown that different structures of counterfactual thought have disparate effects on these measures of creativity.

Counterfactual thinking refers to “a capacity to reflect on what would, could, or should have been if events had transpired differently” (Markman et al., 2007, p. 312). Additive counterfactuals are those that add new elements to reconstruct the past reality; e.g., “If only I owned an umbrella, I would not have gotten wet” (Markman et al., 2007, p. 313). Subtractive counterfactuals remove antecedent elements to reconstruct the past reality; e.g., “If only it hadn’t rained today, I would not have gotten wet” (Markman et al., 2007, p. 313). While additive counterfactual thought aids generation of creative uses of objects, subtractive counterfactuals boost results on the remote associates test (RAT) and various syllogisms (Kray, Galinsky, & Wong, 2006; Markman, Lindberg, Kray, & Galinsky, 2007). This is because additive counterfactuals seem to be more creative in their nature: While thinking of what might have been, individuals mentally open up to possibilities beyond what happened, however, in the negative counterfactual condition, they are restricted to the original occurrence.

By allowing individuals to open-up to alternative versions of past events, additive counter-factuals promote generative thinking, and hence produce an effect to creative uses of objects. However subtractive counterfactuals elicit a processing style that considers relations between sets of stimuli, and could enhance performance on tasks that require looking for remote associates, but not

those that benefit from generation. This demonstrates, that even though the RAT and uses for an object are considered creativity measures, they may rely on different cognitive skills, and hence represent a different aspect of creative performance: a broader, generative focus (creative uses) versus a more analytical, hypothesis-testing approach (RAT).

Another reason for why measures may or may not reveal uplifts in creative performance is domain-specificity. A creativity task that taps on an expert domain is more likely to produce effects, because it is more relevant to an individual, and because that person possesses more information about a specific domain. Creativity requires not only flexible thinking, but also persistence, and so if a creative task is highly relevant to an individual, then that person will be more motivated, and more likely to produce creative results on this relevant, rather than irrelevant task. Furthermore, possessing knowledge about a topic leads to an information effect: Individuals knowledgeable in a domain have more “building-blocks” to create an original product (e.g., Okoh, 1980). People often produce new things from combining together ideas already stored in their memory, hence, the more knowledge people have, the more potential ideas and combinations they can come up with, and the more likelihood that the result will be creative.

These two mechanisms become relevant when discussing studies in which effects of diversity to creativity are moderated by a third variable. For instance, in a study looking at the effects of identity integration (the degree to which an individual sees their two identities as not conflicting) on creativity, female engineers were asked to produce a mobile device targeted at other females, or at a student population. High identity integration was related to

higher creativity only when the product was relevant – that is targeted at female users, rather than college students (Cheng, Sanchez-Burks, & Lee, 2008). Benefits to creativity in participants high in identity integration might have been limited to the domain-relevant task for two reasons: firstly, because the domain was personally important, and therefore participants exerted more effort on the task; secondly, because those individuals had more knowledge of the domain (specific needs of female users), and were therefore able to come up with more relevant ideas, and more combinations of ideas.

In sum, the idea that different creativity measures can sometimes produce disparate effects will be discussed in the introduction to Study 6. As I demonstrate in that study, creativity measures involving higher levels of cognitive busyness (Study 3, 4) produced different effects in reaction to the same manipulation, compared to a less taxing operationalization of creativity (Study 6).

SUMMARY

Creativity in the present thesis is understood as the ability to produce work that is novel and original, but also appropriate. My investigation of creativity combines the social-personality and cognitive approaches: The reported studies look at how different social, cognitive and motivational factors combine to influence creativity in people exposed to diversity. Furthermore, the studies presented in this thesis were informed by findings of the last decade of creativity research in several ways.

The research was conducted under the assumption that creativity is a normative property of human thought (T. B. Ward et al., 2008; Tadmor,

Galinsky et al., 2010), that creative production can be achieved through cognitive flexibility and effort (DPCM; Baas, De Dreu, & Nijstad, 2008; De Dreu, Baas, & Nijstad, 2008), that any contextual effects to creativity will likely be contingent upon individual differences in motivated information processing (Chirumbolo, Mannetti, Pierro, & Kruglanski, 2004), and that increments to creative performance can be demonstrated through priming procedures (e.g., Maddux et al., 2010; Maddux & Galinsky, 2009). Furthermore, as demonstrated in Chapter 7, different operationalizations of creativity can sometimes capture different underlying processes (e.g., Kray, Galinsky, & Wong, 2006; Markman, Lindberg, Kray, & Galinsky, 2007).

As I show in the later sections of this thesis, these assumptions were confirmed. Six studies used priming procedures to simulate mental operations involved in impression formation, and produced effects to creativity in line with my hypotheses. Furthermore, positive effects to creativity in Studies 5 and 6 were linked to higher flexibility, and an inability to delegate cognitive resources lead to a decrease in creativity in Studies 3 and 4. Creative performance in Studies 2 and 5 was moderated by individuals' epistemic motivations. Finally, as demonstrated in studies 3, 4 and 6, measures of creativity involving different levels of cognitive busyness produced different effects in reaction to the same manipulation. In the next chapter I focus in on the key topic of this thesis by discussing existing findings of a link between social and cultural diversity and creativity in people.

CHAPTER 2: SOCIAL DIVERSITY ENHANCES CREATIVITY

So far I presented some basic assumptions underlying the creativity research reported in this thesis. In this section I will report findings, across different sub-fields of psychology, demonstrating that social diversity and multicultural experience are linked to creativity. This chapter will explain how social diversity and creativity co-vary in the development of societies (Simonton, 1997, 1999), and how researchers have found superior creative performance in groups with persistent minority positions (e.g., De Dreu & West, 2001). Furthermore, cross-cultural and educational researchers observed higher creativity in bilingual and bicultural individuals (e.g., Okoh, 1980) as well as benefits to integrative (e.g., Tadmor & Tetlock, 2009) and cognitive complexity (Benet-Martínez, Lee, & Leu, 2006), and a higher receptiveness to diverse ideas and solutions in multicultural individuals (e.g., Leung & Chiu, 2010). These various effects of social diversity to creativity and complex thinking could be attributed to changes in the way people process information following acculturation experiences.

DIVERSE SOCIETIES

Societies benefit from cultural diversity and open migration policies. The most salient anecdotal example for this is an unusually high international mobility and level of multicultural experiences in eminent scientists. Take a look at the most recent Nobel Prize winners: in 2010 a joint prize in Physics went to Andre Geim and Kostantin Novoselov - two Russian-born scientists who throughout their careers worked at first in the Netherlands and, over the last decade, in the UK. The prize in Chemistry was offered to an American

(Richard Heck) and two Japanese (Akira Suzuki, Ei-ichi Negishi) working in the USA, while the economics prize was awarded to two Americans (Peter Diamond, Dale Mortensen) and a UK-based Greek Cypriot (Christopher Pissarides). Although anecdotal, these examples illustrate how internationalization and a diversity of ideas and perspectives often co-vary with innovation in science.

Such observations are not just characteristic of modern times, but can be found throughout the history of art and science: Alexander von Humboldt's Latin American expedition shaped the history of natural sciences (Walls, 2009), Darwin's voyage on the Beagle inspired the Theory of Evolution (Darwin, 2010), and the Dutch painter Van Gogh produced his most renowned paintings while living in the south of France (Botton, 2002). But are such anecdotes supported by evidence? An impressive example of data demonstrating the diversity-creativity link on the societal level is the research by Simonton (1997, 1999). In a generational time-series analysis of Japanese data between 580 and 1939 A.D. the number of eminent individuals in a generation was a positive function of the amount of foreign influence. The influx of foreign ideas and people stimulated Japanese creativity with a delay of two generations (40 years). This is still within the range of an individuals' lifespan, so it is likely that individuals who experienced higher diversity of ideas and traditions earlier in life contributed creatively in the later stages of their life (Simonton, 1997). Other studies found large proportions of first- and second-generation immigrants among eminent contemporaries (Simonton, 1999, p. 122) and a link between openness to diversity and economic growth (Florida, 2002; Simonton, 1997).

DIVERSE WORKGROUPS

Explanations for the above findings and observations are attempted both at the group and individual level. Although this thesis is more concerned with the individual perspective, I will briefly discuss the main findings on how workgroup diversity affects creative problem solving. The discussion of this topic will allow for a better understanding of the broader context of the present investigation, and some of the findings of the group-level analyses will, as I demonstrate later, parallel those on individual level.

McLeod, Lobel, and Cox (1996) asked small groups to engage in a brainstorming task, to generate ideas for promoting tourism to the United States. Half of the groups comprised of White participants, and the other half included Whites, Blacks, Latinos, and Asians. Racially diverse groups produced more ideas; when rated by naïve coders their ideas were also found of higher quality (McLeod et al., 1996). These effects could be due to an information effect, similar to the one discussed in the previous chapter: some open-ended problems, for instance an understanding of different consumer markets, simply benefit from a diversity of perspectives as multiple building-blocks for a creative solution; however, further studies suggest that a different process may be at play. The presence of minority members elicits a qualitative difference in the way individuals process information about the problem, and through that, enhances the apparent levels of creativity and innovation. In the next section, I expand this idea of a qualitative difference of information processing in diverse groups.

Attention Focus in Diverse Groups

Group diversity can contribute to production quality. Phillips, Northcraft, and Neale (2006) demonstrated performance benefits for racially heterogeneous groups evaluating case materials in a homicide investigation. In their study, diverse groups spent more time on group discussion and were more willing to share unique (i.e., known only by a single member of the group) information within the group. The authors argued that a perception of differences within the group increased participants' willingness to raise and discuss issues that could be critical to group performance; in other words, when groups perceived themselves as diverse, they were more likely to elaborate on a problem, which in turn increased their performance. This latter finding suggests that what is going on is not only an information effect (group members contributing a wider range of ideas), but also a shift in attention focus or attitude to the problem at hand.

Phillips et al.'s (2006) study provides a reason why heterogeneous groups are more likely than homogeneous groups to be creative and reach high-quality decisions. Homogeneity of opinions increases the confidence of group members in the accuracy of their judgments (Baker & Petty, 1994; Schulz-Hardt, Jochims, & Frey, 2002) resulting in conformity (Asch, 1956) and groupthink effects (Janis, 1972). This can be prevented by introducing minority dissent (Nemeth, 1995; Nemeth et al., 2001). In fact, even an expectation of interacting with minority members can lead to higher elaboration on a problem. In the study of Sommers and colleagues (2008) majority groups produced more creative solutions when expecting a subsequent discussion in a diverse group. White participants who expected to discuss race-relevant topics with a racially

diverse group comprehended written text better than participants expecting to discuss in all-White groups. This effect was linked to an increase in race-relevant thought among White individuals in a diverse setting (Sommers et al., 2008).

Evidence for the idea that group diversity encourages deeper elaborative thought on a problem can be found in the work by Nemeth (Nemeth, 1986; Nemeth & Kwan, 1987). In the presence of minority groups, majority group members shift attention to the inconsistent views of the minority group, resulting in greater focus and discussion of the problem, and subsequent benefits to the end-product. In Nemeth's studies, people exposed to persistent minority views were more likely to find more innovative solutions (Nemeth, 1986 Study 1), adopted more problem solving strategies (Nemeth, 1986, Study 2) and generated more original associates (Nemeth, 1986, Study 3). In other words, individuals exposed to minority positions were better decision makers because they attended to more aspects of the situation and re-examined ideas more carefully. In contrast, those exposed to majority views thought in a more convergent manner, which lead them to unreflective acceptance of the majority position (for a review see Nemeth, 1986, 1995).

Complex Thinking and Creativity in Diverse Groups

Consistent with this theorizing, research has demonstrated a link between diversity and integrative complexity. Integrative complexity is the "capacity and willingness to acknowledge the legitimacy of competing perspectives on the same issue and to forge conceptual links among these perspectives" (Tadmor & Tetlock, 2006, p. 174). Integrative complexity

increases when individuals deal with conflicting perspectives (Suefeld, Tetlock, & Streufert, 1992; Tadmor & Tetlock, 2006). If, as discussed in the previous sections, group diversity leads to greater attention to different viewpoints, and careful examination of the problem, this may be also reflected in changes to integrative complexity. To investigate this hypothesis, Antonio and colleagues (2004) varied racial and opinion composition in small-group discussions of college students. When groups consisted of racial and opinion minority members, and when members reported having racially diverse friends and classmates, their essays were rated as higher in integrative complexity (Antonio et al., 2004). The composition of those groups directed individuals' attention to the topic to an extent, which allowed for a deeper discussion and consideration of the topic in question.

Integrative complexity is a correlate of creativity (Quinn, 1980), and it would seem prudent to ask whether diverse group settings could, through, or independently of benefits to cognitive complexity, have an impact on creative performance as well. Paying attention to multiple perspectives and elaborating on solutions to problems could contribute to creativity because, as Amabile suggests (1996), creativity benefits from "suspending judgement" and "keeping response options open as long as possible" (Amabile, 1996, p. 88). Discussing issues in more depth, which is what happens in diverse group settings, could lead not only to a more complex cognitive style, but also to more creative performance.

This notion of benefits to creativity in diverse groups was confirmed in further research (De Dreu & West, 2001; Kenworthy et al., 2008). Kenworthy and colleagues (2008) compared originality and creativity of arguments

generated by members of numerical minorities and majorities. Participants assigned to a numerical minority (Studies 1 and 2) generated more original ideas when advocating their own opinion compared to members of numerical majority. In Study 3 participants in a numerical minority generated more creative arguments than those in both the majority and equal-fractions conditions; however, their arguments were not stronger.

The authors explained these findings referring to social and epistemic motivations of the minority position. The epistemic explanation is most relevant here: minority participants considered more alternatives and were more open to unusual solutions due to a fear of invalidity, the epistemic motivation aiming to avoid premature closure on the “wrong” answer. Furthermore, they also had a social motivation: to influence the majority position and defend the minority position (Kenworthy et al., 2008). Both of these motivations would lead to a deeper discussion of problematic issues, which would benefit the creative quality of their arguments. Moreover, further studies demonstrated effects to creativity in majority members faced with minority dissent: innovation in such groups was especially pronounced when the team was involved in decision-making, and thus the individual group members had a higher motivation to discuss the problem at hand (De Dreu & West, 2001).

In sum, studies on group diversity and minority dissent support the notion that diverse work-groups may bring about more creative products or solutions. Diverse groups devote more attention to discussing the problem in-depth (Antonio et al., 2004; Nemeth, 1986; Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006), which can influence subsequent levels of creativity and innovation (for a review see De Dreu, Nijstad et al., 2008). This idea that

introducing diversity makes people 'think harder' will be mirrored in studies on bilingualism and acculturation strategies. As well as having to deal with a new, unfamiliar group members, acquiring a new social identity results in shifts to more effortful and elaborative information processing and produces increments to creativity.

INDIVIDUAL EXPERIENCES OF DIVERSITY

The findings of higher creativity in diverse groups and societies are mirrored by research reporting cognitive benefits in individuals who experienced diversity. In the following section I introduce research from cross-cultural and social psychology which suggest that experiences of biculturalism and bilingualism, as well as experiences of living abroad can contribute to more flexible, complex and creative performance. The evidence suggests that this may happen because partaking in more than one culture is linked to a perception of inconsistencies, and, following that, more elaboration on relevant cultural issues.

Bilingualism and Creativity

Scholars in bilingual countries were among the first to investigate how bilingual curricula affect school children. Lambert, Tucker & d'Angeljan (1973) followed up Canadian elementary schoolchildren in a bilingual study program in Quebec: English-speaking pupils instructed in French were compared to their peers instructed in their native English or French on a number of outcome measures. Although the researchers found no significant differences in math

abilities or intelligence levels, bilingual pupils demonstrated higher levels of creativity at two testing times: in Grade 4 and in Grade 6 (Lambert et al., 1973).

These findings were replicated by Okoh (1980), who suggested that the underlying reason for a bilingualism-creativity relationship could be an information effect. She theorized that bilinguals, thanks to being equipped in two sets of cognitive cues, signs and meanings, will have more creative “building blocks” than their monolingual peers. These students should benefit because they have the unique opportunity to combine two distinct sets of ideas embedded in the two languages in which they operate. In her two studies, the author compared the development of bilingual children in Nigeria (speaking Yoruba and English) and Wales (speaking Welsh and English) with matched monolinguals from either of those countries. Bilingual children aged 9-11 scored higher on measures of divergent thinking and verbal creativity (Okoh, 1980). A further review of 24 studies confirmed increased levels of creativity in bilingual children (Ricciardelli, 1992).

Recently, bilingualism research has moved away from explaining these findings through information effects, to suggest that enhanced creativity in bilinguals may be not just due to more or better developed knowledge structures, but a better developed inhibitory control (Bialystok, 2005; Bialystok, Craik, Klein, & Viswanathan, 2004). Studies on executive functioning in bilingual individuals demonstrate how young children (5-7 year olds) are more successful at switching rules during card sorting tasks (Bialystok, 1999; Bialystok, Craik, Klein, & Viswanathan, 2004), and at locating hidden shapes in the Children’s Embedded Figures Task (Bialystok, 2005; Carlson & Meltzoff, 2008). Bilingual adults show superior performance on the Stroop test

(Bialystok, Craik, & Luk, 2008) and several other attention and interference measures (Bialystok et al., 2004; Costa, Hernandez, & Sebastian-Galles, 2008). From 7-month old babies, who are better able to switch responses after a rule shift (Kovacs & Mehler, 2009), to elderly bilinguals who experience a later onset of Alzheimer's' disease (Craik, Bialystok, & Freedman, 2010), bilingualism affects cognitive development throughout lifespan. These benefits to executive control, resulting from a repeated switching between languages, have been suggested as a plausible mechanism behind the observable bilingualism-creativity effects (Kharkhurin, 2007, 2008, 2009; Kharkhurin, 2010a, 2010b).

Acculturation Processes

There is some debate as to whether the apparent effects on creativity of learning two different languages is due to bilingualism, or in fact bicultural exposure (for a further discussion see Kharkhurin, 2010a). Bicultural individuals "are those who have been exposed to and have internalized two cultures" (Nguyen & Benet-Martínez, 2007, p. 102). However, because language is an integral part of one's culture, carrying with it multiple meanings, norms and values, biculturalism and bilingualism are closely entwined. Most bicultural experiences will encompass learning a new language, and most bilingual individuals will have, through their language, exposure to two distinct cultural systems. And so findings of higher creativity in bilingual individuals, could equally be considered as resulting from exposure to and an integration of two different cultural systems, rather than the mere fact of being expert in two languages. It is important to note at this point, that not all immigrants or

sojourners are biculturals, and so the effects to creativity would occur only in some individuals living or studying abroad. More specifically, effects to creativity would be most likely in individuals choosing a dual identity strategy in their acculturation process.

In a multicultural society migrants and minorities adopt different acculturation strategies to help them manage their group membership. Acculturation processes describe the psychological reactions of immigrants moving to a new country and adapting to their new social reality. Such experiences may often encompass the necessity to resolve potential conflicts between the original cultural identity and a new, host nation identity (Berry & Annis, 1974). The choice of one identity strategy over others will have profound consequences to migrants' behaviour, beliefs, well-being as well as to the inter-group relations within the larger society (Chirkov, Vansteenkiste, Tao, & Lynch, 2007; Dovidio, Gaertner, & Saguy, 2009; LaFromboise, Coleman, & Gerton, 1993; Verkuyten, 2005a), and as I later show, also to creativity.

Acculturation has most recently been defined as "the process of cultural and psychological change that results following meeting between cultures" (Sam & Berry, 2010, p. 472). In the acculturation process, individuals choose between four different strategies, which will determine their future relationship with the host and home cultures. These strategies are: (1) assimilation; seeking interaction with the new culture without maintaining the primary cultural identity, (2) separation; holding on to the original culture and avoiding contact with the new one, (3) integration; maintaining interest in both, the original and the current culture, and (4) marginalization; having little interest in maintaining the old culture as well as having few relations with people from the new culture

(Berry, 1997). The third strategy, integration, is the characteristic of truly bicultural individuals, and individuals who adopt this strategy are most likely to benefit to creativity. How such benefits could occur becomes clear once we consider the cognitive and behavioural consequences resulting from the necessity of living within a new culture and managing one's multiple cultural identities.

Biculturalism and Frame Switching

According to cross-cultural researchers, bicultural individuals can deal with their own diversity by developing the ability to alternate between the two relevant cultural frames (Hong, Morris, Chiu, & Benet-Martínez, 2000). Biculturals who have become adept at cultural frame-switching are able to independently activate cultural meaning systems relevant to which of the two cultural contexts they find themselves in. For instance, Hong et al. (2000) showed that Chinese American biculturals exposed to American primes made more internal attributions (a Western attributional style), while those exposed to Chinese primes made more external attributions (and East Asian attributional style). It is not difficult to see how developing an ability to culturally frame-switch is highly functional for the long-term sojourner or immigrant. For instance, a British person living in Thailand realizes that while making jokes about the Royal Family is considered harmless in the UK, it may lead to imprisonment in Thailand; in order to function in Thailand, bicultural British individuals will constantly have to be aware of which situation they are in, in order to ensure they exhibit appropriate behaviour.

Being bicultural has an impact on how people approach social situations and construe the social world around them. Successful biculturalism is linked to superior social skills, perspective-taking, and self-efficacy (for a review see LaFromboise et al., 1993). For instance Gutierrez and Sameroff (1990) found that bicultural Mexican American mothers were significantly more perspectivistic in their analysis of behaviour, relatively to Anglo American mothers. Bicultural mothers in this study were more likely to explain behaviours in a way that identifies multiple (e.g., environmental, psychological etc.) rather than single causes for behaviours. Similarly, in the studies of Buriel et al. (1998) bicultural children who interpreted for their Latino parents performed better academically and had greater academic and social self-efficacy.

Furthermore, recent findings suggest that benefits of adopting the bicultural strategy can develop beyond social behaviours, to more basic, cognitive process, such as superior cognitive flexibility, complex thinking skills and creativity. Because biculturals are constantly required to monitor their environment in order to enact the relevant cultural scripts, the resulting exercising of self-control in these frame-switching individuals leads, in the long term, to increased sensitivity to the immediate social or cultural context (Hong et al., 2000; Hong, Benet-Martínez, Chiu, & Morris, 2003). In a recent experiment, Benet-Martínez and her colleagues investigated the cognitive consequences of cultural frame switching (Benet-Martínez et al., 2006). They hypothesized that biculturals' representations of culture should be more cognitively complex than monoculturals'. This should be possible, because biculturals gain expertise in detecting, processing and reacting to cultural cues in the environment, and experience constant executive cognitive processing

involved in cultural frame-switching. Furthermore, because cultural knowledge is uniquely relevant to bicultural individuals, they should demonstrate superior understanding of and sensitivity to culture-related cues (Benet-Martínez et al., 2006).

Experimental data confirmed the predictions. Chinese-American biculturals described Chinese and American cultures in a more cognitively complex way than monocultural Anglo-Americans. Biculturals' descriptions of a culture contained more words and distinct ideas, referred to more cultural values and physical entities, and were more likely to include multiple perspectives, which were compared and contrasted in their work. This positive effect of biculturalism on cognitive complexity was domain-specific; an increase in cognitive complexity was observed in descriptions of culturally-relevant entities only (Benet-Martínez et al., 2006).

Additionally, the effect to cognitive complexity was especially strong for individuals low in bicultural identity integration (BII); i.e., in those who felt that their social identities were conflicting and dissociated rather than compatible and integrated. Authors argued that that low BII individuals, who perceived a clash between the two cultures that they belong to, may have been more likely to develop superior levels of cognitive complexity than high BII individuals or monoculturals would do. Low BII individuals experience a conflict between their two cultural frames more often, and should thus be more motivated, and invest more effort in thinking about these issues and resolving inconsistencies. As I later demonstrate, this logic is consistent with findings of Tadmor and Tetlock (2010; 2006) in whose studies the perceived conflict

between two cultural systems of a bicultural individual led to enhanced integrative complexity.

The findings by Benet-Martínez and colleagues (2006) also resonate with the previously discussed study by Antonio and colleagues (Antonio et al., 2004). In that research, self-reported, racially diverse contacts of students were significantly and positively related to integrative complexity - a cognitive style that involves a differentiation and integration of multiple perspectives and dimensions. The presence of a black collaborator in a group of white participants led to greater perceived novelty of the collaborator and a greater level of integrative complexity. It was also concluded, that the presence of a minority opinion stimulated greater integrative complexity in participants.

To sum up, the findings reported in this section suggest that bicultural and bilingual individuals are uniquely positioned to experience benefits to creativity. Individuals who in the process of acculturation decide to frame-switch, or integrate two cultural frames, experience numerous benefits such as better perspective taking, greater social and academic self-efficacy, and more complex cognitions related to cultural issues. Some of these findings could of course be explained by information effects. For instance, bicultural individuals give more complex descriptions of culture because they have more expertise and more knowledge of cultural issues. However, there are reasons to think that benefits to creativity could occur through a more qualitative change – a shift towards deeper processing resulting from a focus on reconciling conflicting cultural ideas. As I show in the next section, such a change can occur, and results in benefits to cognitive complexity across a range of domains (i.e., not only with relation to culture).

Biculturalism and Integrative Complexity

Tadmor and Tetlock (2006) developed the idea that bicultural adaptation can benefit cognitions. Their theoretical model explained how second-culture exposure boost individuals' integrative complexity. Throughout the acculturation process bicultural individuals learn to act according to, and integrate, different (and sometimes conflicting) cultural scripts and values. They become accountable to people from both cultures; they need to justify their thoughts and actions to significant others representing two sets of cultural norms. These individuals, accountable to mixed audiences, will experience higher levels of dissonance as their endorsed cultural values remain in constant conflict. This mechanism should be especially noticeable in individuals whose two cultural frames are different from each other (Low BII). Such cognitive conflict should require increased effort to resolve the inconsistency; and repeated experience of such conflicts may lead to a gradual development of automatic coping responses and higher integrative complexity - the capacity and willingness to acknowledge different cultural perspectives on the same issue; and a motivation to develop integrative schemas that specify when to activate different worldviews, or behavioural culture-specific scripts (Suedfeld & Tetlock, 2001; Tadmor & Tetlock, 2006).

In an empirical test of their model, Tadmor and Tetlock (2009, Study 1 & 2) tested samples of Israeli-American and Asian-American biculturals, and found that those who identified with both their home and host culture displayed the highest levels of integrative complexity – both on culture-specific, as well as more general measures of integrative complexity. Furthermore, in an experimental priming paradigm Tadmor and Tetlock (2009, Study 3) primed

East-Asian individuals living in the US with either or both of their identities (Asian or/and US). The authors used the personal need for structure (PNS) scale as a proxy for integrative complexity; results showed that participants in the bicultural prime condition scored significantly lower on PNS compared to participants in any of the single-identity conditions (Tadmor & Tetlock, 2009 Study 3).

This fascinating research attests to the idea that prolonged experiences of living abroad and interacting with people from two different cultures have a lasting impact on the way people process information about their immediate environment. Diversity experiences cognitively “open people up”, so to speak, resulting in a better and deeper understanding of complex issues, and a lesser reliance on structure. The findings seem even more pronounced when one takes into account that effects to integrative complexity were not just domain-specific, but generalized to culturally neutral topics. Such generalized effects have not been found elsewhere (i.e., Benet-Martínez et al., 2006 found effects to integrative complexity, but only in culture-specific domains; Cheng, Sanchez-Burks, & Lee, 2008 found effects to creativity, but only in identity-specific domains), and thus this set of studies is an excellent demonstration that biculturalism and cultural adaptation result in more than just increased expertise in cultural domains. Not only do individuals who live abroad have a deeper understanding of culture (as shown by Benet-Martínez, 2006), but there is also some kind of qualitative change in the way these people think about problems, which leads to higher cognitive complexity and lower PNS scores.

Most recently, Tadmor, Galinsky and Maddux (2010) integrated their efforts to apply the concept of integrative complexity in explaining creativity

and business innovation. The researchers demonstrated how individuals' acculturation strategies predicted generating novel uses of an object (Study 1) and innovation in their professional life (Study 2). From a group of individuals who had previously lived abroad, those who identified with the home and host culture simultaneously demonstrated highest levels of creativity. In both studies integrative complexity predicted individuals' creativity on the alternative uses task and their professional innovation. Finally, biculturalism was associated with higher levels of professional success, which, again, was mediated by integrative complexity of those individuals (Study 3).

To summarize, the specific experience of managing two or more cultural frames in the acculturation process can lead to increments in integrative complexity. These studies indicate that positive effects of a bicultural experience extend beyond an information or relevance effect, whereby individuals possess greater expertise or motivation to engage in culture-specific domains, to a more generalized influence on the way in which people process information. Something about the experience of negotiating two cultural frames helps individuals to think more deeply and look at problems from multiple perspectives. Studies outlined in the next section demonstrate that these effects can go even further: Individuals immersing themselves in a second culture develop, as a result of this experience, a tendency to think more creatively.

Multiculturalism and Creative Cognition

Equipped with reports of higher cognitive and integrative complexity in multicultural individuals (Benet-Martínez et al., 2006; Tadmor, Galinsky et al., 2010), researchers further suggested that multicultural experience should lead to

changes in how people use information as building blocks for creativity (Leung & Chiu, 2010). They argued that multicultural experience increases creative performance and creativity-supporting cognitive processes such as recruiting unusual ideas and retrieving non-stereotypical knowledge. This idea may seem similar to what I previously referred to as the information effect: the idea that bicultural individuals have more diverse knowledge, and therefore can come up with more ideas and combinations thereof.

There are strong reasons to think that having knowledge from remote sources of information will promote creativity. Bringing together remote ideas can result in creative combinations. For instance, thinking of an item of furniture, that is at the same time a fruit, may inspire an individual to design a banana-shaped sofa (Ward, Smith & Finke, 2008). But this can only happen when the ideas brought together are remote: When people draw all their knowledge from one source only, they are likely to limit themselves to mundane solutions and ideas. Prior knowledge heavily affects peoples' performance on imaginative tasks: When asked to draw creative exemplars of creatures from the outer space, individuals will draw upon their knowledge of earth creatures and combine their features to produce a new exemplar (T. B. Ward, 1994; T. B. Ward et al., 2002; T. B. Ward et al., 2008). Similarly, when generating new names for a commercial product, people will copy the grammatical structure of already known names (Marsh, Ward, & Landau, 1999). However, the more knowledge people have, the higher their possibilities of combining these pieces of information together. Because culture is commonly conceptualized as a conventional set of knowledge (Wyer, Chiu, & Hong, 2009), knowledge of more than one culture allows individuals access to more ideas, scripts or

schemata, and may, through that, contribute to higher creativity. This is why the mere knowledge of two cultures could lead to more creative responses, and such effects would be especially pronounced on tasks that tap onto these two domains: in this case, on tasks that require extensive knowledge of culture.

But Leung and Chiu (2010) take this possibility a step further: They suggest that multicultural experiences increase individuals' *preference* for recruiting ideas from remote sources. This is not merely a question of whether people know about a sofa and a banana (and have therefore the possibility to combine them) but whether they have a tendency to combine such unusual object together. Many people could find the idea of combining fruit and furniture odd, but if bicultural individuals are used to thinking of two different, opposing cultures, this could change their propensity for thinking the unthinkable, and combining remote and contrasting ideas into novel products.

Biculturalism, according to this logic, brings about not only more knowledge, but also a propensity, a habitual tendency for bringing together and integrating information from remote sources. Individuals with expertise in two cultures can combine ideas from two sets of knowledge and, thanks to that, achieve more creative productivity compared to a monocultural person. However, if exercised over a longer time, they will develop a habitual readiness to use information from many, seemingly disparate sources of cognitions.

Similar reasoning may have prompted Wan and Chiu (2002) to conduct their experiment on conceptual combinations. Participants in this study were asked to solve a set of novel conceptual combination problems, like *What is a vehicle that is also a kind of fish?* versus ordinary conceptual combinations like *What is a plant that is also a kind of fuel?* Participants who had solved the novel

conceptual combination problems demonstrated better performance (Experiment 1) on the Figural Torrance test (Torrance, 1974) and also (Experiment 2) built more creative LEGO models compared to those who solved an ordinary conceptual combination problem (Wan & Chiu, 2002).

Trying to further apply these findings to multicultural exposure, Leung and Chiu (2010) invited European-American undergraduates to watch a 45-minute long slide show, following which participants completed a creativity test. Two experimental conditions: juxtaposition and fusion condition were designed to serve as a “mental simulation” of multicultural experiences. In the juxtaposition condition participants watched images of American and Chinese symbols presented back to back. In the fusion condition participants watched pictures representing the American-Chinese fusion of cultures (e.g., a Vanessa Mae video, a rice burger). Two single-culture conditions presented participants with 1) Chinese cultural symbols 2) American cultural symbols; a final, fifth group of participants performed no task. Following this slide-show, participants were asked to produce a creative Cinderella story. Participants in the juxtaposition and fusion conditions were more creative, compared to participants in the single-culture, or no slide-show conditions. The effect was long-lasting: when primed with the memory of the experiment a week later (participants were asked to write down their thoughts about the slideshow) participants in the fusion and juxtaposition conditions wrote more creative metaphors of time (Leung & Chiu, 2010).

Having established that combinations of cultural symbols can prime creativity, the authors looked at individuals’ actual exposure to multicultural experiences. They found that multicultural experiences were positively related

to generating unconventional ideas and sampling many ideas from foreign cultures. In Study 2 participants with more extensive multicultural experience (a composite score of experiences of living abroad, knowledge of foreign languages, family background as well as personal interests: preference for world food, music and nationality of closest friends) generated more unconventional gift ideas (rated as a frequency score) compared to those with lower levels of experience. In Study 3 individuals with more extensive multicultural experience sampled more ideas from foreign cultures: When asked to produce a creative research proposal, they took as inspiration more sayings by foreign scholars (Leung & Chiu, 2010). These studies clearly demonstrate a causal relationship between exposure to multiple cultures and divergent productions, and the idea that multicultural experiences can serve as a valuable cognitive resource.

Given the findings of recruiting ideas from foreign sources (Study 3), they furthermore suggested that effect extends beyond a mere information effect: individuals with multicultural experience do not only have more data for input, but they also show a higher tendency to recruit ideas from remote, less familiar sources. Due to prior expertise in recruiting foreign ideas, such individuals have developed a “creative combination mindset”.

However, with the exception of study one, the causal relationship between multicultural experience and creativity in these studies is not fully established. All studies are quasi-experiments, which makes it difficult judge about causality. It could be, as the authors claim, that diverse experiences lead to higher creativity, but it could similarly be true that creative individuals are curious about other cultures, and decide to expose themselves to multiculturalism, in a conscious attempt to raise their chances for future

creativity. This is an equally appealing account: people may decide to expose themselves to novel ideas and stimuli, and the diversity-creativity relationship could work either way, or even in a bi-directional manner. I will be addressing this problem in more detail in Chapter 3 of this thesis, which is dedicated to resolving this causal conundrum.

Living Abroad and Creativity

Simultaneously to cross-cultural researchers, social psychologists investigated the effects of shorter-term living-abroad experiences, such as in sojourners, who may decide to study abroad for a couple of years. Maddux & Galinsky (2009) tested a group of American and international students, 66% of who have previously lived abroad. The authors regressed the time these participants had spent living abroad on their solutions to the Duncker candle problem (an insight task), and showed that those with prior experiences of living abroad were more likely to solve this insight task (Study 1). The effects were replicated using a different measure of creativity: creative negotiation solutions (Study 2). More importantly, across these studies only living (but not travelling) abroad predicted more creative solutions to problems.

The findings become quite clear in the context of the reports of higher cognitive complexity and creativity following multicultural experiences (Benet-Martínez et al., 2006; Leung & Chiu, 2010; Tadmor et al., 2009). To experience benefits to creativity, individuals need to have deep, immersive experiences of the foreign culture. Something about the experience of living abroad, other than travelling, must lead to enhanced creativity. One possibility is that while living abroad individuals gain a deeper insight into the other culture. They may start

experiencing accountability pressures as described by Tadmor and Tetlock (2009), and as a result start paying more attention to learning the ways of their new culture.

In a further set of studies the authors primed individuals with their prior experiences of living abroad, travelling abroad or of a day in the life of their hometown. The “living abroad” prime lead to the highest percentage of solutions on the Remote Associates Test (Study 3) and to the Duncker Candle problem (Study 4). Furthermore, the time individuals spent living abroad mediated the effect to solutions on the Duncker candle problem (study 4). In a final study, experimenters primed participants with their experiences of adapting to a foreign culture, observing a foreign culture, learning a new sport or no prime condition. They then asked participants to draw an alien creature: those thinking of experiences of cultural adaptation drew most original pictures of aliens (Study 5).

Further experiments were dedicated to finding out about the exact type of acculturation experience that may have lead to the development of higher creativity (Maddux et al., 2010). In Study 1 individuals with prior living-abroad experiences were asked to recall and write about a) learning something about a different culture or b) learning something about their own culture. They measured creativity using a word completion task (Friedman & Förster, 2001). Results indicated that it was specifically learning about a foreign culture that increased creativity. Furthermore, using new primes, writing about a) functional multicultural learning b) functional within culture learning c) new sport the authors demonstrated that functional multicultural learning specifically lead to a higher rate of correct responses on the RAT (Mednick, 1962) and that functional

multicultural learning, versus non-functional multicultural learning lead to a higher rate of correct responses on an insight task.

Maddux et al. (2010) demonstrated how it is specifically functional multicultural learning – learning about the functions of customs and behaviours in a foreign culture – that increased creativity of individuals who had lived abroad. This result is in agreement with previous findings of higher creativity following living, but not travelling abroad. When travelling abroad people do not experience many possibilities of interacting with and being accountable to individuals from a different culture. On the other hand, when living abroad, they interact in their every-day life with foreign individuals and have to accept the legitimacy and understand the underlying functions of the host cultures' traditions and concepts. Through this, people gain new knowledge and may increase their flexibility and ability to take different perspectives on one topic. This should, in turn, increase their ability to form insight and remote associates.

SUMMARY

The Underlying Process

The studies reported in this chapter provide consistent evidence to the notion that multicultural experiences lead to increased creativity in people. Findings converge across disciplines including group process (Antonio et al., 2004; Nemeth, 1995), bilingualism (Bialystok, 2005; Bialystok et al., 2004; Kharkhurin, 2007, 2008) and cross-cultural researchers (Tadmor, Galinsky et al., 2010; Tadmor & Tetlock, 2006; Tadmor et al., 2009). Studies in all of these areas agree that experiences of diversity can bring about a shift in attention focus and changes in the way individuals process information. The process

which these researchers focus on may at first sight seem slightly different. Improved creativity could occur due to enhanced executive function (Bialystok, 2005; Bialystok et al., 2004), a heightened awareness that scripts and behaviours have dynamic functions and multiple meanings in different cultural contexts, (Galinsky, Maddux, & Ku, 2006; Maddux et al., 2010; Maddux & Galinsky, 2009) or an increased psychological readiness to recruit ideas from different sources, to use them as inputs in the creative process (Leung et al., 2008).

However, one could argue that there is in fact one process underlying the majority of those findings. Increments to creativity could have occurred thanks to individuals' perception of a cognitive conflict existing between the values and ideas of the home and host culture, or one's group membership. This reasoning explains why memories of functional multicultural learning prime creative performance. This happens because both functional learning, and creativity result from the conflict and inconsistencies experienced when switching and negotiating between the home and host identity. Similarly, the fact that bicultural individuals have a propensity to sample ideas from foreign cultures might be related to higher flexibility following negotiating a home and host identity. I will devote more attention to how exactly these processes could operate in Chapter 5, where I present an integrative model outlining how the diversity-creativity relationship occurs due to changes in how people construe their diversity experiences.

Questions of Causality

Another interesting issue is the question of causality and sampling bias in the diversity-creativity relationship. How do we know, whether individuals are creative as a result of experiences of living abroad, and not the other way round? Peoples' lay understanding of inspiration assumes that artists and scientists can consciously expose themselves to inspiring environments. Given that the majority of researchers have demonstrated effects based on pre-existing multicultural exposure (Leung & Chiu, 2010; Maddux et al., 2010; Maddux & Galinsky, 2009; Tadmor, Galinsky et al., 2010; Tadmor et al., 2009), it may very well possible that these samples were biased. In many of the studies reported in the current chapter, it is difficult to judge whether effects of higher creativity occur because the diversity experience affected individuals' cognitive skills, or simply because more creative and open-minded individuals decided to move abroad or surround themselves with diversity. In the next chapter I discuss research that has explicitly addressed this issue.

CHAPTER 3: EXPERIENCES ABROAD AND EPISTEMIC MOTIVATION¹

Living abroad can boost creativity, but is this due to the experience itself, or self-selection on the basis of epistemic motivations to engage with diversity? This chapter presents two studies that de-coupled experiential and motivational factors to investigate whether individuals are more creative because they have lived abroad, or because they are motivated to live abroad. Study 1 compared participants who had committed to living abroad with those who had just returned from a year-abroad: living abroad boosted creativity independently of individuals' motivation to do so. Study 2 measured individuals' motivations to engage in experiences that cognitively challenge a sense of stability and closure. Exposure to diversity boosted creativity for participants lower in need for closure, but lowered creativity for those higher in need for closure. These studies reveal that while the experience of living abroad independently boosts creativity, the extent of the uplift is contingent upon individuals' epistemic motivations.

As demonstrated in Chapter 2, creativity can be enhanced through the experience of social and cultural diversity (Leung, Maddux, Galinsky, & Chiu, 2008; Maddux, Adam, & Galinsky, 2010; Maddux & Galinsky, 2009). These studies have demonstrated how experiences of living abroad boost creativity (Maddux et al., 2010; Maddux & Galinsky, 2009), but as yet it is not clear whether such findings are due to the mere experience of living abroad, or a pre-

¹ The research presented in this chapter is based on a re-analysis of data collected for a British Academy Research Development Award (47819) to R. J. Crisp and an undergraduate project conducted by Vanessa Walsh under the supervision of R. J. Crisp. The data presented has been re-analyzed and re-conceptualized, and the write-up is original to this thesis.

existing preference for diverse stimuli and settings that could have prompted individuals to embrace such experiences. De-coupling the independent impacts of motivation and experience is the focus of this chapter.

CREATIVITY AND LIVING ABROAD

Maddux and Galinsky (2009) recently demonstrated a positive relationship between creativity and the experience of living abroad. They also suggested a need for more research to disentangle the chicken-and-egg problem that arises from this finding. It could be that the specific experience of living abroad makes people more creative, but it is also possible that creative, open-minded people are simply more likely to move abroad (Maddux & Galinsky, 2009, p. 1059). This latter hypothesis is supported by intuitions of increased open-mindedness and preference for novelty in creative individuals (Barron, 1963; Davis, 1975; Gough, 1979; King, Walker, & Broyles, 1996; McCrae, 1987), as well as anecdotal evidence of travelling artists or scientists (e.g., Darwin's voyage on 'The Beagle', travelling painters like Van Gogh or Picasso). New research is therefore needed to distinguish the role of the experience of living abroad versus a motivation to enter novel environments and to cross national boundaries. The present chapter discusses empirical results of two studies that attempted to disentangle the described dilemma.

Creativity is often conceptualized as a capacity to solve problems in novel ways (Dow & Mayer, 2004; Duncker, 1945), see alternative uses of objects (Guilford, 1967), and to uncover ideas or associations between concepts (Harris & Hall, 1970; Mednick, 1962). Creative problem solving and idea generation are based on ordinary mental processes (T. B. Ward et al., 2008) and

can be fostered and improved upon through the right environmental factors (Amabile, 1996). For instance boosts to creative performance can be achieved through activating promotion-focus (Friedman & Förster, 2001), counter-factual thinking (Markman, Lindberg, Kray, & Galinsky, 2007) or through deviancy cues (Förster, Friedman, Butterbach, & Sassenberg, 2005). More importantly, increasing evidence points to a positive relationship between creativity and experiences related to living abroad and crossing cultural boundaries.

In their prominent paper Maddux and Galinsky (2009) demonstrated how individuals who had lived abroad (but not those who have just travelled abroad) performed better on a range of creativity tasks. In their studies, time spent abroad predicted creativity, and priming foreign living experiences, as well as experiences of cultural adaptation temporarily enhanced creative performance (Maddux et al., 2010; Maddux & Galinsky, 2009). These authors have successfully demonstrated that there is a positive association between living abroad and creativity, however, the effects were limited to individuals living abroad (Maddux et al., 2010 Experiment 3). It therefore remains uncertain whether individuals who live abroad experience benefits *because* they have been exposed to diversity, or because of a self-selection effect related to pre-existing motivations of more open-minded and creative individuals who choose to live abroad. Dis-aggregating the independent and interactive roles of motivation and experience is the focus of the studies I report below.

STUDY 1

The first study investigated whether the mere experience of studying and living abroad could bring benefits to creative expression. Studies into the effects

of living abroad typically sample international students, and are therefore not suitable for disentangling the effects of living abroad versus a motivation to do so, because the two are confounded within such participants. However a recent study suggests that, at least at a conceptual level, exposure to multiple cultures can impact positively on creativity independent from motivation (Leung & Chiu, 2010 Experiment 1). European American participants were shown a slide show with symbols of either American culture, Chinese culture or of both cultures. Participants exposed simultaneously to both the American and Chinese culture performed better on both immediate and delayed tests of creativity, compared to participants who were exposed to symbols of one culture only, or have seen no slide-show at all (Leung & Chiu, 2010).

While this study suggests that simultaneous priming of conceptually different cultural frames can impact creativity independent from motivation, it remains to be seen whether the actual experience of living abroad, and the richness of the experience that entails, could bring about boosts to creative performance. Making this distinction matters, because *exposure* is not the same as *experience*. It is possible to get people to spontaneously behave in ways that should be only possible with experience. Priming knowledge structures can make people walk more slowly down corridors (Bargh, Chen & Burrows, 1996), do better on IQ tests (Dijksterhuis & van Knippenberg, 1998) or worse on math tests (Hall & Crisp, 2005), but these mental simulations do not lead to long-term changes in peoples' behaviour. Real experience is distinguished from priming in that it leads to long term, chronic changes to cognitive systems (Fazio et al., 2003). While Leung and Chiu's study focused on effects of a mental simulation of multicultural exposure, the present quasi-experiment

looked at how the rich, varied and immersive nature of multicultural *experience* could impact creativity.

Method

Participants and procedure

Thirty-two University of Kent students (10 males), mean age 21, took part in this laboratory-based study. All participants were recruited from a four-year undergraduate study programme that includes a year-abroad experience as part of the curriculum. Seventeen participants were in their fourth year and had recently returned from a year abroad at a European university, the other 15 participants were in their second year of study and had signed up to study abroad in the following academic year. All of those participants have made a serious life choice: Upon their entry to university they enrolled in 4-year course - longer than the typical UK norm - with a commitment of £3,000 per year. It was therefore assumed that there was a high degree of motivation to live abroad across the whole sample. Participants worked individually in a quiet laboratory and received £3 for their participation.

Dependent Measures

A multicultural contact questionnaire (MCQ, see Appendix A) designed specifically for this study tested whether the year-abroad experience provided individuals with greater immersion in a multicultural environment. This questionnaire enquired about individuals' multicultural experiences of the past year and included statements like "I regularly socialized with people from other countries", "I met people with attitudes and values very different from mine", or

“The majority of my friends were of the same nationality as me”. Participants task was to agree or disagree with 12 such statements on a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*, Cronbach’s $\alpha = .78$). To assess the impact of living abroad, creativity was assessed using 15 items adapted from Mednick’s Remote Associates Test (Mednick, 1962). The measure contained 15 lists of three-word groups; participants’ task was to generate a fourth word that completes the series. For example, the words ‘*surprise*’, ‘*line*’ and ‘*birthday*’, are best completed with the word ‘*party*’ (see Appendix B).

Results

A multivariate GLM was conducted, with multicultural experience and RAT as the dependent variables (see Table 1). The analysis revealed that participants returning from a year abroad reported significantly more multicultural experiences compared to those planning to go abroad, $F(1,29) = 9.16, p = .005$. Participants returning from a year abroad also performed significantly better on the Remote Association Test, $F(1,29) = 5.45, p = .027$. The effect on RAT performance remained significant when computing the same analysis with participants’ age entered as a covariate, $F(1,28) = 5.06, p = .033$.

Table 1

Mean Multicultural Experience and Remote Associates Test (Study 1).

Mean score	Group	
	Been Abroad	Going Abroad
Multicultural Experience**	4.95 (.54)	4.26 (.74)
Remote Associates Test*	7.82 (4.25)	4.60 (2.61)

* $p < .05$, ** $p < .01$

Note: Standard Deviations are given in parentheses

As predicted, individuals with prior experience of living abroad performed more creatively compared to those who had signed up to live abroad in the following year. These findings indicate that the impact of experience is independent of individuals' motivation to engage with diversity - all participants in this sample were equally motivated to live abroad, but over and above this the experience improved creativity. It is important to note that these findings do not rule out an effect of motivation; but they do provide clear evidence that the experience, over and above the motivation, is responsible for creativity uplifts observed here and in the wider literature on culture and creativity. Having established the independence of motivation and experience, the next study was devoted to further exploring the potential interplay of the two. Specifically, while motivation cannot explain the impact of multicultural experience on

creativity, the next study considered whether epistemic motivations could moderate the impact of the experience on creativity.

STUDY 2

Scholars tend to agree that the best way to benefit from exposure to diversity is to approach it with a degree of open-mindedness (Kashima & Loh, 2006; Leung & Chiu, 2010; Leung et al., 2008). This was suggested in Study 1 where individuals committed to living abroad experienced benefits of this experience to creative performance. However, the study did not compare the effects of experience for individuals who were and were not motivated to experience diversity. Therefore Study 2 tested whether greater or lesser motivations to engage with the sort of experiences represented by living abroad would change the impact of that experience on creativity. Specifically, it was hypothesized that individuals' reactions to new social settings may also depend on the need for cognitive closure (NFCC).

Need for closure is the "desire for a definite answer to a question, any firm answer, rather than uncertainty, confusion or ambiguity" (Kosic, Kruglanski, Pierro, & Mannetti, 2004, p. 797). Individuals high in NFCC prefer firm answers, don't like ambiguities and are therefore less likely to benefit from exposure to novel stimuli, for instance a different culture (Chao, Zhang, & Chiu, 2010; Chiu, Morris, Hong, & Menon, 2000; Fu et al., 2007; Kashima & Loh, 2006; Kosic et al., 2004). This can be apparent in findings showing that high NFCC individuals exhibit a stronger tendency to conform to cultural norms (Chao et al., 2010; Chiu et al., 2000; Fu et al., 2007) and are in general more unsettled and stressed when living in a host culture (Kashima & Loh, 2006;

Kosic et al., 2004). In a similar vein, NFCC has been shown to dampen the positive impact of multicultural experience to peoples' ability to recruit ideas from foreign cultures (Leung & Chiu, 2010 Experiment 4) and there appears to be a generally destructive role of an epistemic need for closure to creative endeavours (Chirumbolo, Mannetti, Pierro, Areni, & Kruglanski, 2005).

Reactions to new social settings may therefore depend on individuals' cognitive readiness to deal with uncertainty and ambiguity, a concept captured by the *need for cognitive closure* (NFCC). Importantly, I did not expect NFCC to be related to the degree of individuals' diversity experiences. This is in line with findings that NFCC in migrants and sojourners has no direct relationship with the degree to which people engage with or learn about new cultures (Kashima & Loh, 2006; Kosic et al., 2004). While motivational factors can compel individuals to seek out such experiences, there are many other reasons why individuals may have multicultural experiences. For instance living in a multicultural district, being an economic migrant or accompanying a family member who moves, would to a lesser extent be related to personal choice, and more to external circumstances. In sum, NFCC is independent from the experience of multicultural diversity. We therefore propose that NFCC will moderate the impact of exposure to multicultural diversity: individuals lower in NFCC will benefit most from multicultural experiences, while those higher in NFCC will benefit least, and, in fact, the experience will have a detrimental impact on creativity.

Method

Participants and procedure

Seventy-five University of Kent undergraduate students (13 males), mean age 20, took part in this study. Participants received course credit or payment for participation.

Measures

The current study utilized the same multicultural experience questionnaire as in Study 1 (Cronbach's $\alpha = .78$). Following this participants were asked to complete an adapted version of the alternative uses task (Gilhooly, Fioratou, Anthony, & Wynn, 2007; Guilford, 1967). The instruction asked participants to think of multiple uses for a teaspoon and write down as many ideas as they can in two minutes. Participant's answers were scored for the amount of categories participants used when producing ideas, e.g., if participants said a teaspoon could be used to stir tea and to eat yoghurt, both answers would be considered as belonging to one category - preparing and eating food. However considering the use of a spoon to make a sculpture and use as a doorstop would be considered as two separate categories: use in art and as home appliance. Participants also completed an implicit lexical measure of need for cognitive closure (Calogero, 2007). This measure tests participants' temporary preference for words related to clarity (high need for closure) or ambiguity (low need for closure). The scale contains 17 items such as "She likes situations where the outcome is [known, unknown]" or "They work best under

[unstable, stable] living conditions” (see Appendix D). This measure achieved satisfactory reliability with Cronbach’s $\alpha = .63$ in this study.

Results

There was no correlation between the need for cognitive closure and reported exposure to multicultural diversity $r = .017, p = .882$, supporting the notion that the epistemic need for closure had no relationship to the degree of participants’ exposure to multiculturalism. In a moderated regression analysis (Aiken & West, 1991) an interaction variable was computed by multiplying the centred continuous multicultural exposure score and need for closure for each participant. This analysis revealed a significant effect of need for closure in Step 1, $\beta = -.307, p = .008$, but no effect of multicultural experiences, $\beta = -.042, p = .711; R^2 = .096$. However, Step 2 revealed a two-way interaction between multicultural exposure and need for closure, $\beta = -.235, p = .039; R^2 = .150$, see Figure 1.

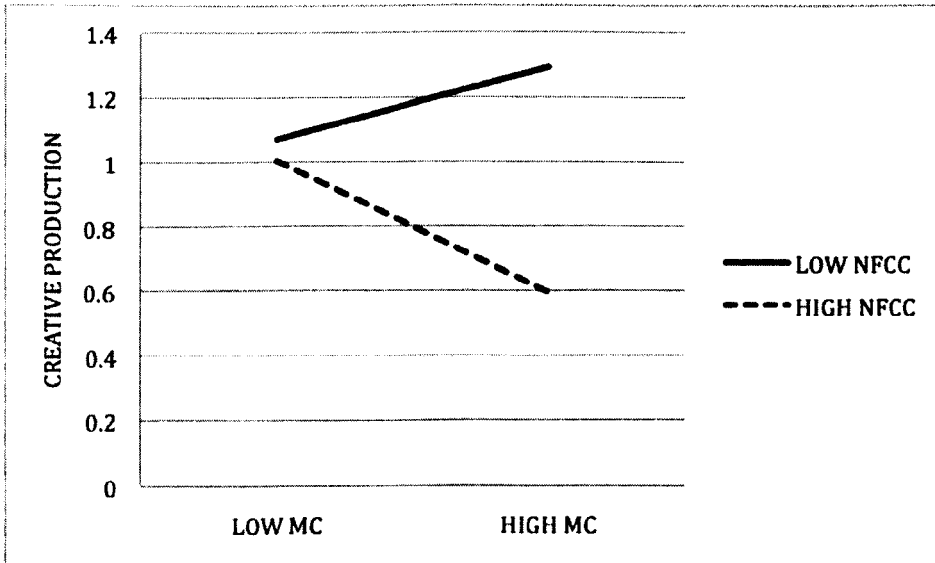


Figure 1. Effects of multicultural experience (MC) on creative production as a function of the epistemic motivation for closure (NFCC; Study 2).

Including the interaction in the model significantly increased R-square: $\Delta R^2 = .054, p = .039$. The interaction was further decomposed. At higher degrees of multicultural experience (+1 *SD*), need for closure was negatively related to creativity, $\beta = -.500, p = .001$. In contrast, for participants reporting little exposure (-1 *SD*) there was no relationship between need for closure and creativity, $\beta = -.047, p = .776$. In sum, individuals' epistemic motivations relating to closure, certainty and structure moderated the impact that multicultural experience had on creativity. Multicultural experience was positively linked to creativity for individuals lower in NFCC, but negatively related to creativity for those higher in NFCC.

SUMMARY AND DISCUSSION

Are people who have gained multicultural experience more creative because of that experience, or because they have a psychological orientation that makes them both more creative, and more likely to seek counter-normative experiences? Two studies presented in this chapter were carried out to delineate the independent and interactive effects of motivation and multicultural experience on creative performance. To de-couple these predictive factors Study 1 sampled individuals who differed in their degree of living-abroad experience, but *not* their motivation to engage in such diversity-defined experiences. This allowed to control individuals' motivation to live abroad, but at the same time observe the impact of living abroad experience on creative performance. Findings demonstrated that the experience of living abroad led to higher creativity independent of individuals' pre-existing motivation to live abroad.

Study 2 investigated the role of epistemic needs in determining the effects of second-culture exposure on creativity. Findings revealed how the positive effect of multicultural exposure to creativity is moderated by individuals' epistemic motivations. Individuals with a lower need for closure experienced positive impacts of multicultural experience on creativity; while those with a higher need for closure showed deleterious effects on creativity.

The finding that epistemic motivations can polarize individuals' creative performance in response to social diversity is important for policy and debate relating to multiculturalism. In fact, it is possible that these findings are the reflection of a broader phenomenon, whereby people's reactions to diversity or multiculturalism depend on their psychological preparedness for thinking about such novel stimuli. Research on multiculturalism and diversity offers somewhat

contrasting findings about both benefits and drawbacks resulting from social diversity. Proponents of the multiculturalism hypothesis (Berry, Kalin, & Taylor, 1977; Lambert & Taylor, 1990; Yinger, 1994) assert that encouraging individuals to maintain distinct cultural, ethnic and religious identities within an inclusive society can yield considerable social and personal benefits. Diversity can increase tolerance and reduce prejudice (Crisp & Hewstone, 2007; Gaertner & Dovidio, 2000; Roccas & Brewer, 2002) as well as make people more flexible and creative (Benet-Martínez et al., 2006; Leung et al., 2008; Maddux & Galinsky, 2009; Tadmor et al., 2009).

On the other hand, some argue that multicultural diversity can endanger social cohesion (Schlesinger, 1992) and have negative outcomes for individuals (Gil, Vega, & Dimas, 1994; Rudmin, 2003; C. Ward, Bochner, & Furnham, 2001). Such controversial findings might be due to differences in individuals' preparedness and cognitive openness towards new, unusual situations such as those represented by social diversity. For instance, while individuals who want to study abroad may to a certain extent be motivated towards diversity, political refugees or individuals in the host society may participate in diversity involuntarily, enter such situations unprepared, and experience detrimental, rather than beneficial, effects. Further studies should investigate the individual circumstances and motives that lead to multicultural exposure or living-abroad experiences. The knowledge of those factors might contribute to a better understanding of when and how living abroad and experiencing multicultural settings contribute to the way people process information about the world, and the potential benefits this brings to cognitive skills embodied in innovation, ideation and creative expression.

As demonstrated in the current chapter, experiences of living abroad, such as those gained by sojourners or immigrants, can bring measurable benefits to creativity performance. The two studies reported in this chapter supported the notion that the relationship between multicultural experience and creativity is causal. Following a year abroad experience students performed more creatively compared to a group matched in levels of motivation to live abroad. This causal relationship was observed because something about the immersive nature of multicultural and living-abroad experiences changed the way in which participants process information, leading to long-term benefits to creativity.

Having established that the relationship described in Chapters 1 and 2 is indeed causal, I next explore the potential underlying processes that may explain *why* living abroad promotes creativity. To do so, Chapters 4 and 5 will link the existing findings of a diversity-creativity relationship with the wider literature on multiple categorization. This leads to unique predictions about how one specific aspect of diversity – a challenge to stereotypical expectations – could be responsible for the cognitive changes observed following acculturation and living abroad experiences.

CHAPTER 4: THE MULTIPLE CATEGORIZATION PERSPECTIVE

In this chapter I introduce the general framework within which the research reported in this thesis was carried out. I will explain how the perception of multiple cross-cutting bases for categorization can have the potential for reducing stereotyping and bias, and how it can have durable impacts on information processing. I will then apply the social categorization perspective to findings from developmental, educational, cross-cultural and small group psychology. This synergy will result in the central predictions to be investigated in the following chapters of this thesis. This chapter will introduce the hypothesis that exposure to a specific kind of social diversity – one that challenges existing stereotypical knowledge – may account for the positive diversity-creativity link observed in psychological literature.

How people conceive of themselves and others is an important mental activity. From the moment of birth people are dependent on others, and navigate their social world trying to predict other peoples' behaviour. Consequently, the social context and the way in which people construe and conceive of individuals and groups is a highly prioritized mental activity (Bless, Fiedler, & Strack, 2005; Fiske & Taylor, 2008; Morris, Menon, & Ames, 2001). In this chapter I will argue that diversity-driven changes to processes of social categorization and person perception can have measurable benefits to how people think, and how they approach solutions to problems. I will do so by applying existing literature about multiple social categorization to the findings of the diversity – creativity link described in previous chapters. In the context of multiple

categorization theories our understanding of the diversity-creativity relationship gains a novel angle. This integration of research traditions will aid our understanding of multiculturalism, point to a common denominator of *cultural* and *social* diversity, and lead to a better understanding of the exact processes through which people experience and cognitively adapt to diversity experiences.

In the context of multiple categorization theories the diversity-creativity debate gains a novel angle. Diversity is a defining characteristic of the modern society. While living abroad and interacting with people from other countries, or facing migration into their own area, individuals have to negotiate identities and adapt their thinking to the new reality that they face. This may encompass trying to answer questions about their own identity (Does my ingroup consist of all females? All psychologists? All females *and* psychologist? Or *exclusively* female-psychologists?), or about the way in which people construe others (Is this person an in-group or out-group? Why are they simultaneously a *psychologist* and *male*?).

Exposure to social and cultural diversity, if experienced over a long term, may influence not only the way individuals habitually construct others, but also how they approach other, non-social problems. In order to navigate in a diverse world, individuals need to predict other peoples' behaviours and traits on the basis of existing knowledge and stereotypes. While experiencing diversity, meeting minority members, interacting with non-stereotypical individuals or even negotiating their own identities, people will often have to deal with inconsistencies. For instance, a student raised in an ethnically homogenous community, who always imagined Italians as loud and lazy, may have a hard time upon discovering that their quiet and hardworking classmate is

Italian. In a similar way a female Asian immigrant may be surprised to discover that while living in the UK she is encouraged to maintain a family life and a professional identity at the same time. When they are able and motivated to do so, these individuals will attempt to resolve such inconsistencies in order to understand the disparity between what was (stereotypically) predicted, and what they have observed or what they were expected to do. If exercised over long periods, such experiences can aggregate, and in a process of cognitive adaptation result in the formation of a more flexible way of thinking about the world. I will explain how this occurs using the crossed-categorization paradigm as a framework integrating findings of cognitive effects of diversity across multiple psychological domains.

CHARACTERISTICS OF THE MULTIPLE CATEGORIZATION APPROACH

Beyond the Ingroup-Outgroup Distinction

Findings described in this thesis arose from research into multiple social categorization. Multiple social categorization and multiple identity are traditions that go beyond the classic ingroup-outgroup distinction (Crisp & Hewstone, 2007; Crisp, Hewstone, & Rubin, 2001; Roccas & Brewer, 2002) and try to capture the complexity of simultaneously salient social categorizations. According to the crossed-categorization paradigm, potential for intergroup conflict may be reduced in societies, which are complex and differentiated along multiple, uncorrelated dimensions (Crisp & Hewstone, 2007; Crisp, Hewstone, & Rubin, 2001). The idea is based on early observations of reduced conflict in cultures with cross-cutting bases for affiliation: For instance, it is more difficult to enter conflicts with a group based on territory, when both

groups have common ancestry (Levine & Campbell, 1972). Further benefits of crossed-categorization can extend to team functioning and information elaboration (e.g., Homan, van Knippenberg, Van Kleef, & De Dreu, 2007). Following these observations, social psychological research has gone on to define how diversity is represented mentally in terms of social categorizations, and how such construals impact intergroup attitudes and behaviour (for a review see Crisp & Hewstone, 2007).

In diverse societies, people no longer see themselves and others on the level of a single group identity, but perceive many cross-cutting categories simultaneously. Such categories can include race, gender, nationality, religion, job or education. To illustrate, a British person can at the same time be perceived as Asian, female and a doctor; two people who are out-groupers (e.g., White versus Black) on one level, can simultaneously be in-groupers (e.g., British) on another one (Roccas & Brewer, 2002). To demonstrate on a real life example, in 2008 the United States have appointed a *Black American* president, followed by a second strong candidate who almost became the first *female president*. This demonstrates how in socially and culturally diverse societies representatives of traditionally marginalized groups can challenge the traditional order to become high-status political leaders. Such occurrences may benefit the wider society by decreasing bias and stereotyping (Hutter & Crisp, 2005; Hutter et al., 2009; Plant et al., 2009).

Diversity is Not Only About Ethnic Divisions

It is important to note, that the above conceptualization of diversity expands the definition of diversity beyond a lay understanding of

multiculturalism. Diverse societies are those in which traditionally converging social categories (e.g., *female housewife*, *White president*) are being eroded, and people find it more and more difficult to navigate their social world using existing stereotypes. This perspective becomes a powerful explanatory framework with regard to societies open to immigration and advocating multicultural policies, as well as those undergoing rapid social change (e.g., affording adoption rights to gay couples, blending gender roles, empowering elderly citizens). The Multiple Categorization paradigm assumes, that the same processes of stereotype change and inconsistency resolution operate with regard to race and ethnicity, as well as other social categories, such as gender and the societal expectations that come with it. After all, the US has not only got a Black president, it is also the home to women who rejected traditional gender roles. According to US government statistics 22.4 percent of US based computer programmers and 10.3 percent of aerospace engineers are females (Women's Bureau, 2009). Diversity, understood as multiple social categories can therefore be defined not only by race, but also gender, occupation, sexual orientation, or any other meaningful and predictive social category.

Perceiving Self and Perceiving Others

Multiple categorization theories can differ in their point of focus. For instance while multiple identity theory focuses on the perception of oneself having multiple identities (Roccas & Brewer, 2002), crossed categorization looks at the consequences of perceiving those multiple, cross-cutting social categories in others (Crisp & Hewstone, 2007). However, being brought about by increasing social diversity, and leading to inconsistent categorizations, these

two points of view – perceiving oneself as diverse, and perceiving diversity in others – can easily be considered under one framework.

Diversity is defined through the perception *and* personal experience of inconsistent social categorizations. Both having to deal with own identity inconsistencies, as well as perceiving such inconsistent categorizations, for instance when encountering a *female mechanic*, are the hallmarks of diverse societies. The experience of social and cultural diversity is therefore not just restricted to *being* an immigrant, minority member, or „deviant” from social norms (e.g., *female engineers*). Both minority and majority members experience social diversity because they have to deal with changes and inconsistencies and seek explanations of why the traditional and stereotypical views of the world (e.g., *engineers are male*) do not apply in a given situation.

High influx of immigrants or the presence of a salient minority will present a challenge especially to those majority group members who may be compelled to reconcile new cultural perspectives into their definition of social reality (Benet-Martínez et al., 2006). Acculturation researchers support this idea. Although the term acculturation, described in Chapter 2, was originally created to account for *immigrants*’ behaviour, acculturation researchers agree that “...nearly every person living in a culturally plural society can be said to be experiencing some form of acculturation” (Sam & Berry, 2010, p. 473).

In sum, the Multiple Categorization paradigm has three important characteristics. It considers intergroup relations not just in the dichotomized context of an in-group and out-group, but recognizes the possibility that people belong to and can simultaneously perceive multiple, related or unrelated group memberships. Diversity in this understanding extends beyond multiculturalism

to all instances of inconsistent social identities. Furthermore, to fully understand how this type of diversity works, we need to consider both the perspective of those who see diversity in others (majority groups, host society) as well as those who experience diversity of their own identities (immigrants, minorities, counter-stereotypical individuals). In what follows I will explain how this type of diversity is linked to the reduction of bias and stereotyping.

DIVERSITY BENEFITS INTERGROUP RELATIONS

Research in multiple categorization has demonstrated, broadly speaking, that experiencing a social diversity characterized by multiple, cross-cutting identities can be beneficial to intergroup relations. In its classical form, the model is based on the cognitive principle of accentuation and attenuation of differences between groups (Tajfel & Wilkes, 1963).

Decategorization

Categorization can lead either to category differentiation, seeing categories as distinct and non-overlapping, or to decategorization, where more individual perceptions of the target are evoked. Strengthening category salience can accentuate differences between categories - groups will now be seen as dissimilar - which in turn provides the basis for intergroup bias (Tajfel, 1982; Tajfel & Wilkes, 1963). Critically however, this process can be reversed: weakening category salience should attenuate differences between social categories, and in consequence lead to lower intergroup bias (Doosje, Spears, & Koomen, 1995; Gaertner & Dovidio, 2000; Macrae & Bodenhausen, 2000).

In the early days of the crossed categorization model, reduction of intergroup bias was considered to occur through reduced differentiation. Considering a second basis of categorization, which cuts across an existing ingroup-outgroup division, weakens the perception of “us” versus “them” (Crisp & Hewstone, 1999, 2007; Crisp, Hewstone, & Cairns, 2001; Crisp, Hewstone, & Rubin, 2001; Deschamps & Doise, 1978). For instance, members of the White and Black categories are considered as out-groupers, but when they are both a *White Female* and a *Black Female*, the additional common category decreases perceived differences between these two group representatives. Later studies identified that another process – individuation – can account for the bias reducing effects of multiple categories.

Individuation

Crisp, Hewstone, and Rubin (2001) demonstrated how considering multiple bases for categorization can reduce bias relatively to only one categorization basis. In two experimental conditions they asked participants to consider five different levels of categorizations when evaluating a multiple ingroup and multiple outgroup member. A control group evaluated the ingroup and outgroup members on the basis of one level of categorization only. The differentiation model in this case would predict that that the multiple ingroup categorization would induce perceptions of similarity and lead to less bias compared to control. The multiple outgroup categorization, on the other hand, should lead to more perceptions of dissimilarity, and more bias than the baseline. Surprisingly, not only the multiple ingroup, but also the multiple outgroup was evaluated more favourably than the baseline. The change in

evaluation was mediated by individuation: participants in the multiple categorization condition perceived the multiple outgroup and multiple ingroup members more as individuals, than group members (Crisp, Hewstone, & Rubin, 2001).

In two further experiments Hall and Crisp (2005) found that bias reduction was more likely when the multiple categories taken into account were conceptually non-overlapping (e.g., a British-Muslim vs. White-British). In that study, again, there was no bias towards a multiple ingroup as well as a multiple outgroup, as long as the criteria for categorization were unrelated. Similar findings can be found in the literature on how bias is related to the complexity of views about a group (Linville & Jones, 1980). Linville and Jones (1980) found that complexity is usually related to more moderate views of a group, while simple, categorical thinking co-varies with greater intergroup bias.

Counter-Stereotypical Combinations

In a review of the multiple categorization findings, Crisp and Hewstone (2007) argued how effects of lower bias in multiple category context could be explained through a shift in processing style, from heuristic and categorical, to a more complex and individuated form of impression formation (Brewer, 1988; Fiske & Neuberg, 1990). According to the Fiske and Neuberg's (1990) continuum model of impression formation, perceivers, facing a complex social world regularly utilize categories when thinking about others. Categorical thinking enables impressions to be construed on the basis of social stereotypes, rather than forming more individuated impressions. So when people encounter someone they automatically categorize that person. However, where the target

cannot be fit into existing categories or combinations of categories (e.g., a *gay priest*, a *male midwife*), this grabs perceivers' attention and they engage in systematic processing to figure out how to classify the person. This is the case when perceivers encounter multiple categorizations that cannot be simply processed heuristically (see Urada, Miller, & Stenstrom, 2007). This is why when conflicting social categorizations define an individual, perceivers will cognitively 'shift gear' to focus on individuating characteristics as a way of resolving the inconsistency.

This theorizing is strongly supported in studies on resolving counter-stereotypical category combinations. When increasing diversity brings stereotypically inconsistent categories together, this prompts a distinctive cognitive process. After being encouraged to think about outgroup members along new, stereotypically inconsistent dimensions of categorization (e.g., a *Black CEO*, a *gay soldier*, a *woman engineer*), impressions formed are less reliant on stereotypes, and subsequently less biased (e.g., Bigler & Liben, 1992; Crisp, Hewstone, & Rubin, 2001; Hall & Crisp, 2005; Hastie, Schroeder, & Weber, 1990; Hutter & Crisp, 2005; Kunda, Miller, & Claire, 1990).

For example, in order to think meaningfully about a female mechanic perceivers suppress their existing knowledge of the stereotypes (of a female, and a mechanic), and think of the reasons why a female would become a mechanic. This inconsistency resolution process can be observed as an increased generation of new, emergent characteristics of the target person, as well as decreased constituent stereotyping (Hastie, Schroeder, & Weber, 1990; Hutter & Crisp, 2005, 2008; Hutter et al., 2009; Kunda, Miller, & Claire, 1990; Siebler, 2008). Emergent attributes are characteristics assigned to a target

person to explain the existence of apparently contradictory category memberships (Hastie, Schroeder, & Weber, 1990; Kunda, Miller, & Claire, 1990). So, when asked to describe a *female mechanic* participants typically go beyond the stereotypes of a female (beautiful, emotional) and a mechanic (masculine, skilled), and generate emergent attributes that are unique to the combination of these two categories (e.g. determined, rebellious - attributes that are not typically generated when people think of females and mechanics independently; Hutter & Crisp, 2005; 2008).

Multiple Classification Skills in Children

Converging support to the idea that repeated exposure to multiple, counter-stereotypical categorizations can reduce bias comes also from studies on categorization skills of primary school children. Bigler and Liben (1992) used a card sorting task to teach 5-10 year olds to classify information along multiple social dimensions. The goal of this intervention, to teach children form not only stereotypically congruent (e.g., male nanny) but also incongruent category combinations (e.g., female mechanic), succeeded: after the training 96% of children (compared to 3% before the training) were able to form counter-stereotypical combinations. More importantly, the effect carried over to other tasks: children better at forming counter-stereotypical combinations were also better at remembering counter-stereotypical characters from a story and used less occupation-gender stereotypes, relatively to children without the multiple classification skills (Bigler, 1999).

Furthermore, the ability to form counter-stereotypical combinations protected the children against an environment imposing gender stereotyping.

During a summer school program children were placed in a classroom where the teacher habitually divided them into groups based on gender. The manipulation aimed at inducing gender stereotyping in children, relatively to a control group where the teacher used random group assignment. The stereotype-imposing manipulation succeeded in children who had not developed an ability to form counter-stereotypical combinations, but those who were already good at forming counter-stereotypical combinations were immune to the harmful manipulation (Bigler, 1995).

To sum up, many studies indicate that thinking of multiple bases of categorization has potential for reducing bias. This happens because paying attention to multiple categorization bases weakens differentiation and enhances more individuated impression formation. The latter mechanism is especially pronounced when the levels of categorization are un-related and form counter-stereotypical combinations. These bias reducing categorization effects are brought about by cognitive changes; further extensions of the crossed-categorization theory applied these findings of reduced prejudice and stereotyping to processes that extend beyond the psychology of intergroup relations.

BENEFITS BEYOND INTERGROUP RELATIONS

So perceptions of multiple cross cutting identities, especially when those identities form counter-stereotypical combinations, have the potential to reduce stereotyping and inter-group bias. Recently, the theory has been extended even further. Crisp and Turner (in press) integrated the existing findings of crossed categorization literature with literature on societal and cultural diversity across

multiple domains (e.g., small group processes, acculturation, development, education research). They argued that a particular type of diversity experience – one that challenges stereotypic expectations - can lead to the formation of a more flexible mindset in information processing, with several demonstrable benefits beyond intergroup relations. Below I will review evidence to this claim, that diversity defined by inconsistency resolution – as experienced by counter-stereotypical individuals, and those who perceive them – can lead to improvements across a range of domains.

Evidence from Bicultural Adaptation

Support for the idea that persistent exposure to counter-stereotypicality can result in developing new, flexible ways of information processing comes from multiple domains. First of all, experiences of cultural adaptation have been shown to benefit cognitive functioning. Bicultural individuals who undergo the effort of negotiating identities engage as a result in more complex thinking (Benet-Martínez et al., 2006; Tadmor & Tetlock, 2006; Tadmor et al., 2009). Crisp and Turner (in press) drew parallels between these experiences of cultural adaptation, and perceiving challenging diversity in others. Because the inconsistency resolution involved in reconciling own multiple identities (such as in biculturals) can bring benefits to flexible and creative thinking, similar effects, they argued, should also be observed when people perceive inconsistencies in others.

“Entering a new society implies a dual process in which immigrants are categorized by others and re-categorize themselves based on new comparison groups” (Lorenzo-Hernandez, 1998, p.39). In order to make sense of their

world, bicultural individuals need to be sensitive and responsive to environmental cues, and act according to the cultural scripts that are required in a given social context (Benet-Martínez et al., 2002; Hong et al., 2000; Ramirez-Esparza et al., 2006). Unsurprising, these “mental gymnastics” show benefits in various areas of life of bicultural individuals. Successful biculturals are more self-conscious and better able to analyze behaviours (Triandis, 1980), they are more aware of multiple functions of behaviours in different cultural frames (Maddux et al., 2010), and better able to look at problems from multiple perspectives (Benet-Martínez & Haritatos, 2005; Tadmor & Tetlock, 2006; Tadmor et al., 2009).

As described in Chapter 2, such benefits can extend to flexibility and creativity. Bicultural migrants benefit in terms of cognitive complexity (Benet-Martínez & Haritatos, 2005; Benet-Martínez et al., 2006), integrative complexity, need for structure (Tadmor & Tetlock, 2006; Tadmor et al., 2009), and creativity (Maddux & Tadmor, in preparation). Crucially, such beneficial effects have been observed not only in biculturals, but any individuals who have experienced “stereotypically challenging diversity”, such as counter-stereotypical female engineering students (Cheng et al., 2008; Crisp, Bache, & Maitner, 2009), as well as people *thinking of* such inconsistent individuals (e.g., Hutter & Crisp, 2005).

These findings support the hypothesis that repeated inconsistency may, in the long term, become the dominant response style of an individual when they enter new situations that evoke dissonance. Over time resolving categorical inconsistencies highlighted by the experience of stereotypically challenging diversity will result in a tendency to adopt the same strategies when contexts

requiring the same suppression of stereotype-based knowledge and generative thought are encountered.

Evidence from Education Literature

Further evidence comes from a recent meta-analysis looking at the impacts of diversity experiences in education. This research revealed a link between diversity experiences that are challenging (e.g., face-to-face encounters) and cognitive development (Bowman, 2010). Bowman notes that “It seems plausible that the novelty and challenge of diversity experiences spur higher order (or at least more effortful and mindful) thinking, and repeated engagement in effortful thought contributes to a generalized disposition toward and preference for complex thinking” (p. 21). Similarly, in Piaget’s developmental theory social interactions contribute not only to students’ social, but also cognitive development (Piaget, 1975).

Research in the educational domain appears to support this notion. Students with more diversity experiences demonstrated benefits on a range of cognitive outcomes (e.g., Gurin, Dey, Hurtado, & Gurin, 2002; Hu & Kuh, 2003; Hurtado, 2001; Nelson Laird, 2005; Terenzini, Cabrera, Colbeck, Bjorklund, & Parente, 2001). A study conducted on US undergraduates showed that students who interacted with diverse peers were more likely to benefit to their academic self-confidence and social agency (belief in the value of actions that benefit the society, e.g., community work, volunteering) (Gurin et al., 2002; Nelson Laird, 2005). More importantly, involvement in diversity courses was a significant predictor of students’ critical thinking, and informal interactions with diverse peers significantly predicted open-mindedness (Nelson Laird, 2005).

In another study, interactions with students from different ethnic backgrounds were related to higher levels of critical thinking and problem-solving skills (Hurtado, 2001). These findings are in agreement with experimental research by Antonio et al. (2004), who showed higher integrative complexity in groups of college students with racial and opinion minority members.

Evidence from Small Group Research

Also studies on small group productivity support the challenging diversity hypothesis. As I discussed in Chapter 2, the presence of salient minority members can lead to a shift in information processing and subsequent benefits to workgroup creativity. But how can we draw a parallel between categorization models, and what is happening in a group interaction? The common link can be found in the inconsistency resolution that takes place when majority members have to reconcile minority positions with what they see as being representative of the whole group. From social projection theory we know that group members tend to project their own characteristics on the superordinate identity (Waldzus, Mummendey, Wenzel, & Weber, 2003; Wenzel, Mummendey, Weber, & Waldzus, 2003). Consistent with this perspective, members of the majority group (e.g., females) would (due to stereotypes and the projection mechanism) perceive the minority group (e.g., males) as inconsistent with a superordinate identity (psychology students). Because they are joined in this superordinate identity, majority group will be forced to consider the minorities' position, and this will result in deeper thought processes and a benefit to creativity. These mechanisms are reflected in the

previously described findings of deeper processing (Antonio et al., 2004; Phillips, Mannix, Neale, & Gruenfeld, 2004; Phillips et al., 2006) and higher creativity in diverse workgroups (McLeod et al., 1996; Nemeth, 1986; Nemeth et al., 2001; Sommers et al., 2008; De Dreu & West, 2001; Kenworthy et al., 2008; Homan, van Knippenberg, Van Kleef, & De Dreu, 2007).

Evidence from Conceptual Combinations

Finally, the challenging diversity hypothesis is supported by findings of higher creativity following the integration and resolution of incongruent ideas or objects. From literature on creative cognition we know that combining concepts that usually don't go together is in itself a creative process (Hampton, 1997; Thagard, 1997; Wan & Chiu, 2002; Wilkenfeld & Ward, 2001). This can be observed as the *emergence of novel attributes* that go beyond the stereotype when perceiving counter-stereotypical targets (Hutter & Crisp, 2005, 2008; Hutter et al., 2009), and findings of more creativity following non-social conceptual combinations. For instance Wan and Chiu (2002) asked participants to solve a set of novel (e.g., *What is a vehicle that is also a kind of fish?*) or ordinary (e.g., *What is a plant that is also a kind of fuel?*) conceptual problems. Those primed with conceptual incongruence performed better on the Figural tests of the Torrance Tests of Creativity Thinking (Experiment 1) and built more creative LEGO models (Experiment 2).

Leung and Chiu (2010) argued that this type of conceptual integration, when practiced over time, can carry over to become a habitual way of thinking about problems (Leung & Chiu, 2010). These authors found that multicultural experiences were related to generating unconventional ideas (Study 2) and

explained this phenomena suggesting that individuals with multiple experience, who have over time learned to reconcile inconsistencies between the home and host culture, developed a cognitive preference for sampling ideas from multiple cultures (Study 3). These studies demonstrated how individuals with extensive multicultural exposure had more opportunity to practice inconsistency resolution, and thanks to that improved their ability go beyond the obvious and stereotypical, in favour of the less familiar and more novel combinations of ideas.

To sum up, Crisp and Turner (in press) have argued that the benefits of developing a flexible categorization style could be extended beyond intergroup relations, to other aspects of psychological functioning, including basic cognition, problem solving, creativity, self-efficacy or ideological orientation. Evidence to this came from observations of cognitive benefits in biculturals, college students exposed to diversity, small groups with visible minority members and literature on the formation of conceptual combinations. These findings converged to show that being compelled to re-construct social reality through the experience of social and cultural diversity can help people do develop a flexible cognitive mindset.

ANTECEDENTS

It is important to mention certain limitations, or conditions that need to be fulfilled in order for individuals to develop the flexible mindset discussed in this chapter. To experience benefits of cognitive adaptation to experiences of diversity, individuals must be able and motivated to undergo the inconsistency resolution process. When motivation or ability is lacking, inconsistency may be

ignored, and individual behaviour will be guided by existing stereotypes (Crisp & Turner, in press). Three conditions are therefore needed for the development of a flexible mindset: 1) individuals must encounter diversity that entails inconsistent categorizations 2) individuals must want to resolve, rather than ignore the inconsistencies and 3) individuals must be able to, and so have time and sufficient cognitive resources to engage in the effortful process of inconsistency resolution. If exposed to diversity in the long term, and under these three conditions, individuals should develop a flexible categorization mindset that will have beneficial effects to a variety of cognitive tasks, especially those which (like creativity) can benefit from inhibiting stereotypes and mundane, obvious answers, and generating novel ideas.

These three antecedents take on importance if we consider that adaptation to diversity will involve different stages. Although exposure to diversity has clear cognitive benefits in the long term, reactions to diversity may vary in earlier stages of exposure. This is consistent with findings that for instance in individuals who live abroad, benefits to creativity are positively correlated with the time participants spent in a foreign country (Maddux & Galinsky, 2008). When people face challenging diversity for the first time, they may not only not experience immediate benefits, but feel overwhelmed, tired, and show symptoms of cognitive busyness or ego depletion (Richeson, 2005; Hutter, 2006). I explore this possibility in more details in Chapters 5 and 6 which look exactly at these early stages of exposure to counter-stereotypical diversity.

SUMMARY

This chapter has explained how an integration of findings from crossed-categorization and a range of other psychological literatures can lead to the prediction that exposure to challenging diversity can, in the long-term, bring about enhancements to cognitive performance. The remaining chapters of this thesis will be dedicated to testing this challenging diversity hypothesis on varied, and theoretically relevant, measures of creativity.

CHAPTER 5: CHALLENGING DIVERSITY AND CREATIVITY²

Following the prediction that challenging diversity can benefit individuals' cognitive functioning, this chapter applies the hypothesis to one particular aspect of diversity experiences – the perception of inconsistent, counter-stereotypical category combinations. According to past findings, perceptions of counter-stereotypicality can reduce stereotyping (e.g., Hutter & Crisp, 2005), but this will be also accompanied cognitive busyness. Throughout the chapter I integrate predictions made by the challenging diversity hypothesis with the wider literature on stereotype change, conceptual combinations and creativity. I argue that for the experience of challenging diversity, operationalized as perceiving counter-stereotypicality, to produce benefits in creative performance this type of diversity must be experienced over a long period. Initially, the cognitive process of inconsistency resolution when perceiving counter-stereotypical individuals can be detrimental to creative performance; positive effects will be experienced following longer-term immersion in contexts requiring repeated inconsistency resolution.

Imagine you are in Kent, a region of England famous for fine agriculture. In the outskirts of a small town a couple are purchasing a second-hand car. 'I can't help noticing your strange accent, where are you from?' asks the salesman. 'Poland' they reply. 'Poland, so you must work on a farm somewhere here in Kent?' asks the dealer. 'No, actually I'm a scientist, and my partner is a computer programmer,' replies the woman. The salesman frowns

² Chapters 5-7 consist of a paper that is currently under review at the *Journal of Personality and Social Psychology*.

and pauses for a moment, after which he replies ‘Oh well ... you are obviously quite westernized then’.

Take a moment to reflect on this dialogue (which is an account of an exchange experienced by the author). Individuals usually enter social interactions equipped with a set of mental shortcuts, such as schemas and social categories, which help them to generate expectations about others (Fiske & Taylor, 2008, pp. 92-98; Hamilton & Sherman, 1994). In our example, when the social identity “Polish” became salient it activated the stereotype of Eastern European economic migrants, a group who typically perform low skilled jobs in Britain (Equality and Human Rights Commission, 2010). This stereotype allowed the car dealer to generate predictions about his conversation partners. However in this particular case the predictions failed and the two people in front of him did not fit the stereotype. As a result the salesman stopped for a moment to engage in additional thought. He then came up with a new attribute, “westernized”, which explained the “unusual” category memberships of the couple before him.

This example illustrates the cognitive dynamics of stereotyping and impression formation in a world characterized, increasingly, by social and cultural diversity. The couple, like many others, represent societal diversity brought about by increasing cultural, economic and political mobility. In social cognitive terms they represent a surprising combination of social categories: they are Polish, they are in the UK (and not just on vacation - they are buying a car). The perceiver faces a dilemma - here are two conflicting stereotypes. He responds by engaging in elaborative thought and forming a new impression to explain the conflicting stereotypes. This chapter is all about these cognitive

dynamics that arise from the experience of social and cultural diversity, and how they can have both a detrimental (at first) and beneficial (later on) impact on individuals' psychological functioning.

DIVERSITY DEFINED AS CONFLICTING CATEGORIZATIONS

Individuals who belong to two stereotypically conflicting social categories are common in multicultural societies: A British person might be surprised to see a Polish scientist living in Britain, while the immigrant may not have initially expected their British host to be a Muslim. It is not only immigration that creates these conflicting category combinations. Changes within society can also create surprising new combinations, for instance when gay couples are given adoption rights in a country (e.g., a *gay father*), or females enter previously male-dominated professions (e.g., a *female mechanic*).

When increasing diversity brings such stereotypically inconsistent categories together, this prompts a distinctive cognitive process. Perceptions of surprising category combinations can shift the way people processes information. For instance, in order to think meaningfully about a “female mechanic” perceivers must suppress their existing knowledge of the constituent stereotypes (stereotypic traits of a female, and a mechanic), and think of the reasons why a female would become a mechanic. This inconsistency resolution process can be observed as an increased generation of new, emergent characteristics of the target person, as well as decreased constituent stereotyping.

Emergent attributes are characteristics assigned to a target person to explain the existence of apparently contradictory category memberships (Hastie,

Schroeder, & Weber, 1990; Kunda, Miller, & Claire, 1990). So, when asked to describe a female mechanic participants typically go beyond the stereotypes of a female (beautiful, emotional) and a mechanic (masculine, skilled), and generate emergent attributes that are unique to the combination of these two categories (e.g. determined, rebellious - attributes that are not typically generated when people think of females and mechanics independently) (Hutter & Crisp, 2005; 2008).

Perceiving surprising or counter-stereotypical combinations of categories may have unique consequences that go beyond a re-construal of the target at hand. These counter-stereotypical combinations may represent a unique “challenging” form of social and cultural diversity - they are cognitively challenging because their conceptual integration requires the resource intensive inconsistency resolution process described above. Chapter 4 introduced the model proposed by Crisp and Turner (in press) of how individuals cognitively adapt to the repeated experience of stereotypically challenging diversity. This model centres on the repeated engagement of inconsistency resolution. According to the model, over time individuals engaging in this process will develop a propensity for cognitive flexibility that will be evident in the ability to spontaneously inhibit stereotype-based knowledge, that will generalize to any domain in which conflicting category-based expectations must be reconciled. Creativity is one such domain of human performance that should, under the right conditions, benefit from this enhanced cognitive flexibility. I will outline the reasoning for this assertion below.

INCONSISTENCY RESOLUTION CONSUMES COGNITIVE RESOURCES

Recall the earlier anecdote about the car mechanic: The used car salesman's reaction to meeting a Polish scientist is surprise and additional thought. The challenging diversity hypothesis presented in the previous chapter predicts, that if experiencing such encounters over a long time, the man would engage in a repeated inconsistency resolution process, and through that, develop a more flexible cognitive mindset. But assuming the man had little or no experience of encountering counter-stereotypical individuals, he may find it cognitively difficult to reconcile the stereotypical knowledge about the category "Polish" with what he knows about the social category "scientist". The basic cognitive processes that this sort of diversity experience triggers can be understood by drawing on established dual-process models of social categorization and impression formation.

According to Fiske and Neuberg's (1990) continuum model, given the complexity of the social world, and limited cognitive resources, perceivers regularly utilize categories when thinking about others. Categorical thinking enables impressions to be construed on the basis of the social categories of which they are members (e.g. sex, race, occupation) rather than forming more individuated impressions. So when people encounter someone they automatically categorize that person. However, where the target cannot be fit into existing categories or combinations of categories (e.g., a gay priest, a male midwife), this grabs perceivers' attention and they engage in systematic processing to figure out how to classify the person (leading ultimately to the person being sub-typed as an individual). This is the case when perceivers encounter multiple categorizations that cannot be simply processed heuristically

(see Urada, Stenstrom, & Miller, 2007 for recent evidence supporting this assertion). In sum, when conflicting social categorizations define an individual perceivers will cognitively 'shift gear' to focus on individuating characteristics as a way of resolving the inconsistency. Notably, this elaborative processing is cognitively demanding. While stereotypes are the mind's energy-saving devices (Macrae, Milne, & Bodenhausen, 1994) guiding people's perceptions of others with little cognitive effort (Dijksterhuis & van Knippenberg, 1995; Gilbert & Hixon, 1991; Macrae, Hewstone, & Griffiths, 1993; Srull & Wyer, 1989; Stangor & Duan, 1991), resolving stereotypic inconsistencies and re-construing the target person as an individual is an effortful cognitive process.

Hutter and Crisp (2006) demonstrated how reconciling surprising social category combinations requires cognitive resources. They asked participants to describe a surprising combination under high versus low cognitive load conditions. Participants under high, compared to low load, generated significantly less novel (emergent) attributes when forming an impression of a female mechanic, but there was no difference in the amount of stereotypical (constituent) attributes generated. In a different study, attribute emergence was associated with time spent thinking of the counter-stereotypical combination (Hutter, Crisp, Humphreys, Waters, & Moffitt, 2009), consistent with the processes outlined by the impression-formation continuum model. In Experiment 1 the Hutter et al., (2009) timed participants who were describing a counter-stereotypical or stereotypical combination; participants describing the counter-stereotypical combination took more time to finish the task. In Study 2 when participants were asked to generate 10 attributes, there was more emergent and less constituent attributes among the latter five, than the first five

adjectives generated. So describing counter-stereotypical (compared to stereotypical) targets took more time, and the number of emergent attributes generated was associated with the time taken to form an impression of the target.

CREATIVITY CONSUMES COGNITIVE RESOURCES

This leads to a straightforward prediction that when people are exposed to the type of challenging diversity outlined above, there will be an initially detrimental impact on creative performance. This is because inconsistency resolution consumes cognitive resources, and creative performance requires cognitive resources. A recent model of creative performance - the Dual Pathway to Creativity Model (DPCM; Baas, De Dreu, & Nijstad, 2008; De Dreu, Baas, & Nijstad, 2008) proposes that creative ideas and solutions are a function of two factors: flexible information processing and persistence. The flexible pathway manifests itself in divergent thinking, using inclusive categories and switching easily between those categories, while the persistence path captures the notion that to score highly on creativity tasks individuals additionally need to engage in more deliberative, structured information processing.

According to this conceptualization of creativity, performance will be decreased when individuals lack cognitive resources and are unable to pay sufficient attention to the task at hand. This is reflected in past research where manipulating people's attention with noise proved detrimental to creativity (Kasof, 1997; Martindale & Greenough, 1973). Kasof (1997) assessed participant's creativity on the basis of a poem under different conditions: with and without noise, with predictable or unpredictable and intelligible or

unintelligible noise. Noise, especially unpredictable and intelligible, impaired performance on creativity measures (Kasof, 1997).

Creative processes involve inhibition and evaluation, both of which rely on working memory capacity (Hambrick & Engle, 2003; Hasher & Zacks, 1988). Creative individuals are good at evaluating ideas because working memory capacity allows them to control and direct their attention, as well as activate and inhibit irrelevant or misleading cues. In one study, participants who scored highly on creativity measures were better able to inhibit their irrelevant responses on the Stroop test (Gamble & Kellner, 1968; Golden, 1975) and Navon task (Groborz & Nęcka, 2003). However with not enough “mental power” delegated to the task, difficulty in suppressing inappropriate solutions could result in functional fixedness - the inability to look beyond the usual functions objects - which is considered one of the classical “enemies” of creativity (Hambrick & Engle, 2003; Hasher & Zacks, 1988).

In summary, both perceptions of surprising, counter-stereotypical targets, as well as many forms of creativity, require the allocation of cognitive resource. This leads to the prediction that the experience of diversity that is defined by conflicting social categorizations could decrease subsequent creative performance. This is because the cognitive effort expended in reconciling the conflicting stereotypical categorizations would deplete the resources subsequently available for cognitively-demanding creativity tasks. Such carry-over effects are well established in the literature for a range of tasks including thought suppression, emotion regulation, helping behaviour and Stroop task performance (Gailliot & Baumeister, 2007; Richeson & Trawalter, 2005; Richeson, Trawalter, & Shelton, 2005). More importantly to the present

argument, depletion of resources is especially detrimental to complex thinking: for example, participants who controlled their attention while watching a video performed worse on subsequent logic and reasoning tasks and thoughtful reading comprehension (Schmeichel, Vohs, & Baumeister, 2003). It is therefore likely that diversity experiences that involve the need to reconcile conflicting categorizations will have an immediate, short-term detrimental impact on creativity-related tasks.

MULTICULTURALISM AND CREATIVITY: A PARADOX

Thus far the literature I reviewed in this chapter suggests that the experience of stereotypically challenging diversity is resource demanding and will therefore lead to an immediate and short-term detriment on creativity tasks that require cognitive resource allocation. However, if, as Crisp and Turner (in press) argue, conflicting categorizations are a defining feature of social and cultural diversity, there is an apparent disparity with existing work that has explored the link between multi-cultural diversity and creativity.

A great deal of recent research has shown that multicultural experience is positively correlated with creativity performance (Benet-Martínez, Lee, & Leu, 2006; Leung & Chiu, 2008; Leung, Maddux, Galinsky, & Chiu, 2008; Maddux, Adam, & Galinsky, 2010; Maddux & Galinsky, 2009; Tadmor & Tetlock, 2006; Tadmor, Tetlock, & Peng, 2009; Benet-Martínez, Leu, Lee, & Morris, 2002; Hong, Morris, Chiu, & Benet-Martínez, 2000). For instance people with multicultural experiences produced less conventional gift ideas and sampled more ideas from foreign cultures (Leung & Chiu, 2010, Studies 2 & 3). In a recent study, European-American undergraduates performed more

creatively after being exposed to American and Chinese cultural symbols, and to a fusion of American and Chinese culture, compared to a single-culture condition (Leung & Chiu, 2010, Study 1). In parallel research, experiences of living abroad were shown to boost creativity: time spent living abroad predicted participants creative performance, and the degree to which individuals adapted to the host culture mediated the relationship between the experience of living abroad and creativity (Maddux & Galinsky, 2009, Studies 1, 2 & 4). Furthermore, learning the underlying meanings of behaviour in a multicultural context facilitated idea flexibility, increased performance on the remote associates test and helped individuals to overcome functional fixedness (Maddux et al., 2010).

These studies have mainly examined the effects of the experience of cultural diversity, but for the sake of the present model, the same principles are relevant to any type of social diversity that creates category conflict. So, the experience of a Chinese American is similar to a female mechanic in the sense that they are both defying culturally prescribed norms, and that they are both described by two non-overlapping social identities (Roccas & Brewer, 2002). This parallel between studies of cultural diversity and social diversity has been demonstrated empirically, and with respect to creative performance. In two experiments Asian Americans as well as female engineers experienced superior creative performance on tasks relevant to their dual identity domains (Cheng et al., 2008).

We are therefore faced with a theoretical and empirical paradox. It is well established, that thinking about counter-stereotypicality takes cognitive effort, and should therefore deplete resources and reduce creativity. On the

other hand, the experience of social and cultural diversity is positively, not negatively, correlated with creative performance. The answer to this paradox lies in delineating the time-course of exposure to diversity. My proposition is that in the first instance, engaging in inconsistency resolution when forming an impression of someone described by conflicting categorizations will result in cognitive depletion and therefore decreased creativity. In the longer term as people gather more experience in resolving such inconsistencies, they will cognitively adapt to such experiences – no longer finding them cognitively demanding. As such, the experience of stereotypically challenging diversity will no longer be detrimental to subsequent tasks that require cognitive resources; in fact, the experience will prime a generative process similar to that observed in the reconstrual of surprising category combinations. In short, we should, after repeated exposure to counter-stereotypical combinations, observe the reported positive correlation between creativity and diversity experiences.

A CREATIVE MINDSET

One of the reasons why a positive association between diversity and creativity is observed may be that repeated experience of stereotypically challenging diversity encourages the formation of a mindset characterized by a lesser reliance on stereotypes, and more divergent thought. Mindsets are goal-related orientations in information processing (e.g., Gollwitzer, Heckhausen, & Steller, 1990). When a mindset is activated, the goal pursued or mental procedure exercised in one task typically carries-over and influences a new context (Markman, Lindberg, Kray, & Galinsky, 2007; Sassenberg & Moskowitz, 2005). People who often experience stereotypically challenging

diversity gain practice in resolving counter-stereotypical combinations, and may as a result develop a tendency to activate a more general counter-stereotypical mindset under conditions that trigger its use.

Consider Maria, a Brazilian student moving to study in Britain. Upon her arrival in the UK Maria interacts with and becomes accountable to representatives of an unknown society; moving to England means she will have to confront her existing knowledge structures (stereotypes) with actual representatives of the stereotyped group. In the past, gathering knowledge from English textbooks or movies Maria may have imagined that all people in Britain are White Christians who exercise self-restraint in the expression of emotion. Because these stereotypes will guide her first impressions of British people, the newly arrived student will be puzzled, and might engage in inconsistency resolution upon meeting the first *British Muslim* or engaging in a conversation with an extroverted person. In order to think meaningfully about the British Muslim she encounters, Maria will have to suppress her existing knowledge of the constituent stereotypes (stereotypic traits of a British, and a Muslim), and think of the reasons why a British person would be a Muslim. In a new environment this process will repeat many times and may eventually lead to less reliance on stereotypic thought and more propensity for novel ideas and solutions.

Consistent with this time-course analysis, Leung, Maddux, Galinsky & Chiu (2008) suggest that multicultural experiences can lead to higher creativity through “fostering synthesis of seemingly incompatible ideas”, “destabilizing reutilized knowledge structures” and “creating a psychological readiness to recruit ideas from unfamiliar sources and places” (pp. 172). From the

perspective of social categorization research, long-term exposure to counter-stereotypicality will systematically de-stabilize existing knowledge structures (stereotypes) and therefore create a propensity for more divergent thought and less reliance on conventional, stereotypical knowledge, best demonstrated by increased creativity (see Tadmor & Tetlock, 2005). Finally, stereotyping and over-reliance on cognitive structures are negatively associated with creativity (Rietzschel, De Dreu, & Nijstad, 2007; Sassenberg & Moskowitz, 2005), and the ability to suppress obvious solutions stored in long-term memory, as well as to generate new ideas, are both mental operations necessary for creative idea generation (Landau & Leynes, 2004; Marsh et al., 1999).

If as a result of her study-abroad experience Maria becomes increasingly exposed to counter-stereotypicality, the inconsistency resolution will after some time become habitual in association with counter-stereotypical targets. What is more, the gradual automatization of stereotype suppression might in the long-term free her cognitive resources. This is consistent with the literature on self-regulation of prejudice, which suggests that over time, avoiding the expression of stereotypes can lead to automatized suppression and less resource consumption (Crisp & Turner, in press; Devine & Monteith, 1999; Monteith, Ashburn-Nardo, Voils, & Czopp, 2002; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999).

To summarize, this chapter integrated the predictions of challenging diversity hypothesis with findings of stereotyping and stereotype change. From this it was predicted, that resolving category inconsistencies may bring initial detriments, but long-term benefits to creative cognition. This is consistent with the antecedents of challenging diversity discussed at the end of Chapter 4.

Real-life diversity is associated with a number of stressors, which could decrease individuals' motivation and capacity to deal with cognitive inconsistencies. But when encountering a challenging diversity individuals must be motivated and able to resolve inconsistencies. If at the initial stages of counter-stereotypical exposure individuals are overwhelmed and lack cognitive resource, then they are more likely at this stage to experience detriments, not benefits to creativity. However, although in the first instance inconsistency-resolution will be effortful, over time individuals such as Maria might become more accustomed to resolving counter-stereotypical inconsistencies, and find it easier to abandon a stereotypic way of thinking. Maria's repeated exposure to counter-stereotypical targets will lead to the formation of a counter-stereotypical mindset allowing her to generate new ideas, and abandon her reliance on information stored in long-term memory. This should be apparent for instance in people with extensive experiences of living abroad, who are more used to counter-stereotypical diversity, and will as a result show not poorer, but enhanced creative performance when they encounter counter-stereotypical individuals in future.

OVERVIEW

Based on the integration of work on social cognition (categorization) and cross-cultural psychology (multiculturalism) outlined in Chapters 4 and 5, it was hypothesized that perceiving counter-stereotypical individuals will result in lower creativity with early exposure, but enhanced creative performance with repeated exposure. I present an outline of the time-course model of exposure to stereotypically challenging diversity in Table 2. The studies begin by

investigating effects on creativity apparent in early exposure. Studies 3 and 4 tested the prediction that immediately following the resolution of stereotypically conflicting categorizations creative performance will be lowered, and found a mediational explanation for this effect. Studies 5, 6, and 7 investigated moderators that should reveal support for the early versus later impacts of exposure to counter-stereotypicality on creative expression, consistent with the time-course model.

Study 5 tested whether personal need for structure (PNS) moderated the effects of challenging diversity. It was predicted that individuals lower in PNS would be better able to form remote associations after forming an impression of a counter-stereotypical target. In Study 6 challenging diversity was predicted to benefit individuals with higher multicultural experience on a task measuring the ability to overcome inadvertent plagiarism. Finally, Study 7 tested whether benefits to creativity in individuals with higher multicultural experience could also be seen on the level of self-construal.

Table 2

Summary of effects of initial and longer term exposure to stereotypically challenging diversity

Study	Effects
Initial exposure	
S. 3	Lower creativity
S. 4	Lower creativity mediated by processing difficulty
S. 5	Higher and lower creativity: moderated by personal need for structure
Longer-term exposure	
S. 6	Higher creativity: moderated by multicultural experience
S. 7	Higher creative self-attributions: moderated by multicultural experience

CHAPTER 6: INITIAL EXPOSURE TO CHALLENGING DIVERSITY

Three studies presented in this chapter yield support for the idea that diversity defined by reconciliation of conflicting categorizations has an initially detrimental impact on creative performance. In Studies 3 and 4 following the resolution of stereotypically conflicting categorizations, individuals experienced decreased creative performance on the remote associates test and a picture drawing task. Furthermore, the decrease in creativity in Study 4 was mediated by subjective reports of processing difficulty of the counter-stereotypical combination. In the concluding Study 5, individuals with a more flexible cognitive orientation evidenced enhanced creativity, while those with less flexibility showed decreased creativity following exposure to counter-stereotypical primes. These findings support an integration of social categorization and cross-cultural perspectives, and explain how and why people may be initially resistant to diversity.

As discussed in Chapter 6, although challenging diversity can lead to long-term benefits to peoples' flexible thinking and creative performance, because inconsistency resolution is such a cognitively demanding task, it is likely that individuals who encounter counter-stereotypical diversity for the first time will experience detriments rather than benefits from this type of diversity. In order to test this prediction I employed an experimental paradigm which prompts individuals to engage in inconsistency resolution, in order to make sense of a counter-stereotypical target person, such as a female mechanic, or male nurse. This paradigm was successfully used by Hutter and Crisp (e.g.,

2005, 2006, 2008) who demonstrated, that perceiving counter-stereotypical (versus stereotypical) targets lead to the generation of less stereotypical, and more individuating characteristics of this target. This technique seemed an appropriate mental simulation of diversity experiences described in the challenging diversity model, and could easily be applied as my experimental manipulation.

PILOT STUDY: COUNTER-STEREOTYPICAL COMBINATIONS ARE DIFFICULT TO PROCESS

A pilot study was carried out to provide a priori evidence that upon initial exposure, counter-stereotypical combinations would be perceived as more difficult to process compared to stereotypically consistent combinations. Following previous research (Hutter & Crisp, 2005; Kunda et al., 1990) participants were asked to generate adjectives describing a male mechanic and a female mechanic. Following that, they reported how easy or difficult they found it to generate these combinations. Because in previous studies participants found the female mechanic most surprising, I expected that this combination would be seen as most difficult to think of (Hutter & Crisp, 2005).

Method and Results

Participants and design

Sixty-five undergraduate volunteers (10 men) took part in this laboratory-based experiment. The average participant age was 20. Participants received course credit or £2 for their involvement. The study had a one-factor (male mechanic vs. female mechanic) between-participant design.

Procedure

Participants sat in separate cubicles were asked to generate adjectives describing either a stereotypical combination (male mechanic) or a counter-stereotypical combination (female mechanic). They were instructed to generate as many traits as possible until the experimenter asked them to stop. They were allowed three minutes for this task after which they were asked to complete a questionnaire. Upon completion of the procedure participants were thanked and debriefed.

Manipulation

Following previous research (Hastie et al., 1990; Hutter & Crisp, 2005; Kunda et al., 1990) I presented participants with one target belonging to a counter-stereotypical or stereotypical combination of social categories. Participants in the counter-stereotypical condition were asked to describe a female mechanic while participants in the stereotypical condition a male mechanic (for an example of the counter-stereotypical condition, see Appendix E). Consistent with previous research I expected participants would find the female mechanic not only more surprising and less familiar, but more difficult to form an impression of compared to the stereotypical combination.

Dependent variables

Rubin, Paolini and Crisp (2010) have recently used an overt measure of processing difficulty to explain bias exhibited against migrants from one ad hoc group to another (i.e., a counter-stereotypical combination). In this study participants' assessment of how a certain group of migrants was difficult to

think of partially mediated the negative trait assessment of this group. Following that example, I decided to ask participants about their impressions of thinking about the target. The measure was expanded to use five different items assessing participants' subjective experience of thinking about the target.

When designing these items I took into account findings that people more easily process stimuli that are familiar (Winkielman, Schwarz, Fazendeiro, & Reber, 2003), prototypical (Winkielman, Halberstadt, Fazendeiro, & Catty, 2006) and less complex (Reber, Winkielman, & Schwarz, 1998). Participants were therefore asked with regard to the given combination (1) How surprising they found the pairing of categories (2) How familiar the pairing was (3) How easy it was to think up characteristics of that person, (4) How complex they found their pairing and (5) how similar they found the two groups that made up the pairing (see appendix F). Participants gave their answer on a scale from 1 (not at all) to 5 (very much). After reverse-coding the ease, familiarity and similarity items we computed a single index of processing difficulty. The five items were highly correlated with a Cronbach's $\alpha = .77$, and were therefore combined into a single index of processing difficulty to use in further analyses.

Results

As predicted, the female mechanic ($M = 14.42$) was perceived as more difficult to process than the male mechanic ($M = 10.41$), $t(63) = 4.66, p < .001$. In consequence, further studies used this female mechanic vs. male mechanic pairing as a manipulation of exposure to counter-stereotypicality.

STUDY 3

Having established that the process of inconsistency resolution following perceptions of counter-stereotypical targets is indeed taxing and effortful, Study 3 tested whether reconciling conflicting social categorizations will also decrease creative performance. The finding of our pilot study, that counter-stereotypical targets are difficult to think of, mirrors past findings of cognitive taxation during this inconsistency resolution process (Hutter et al., 2009). If people are taxed while thinking of a counter-stereotypical target, than this may have negative impact on creativity. This assertion is supported by findings that processing difficulty can negatively affect subsequent decisions and judgments (Novemsky, Dhar, Schwarz, & Simonson, 2007; Rubin et al., 2010), and that creative performance in particular requires working memory capacity (Hasher & Zacks, 1988; Kasof, 1997; Martindale & Greenough, 1973). Following this reasoning I expected that the cognitively taxing inconsistency resolution process would have a carry over effect to a subsequent task and adversely affect creative performance. In other words, I expected that participants in the counter-stereotypical condition would demonstrate lower levels of creativity on a complex mental task.

Method

Participants and design

Sixty-six psychology undergraduate students took part in this study. The sample consisted of 55 females and 11 males with the mean age of 19. The study was internet-based and participants received £2 or course credit for

participation. One participant was removed from the sample due to an error in the internet procedure.

Procedure

The experiment was advertised through email to University of Kent students. Upon completion of the online procedure participants were thanked and debriefed. They were given the opportunity to contact the experimenters with any questions about the procedure.

Manipulation

Participants were asked to list their spontaneous thoughts about a female mechanic and a male mechanic. The female mechanic represented the counter-stereotypical combination condition while the male mechanic represented the stereotypical combination condition.

Dependent variables

Participants' creativity was measured using 15 items of the Remote Association Test (Bowers, Regehr, Balthazard, & Parker, 1990; Mednick & Mednick, 1967). Participants' task was to find a word analogous to three other words. For instance the words *Salt*, *Deep*, *Foam* are associated with the answer *Sea*, and words like *Magic*, *Plush*, *Floor* with the word *Carpet*. This convergent creativity task requires participants to generate creative associations while remaining selective and suppressing any answers that do not fit well enough with the three exemplars. It is also relatively easy to incorporate in an online procedure.

Results and Discussion

Participants in the counter-stereotypical combination condition scored significantly lower on the Remote Association Test ($M = 10.28$), compared to participants in the stereotypical combination condition ($M = 13.91$), $t(63) = -2.13$, $p = .037$. As predicted, after forming an impression of an individual defined by conflicting categorizations, participants performed worse on a creativity measure.

STUDY 4

The Pilot study and Study 3 showed how individuals defined by conflicting categorizations are difficult to think about, and doing so can lead to a decreased performance on subsequent measures of creativity. Study 4 was designed to render additional support for our model. In particular this study (1) used an alternative measure of creativity (2) conducted a more controlled laboratory test and (3) tested for a mediation through processing difficulty of the manipulated target.

With regard to the first point, the Remote Association Test measures the ability to uncover subtle relationships linking three different words. However, there are two reasons why an alternative measure of creativity could be beneficial. Firstly, the RAT does not capture creative outcomes as such, but rather focuses on a cognitive process that might lead to enhanced creative production. It would therefore be more appropriate to employ a measure that taps on a broader sense of creativity and takes into account the creative products generated by participants. Secondly, the RAT heavily relies on language skills and is therefore open to a verbal bias (Runco, 2007, pp. 11-12). Using a task

that taps into an alternative skill domain would help to establish the generality of the predicted depleting effect of counter-stereotypical targets.

This study also aimed to replicate previous findings in a laboratory setting, where it would be easier to control the time participants took to complete the tasks. Study 3 did not control for the amount of time that participants spent on the tasks, and therefore, one could not be sure whether the effects of cognitive depletion were purely due to the mentally taxing inconsistency resolution process, rather than, for instance, differences in motivation to complete the task. Keeping time constant would control for such extraneous factors and help get as close as possible to capturing the effects of compromised working memory capacity. Finally, in this study I included the same questions about a difficulty in processing as employed in the pilot study, with the expectation that perceived difficulty in reconciling the conflicting categorizations would mediate the negative impact of counter-stereotypicality on creativity.

Method

Participants and design

Sixty-two undergraduate volunteers took part in this laboratory-based experiment. The sample consisted of 53 females and nine males with the average age of 20. Participants received course credit for their involvement.

Procedure

Participants were tested in individual laboratory cubicles. They were informed that the study consisted of several tasks. Participants were to concentrate on each task until the experiment asked them to stop. Upon completion participants were thanked and debriefed.

Manipulation

As in the previous study participants were presented with a counter-stereotypical ('female mechanic') or stereotypical ('male mechanic') category combination. They were instructed to describe the target using as many single adjectives as they could think of, and they were given three minutes to perform this task.

Dependent variables

This time a broader array of creativity measures was employed. The Remote Association Test used in Study 3 has the advantage of easy application in an online procedure, but it relies heavily on language abilities and reflects a more narrow conceptualization of creativity. In order to capture a broader sense

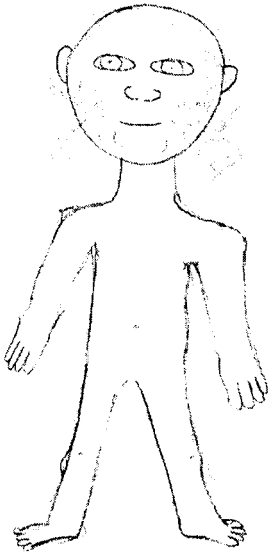
of creativity I asked participants to draw an alien creature (see Appendix G). Later on, independent judges rated the creativity of these drawings using several criteria (Maddux & Galinsky, 2009; Rietzschel et al., 2007; T. B. Ward, 1994). Participants were asked to imagine and draw a creature from the outer space and were allowed five minutes to complete the task. In the following five minutes participants completed 15 items of the Remote Association Test (Bowers et al., 1990; Mednick & Mednick, 1967) and after that completed the processing difficulty measure utilized in the pilot study.

Results and Discussion

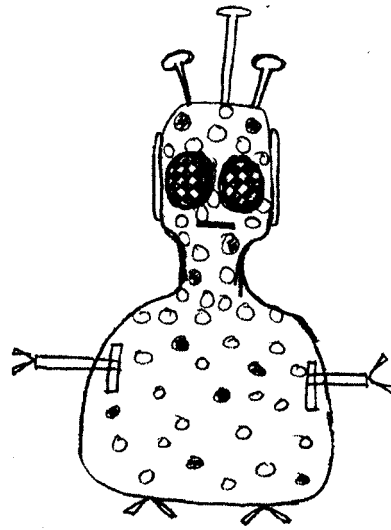
Coding

Two independent coders rated the pictures drawn by participants. The rating schemes used criteria similar to those in previous research (Maddux & Galinsky, 2009; Rietzschel et al., 2007; T. B. Ward, 1994). Raters (blind to the condition and hypotheses) assessed the picture in terms of (1) creativity, (2) originality and (3) use of imagination. They were also asked whether (4) the aliens were similar to earth creatures and (5) whether they were similar to aliens typically depicted in film and literature, (6) to what extent participants took into account known earth creatures and (7) aliens when drawing the picture. Raters also rated the alien on typicality of functions and organs: (8) whether the alien lacked or (9) had an atypical number of sensory organs, (10) whether the creature was symmetrical, (11) had an unusual configuration of the senses, (12) an atypical number of movement organs, (13) unusual or exaggerated ability and (14) whether it had organs serving an atypical function. For illustrations of more versus less creative drawings in this study see Figure 2.

Picture A



Picture B



Picture C

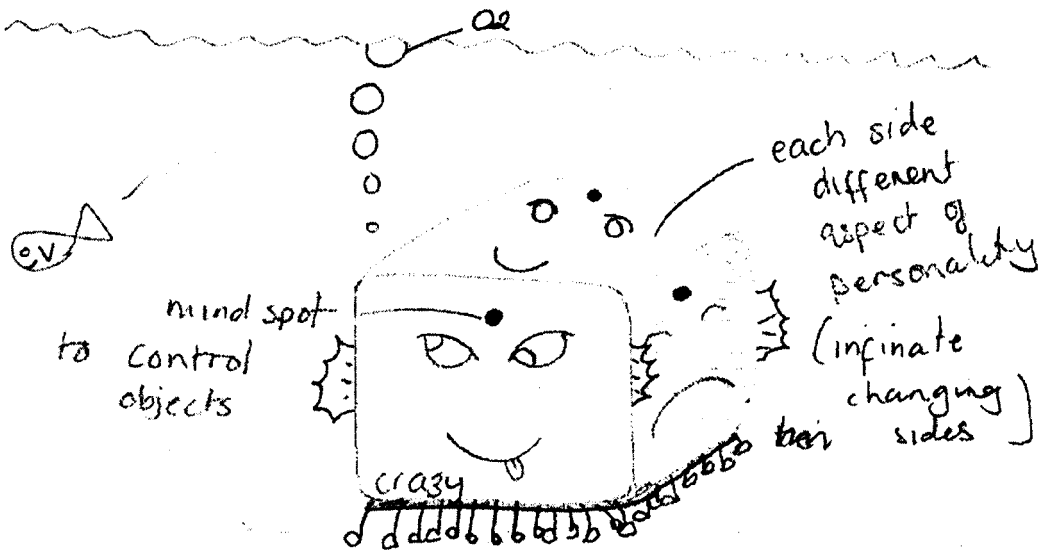


Figure 2. Examples of the least creative (A: $M = 1.38$), average (B: $M = 2.94$) and most creative (C: $M = 4.38$) alien drawings in the creative production task (Study 4).

These items formed three variables, which were first averaged for each rater, and then between the two raters. Variable 1, general assessment of picture creativity (questions 1-3) produced a Cronbach's $\alpha = .97$ for coder one and Cronbach's $\alpha = .97$ for coder two. Variable two, dissimilarity from earth creatures and 'typical' aliens (questions 4-7) produced $\alpha = .89$ and $\alpha = .71$. Variable three, atypicality of functions (questions 8 – 14) produced $\alpha = .65$ and $\alpha = .74$. The three variables were highly correlated ($\alpha = .87$ for coder one, $\alpha = .79$ for coder two) so I collapsed them into a single measure of creativity. The single indices for both coders were reliable ($\alpha = .81$) so I combined into a final index of picture creativity, which we used in subsequent analyses.

Processing difficulty

After reverse coding the ease, familiarity and similarity score, the five items of processing difficulty formed a reliable index, Cronbach's $\alpha = .81$. I then computed a single variable of processing difficulty and conducted an independent samples *t*-test with counter-stereotypical combination as our independent variable. As predicted, participants in the stereotypical combination condition ($M = 10.71$) reported lower processing difficulty compared to participants in the counter-stereotypical condition ($M = 15.37$), $t(59) = -5.20$, $p < .001$.

Creativity measures

Participants in the counter-stereotypical condition performed less creatively than participants in the stereotypical condition on both the creative production and RAT tasks. We subjected the rating of creative production to an

independent sample t-test. As expected, participants in the counter-stereotypical condition scored significantly lower ($M = 2.70$), compared to participants in the stereotypical category condition ($M = 3.20$), $t(59) = 2.77, p = .008$, see Table 3. Participants in the counter-stereotypical category combination condition also scored lower on the Remote Association Test ($M = 8.71$), compared to participants in the stereotypical condition ($M = 10.81$), but this time the effect was only marginally significant $t(60) = 1.80, p = .077$.

Table 3

Creative performance and processing difficulty as a function of category combination (Study 4).

Variable	Condition	
	Counter-stereotypical	Stereotypical
Processing difficulty**	15.37 (3.33)	10.71 (3.65)
Creative production*	2.70 (.80)	3.20 (.60)
RAT	8.71 (4.51)	11.03 (4.56)

* $p < .05$, ** $p < .01$

NOTE: Standard deviations are shown in parentheses

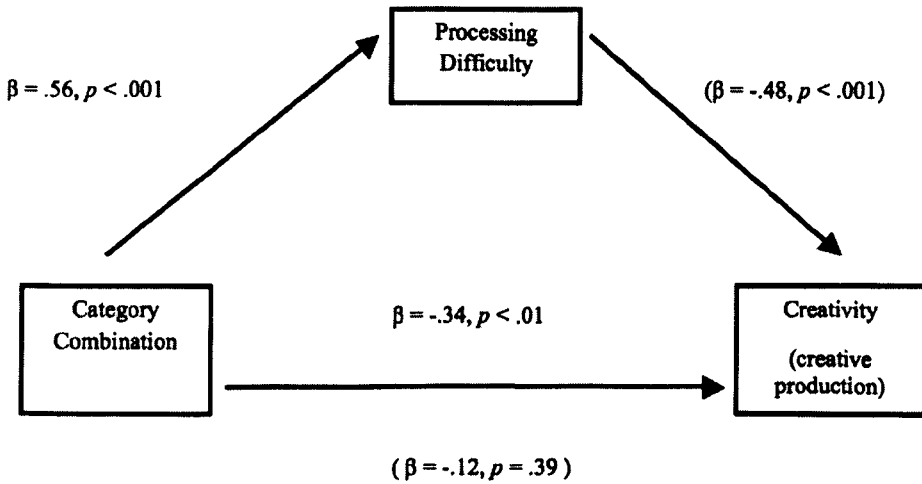


Figure 3. Higher processing difficulty mediates the negative relationship between a counter-stereotypical category combination and creativity. The stereotypical category combination was coded as 0 and counter-stereotypical as 1. Sobel $Z = -2.63, p < .01$ (Study 4).

Mediational analysis

Processing difficulty significantly mediated the effect of counter-stereotypicality on creativity (see Figure 3). Counter-stereotypicality (stereotypical category coded as 0, counter-stereotypical as 1) was positively related to processing difficulty ($\beta = .56, p < .001$) and negatively related to picture creativity ($\beta = -.34, p = .008$). Processing difficulty was negatively related to creativity independent of category combination ($\beta = -.48, p < .001$). When controlling for processing difficulty, counter-stereotypicality was no longer associated with creativity ($\beta = -.12, p = .387$). A Sobel-Z test was significant, $Z = -2.63, p = .009$.

As predicted, perceptions of individuals defined by a counter-stereotypical combination of categorizations led not only to a reduction in finding remote associations, but also to a decrease in creative production. The marginal effect on RAT could be attributed to fatigue effects – in this experiment the RAT task came second in the sequence of creativity tasks, following the alien drawing. On the first, creative drawing task however, the negative effect of thinking about an individual defined by conflicting categorizations was mediated by higher reported difficulty in thinking about the combination. This supports my hypothesis that difficulty in processing of counter-stereotypical combinations can cause performance detriments on a subsequent task, and as a result inhibit participants' ability to generate new products. Such results are consistent with the challenging diversity view outlined in Chapter 5, that immediate exposure to diversity can result in cognitive detriments, rather than benefits.

STUDY 5

Studies 3 and 4 demonstrated how the immediate impact of forming an impression of an individual defined by counter-stereotypical categorizations results in a decrease in creative production and the ability to form remote associations. However, it could be argued that with repeated implementation of this inconsistency resolution process, and the following process of cognitive adaptation (Crisp & Turner, in press) the experience of stereotypically challenging diversity could eventually lead to the development of a mindset characterized by lesser reliance on cognitive structures such as stereotypes, and through that, higher creativity.

In their model of cognitive adaptation to the experience of social and cultural diversity, Crisp and Turner (in press) draw upon models of the self-regulation of prejudice to explain how this adaptation process can occur. Findings on self-regulation of prejudice suggest that over time, avoiding the expression of stereotypes can lead to automatized suppression and less resource consumption (Devine & Monteith, 1999; Monteith, Ashburn-Nardo, Voils, & Czopp, 2002; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999). In a similar vein, Crisp and Turner argue that, over time, inconsistency-resolution will become easier and individuals will have developed a propensity to avoid prototype-based thinking where it is adaptive to do so (i.e., where tasks demand resource allocation to more generative ways of thinking). Applied to creativity outcomes, this means that repeated exposure to counter-stereotypical targets, and the repeated engagement of the inconsistency resolution process, will in the long-term result in the formation of a creative mindset, allowing for the generation of new ideas, and an abandoning of information stored in long-term memory.

One conclusion of this cognitive adaptation view is that people who do have a more flexible mindset, should have less trouble thinking of counter-stereotypical primes, and so in the absence of cognitive busyness, resolving counter-stereotypical primes, in flexible individuals, should prime creativity. This assertion could be tested by looking at individuals' epistemic needs, or more specifically, at the degree to which individuals rely on existing cognitive structures (stereotypes) in information processing. One way of measuring this is by utilizing the personal need for structure scale (Neuberg & Newsom, 1993).

Personal need for structure (PNS) is a chronic tendency to create and use abstract mental representations (e.g., schemata, prototypes, scripts, attitudes; and stereotypes), that are simplified generalizations of previous experiences. The creation and use of such cognitive structures allows for an understanding of one's world with a relatively minimal expenditure of cognitive resources. People high in PNS have been shown to organize information in relatively simple ways and use more stereotypical traits when describing ambiguous targets (Neuberg & Newsom, 1993). One might expect that individuals with a greater desire for simple structure will find it more difficult, compared to individuals with lower PNS scores, to deal with stereotype inconsistent information. This prediction was confirmed by Hutter et al., (2009) when high (compared to low) PNS individuals engaged more in inconsistency resolution when forming an impression of a female mechanic (versus a male mechanic).

Consistent with those past findings, I predicted that that the experience of stereotypically challenging diversity will prime a readiness to abandon stereotypical thinking and generate novel ideas and solutions. However, these effects will be contingent upon the extent to which individuals can tolerate a

challenge to their stereotypic knowledge structures. If this reasoning about underlying processes is correct, positive effects should be especially pronounced in individuals who are low in the chronic need for a simple structure, because these targets will find it relatively easy to relax their reliance on stereotypical information.

The same diversity experiences will, however, produce a different reaction in people high in PNS. This would happen because individuals who strive for cognitive consistency invest their energy in defending existing beliefs against stereotypically challenging information, and so PNS individuals would be more likely to experience adverse effects cognitive load. Creative production is linked to a cognitive style that is characterized by complexity (Quinn, 1980), the ability to look at problems from new, unusual perspectives (Duncker, 1945) and to withhold pre-emptive judgments and solutions (Getzels & Csikszentmihalyi, 1967). When seeing counter-stereotypical targets, individuals high in PNS would attempt to protect the stereotypes that they already have, but to be creative they would need to do the opposite: relax their reliance on existing structures and think flexibly (Chirumbolo, Mannetti, Pierro, Areni, & Kruglanski, 2005; Schultz & Searleman, 1998). Following this reasoning I predicted that individuals who in their information processing rely on structure would engage more in the inconsistency resolution, and this would have an adverse effect on creativity scores.

In sum, Study 5 looked at whether PNS would qualify the impact of the experience of stereotypically challenging diversity on creativity. I expected that participants low in PNS would perform more creatively when faced with such counter-stereotypical individuals, whereas high PNS participants would

experience more difficulty, which would result in lower subsequent creativity. This, moderation-of-process design (Spencer, Zanna, & Fong, 2005) allowed for an examination of the role of propensity to favours structure as a process driving the positive diversity–creativity relationship. If substantiated, these predictions would support my hypothesis, that the experience of stereotypically challenging diversity is linked to enhanced creativity, because it decreases individuals’ need for structure through exercising a mindset of lesser reliance on existing prototypic cognitions.

Method

Participants

Fifty-seven undergraduate volunteers took part in this online experiment. Six individuals were removed from the sample as feedback suggested they guessed the hypothesis. The final pool consisted of 51 participants (10 males) with the average age of 21. Participants received course credits for their involvement.

Procedure

Participants first completed the personal need for structure scale. They were then asked to generate adjectives to describe a female mechanic or a male mechanic. Finally, they performed a creativity task - the Remote Association Test. Upon completion of the procedure participants were thanked and debriefed. They were given the opportunity to contact experimenters with any questions about the procedure.

Pretest measures

Participants began the experiment by answering 12 questions of the personal need for structure scale (Neuberg & Newsom, 1993, see Appendix H). The questionnaire contained items such as I enjoy having a clear and structured mode of life or I don't like situations that are uncertain. In this experiment, the scale achieved a Cronbach's $\alpha = .84$.

Manipulation and measures

Following previous research participants were presented with a counter-stereotypical (female mechanic) or a stereotypical (male mechanic) target. They were asked to describe this person using 10 single adjectives. Creativity was measured using 15 items of the Remote Association Test (Bowers et al., 1990; Mednick & Mednick, 1967).

Results and Discussion

I computed a moderated regression analysis (Aiken & West, 1991) and contrast coded the combinations as -1 (stereotypical) and +1 (counter-stereotypical), see Figure 3. Following that, I computed an interaction variable by multiplying this contrast and the centred continuous PNS score for each participant. This analysis revealed no significant effects in Step 1 for PNS: $\beta = -.08$, $p = .561$, nor stereotypicality: $\beta = -.074$, $p = .608$; $R^2 = .01$. However, in Step 2 there was a two-way interaction between condition and PNS: $\beta = -.41$, $p = .007$; $R^2 = .16$, see Figure 4. Including the interaction term in the model significantly increased R -square: $\Delta R^2 = .15$, $p = .007$.

To decompose this interaction I carried out simple regressions separately for each category combination. In the stereotypical target condition PNS had no significant effect on creativity: $\beta = .21, p = .301$, while in the counter-stereotypical condition PNS was significantly associated with lower creativity: $\beta = -.52, p = .010$. At lower PNS ($-1 SD$), there was a tendency approaching significance for thinking about counter-stereotypical category combinations to yield greater creativity performance than stereotypical combinations, $\beta = .35, p = .086$. In contrast, participants who were higher in PNS ($+1 SD$) were less creative following exposure to a counter-stereotypical vs. stereotypical individual, $\beta = -.47, p = .019$.

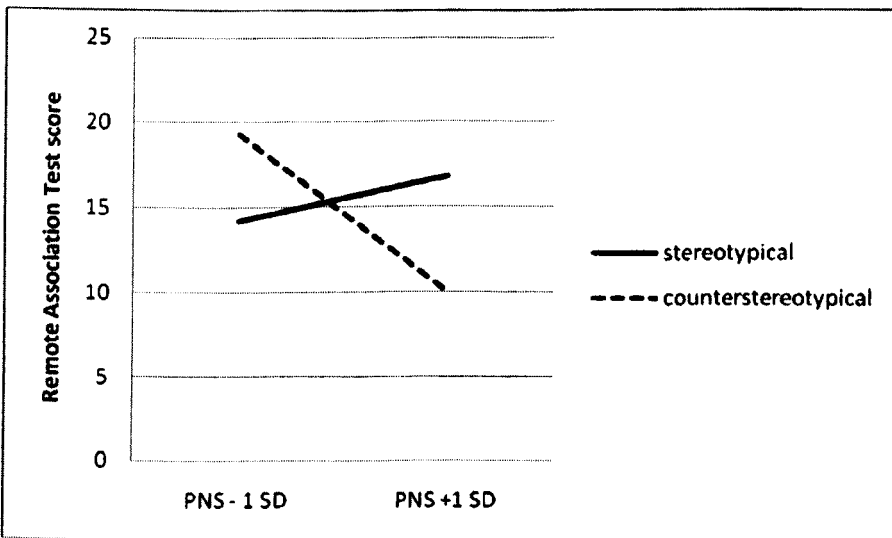


Figure 4. The Remote Association Test score as a function of counter-stereotypicality and personal need for structure (PNS; Study 5).

In sum, this study demonstrated that perceiving a counter-stereotypical individual can prime creativity in people low in PNS, but will have a negative impact on people with a higher need for structure. In the experiment participants' cognitive style moderated the effect of counter-stereotypical targets on creativity. Participants low in PNS, when asked to form an impression of a counter-stereotypical individual, showed higher creative performance compared to high PNS individuals. This is consistent with the idea that counter-stereotypicality is related to less stereotyping and more emergent attribute production (Hutter & Crisp, 2005). Counter-stereotypicality primes a mindset of decreased reliance on structured thought, which in turn allows participants to recruit more diverse ideas and come up with creative products or solutions.

At the same time the results of this study supported my prediction that people are highly attached to structured thinking will experience detriments, rather than benefits to creative performance. Notably, this study is also a conceptual replication of Study 2 presented earlier in this thesis. In that study another type of epistemic motivation, individuals' need for cognitive closure, moderated the effect of diversity experiences on creativity. Across both studies individuals with a low epistemic motivation (NFCC in Study 2, PNS in study 5) performed more creatively following multicultural experience (Study 2) and a counter-stereotypical diversity prime (Study 5). However, individuals with a high epistemic motivation experienced detriments.

SUMMARY

This chapter presented three studies attesting to the idea that in the process of cognitive adaptation to diversity experiences, individuals will experience initial detrimental effects to creativity, but that this type of diversity will prime creativity in people with a more flexible cognitive orientation. Having shown that counter-stereotypicality is positively associated with creativity through lesser reliance on cognitive structure, I proceeded to examine the hypothesis that this creative, counter-stereotypical mindset could have emerged due to prior exposure to challenging diversity.

CHAPTER 7: LONG-TERM EXPOSURE TO CHALLENGING DIVERSITY

This chapter presents two studies in which counter-stereotypicality lead to increments in creativity in individuals with prior experiences of living abroad. Repeated experience was previously mentioned as one of the boundary conditions of the challenging diversity hypothesis. This means that flexible thinking and creative benefits of diversity can only be experienced with prolonged exposure. Study 6 confirmed this prediction by showing that individuals with longer-term experiences of diversity perform more creatively following a counter-stereotypical prime. Study 7 asked whether these creative benefits of counter-stereotypical diversity can also be incorporated in individuals' self-concept. In this study individuals with more diversity experiences identified themselves using more creative adjectives following a counter-stereotypical prime. These findings support an integration of social categorization and cross-cultural perspectives, and explain that even though people may initially be resistant to diversity, in the longer term this experience can yield benefits for individuals, groups and society.

Initial perceptions of counter-stereotypical targets are mentally taxing and detrimental to creativity (Studies 3-4). This is contingent upon a flexible mindset in information processing (Study 5). Individuals who possess a flexible mindset of lesser reliance on cognitive structures experience benefits to creativity. However, those who to a larger extent rely on the knowledge structures stored in long-term memory, experience more difficulty in

reconciling two social categories that usually don't go together, and underperform on subsequent measure of creativity and remote associations.

STUDY 6

Study 6 tested the prediction that prolonged experiences of cultural and social diversity could make it easier for individuals to process counter-stereotypicality, and this would aid creative performance. To test this hypothesis I employed a measure of creative idea generation, which is optimally tailored to assess whether participants are able to go beyond the activated knowledge in idea generation (Dijksterhuis & Meurs, 2006; Marsh et al., 1999). This measure taps on early, less cognitively demanding stages of creative production, and thus I predicted that it would be less susceptible to the cognitive depletion effects revealed on the measures employed in Studies 3 - 5 (picture drawing and RAT).

The prediction for the current experiment was that counter-stereotypicality can prime a more flexible mindset in individuals with extensive experiences of living abroad. This study also enabled me to draw a clear link between studies showing depletion-driven effects of stereotypically challenging diversity on creative performance, and research on cross-cultural psychology that has revealed how experience of diversity is positively related to creative performance.

Adaptation to Diversity Experiences

To test the hypothesis of longer-term benefits to creativity, this study controlled for participants' experiences of having lived abroad. Exposure to

challenging diversity while living outside one's country of origin is a constant training in resolving counter-stereotypical combination. With this type of prolonged exposure to challenging diversity, individuals will gain expertise at resolving category inconsistencies, and will have developed a propensity to suppress stereotypical thought and think more flexibly and creatively. This is consistent with reports of higher creativity following multicultural experience and encountering conceptual inconsistencies (Cheng et al., 2008; Crisp et al., 2009; Leung et al., 2008; Maddux et al., 2010; Maddux & Galinsky, 2009; Tadmor & Tetlock, 2006; Benet-Martínez, Leu, Lee, & Morris, 2002; Hong, Morris, Chiu, & Benet-Martínez, 2000; Hampton, 1987, 1997; Wan & Chiu, 2002).

In their model of cognitive adaptation to diversity experiences Crisp and Turner (in press) outlined several conditions for successful adaptation to diversity experiences. To benefit from diversity individuals must encounter instances of diversity that involve stereotypic incongruence. If the perceivers are motivated and have sufficient cognitive resource, then upon encountering such inconsistencies they will engage in elaborative thought in order to resolve the inconsistency. However, this will not result in long-term benefits unless the experience of diversity is prolonged. The latter prediction is very much in line with findings of diversity-creativity researchers. For instance Maddux and Galinsky (2009) showed that living abroad, but not travelling abroad, is related to higher creativity in people, and the length of peoples' stay abroad mediates the living abroad – creativity relationship.

Crisp and Turner (in press) draw upon models of the self-regulation of prejudice to explain how this adaption process can occur. When individuals

encounter counter-stereotypical diversity for the first time, this results in a temporary shift in attention focus, and the generation of less stereotypic and more emergent attributes. A one-off encounter with counter-stereotypical diversity will not change how people process information, but if the inconsistency resolution is experienced repeatedly, it could develop into a habitual way of thinking. This argument is in line with findings on self-regulation of prejudice, which suggest that over time, avoiding the expression of stereotypes can lead to automatized suppression and less resource consumption (Devine & Monteith, 1999; Monteith, Ashburn-Nardo, Voils, & Czopp, 2002; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999). With time stereotype suppression does become easier. In a process of self-regulation of prejudice, individuals low in prejudice monitor their thoughts to avoid activating stereotype-consistent thoughts, and replace this stereotype-based impression formation with more individuated thought. As a result, over time, this process becomes automatized, and less cognitively taxing (Monteith, 2002).

Automatic suppression of stereotypes is not the only thing that happens when individuals encounter counter-stereotypical targets. When thinking of a counter-stereotypical target individuals produce new, emergent attributes. So there are two simultaneous processes: individuals who encounter counter-stereotypicality suppress stereotypes, and generate non-stereotypical traits. If people exercise this inconsistency resolution over extended periods, it could lead to habitual lesser reliance on stereotyping, and more reliance on generative thought. Because over time inconsistency-resolution becomes easier and less depleting, this will leave more space for generative processes. Applied to creativity outcomes, this means that repeated exposure to counter-stereotypical

targets, and the repeated engagement of the inconsistency resolution process, will in the long-term benefit the formation of a flexible, creative mindset. However, because both suppression and generation require cognitive resources, they will benefit only in those individuals who have plenty of resource, and who have enough experience with counter-stereotypicality not to be cognitively taxed in the process of resolving inconsistencies.

Following this logic I hypothesized that the repeated engagement of inconsistency resolution when forming impressions of counter-stereotypical targets would systematically de-stabilize existing knowledge structures (stereotypes), and create a propensity for more divergent thought and less reliance on conventional, stereotypical knowledge. As a result, participants with prior experience of challenging diversity will be most likely to go beyond the recently activated knowledge following exposure to a counter-stereotypical prime. Applying this to the current priming methodology, when faced with a counter-stereotypical prime, individuals with more diversity experiences should experience a boost to their creativity.

Creativity and Knowledge Activation

To increase the likelihood of capturing individuals' tendency not to rely on stereotypic thought, this experiment introduced a new measure of creativity – the inadvertent plagiarism task (e.g., Dijksterhuis & Meurs, 2006; Marsh et al., 1999). This creativity measurement was constructed on the premise that when looking for solutions to problems or generating ideas, individuals first scan their memory for the best fitting idea. For instance, when asked to generate new names for a new product or a chemical element people will to a large extent

copy the orthographic structure of exemplars given to them in the instruction (Marsh et al., 1999). Inadvertent plagiarism is a term coined to describe people's tendency to be restrained by the currently activated knowledge structures and exemplars, and it is assumed that the ability to overcome this process is beneficial to creativity (Duncker, 1945; Marsh et al., 1999). If exposure to counter-stereotypicality decreases individual reliance on existing knowledge structures, then people facing counter-stereotypical primes should show lower 'plagiarism' scores. And because this task is relatively easy, and the early, generative stages of creativity will require less working memory capacity (Finke, 1996; Groborz & Nęcka, 2003), the task is less likely to be negatively affected by resource consumption.

Method

Participants

Sixty-five undergraduate volunteers (52 females) took part in this online experiment - the average age of participants being 21. Participants received course credits for their involvement.

Procedure

Participants were asked to generate adjectives to describe a female or a male mechanic, they performed the inadvertent plagiarism task and answered some demographic questions. Upon completion of the procedure participants were thanked and debriefed. They were given the opportunity to contact experimenters with any questions about the procedure.

Manipulation

Following previous research participants were presented with a counter-stereotypical (female mechanic) or a stereotypical (male mechanic) target. Participants' task was to describe this person using 10 single adjectives.

Dependent variables

To capture the ability to withstand inadvertent plagiarism, I measured the extent to which participants relied on false cues in idea generation. Participants were asked to generate three new names of pasta, and were given five examples non-existent names. All the examples ended with the letter 'i', but participants were never explicitly told that they should copy any features of those examples (Dijksterhuis & Meurs, 2006; Marsh et al., 1999). Creativity (ability to withstand plagiarism) was assessed by computing the number of divergent items - new pasta names that despite the cue provided did not end with an "i". At the end of the experiment participants were also asked about their multicultural experiences: whether they have ever lived abroad, for how many years and in how many countries.

Coding

Following Dijksterhuis & Meurs (2006) I counted the number of new pasta names for all participants. A few participants listed an existing pasta name and such answers were not included in the count. Pasta names were assigned to one of two categories: those ending with an "i" (called converging items, as they are in line with the cue given) and indicating lower creativity, versus those not ending with an "i" (diverging items) and therefore indicating a higher level

creativity. The majority of participants have correctly generated three new names of pasta, and thus the converging and diverging item scores were highly negatively correlated: $\beta = -.967$, $p < .001$. The cell means and standard deviations for converging and diverging names across conditions are presented in Table 4.

Table 4

Diverging and converging names of pasta across experimental conditions (Study 6).

Item type	Condition	
	Stereotypical	Counter-stereotypical
Converging*	2.44 (.76)	1.85 (1.00)
Diverging*	.50 (.76)	1.09 (1.01)

* $p < .05$, ** $p < .01$

NOTE: Standard deviations are shown in parentheses

An index of multicultural experience (Leung et al., 2008; Maddux & Galinsky, 2009) was computed from the time participants have lived abroad and the number of countries they have been in. Both variables were highly correlated: $r(65) = .682, p < .001$. I standardized the scores so that each number was expressed as a fraction ranging from 0 to 1, and added them to form a combined multicultural experience index. Because the new variable showed significant positive skewness (since 60 percent of our sample had never lived abroad) I also winsorized outliers and subjected the variable to a logarithmic transformation. This reduced skewness from 2.14 to 1.53. The transformed variable was then used in all subsequent analyses.

Results and Discussion

To test for the effects of combination to creative plagiarism, and whether these effects would be qualified by multicultural experience, a moderated regression analysis was computed (Aiken & West, 1991), see Figure 5. Combinations were contrast-coded as -1 (stereotypical) and +1 (counter-stereotypical). Following that, I computed an interaction variable by multiplying this contrast and the centred continuous multicultural experience score for each participant. The interaction was then regressed on the creativity DV – the number of creative (diverging) answers. This analysis revealed in Step 1 a significant effect of counter-stereotypicality: $\beta = .32, p = .009$ and a marginally significant effect of multicultural experience: $\beta = .21, p = .080, R^2 = .15$. Participants in the counter-stereotypical condition and participants with more multicultural experience produced more creative pasta names.

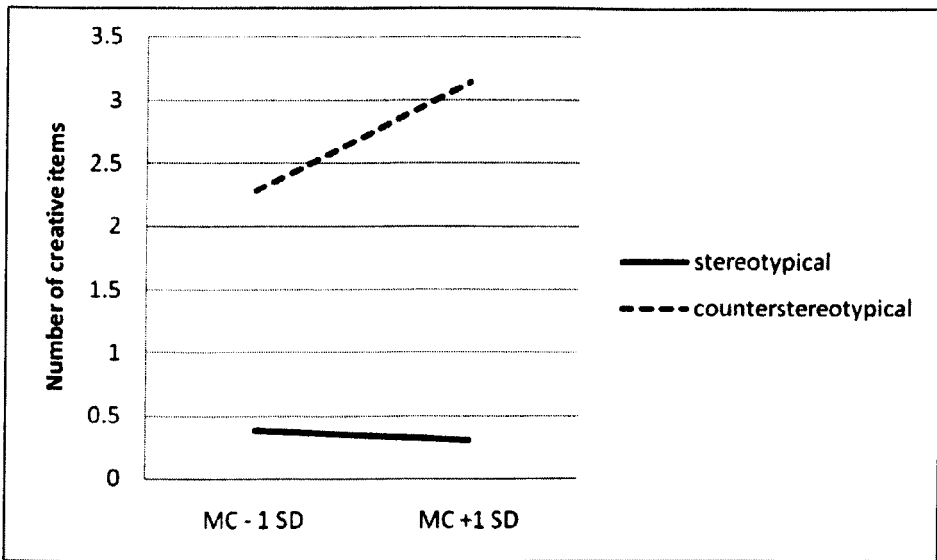


Figure 5. Number of creative items produced as a function of counter-stereotypicality and multicultural experience (MC; Study 7).

In Step 2 I found a two-way interaction between condition and multicultural experience: $\beta = -.97, p = .034, R^2 = .207$, see Figure 4. Including the interaction in the model significantly increased R-square: $\Delta R^2 = .06, p = .034$. After decomposing this interaction participants were more creative after forming an impression of a counter-stereotypical target: this was true for those with lower multicultural experience (-1 SD): $\beta = 1.01, p = .004$ but more so for individuals higher in multicultural experience (+1 SD): $\beta = 1.51, p = .009$. When computing simple slopes independently within each condition, in the counter-stereotypical target condition prior multicultural experience was significantly associated with higher creativity: $\beta = .43, p = .013$ but had no effect in the stereotypical condition: $\beta = -.05, p = .784$.

In sum, both perceiving a counter-stereotypical individual and having prior multicultural experience reduced participants' reliance on primed cues. Individuals with prior multicultural experience and exposed to a counter-stereotypical exemplar plagiarized least, followed by those in the counter-stereotypical condition and with lower multicultural experience. As predicted, forming an impression of a counter-stereotypical target person led to a lesser reliance on false cues in idea generation. This was additionally qualified by participants' degree of multi-cultural experience, so that participants with higher levels of experience benefited most from forming an impression of the counter-stereotypical target.

Notably the measure used in this study was less susceptible to the resource depleting effects of inconsistency resolution, and this was reflected in the positive skew of participants' creative performance. However, the simple slope analysis indicates that at very low levels of multicultural experience, on this measure, the relationship between counter-stereotypicality and creativity would be reversed - consistent with the effects observed on more depletion-sensitive measures used in Studies 3 to 5.

This study supports the theoretical time-course model outlined in the introduction. Forming impressions of counter-stereotypical people can lead to the formation of a more flexible, creative mindset characterized by increased divergent production and lesser reliance on existing knowledge structures. Furthermore, this mindset becomes activated when individuals perceive counter-stereotypical targets, contingent upon prior multicultural experience.

STUDY 7

So far the studies have measured creativity by assessing the end-product (i.e., originality of creative drawings, Study 4, inadvertent plagiarism, Study 6), and by looking at the creative process (i.e., participants' ability to form remote associations, Studies 3 - 5). The findings of Study 6 supported my prediction that over time repeated experience of stereotypically challenging diversity will develop a mindset characterized by cognitive flexibility and creative orientation.

An interesting question at this point would be whether these changes in how individuals process information about the world will also be reflected in how they think about themselves. People who have gained multicultural experience usually talk about it as being self-defining - the experience has become a part of who they are, internalized. As people develop wider social networks, and in particular networks that involve diverse and differentiated bases for identity, they develop a more complex social identity - an integrated self-concept - that includes the disparate identities (Amiot & de la Salbonierre, 2010; Brewer, 2010; Roccas & Brewer, 2005). But if diversity experiences are accompanied by more creativity, could the changes in self-concept involve thinking of oneself as not only more complex, but also more creative?

As time goes by in the process of adapting to diversity, individuals may become increasingly aware that the stereotypes which they have learned are no longer applicable. Furthermore, because during the inconsistency resolution process these individuals will engage in creative processes (generation of emergent attributes) they may learn to associate counter-stereotypical diversity with own creative performance.

This prediction could be directly tested by looking at whether counter-stereotypicality primes thinking of oneself as more creative. From past studies we know that environmental cues prime not only goals and behavioural tendencies, but also mental representations, including peoples' working self-concept. Individuals' sense of self can shift across situations (Markus & Kunda, 1986) so that different conceptions of the self become active in working memory when triggered by a significant self-relevant event (Fazio, Effrein, & Falender, 1981; Hicks, Schlegel, Friedman, & McCarthy, 2009). So with long-term exposure to stereotypically challenging diversity people would have developed a working self-concept characterized by increased creativity. This would happen as a result of making creative-self attributions in the presence of counter-stereotypical cues.

According to self-perception theory (Bem, 1967) individuals make inferences about their own traits on the basis of own exhibited behaviours. If so, then those who experienced enhanced creative production in counter-stereotypical contexts would, over time, make more attributions of own creativity when immersed in counter-stereotypical setting, and would have as a result formed an associative link between counter-stereotypicality and own creativity. The unconscious activation of mental representations develops from their frequent activation in the presence of given stimulus in the environment (Bargh, 1989; Shiffrin & Schneider, 1977), so if individuals are persistently engaged with stereotypically challenging diversity, then this experience would, after a while, become associated with enhanced own creativity, and have the power to prime a creative self-concept.

Given that both behaviours as well as self-concepts can be primed by associated cues, counter-stereotypicality should elicit not only creative tendencies (as shown in Study 3 and 4), but also a more creative self-concept in individuals. In other words, the hypothesis is that counter-stereotypicality is conceptually linked to a self-concept characterized both by a creative mindset (or behavioural tendencies), as well as generalized self-descriptive judgments of own creativity (declarative knowledge). Consistent with the findings of Study 6, the impact on individuals' self-concept should be most pronounced in participants who have previously lived abroad, and have therefore been exposed to a challenging diversity long enough to lead to the formation of a creative, counter-stereotypical mindset. In contrast, people with no or little experience of multiculturalism would not have had the experience of consistently associating counter-stereotypical diversity and their own creativity.

This is consistent with the adaptation model (Crisp & Turner, in press), which predicts that counter-stereotypicality increases creativity in individuals with prior multicultural experience. Testing whether individuals with diversity experiences activate a creative self-concept when faced with counter-stereotypicality would therefore be a natural step in gaining support for the challenging diversity model.

Method

Participants and design

The sample consisted of 155 University of Kent students. Three participants were removed from the data set due to errors in the procedure. The analyzed data contained 106 females and 46 males with the mean age of 22. The

majority (71%) of participants were non- psychology students. The study was conducted in a university laboratory and participants received £3 or course credit for participation.

Procedure

The study was advertised through the university research participation scheme. To ensure better participation of international students additional emails were sent out to all university students requesting participants who live or have lived abroad. After signing up for the study all participants were subjected to the same procedures, instructions and materials.

Manipulation

As previously, participants in this experiment were presented with a counter-stereotypical (female mechanic) or stereotypical (male mechanic) category combination and instructed to describe the target using single adjectives. In order to code participants' chronic exposure to diversity the sample was split along the criteria of having lived outside the country of origin for more than six months. This allowed for an identification of 45% of the sample, who have lived outside their country of origin for at least six months (this included both UK students who had lived abroad, and foreign students currently living in the UK) versus 55% who have always lived in the UK. In the following paragraphs I refer to those groups as low versus high chronic exposure to diversity.

Dependent variables

Activation of a creative self-concept was measured using the Creative Personality Scale (CPS), a sub-scale of the Adjective Check List (ACL) (Gough & Heilburn, 1965, see Appendix J). The ACL contained 18 positive and 12 negative items associated with creativity. The positive items were *capable, clever, confident, egotistical, humorous, individualistic, informal, insightful, intelligent, interests-wide, inventive, original, reflective, resourceful, self-confident, sexy, snobbish, and unconventional*. The negatively weighted items were *affected, cautious, commonplace, conservative, conventional, dissatisfied, honest, interests narrow, mannerly, sincere, submissive, and suspicious*. Participants were asked to circle ten items that described them best. One point was given each time one of the 18 positive items is checked, and 1 point was subtracted each time one of the 12 negative items was checked. The theoretical range of scores was therefore from - 12 to +18. All the items have previously been found to correlate with measures of creativity (Gough, 1979).

Results and Discussion

Participants with greater experience of diversity, when faced with a counter-stereotypical category combination, attributed to themselves more creative adjectives compared to the other three conditions. A 2 (counter-stereotypical combination) x 2 (chronic exposure to diversity) ANOVA on the creative adjectives list produced a significant interaction effect $F(1,148) = 4.28$, $p = .040$. I chose orthogonal Helmert contrast analysis as it allows an incremental test of specific hypothesis-driven effects (see Rosenthal, Rosnow, & Rubin, 2000). I then dummy-coded the two independent variables in the

following order: low exposure & stereotypical target, low exposure & counter-stereotypical target, high exposure & stereotypical target and finally high exposure & counter-stereotypical target. The means for each of those groups are presented in Table 5. Contrast A was 1, -1, 0, 0 and tested the difference in creative self-description between stereotypical and counter-stereotypical combination in participants with low chronic exposure to diversity. Contrast B was 1, 1, -2, 0 and tested the difference between groups with low chronic exposure and the high chronic exposure-stereotypical group. Contrast C was 1 1 1 -3 and sought for a difference between the high chronic exposure counter-stereotypical participants and the three remaining groups. If our hypothesis that participants with high chronic exposure develop a creative mindset was correct, then only contrast C should be significant. The results confirmed my predictions. Contrast A was not significant $t(148) = .76, p = .447$, contrast B was not significant $t(148) = -.07, p = .948$ and contrast C was significant $t(148) = -2.63, p = .009$. This confirmed the prediction that as a result of chronic exposure to counter-stereotypical targets participants develop a more creative-self concept.

As predicted, in this study exposure to a counter-stereotypical target was related to more creative self-conceptions only when individuals have amassed greater experiences of diversity. As a result of extended exposure, individuals living abroad developed a working self-concept related to higher creativity, which became activated in response to forming an impression of a counter-stereotypical target. This supports my hypothesis that counter-stereotypicality is linked to higher creativity in individuals (Studies 4 and 5) as well as the idea that such benefits are moderated by prior exposure to stereotypically

challenging diversity (Study 6). While in Study 6 forming an impression of a counter-stereotypical target was associated with more creativity, in the present study it primed creativity on the level of declarative knowledge about the self. This means, that extended experience of stereotypically challenging diversity leads not only to a creative mindset, but might also leave meaningful impressions on people's idea of who they are or what they are like.

Table 5

Self-attribution of creativity-related traits in participants with and without chronic exposure to diversity. The theoretical range of scores extends from - 12 to +18 (Study 7).

Amount of exposure	Condition	
	Stereotypical	Counter-stereotypical
Little	2.74 (3.24)	2.27 (2.70)
Chronic	2.54 (2.84)	4.00* (2.60)

* $p < .05$, ** $p < .01$

NOTE: Standard deviations are shown in parentheses

SUMMARY AND DISCUSSION

The studies presented in Chapters 5 and 6 provide evidence in support of a time-course model of challenging diversity experiences. Drawing upon recent theoretical perspectives on cognitive adaptation to diversity experiences, five studies delineated the time-course of effects of exposure to counter-stereotypical targets and shed light on when and why exposure to counter-stereotypical targets can increase or decrease creative production.

Early Impacts

It was predicted that initial exposure to counter-stereotypical targets would lead to cognitive depletion, and this could adversely impact subsequent creative performance. Empirical support for this assertion was found in Studies 3 and 4 when participants engaged in an effortful process of inconsistency resolution when forming an impression of a counter-stereotypical combination, which resulted in lower remote associations formed and less creative outcomes in subsequent creativity tests. This occurred because counter-stereotypical targets violated individuals' stereotypical assumptions about what kind of social categories usually go together. Participants' rating of the difficulty in processing of the combination mediated negative effects on creative production. In Study 5 individuals attached to a structured way of thinking (high PNS) identified the least number of remote associations after forming an impression of a counter-stereotypical individual.

Longer Term Effects

In Study 3 and 4 forming an impression of a counter-stereotypical individual resulted in lower subsequent creative performance, an effect mediated by the perceived difficulty in thinking about the target person. In contrast, in Study 5, individuals lower in PNS (indicating a lesser reliance on cognitive structures) were more creative after forming an impression of a counter-stereotypic individual, while those with higher PNS were less creative. This moderation-of-process approach indicates that the core mechanism driving the impact of counter-stereotypicality on creativity is individuals' cognitive orientation: Those who relied on rigid boundaries and prototypes found the reconciliation of stereotypically incongruent categorizations cognitively difficult and have subsequently retained less resource available for creative performance. On the other hand, individuals who were at ease with challenging category boundaries and adept at drawing upon non-prototypical knowledge, formed an impression of the counter-stereotypical individual with apparent ease, and were subsequently more creative, suggesting the experience primed characteristics of creativity over and above some baseline.

Finally, the positive relationship between stereotypically challenging diversity and creativity was especially pronounced in individuals with greater multicultural experience. In Study 6 the extent of individuals' experience of living abroad predicted creative divergent production after forming an impression of a counter-stereotypical target. Study 7 further demonstrated that these effects on creativity extend beyond creative processes to changes in individuals' self-concept. In that study participants who had previously lived abroad, after forming an impression of a counter-stereotypical target, considered

themselves more creative compared to individuals with either few diversity experiences or who formed an impression of a stereotypical target.

Experiencing Diversity

This research explains how people who in some way challenge traditional group boundaries (migrants, men and women in non-traditional jobs etc.), experience benefits to creativity. Furthermore it suggests an important direction for future research: The idea that counter-stereotypicality aids not only the counter-stereotypical individuals, but could also bring benefits to those who surround them. More specifically, the finding that forming an impression of a counter-stereotypical person aids divergent production (Study 6) and that counter-stereotypicality helps low PNS individuals to form remote association (Study 5) suggest that, under the right conditions, anyone can benefit from the experience of stereotypically challenging diversity. This is a provocative suggestion, especially important in light of the ongoing discussion on the benefits of immigration and increased social mobility in modern, multicultural societies (e.g., Rudmin, 2003; Verkuyten 2005). The five studies presented here support the idea that a social diversity that challenges stereotypical expectations can, in the long term, have measurable psychological benefits to society.

Although counter-stereotypical diversity can bring about initial processing difficulty, these results make one optimistic about the wider, long-term benefits of the experience of stereotypically challenging social diversity. The different reactions to early and extended exposure to these diversity experiences illustrate an established principle: Although painful at the beginning, practice makes perfect. Whether in sport or speaking a new

language, initial stages of acquiring a skill are painful and exhausting, but individuals who persist at regular training develop superior skills and endurance. Muscles that respond with pain during the first training session, become stronger and more efficient with continued practice; so too will exposure to stereotypically challenging diversity, with repeated exposure and engagement, bring about benefits in the long term.

These findings support the model of cognitive adaption to diversity experiences recently proposed by Crisp and Turner (in press). Crisp and Turner draw upon research on the self-regulation of prejudice which argues that, over time, avoiding the expression of stereotypes can lead to automatized suppression and less resource consumption (Devine & Monteith, 1999; Monteith et al., 2002; Moskowitz et al., 1999). In a similar vein, Crisp and Turner argued that over time repeated engagement in the inconsistency-resolution process (in response to the experience of stereotypically challenging diversity) will lead to cognitive adaption. This adaption will be evident in a generalized, spontaneous ability to inhibit dominant, stereotypic and prototype-based thought, which will free up cognitive resources for generative thought processes. The findings reported in this article support this model of cognitive adaption as it relates to creative expression.

Categorization, Multiculturalism and Creativity

The delineation of proximal versus distal effects of exposure to stereotypically challenging diversity offers one way to reconcile the opposing effects observed in the categorization literature with studies showing a positive link between multiculturalism and creativity. The novelty of this approach lies

in the fact that it combines both the literature on the categorization-defined immediate impacts of perceiving diversity, and the recent findings of a link between multiculturalism and creativity. Additionally, the findings suggest that the effects of experiencing stereotypically challenging diversity may not be limited to people who are themselves counter-stereotypical. In the story opening Chapter 5, when the social identity Polish became salient, it activated the stereotype of a social group that is typically thought of as low-status manual workforce. However, the content of this stereotype remained in stark contrast to what the protagonist knew about scientists. The salesman experienced cognitive inconsistency and emerged from it having generated a novel, creative attribute to explain the conflicting stereotypes: westernized.

But what if the man were living in a multicultural city where the categories Eastern European or Black don't entail lower social status, and people lead less traditional lifestyles. In other words - what if the surroundings provided an opportunity to engage more with counter-stereotypicality? The challenging diversity idea predicts that under such circumstances, given a degree of open-mindedness, the same person would, with time, develop a flexible mindset characterized by decreased reliance on stereotyping. This would not only influence levels of prejudice and tolerance towards minority members, but could also have more general benefits to cognitive abilities and creative thinking.

Perceiving counter-stereotypical individuals can therefore deeply affect the way people think about the world, and this is ensured by the unique social nature of these unusual conceptual combinations. Processing information about others is important, complex and pervasive (Fiske & Taylor, 2008, pp. 14-17)

and because people constantly think about others, it is likely that any changes to how they do this will affect the way in which they process other, non-social aspects of the world. An understanding of social and cultural diversity is therefore very important, because counter-stereotypicality defined in terms of social categories is likely to have a deep impact on the way people think, compared to, for instance, counter-stereotypicality of abstract categories (e.g., Wan & Chiu, 2002).

This leads to a more general conclusion, that theories of social categorization play a role not only in the explanation of prejudice and social cohesion, but they can illuminate areas beyond intergroup relations, such as in the case of this paper, the occurrence of effects to creativity in diverse social settings. Future research should investigate whether the formation of a counter-stereotypical mindset could lead to changes in other areas of human functioning, for instance interpersonal skills or complex problem solving (for an elaborated argument and a priori evidence for this assertion, see Crisp & Turner, in press).

Practical Implications

Research on counter-stereotypical category combinations is important not only for psychological theories of categorization, but also for an understanding of the challenges and benefits of increasing social diversity. Social diversity does not only mean that countries are ethnically mixed, but also that more and more people belong to diverse groups and serve functions that they had previously no access to. For instance the 2008 presidential elections in the United States have shown that representatives of traditionally marginalized ethnic groups can become high-status political leaders (Plant et al., 2009).

People are also more often undertaking professions traditionally restricted to one gender: Women account for 22.4 percent of US based computer programmers and 10.3 percent of aerospace engineers (Women's Bureau, 2009). Similarly, males are undertaking traditionally female roles too, an interesting example of which might be the emergence of childcare agencies specializing in 'mannies' - male nannies (Gibson, 2003). I perceive these changes as positive not only because they are evidence of increased, fair access to goods and social roles, but also because in the long term they will contribute to the development of flexible thinking and creativity in individuals.

Counter-stereotypical individuals are at the forefront of social change in many countries, and investigating the consequences of this phenomenon is important for psychologists, policy-makers and the public. People's reactions to counter-stereotypical, unusual targets have implications not only to prejudice reduction and minority rights, but also to fields beyond. A systematic knowledge base about the benefits of diversity is crucial to policy- and decision-makers in organizations, as well as to the public. This research could for instance illuminate anyone interested in prejudice reducing interventions. Many programs devised to ensure positive inter-ethnic relations utilize counter-stereotypical information about the targets of prejudice (for a review see: Bigler, 1999) and it is important to consider whether the short-term effects of such intervention, alongside decreased prejudice, could also include effects to school performance of children.

Investigating counter-stereotypicality is also important in the context of diverse work groups in organizations. For instance one important consequence is that it might be beneficial for male-dominated organizations to promote

female members, but to reap the benefits of this to creative output, they must guarantee a certain amount of open-mindedness from all team players. Finally, the results of those studies illuminate the ongoing discussion about benefits of social diversity and multiculturalism. Is increasing societal diversity a good thing? Should politicians, policy makers and the public welcome an increasingly pluralistic society? These are questions that have dominated scholarly, political and public discourse in the 20th century. Researchers assert that encouraging individuals to maintain distinct cultural, ethnic and religious identities is beneficial to relations in wider society (Berry, Kalin, & Taylor, 1977; Lambert & Taylor, 1990; Yinger, 1994), can increase tolerance and reduce prejudice (Crisp & Hewstone, 2007; Gaertner & Dovidio, 2000; Roccas & Brewer, 2002) as well as make people more flexible and creative (Benet-Martínez et al., 2006; Leung et al., 2008; Maddux & Galinsky, 2009; Tadmor et al., 2009). On the other hand, some argue that multicultural diversity can result in poor intergroup relations, stress and marginalization (Schlesinger, 1992; Gil, Vega, & Dimas, 1994; Rudmin, 2003; C. Ward, Bochner, & Furnham, 2001).

The research presented in this thesis contributes to this debate, by showing that extended exposure to stereotypically challenging diversity can bring measurable psychological benefits. An awareness of such findings is crucial for the improvement of current policies and attitudes towards social and cultural diversity. Illuminating when, why and how the experience of stereotypically challenging diversity will be accepted and integrated into individuals' world views will be an important endeavour for future research.

CHAPTER 8: MULTICULTURAL IDEOLOGY, CHALLENGING DIVERSITY AND CREATIVITY

This final empirical chapter explores an interplay between ideology and experience in determining the relationship between diversity and creativity. In this chapter I propose that the endorsement of multicultural ideologies brings with it an appreciation of different points of views, an openness to new perspectives, and a tendency to think beyond dominant, well-learned and prototypical responses - all of which are hallmarks of creative thought. However, when this type of ideology is absent, creativity can still be achieved when individuals are exposed to social diversity. Consistent with these predictions in Study 8 endorsement of multicultural ideology predicted greater creative performance than endorsement of assimilationist ideology. In Study 9 for individuals who did not hold a positive attitude towards multiculturalism, experimentally induced exposure to counter-stereotypicality had a compensatory effect, enhancing creative performance.

According to the writer and academic Richard Florida “Economic growth is powered by creative people, who prefer places that are diverse, tolerant, and open to new ideas” (Florida, 2002, p. 249). Until recently similar sentiments remained unexplored by psychologists, but emerging research is showing that exposure to multicultural perspectives and experiences of living abroad can bring about enhanced creativity (Benet-Martínez, Lee, & Leu, 2006; Cheng, Sanchez-Burks, & Lee, 2008; Hong, Morris, Chiu, & Benet-Martínez,

2000; Leung & Chiu, 2010; Maddux, Adam, & Galinsky, 2010; Tadmor, Tetlock, & Peng, 2009).

This thesis began with demonstrations of how *experience* of diversity is different from a *motivation* to engage in that diversity. I argued how benefits to creativity occur when individuals have engaged in diversity, and that this effect is causally independent of, but may be moderated by a motivation to engage with diversity (Study 1) or individuals' epistemic motivations (Study 2, 5). These studies have shown that multicultural experience boosts creativity when individuals are motivated, but can bring detriments to creative performance when motivation is absent.

The current chapter looks at another aspect of how people approach diversity, multicultural ideology. Studies 8 and 9 explore this ideological determinant, and look at how a positive orientation towards multiculturalism could interact with exposure to social and cultural diversity to predict creative performance. I first explore the question: Could the concept of multiculturalism, mentally articulated in the form of attitudinal or ideological support for social and cultural diversity, itself promote the sort of mental flexibility, and willingness to embrace diverse ideas that are the hall marks of creative thought? My hypothesis is that the endorsement of multicultural ideology itself is defining of a mental perspective that can benefit creative performance. Furthermore, I propose that when individuals do not have a positive orientation towards multiculturalism, then an exposure to diversity that challenges stereotypic expectations (Crisp & Turner, in press) will provide an especially strong stimulus for creative performance. Because individuals who don't endorse a multicultural policy will have a limited propensity for divergent

thought, exposure to diversity will have most pronounced effect particularly in those individuals, leading to an increase in availability of alternative viewpoints, and consequently higher levels of creative performance.

MULTICULTURAL IDEOLOGY

Why would multicultural ideology be important for flexible thinking and creativity? Multiculturalism is one of the most hotly debated political topics in recent times. This is perhaps quite natural, given the sheer extent of social change brought about by global migration. In 2009 over nine percent of all people living in Europe, 22 percent of all inhabitants of Australia and New Zealand and 14 percent of all people living in North America were classed as migrants (Population Division, 2009). As a result, people in most developed countries are now faced with the dilemma of how to accommodate distinct cultural and ethnic minority groups within one state. The public discourse in those countries is often alight with debate on the way in which such major social changes should be dealt with, and how minority and majority groups should negotiate their cultural differences to achieve social harmony.

Support for multicultural policies entails acceptance and active support for minorities to maintain their distinct cultural traditions and habits; this is often contrasted with an assimilationist view, by which minority members should adapt the cultural norms and habits of individuals from the majority culture (Verkuyten, 2005a, 2005b, 2007; Wolsko, Park, Judd, & Wittenbrink, 2000). Issues of multiculturalism spark controversy among majority group members: On one side, people perceive salient cultural minorities as a threat to social harmony and a source of conflict, on the other, even majority group

individuals can sometimes be appreciative of cultural differences, and see the presence of other cultural groups as a benefit rather than hindrance to the original culture (Verkuyten, 2004).

The issue of support for multiculturalism has thus been the source of much debate and interest, but its investigation focused on tolerance, identity, harmonious intergroup relations, and not creativity (Verkuyten, 2005a, 2005b, 2007). On the other hand, multicultural experience, but not a multicultural ideology has been explored with regard to its effects on creativity, leading to findings of higher creativity in individuals with exposure to multiculturalism or experiences of living abroad and cultural adaptation (Leung, Maddux, Galinsky, & Chiu, 2008; Maddux, Adam, & Galinsky, 2010; Maddux & Galinsky, 2009; Benet-Martínez, Leu, Lee, & Morris, 2002; Hong, Morris, Chiu, & Benet-Martínez, 2000).

This chapter integrates these two lines of research to ask the question: Can an endorsement of multicultural ideology predict creativity? The answer to this question is important, since it can tell us about the broader consequences of endorsing beliefs that feed into one of the most hotly debated topics in modern society. If a positive orientation towards multiculturalism predicts creativity, then this also adds a significant new dimension to the debate on multicultural versus assimilationist policies. It could explain not only whether multiculturalism is good for society, but also whether it is good for the individuals embracing these types of ideologies, and their cognitive performance in domains other than social diversity.

Investigating multicultural ideology would also shed further light on the diversity-creativity debate. In several chapters of this thesis I demonstrated how

the experience of social diversity can influence peoples' creative performance. But as Studies 1, 2 and 5 show, these effects are not unmoderated: Experience of and exposure to diversity can interact with individual difference variables – motivation to live abroad, epistemic motivations – to influence flexible thinking and creativity. Multicultural ideology is another aspect, that is likely to play a part in these phenomena. This is because, as I outline in the following chapters, an endorsement of multicultural ideologies is strongly related to peoples' engagement in experiences of diversity, and to how much people appreciate information that derives from diverse sources.

How exactly does a multicultural ideology relate to social diversity? People who endorse a multicultural ideology think that minority members should be actively supported in maintaining their cultural traditions and values. As such, this ideology could motivate people to engage with such communities, to support and interact with minority members. Another possibility is that an endorsement of multicultural ideology could be the result of prior exposure to social and cultural diversity. From social psychological research we know that attitudes are formed on the basis of experience (Fazio, Eiser, & Shook, 2004; Fazio, Zanna, & Cooper, 1978), and a positive reaction to the experience of social and cultural diversity could be the development of a value system that embraces the idea of a multiculturally diverse society.

At the same time, support for multiculturalism is quite distinct from experiences of diversity in the respect that it is an ideological belief, but not an actual behaviour. As well as exploring the impact of multicultural experience on creativity, it would therefore seem prudent to examine the impact of multicultural ideology on creativity. This is more so because experience is not

necessary to inform attitudes, values and ideologies (e.g., McGuire, 1960; Newcomb, 1943); an individual could develop a multicultural ideology without having experienced multiculturalism (e.g., by assimilating attitudes from family or peer groups). Similarly, experiences with diversity are by no means unequivocally positive, and can yield negative outcomes (Rudmin, 2003). As such, to ensure a better understanding of the diversity-creativity link, it is important to examine the effects of different ideologies relating to multiculturalism and diversity on creative performance.

WHY MULTICULTURALISM MAY STIMULATE CREATIVITY

What aspects of creativity could benefit from endorsing multicultural ideology? Creative performance generally benefits from an abundance of diverse stimuli and information, and it is therefore perhaps unsurprising that exposure to different cultures heralds uplifts in creative performance. A broad knowledge base is important to perform creatively, because it widens an individuals' range of response and generative possibilities (e.g., Amabile, 1996, p. 85; Weisberg, 1999). The bigger this set, the more numerous the alternatives and the bigger the chance of coming up with creative answers and new combinations of ideas. Furthermore, to perform creatively, it is important to break out of performance scripts, or to put it in another way - think differently than other people do, or differently from how one thinks in usual circumstances (Schank & Abelson, 1977). The degree to which this type of non-schematic thinking is important for creative accomplishments can be apparent when looking at coding schemes of different creativity measures. For instance some researchers assess creativity by simply assigning higher creativity scores to

ideas that are rare and unusual, and least mentioned by other study participants (Ip, Chen, & Chiu, 2006; Leung & Chiu, 2010).

So the more people know, and the more diverse this information is, the more chance they have of performing creatively; highly accessible knowledge about other cultural systems, their habits, beliefs and diverse points of view, should increase individuals' ability to come up with creative products and ideas (Leung & Chiu, 2010; Leung, Maddux, Galinsky, & Chiu, 2008; Maddux et al., 2010). However, people differ in the degree to which they take into account the knowledge and beliefs from different cultures when thinking about the world (Leung & Chiu, 2010; Leung et al., 2008). Multicultural ideology, as an expression of active support for differences, could be an expression of the extent to which people appreciate other cultures, with their values and traditions, and to what extent they think of them seriously as part of the wider national heritage. Such an appreciation of diversity could very well aid creative performance, because it would prompt individuals to recruit ideas from more than ones' own culture (Leung & Chiu, 2010).

Advocating that cultural and ethnic minorities nourish their cultural traditions is a sign of appreciation of alternative viewpoints. It is can also indicate receptiveness to a variety of perspectives, not only from individual's own, but also from other cultural systems. If this is true, then individuals who endorse multicultural policies should exemplify more creativity compared to those who do not support these policies. If individuals endorsing multicultural policies are receptive to the different perspectives and stimuli coming from other cultures, they will incorporate them into their own thinking and problem

solving, even with little prior exposure to these cultures, and will as a result show increased benefits to creative performance.

A propensity to sample ideas and thoughts from other cultures need not be reserved solely to individuals who live abroad or acculturate. People don't need to experience other cultures from the inside (i.e., to be members of those cultures or to acculturate) in order to appreciate the perspectives and ideas represented by those cultures (for a similar argument see Aberson, 2010). Instead, every person has some, even rudimentary knowledge of other cultural systems and rules that these cultures are governed by: for instance, one can gain knowledge about Islam and Muslims through reading books or watching movies, without ever having met a Muslim person. And because a person who endorses multicultural policies, and therefore appreciates the existence of other cultural viewpoints, assigns more value to ideas from other cultures, such individual will experience benefits to creativity even when they have an 'outsiders' view of a given culture and its customs or values.

STUDY 8³

Following the above assertions it was hypothesized that an endorsement of multiculturalism should show links with higher creativity irrespective of whether individuals have experienced a deep immersion in a second culture or not. Instead, individuals supporting multicultural policies will appreciate cultural differences, and this recognition of differing viewpoints will be apparent in their

³ The findings of this study are based on a re-analysis of data collected for the British Academy Research Development Award (47819) to R. J. Crisp. The data presented in this section has been re-analyzed and re-conceptualized, and the write-up is original to this thesis.

ability to see objects, even non-social ones, from more perspectives, include more sources of ideas in their thinking, and as a result, perform more creatively.

Whether multicultural ideology can impact creativity is a crucial question, because it may shed light on how values and ideologies impact people's cognitive performance, and inform those wishing to consider diversity policies in their organizations. Researchers often consider the impact of multicultural policies to intergroup relations; they ask for instance whether endorsing multiculturalism could influence levels of in-group identification and racial prejudice (Verkuyten, 2004, 2010). But the consequences of multicultural policies can extend much further - to a change in peoples' readiness to recruit ideas from different cultural systems. Researchers have already demonstrated, that exposure to other cultures and traditions can bring about greater creativity (Leung & Chiu, 2010; Leung et al., 2008; Maddux et al., 2010; Maddux & Galinsky, 2009). In order for this new and exciting line of research to develop, it is important to consider other aspects of multiculturalism that may be at play, such as individual differences in support of multicultural policies.

To investigate this question, participants were asked to reveal their views regarding multicultural policies, and to perform a creativity task in which they were to think of different uses of an everyday object. It was expected that if the theorizing is true, a higher endorsement of multicultural policies would be associated with higher creativity in people.

Method

Participants

Forty-nine undergraduate students (6 men), mean age 20, took part in this lab-based experiment. Participants were offered course credit for their involvement.

Measures

To make sure that the effects of a multicultural ideology on creativity are due to the ideology itself, and not individuals' prior exposure to diversity, we controlled for individuals' levels of immersion in a multicultural environment using the same multicultural contact questionnaire (MCQ) as in Study 1 and 2. This questionnaire enquired about individuals' multicultural experiences of the past year; it included statements like "I regularly socialized with people from other countries", "I met people with attitudes and values very different from mine", or "The majority of my friends were of the same nationality as me". Participants' task was to agree or disagree with 12 such statements on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree, Cronbach's $\alpha = .64$).

Participants then completed the Endorsement of Multicultural vs. Assimilation Ideologies measure, which required subjects to express their agreement or disagreement with a statement supporting multicultural or assimilation domestic policies. These statements have been originally adapted from a US political speech and Canadian government documents (Davies, Steele, & Markus, 2008). The multiculturalism statement (adapted to use in the UK, see Appendix K) said: "We now realise that it's critical for cultures within

Great Britain to have a reciprocal relationship – a healthy balance of give and take that embraces diversity as a source of strength”. The pro-assimilation statement said: “It’s our culture’s destiny to lead, and we will lead Great Britain by example. Our values, principles, and practices are a model for all British to follow”.

Participants rated their agreement or disagreement using five items (a) “Do you agree with the stated policy?”, (b) “How close to ideal is the stated policy?”, (c) “Does the stated policy reflect your personal values?”, (d) “Would you publicly support the stated policy?” and (e) “Is the stated policy insightful?” on a scale from 1 (strongly disagree) to 6 (strongly agree). Participants’ responses achieved a Cronbach’s alpha of .65 for the multiculturalism, and Cronbach’s alpha of .73 for the assimilation policy statement.

Following this questionnaire participants were asked to complete an adapted version of the alternative uses task (Gilhooly, Fioratou, Anthony, & Wynn, 2007; Guilford, 1967), a well known measure of creativity. This measure was especially well-suited to test the current hypothesis, because it captures the degree to which people can think of alternative uses, take different approaches and perspectives on one problem, so the task is almost a non-social analogue of the degree to which people recognize and acknowledge the importance of views and perspectives other than from their own cultural circle.

The instruction requested subjects to think of multiple uses for a teaspoon and write down as many ideas as they can think of in two minutes. Participant’s answers were scored for the amount of categories used when producing ideas, e.g., if a participant wrote that a teaspoon could be used to stir tea and to eat yoghurt, both answers would be considered as belonging to one

category – preparing and eating food. On the other hand, considering the use of a spoon to make a sculpture and to use it as a doorstop would be coded as two separate categories: use in art and as home appliance.

Results and Discussion

A regression analysis with diversity experience, endorsement of multiculturalism and assimilation policies entered simultaneously as predictors was conducted in order to test the hypothesis. Endorsement of multicultural ideology emerged as a significant positive predictor of creative uses for a teaspoon ($B = 1.04$, $SE = .16$, $\beta = .69$, $p < .001$). Endorsement of assimilation had an insignificant negative impact on creativity ($B = -.214$, $SE = .13$, $\beta = -.18$, $p = .104$). Multicultural experience had no significant effect on creativity ($B = -.087$, $SE = .20$, $\beta = -.05$, $p = .668$). So the more individuals appreciated multiculturalism, the more categories they used when thinking of alternative uses of a teaspoon. Whether they supported assimilation policies, and whether they had experienced diversity over the last six months had no significant effect on creativity.

Discussion

These findings support the hypothesis that an endorsement of multicultural ideology is related to higher creativity in people. This is because individuals who recognize the existence and importance of other cultures and social groups are more likely to recruit ideas from multiple sources and therefore perform more creatively. The ability to look at a problem from multiple perspectives was demonstrated when individuals were better able to

recruit different uses for a common household object - a teaspoon. This effect occurred when multicultural ideology was entered in the regression simultaneously with multicultural experience, which had no effect on creativity. These results support the notion that mere appreciation of multiple cultures, regardless of the experience of those cultures, can be associated with creativity.

Notably, in this study only endorsement of multicultural policies, and not assimilation policies, predicted individual's creativity. Multiculturalism and assimilation policies are usually considered two opposite ends of one political spectrum, however, the stimuli used in this current study were originally part of a manipulation, and it is possible that the two statements were not equally representative of the stated policies. The first statement uses the word 'diversity' and makes it quite clear what political agenda it supports, but the assimilation statement in comparison seems more vague, and might thus not have captured the exact opposite of multiculturalism views. We addressed this issue in Study 2, by using a multiculturalism scale to examine how multicultural ideology and exposure to diversity interact in bringing about creative outcomes.

STUDY 9: RESTORATIVE POWER OF CHALLENGING DIVERSITY

As shown in Study 8, people who support multicultural ideologies are better at creative production. This is because an appreciation of the existence of alternative cultures and lifestyles carries-over to creativity-related tasks, allowing individuals to approach problems from multiple perspectives and see more alternative solutions. So if individuals express their support for ethnic and cultural minorities, they are more likely to experience benefits to their creativity.

But what about those who don't support multicultural positions? To allow these individuals to perform more creatively, a diversity stimulant is needed - these individuals need to be primed with the idea of diversity, which will then result in higher accessibility of less obvious information. In other words, these individuals will be more able to use diverse stimuli, that surrounds them, but only if alerted to the presence of this diversity. This hypothesis is consistent with past findings that priming a mindset to 'think differently' can increase peoples' creativity (Förster, Friedman, Butterbach, & Sassenberg, 2005). However, I hypothesize that this type of prime will have an especially strong effect to creativity in those who do not appreciate different cultural viewpoints and that in those individuals, the prime will work like a 'diversity shot' – a strong injection of diversity stimuli, alerting participants to the existence of alternative viewpoints.

Following this logic, with regard to Study 9 I expected that exposure to social diversity and individual differences in support for multicultural ideologies will interact to produce creative outcomes. People who don't endorse multicultural ideologies will benefit more from a diversity prime, because those individuals are naturally less able to 'notice' and benefit from diverse settings. However, a diversity 'shot' - a cognitive prime alerting those individuals to the existence of alternative viewpoints, will allow them to perform more creatively. The diversity prime will have no significant impact in those who already endorse multicultural policies, because as shown in Study 8, these individuals already exhibit a higher ability to take into account diverse stimuli and produce more creative outcomes - they are more able to think of more perspectives when solving a problem, because they notice the diversity around them more easily.

A Diversity "Shot in the Arm"

Stimuli representing counter-stereotypical diversity is one of the best possible ways to give people a 'diversity shot' - encourage more attention to the multiplicity of cultures and stimuli, leading to improved creativity. Counter-stereotypical diversity is abundant in today's world. Migrants, for instance Chinese residents of the USA, are counter-stereotypical in the sense that they share a membership in two social groups that stereotypically don't go together. Similarly, people's professional choices are less than in the past determined by their gender: for example women account for over 22 percent of US based computer programmers, and over ten percent of aerospace engineers (Women's Bureau, 2009).

Studies 5, 6 and 7 in the current thesis demonstrated how this type of diversity can, under certain conditions, be associated with higher creativity scores (in low PNS individuals, Study 5), lower plagiarism scores (in those with multicultural experience, Study 6) and a self-concept related to creativity (in those with multicultural experience, Study 7). An indication of similar benefits can be seen in the wider psychological literature. For instance individuals who poses a surprising mix of social identities such as an Asian American, or a female-engineer, experience benefits to their creative performance (Cheng, Sanchez-Burks, & Lee, 2008). Also when looking at counter-stereotypical individuals as objects of perception, they are a special case of unusual conceptual combinations, and such combinations have previously been associated with creativity (Hampton, 1987, 1997; Thagard, 1997; Wan & Chiu, 2002; Wilkenfeld & Ward, 2001). This was for instance apparent in the studies of Wan and Chiu (2002), who demonstrated that inconsistent conceptual

combinations prime creativity. In their experiment participants primed with conceptual incongruence performed better on the Figural tests of the Torrance Tests of Creativity Thinking (Experiment 1) and built more creative LEGO models (Experiment 2).

As discussed in Chapter 4, the mere act of combining two inconsistent social categories can bring about creativity. In order to think meaningfully about a counter-stereotypical individual, perceivers must suppress their existing knowledge of the constituent stereotypes, and engage in “causal reasoning” (Kunda et al., 1990) to make sense of the unusual conceptual combination. As a result, when asked to describe a female mechanic subjects would go beyond the stereotypes of a female (beautiful, emotional) and a mechanic (masculine, skilled), and generate creative, emergent attributes that are unique for the combination of these two categories (Hutter & Crisp, 2005). This process not only draws participants’ attention more to inconsistencies around them, but it also is creative in itself, because it leads people to produce more creative attributes.

Given this evidence, I predicted that a challenging diversity prime may be able to give people a ‘shot in the arm’ in diversity terms. Individuals who don’t endorse multiculturalism do not usually consider diverse stimuli, and so a challenging diversity prime will cause them to pay increased attention to diverse stimuli, resulting in better creative performance. The current proposition is thus that perceptions of unusual, surprising social stimuli will have especially strong effects in individuals who do not support multicultural policies, because these individuals are most in need of stimuli prompting them to pay attention to diversity

To test this idea, I measured participants' endorsement of multicultural ideology and asked half of the sample to think of an unusual, counter-stereotypical individual. It was hypothesized that this manipulation would lead to enhanced creativity, especially in people who don't endorse multiculturalism, because they are the most likely to benefit from a prime alerting them to the existence of diversity.

Method

Participants and procedure

Ninety-six undergraduate students (11 men), mean age 19, took part in this lab-based experiment. Participants began by filling in the multicultural ideology scale, followed by the counter-stereotypical manipulation and the creativity task. Participants were offered course credit for their involvement.

Manipulation

Half of the sample were asked to describe a female mechanic, a counter-stereotypicality manipulation previously used by Hutter and Crisp (2005). Participants were asked to describe the target using single adjectives; they were given two minutes for this task. Participants in the control group performed no task.

Measures

To improve the methodology from Study 8, the current study employed the multicultural ideology scale (see Appendix L; Berry & Kalin, 1995), which conceptualizes endorsements of assimilation (lower scores) or multiculturalism

(higher scores) as two opposite poles of one dimension. The scale requires participants to express their agreement or disagreement with 10 different statements pertaining to multicultural policies - this makes it more reliable to the measure used in Study 8. Examples of items include: "Immigrant parents must encourage their children to retain the culture and traditions of their homeland" (reverse scored) or "We should do more to learn about the customs and heritage of different ethnic and cultural groups in this country", the scale achieved a Cronbach's $\alpha = .79$ in this study. To measure creativity, participants were asked to draw an alien creature; their answers were rated by two coders using several criteria (Maddux & Galinsky, 2009; Rietzschel, De Dreu, & Nijstad, 2007; T. B. Ward, 1994). Participants were asked to imagine and draw a creature from the outer space; they were allowed five minutes to complete the task.

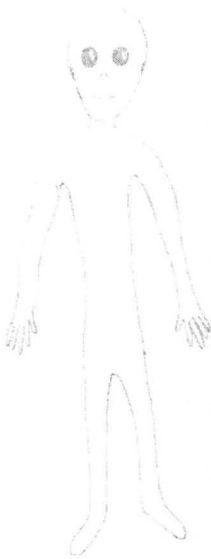
Results and Discussion

In order to establish the creativity of participants' pictures, two independent coders rated the creative production on several criteria, similar to those used in Study 4. Raters were assessing the picture on the qualities of (1) creativity, (2) originality and (3) use of imagination. We also asked whether (4) the aliens were similar to earth creatures and (5) aliens typically depicted in film and literature, (6) to what extent participants took into account known earth creatures (7) and aliens when drawing the picture. Raters also rated the alien on atypicality of functions and organs: (8) whether the alien lacked or (9) had an atypical number of sensory organs, (10) whether the creature was symmetrical, (11) had an unusual configuration of the senses, (12) an atypical number of

movement organs,(13) unusual or exaggerated ability and (14) whether it had organs serving an atypical function. Items 4,5,6,7 and 10 were reverse-scored. For illustrations of more versus less creative drawings in this study please look at Figure 6.

The analyses began by computing Cronbach alphas of three variables for each coder. Variable one, general assessments of picture creativity (questions 1-3) produced a Cronbach's $\alpha = .98$ for coder 1 and $\alpha = .94$ for coder 2. Variable two, dissimilarity from earth creatures and 'typical' aliens (questions 4-7) produced $\alpha = .66$ and $\alpha = .72$. Variable three, atypicality of functions (questions 8 – 14) produced $\alpha = .77$ and $\alpha = .70$. The three variables were highly correlated ($\alpha = .86$ for coder one, $\alpha = .67$ for coder 2) so I decided to combine them into single variables. The collapsed variable ratings of both coders were reliable ($\alpha = .91$) so we combined them into a final variable of picture creativity which was then used in subsequent analyses.

Picture A



Picture B



Picture C

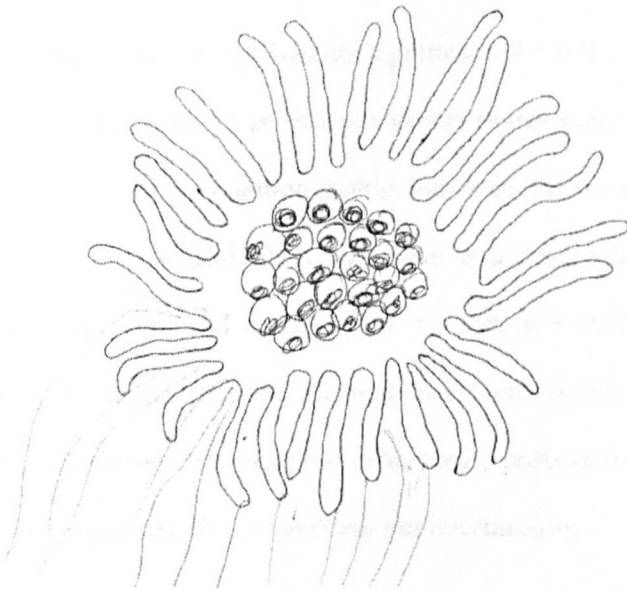


Figure 6. Examples of the least creative (A: $M = 1.33$), average (B: $M = 2.59$) and most creative (C: $M = 4.33$) alien drawings in the creative production task (Study 8).

A moderated regression analysis (Aiken & West, 1991) was computed, with the combinations contrast-coded as -1 (control) and +1 (counter-stereotypical), see Figure 2. Following that, I created an interaction variable by multiplying the contrast and the centred continuous multicultural ideology score for each participant. This analysis revealed in Step 1 a significant effect of condition: $\beta = .215, p = .039; R^2 = .047$, and no effect of multicultural ideology: $\beta = -.062, p = .546$. Step 2 revealed a two-way interaction between condition and multicultural ideology: $p = .036; R^2 = .092$. Including the interaction in the model significantly increased R-square: $\Delta R^2 = .045, p = .036$. At lower endorsement of multicultural ideology (-1 *SD*) exposure to a counter-stereotypical target yielded greater creativity performance compared to control $\beta = .425, p = .003$. The effect of condition in individuals who endorse multicultural ideology (+1 *SD*) was not significant: $\beta = .021, p = .885$. To further decompose this interaction I carried out simple regressions separately for each condition. In the control condition multiculturalism had no significant effect on creativity: $\beta = .158, p = .280$. There was however a marginally significant effect in the counter-stereotypical condition, $\beta = -.258, p = .073$, whereby higher endorsement of multiculturalism was associated with lower creativity. In sum, perceiving a counter-stereotypical individual had a positive impact on creativity, especially in people who did not endorse multiculturalism.

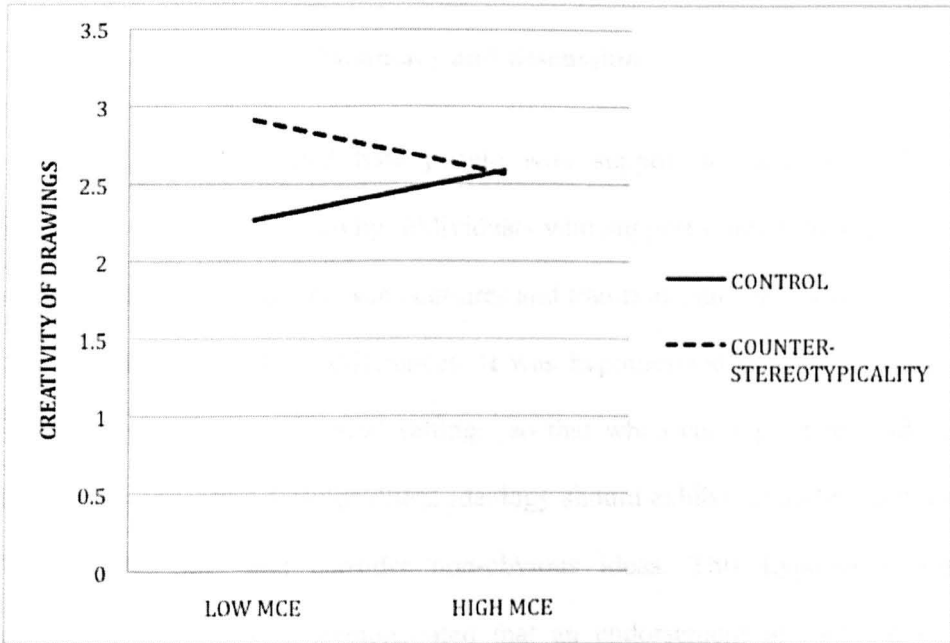


Figure 7. Creativity as a function of stereotypicality and endorsement of multicultural ideology (MCE; Study 9).

As predicted, perceiving a counter-stereotypical target lead to increased creativity in individuals who did not endorse a multicultural ideology. This confirms the earlier prediction that such individuals will not be able to incorporate diverse stimuli in their thinking, unless they are given a ‘diversity shot’ – an unusual, counter-stereotypical diversity prime, leading to higher availability of diverse experiences or ideas in memory. Secondly, individuals in the counter-stereotypical prime condition in this study have shown overall increased creative performance, which confirms predictions of a counter-stereotypical diversity leading to higher flexibility and creativity in people (e.g., Crisp & Turner, in press).

Summary and Discussion

Study 8 investigated how people who support multicultural policies experience benefits to creativity. Individuals who support multicultural policies recognize the differences between cultures and traditions, and are more ready to accept and promote those differences. It was hypothesized that this tendency should carry over to non-social settings, so that when coming up with ideas, individuals endorsing a multicultural ideology should exhibit an ability to think 'outside the box' and consider non-obvious ideas. This hypothesis was confirmed, and Study 1 demonstrated that an endorsement of multicultural ideology is related to enhanced creativity.

This finding is consistent with previous literature on the benefits of multicultural exposure to creativity (Leung & Chiu, 2010; Leung et al., 2008; Maddux et al., 2010; Maddux & Galinsky, 2009) and with findings on how an open-minded view of the world aids creative production. Past research demonstrated how performance flourishes in individuals who are open to experience (Leung & Chiu, 2008), low in need for closure (Chirumbolo et al., 2004; Chirumbolo & Sensales, 2004), have a low personal need for structure (Dollinger, 2007) and are more liberal in their beliefs (Dollinger, 2007). The two studies presented in the current chapter add a new individual difference - an endorsement of multicultural ideology - to this list of factors supporting creativity. Study 9 demonstrated how exposure to counter-stereotypical diversity, or what I called a 'diversity shot', triggers the cognitive dynamics leading to creative outcomes in individuals who don't endorse multiculturalism.

Applications

These findings have profound consequences to intergroup relations and the psychology of creativity. First of all, they add support to the growing body of literature on how different aspects of social diversity, such as multicultural exposure, living abroad or biculturalism aid creativity. Secondly, they further support the results of Studies 5-7 showing that exposure to challenging diversity can have and impact on people's creativity. As discussed in Chapter 4 and 5, in multicultural societies peoples' social stereotypes are often challenged. This study demonstrates how such changes can have a definable and considerable impact on the individual experiencing it. The current study adds a new angle to the discussion about social diversity and multiculturalism. It suggests that participation in challenging diversity is good not only for those who are low in epistemic needs, or who have extensive multicultural experience, but it can also have benefits in individuals who have previously not had the chance to appreciate social and cultural diversity. Finding ways in which counter-stereotypicality and tolerant attitudes can aid creativity may come in useful to individuals and organizations willing to foster creativity and innovative thought.

CHAPTER 9: GENERAL DISCUSSION

This chapter summarizes findings of the nine studies reported in this thesis and discusses these studies' limitations, implications and applications for future research and practice. In this thesis I demonstrated that experiencing social and cultural diversity benefits creativity, independently of individuals' motivation to experience diverse environments. Following that, I established support for the challenging diversity hypothesis: an assertion that long-term experiences of social and cultural diversity contribute to flexible thinking and creativity. This research also yielded support for the idea that the impact of challenging diversity on creativity is contingent upon individuals' epistemic motivations and available cognitive resources. Individuals with high epistemic motivation will experience detriments, while individuals with low epistemic motivation are more likely to benefit in creative performance following exposure to diversity. Furthermore, I demonstrated how an endorsement of multicultural ideologies is also related to higher creativity, and how counter-stereotypical diversity can have restorative effects when this endorsement is lacking. This final chapter concludes with suggestions for future research and some theoretical and practical applications of this work.

THEORETICAL BACKGROUND

This thesis applied the challenging diversity hypothesis to the relationship between social diversity and creativity. The hypothesis was derived from the integration of research on crossed-categorization, and various accounts

of cognitive benefits related to the experience of social and cultural diversity (Crisp & Turner, in press). Therefore, based on existing findings of crossed categorization literature, and literature on societal and cultural diversity across multiple domains (e.g., small group processes, acculturation, development, education research), I hypothesized that exposure to counter-stereotypical stimuli will have initially detrimental, but in the long term beneficial effects to creativity.

These predictions were confirmed. Social diversity was related to benefits in creative performance, and these effects worked over and above individuals' motivation. Further studies demonstrated how a special form of diversity, one that challenges peoples' stereotypical expectations about the world, led to higher creativity in individuals with low epistemic motivation, and those with prior experience of diversity. Finally, this thesis demonstrated that another factor, the endorsement of multicultural ideology, was related to higher creativity. When individuals did not endorse such ideologies, challenging diversity had restorative influence on creative performance. Below I will present a more detailed summary of findings of the initial literature review and experimental studies.

SUMMARY

The opening chapter of this thesis presented the current state of creativity research with focus on social psychological approaches to creativity. It introduced five important implications of creativity research that have informed the present inquiry: That creativity is considered a normative property of human thought, that creative production could be achieved through cognitive flexibility

and effort, that any contextual effects to creativity would likely be contingent upon individual differences in motivated information processing, that increments to creative performance can be demonstrated through priming procedures, and that different operationalizations of creativity capture different aspects of creative performance.

Following that, Chapter 2 reported findings from a wide range of studies, demonstrating how social diversity and multicultural experience are linked to enhanced creativity. Across multiple psychological domains, studies on the societal (Simonton, 1997, 1999), group (De Dreu & West, 2001; Kenworthy et al., 2008; McLeod et al., 1996; Nemeth, 1986; Sommers et al., 2008), as well as in individual level (Benet-Martínez et al., 2006; Kharkhurin, 2007, 2008; Kharkhurin, 2010a, 2010b; Leung & Chiu, 2008, 2010; Leung et al., 2008; Maddux et al., 2010; Maddux & Galinsky, 2009; Okoh, 1980; Tadmor & Tetlock, 2006; Tadmor et al., 2009) support the notion of more flexible thinking and superior creative performance following exposure to diversity. More importantly, the reviewed studies suggested that one particular process could underlie the boost to creativity across all of these studies. Enhanced creativity, following exposure to diversity, occurs because exposure and experience of cultural diversity prompts processes of inconsistency resolution, which result in a cognitive shift towards more controlled, careful information processing.

An integration of those findings provided important insights in to how diversity operates leading to enhanced creativity. In particular, my suggestion was that increments to creativity occur because experiences of diversity force individuals to resolve cognitive inconsistencies, a process in which individuals

abandon stereotypic ways of thinking in favour of more generative thought. Engaging in this process of inconsistency resolution could, in the long term, lead to the development of more flexible thinking.

Diversity and Epistemic Motivation

Following this literature review, Chapter 3 dealt with the important issue of causality in diversity-creativity research. A review of past studies demonstrated a link between experiences of diversity and creative production, however, because a majority of these studies were quasi-experimental, the issue of whether experiences of diversity actually cause enhanced creativity was open to discussion. Given the possibility that the diversity-creativity effects are due to confounding variables, it seemed prudent to first examine whether it is really the experience of diversity that leads to higher creativity. Hence, the two studies presented in Chapter 3 de-coupled experiential and motivational factors.

To investigate whether there are any cognitive effects of multicultural experience beyond individuals' own motivation to expose themselves to diversity, Study 1 compared participants who had committed to living abroad with those who had just returned from a year-abroad. As predicted, living abroad boosted creativity independently of individuals' motivation to do so. Individuals with prior experience of living abroad scored considerably higher on the Remote Association Test, compared to those who were about to go abroad in the following year. These findings indicated that the impact of experience was independent of individuals' motivation to engage with diversity - all participants in the sample were equally motivated to live abroad, but over and above the experience itself improved creativity. This study provided clear

evidence that the experience of diversity, over and above individuals' motivation, can lead to creativity uplifts, as observed here and in the wider literature on culture and creativity.

Having established the independence of motivation and experience, Study 2 was devoted to a further exploration of the potential interplay between exposure to diversity and epistemic motivations. Specifically, while motivation itself could not explain the impact of multicultural experience on creativity, this study looked at whether epistemic motivations moderated the impact of experience on creativity. This study measured individuals' motivations to engage in experiences that cognitively challenge a sense of stability and closure, and the extent to which they have engaged in diversity in the past. Exposure to diversity boosted creativity for participants lower in need for closure, but lowered creativity for those higher in need for closure. Together, Study 1 and 2 revealed that while the experience of living abroad independently boosts creativity, the extent of the uplift is contingent upon individuals' epistemic motivations. Having established that, I set about to specify the exact nature of the process behind these creative uplifts. The following two chapters introduced the framework of crossed-categorization and the challenging diversity hypothesis (Crisp & Turner, in press) that formed a theoretical basis for my inquiry.

The Challenging Diversity Hypothesis

Chapters 4-7 sought to apply and extend the challenging diversity hypothesis to the diversity-creativity relationship. Challenging diversity is an idea derived from the integration of research on crossed-categorization and the

cognitive benefits of social and cultural diversity (Crisp & Turner, in press). This model argued that perceptions of unrelated, multiple cross-cutting categorizations have not only the potential to reduce stereotyping and intergroup bias (Crisp & Hewstone, 2007; Crisp, Hewstone, & Cairns, 2001; Hall & Crisp, 2005; Hutter & Crisp, 2005), but can have further effects beyond intergroup relations (Crisp & Turner, in press). Based on this hypothesis, and an integration with existing findings on the benefits of diversity to creativity, I hypothesized that exposure to counter-stereotypical diversity will have initially detrimental, but in the long term beneficial effects to how people approach creative tasks. This hypothesis was consistent with the three conditions warranting the challenging diversity hypothesis. For the shift in processing and long-term development of flexibility to occur 1) diversity experienced by individuals must challenge existing social stereotypes 2) individuals must be motivated and 3) able (i.e., have the sufficient cognitive resources) to resolve conceptual inconsistencies. Studies 3-7 and Study 9 applied the challenging diversity hypothesis to creative processes, and these predictions were supported in empirical evidence.

Study 3 & 4

Study 3 and 4 investigated effects on creativity apparent in early exposure to counter-stereotypical diversity. These studies tested the prediction that immediately following the resolution of stereotypically conflicting categorizations individuals will experience cognitive depletion and a subsequent drop in creative performance. As predicted, perceptions of individuals defined by a counter-stereotypical combination of categorizations led not only to a

reduction in finding remote associations (RAT, Study 3 and 4), but also to a decrease in creative production (alien drawing, Study 4). In Study 4 the negative effect of thinking about an individual defined by conflicting categorizations was mediated by higher reported difficulty in thinking about the combination. These studies provided strong support to the hypothesis that thinking about counter-stereotypical targets is effortful, and can lead to performance detriments on a subsequent task. This finding is a direct reflection of how the “ability” antecedent of the challenging diversity hypothesis operates – individuals will not experience benefits to creativity unless they have the sufficient cognitive resources to do so.

Study 5

Studies 5, 6, and 7 investigated potential moderators to reveal support for the early versus later impacts of exposure to counter-stereotypicality on creativity. In Study 5 personal need for structure (PNS) moderated the effects of challenging diversity on creativity. In this study individuals lower in PNS were better able to form remote associations after forming an impression of a counter-stereotypical target. Individuals high in PNS on the other hand, experienced performance detriments. This finding has two important implications. First of all, it suggests that a flexible categorization mindset is linked to enhanced creativity in people. Secondly, that the beneficial effects of counter-stereotypical diversity are contingent upon existing epistemic motivations. This second conclusion mirrors the findings of Study 2. Individuals in that study benefited from diversity only when they were low in need for cognitive closure. In other words, being in the right mindset, wanting to engage

in complex, novel and unusual experiences can help individuals benefit from challenging diversity, however, with a more closed-minded attitude, resolving inconsistencies will more likely result in cognitive detriments.

Study 6

In Study 6 challenging diversity was predicted to benefit individuals with higher multicultural experience on a task measuring the ability to overcome inadvertent plagiarism. This prediction was made following the adaptation model outlined by Crisp and Turner (in press). According to this model, individuals need time and extended exposure to counter-stereotypical diversity in order to develop an automatic ability to suppress stereotypes and engage in generative thought. Following this argument I predicted that individuals with prior living abroad experiences will have had more exposure to challenging diversity and were therefore most likely to experience benefits to creativity. This experiment utilized a low-effort creativity measure. The results indicated that both perceiving a counter-stereotypical individual, and having prior multicultural experience were beneficial to creativity. There was also an interaction effect, such that exposure to the counter-stereotypical prime was most beneficial to individuals with prior multicultural experience. In sum, this study supported the theoretical time-course model. Forming impressions of counter-stereotypical people primed a flexible, creative mindset characterized by increased divergent production and lesser reliance on existing knowledge structures.

Study 7

The final experiment in this set - Study 7 - tested whether benefits to creativity in individuals with higher multicultural experience could also be seen on the level of self-construal. This hypothesis was based on the idea that people with extensive multicultural experience think of their own identity in more complex ways (Amiot & de la Salboniere, 2010; Brewer, 2010; Roccas & Brewer, 2005), and this could also carry-over to construing themselves as more creative. In this study exposure to a counter-stereotypical target was related to more creative self-conceptions, but only in individuals who amassed greater experiences of diversity. Resulting from extended exposure to diversity, individuals living abroad developed a working self-concept related to higher creativity, which became activated in response to forming an impression of a counter-stereotypical target.

This supports my hypothesis that counter-stereotypicality is linked to higher creativity in individuals (Studies 4 and 5) as well as the idea that such benefits are moderated by prior exposure to stereotypically challenging diversity (Study 6). While in Study 6 forming impressions of a counter-stereotypical target was associated with more creativity, in the present experiment it primed creativity on the level of declarative knowledge about the self. This means that extended experience of stereotypically challenging diversity lead not only to a creative mindset, but might also have left meaningful impressions on people's idea of who they are, or what they are like.

Challenging Diversity and Multicultural Ideology

The final studies presented in this thesis explored the interplay between multicultural ideology and exposure to counter-stereotypical diversity. The proposal was that an endorsement of multicultural ideologies (i.e., support for minority members to retain elements of their original culture) brings with it an appreciation of different points of views, an openness to new perspectives, and a tendency to think beyond dominant, well-learned and prototypical responses - all of which are hallmarks of creative thought. However, in the absence of this type of ideology, creativity can still be achieved when individuals are exposed to social diversity.

In Study 8 endorsement of multicultural ideology predicted greater creative performance than endorsement of assimilationist ideology. This supported the argument that individuals who recognize the existence and importance of other cultures and social groups are more likely to recruit ideas from multiple sources, and therefore perform more creatively. In Study 9 for individuals who didn't hold positive attitudes towards multiculturalism, experimentally induced exposure to counter-stereotypical diversity had a compensatory effect, enhancing creative performance. This confirmed earlier predictions that individuals who don't endorse multiculturalism will not be able to incorporate diverse stimuli in their thinking, unless they are given a 'diversity shot' – an unusual, counter-stereotypical diversity prime, leading to higher availability of diverse experiences or ideas in memory.

This study also registered a main effect of counter-stereotypicality: individuals in the counter-stereotypical prime condition performed more creatively on a picture-drawing task. This confirms my predictions of counter-

stereotypical diversity leading to higher flexibility and creativity in people. This finding may seem somewhat contrary to the findings of Study 4, in which counter-stereotypicality lead to a negative main effect on creativity. Two reasons might account for the surprising finding. First of all, in Study 9 the experimental group was compared against a no-task group, whereas in Study 4 the comparison group formed impressions of a stereotypical individual. A study with three levels of the independent variable could prove useful in resolving this inconsistency in findings.

Secondly, Study 9 opened with the multicultural experience questionnaire, but multicultural experience in Studies 6 and 7 was mostly inquired about at the end of the experiment. In light of this, a possibility arises that the presence of the multicultural experience questionnaire shifted participants' attention away from the creativity task, to thinking that this experiment focuses on prejudice-related topics (which is the case with many experiments at the School of Psychology at Kent). Considering the "draw an alien" task a filler, rather than an actual test, participants (psychology students) would then be more at ease with this task and would have relied more on flexibility and automaticity, rather than controlled (cognitively demanding) processes.

In sum, the findings of Study 8 and 9 are consistent with previous literature on the benefits of multicultural exposure to creativity (Leung & Chiu, 2010; Leung et al., 2008; Maddux et al., 2010; Maddux & Galinsky, 2009) and with findings on how an open-minded view of the world aids creative production. They mirror reports of how performance flourishes in individuals who are open to experience, low in need for closure, have a low personal need

for structure and are more liberal in their beliefs. These experiments added a new individual difference variable - the endorsement of multicultural ideology - to the list of factors supporting creative performance. Furthermore, Study 9 added support to the challenging diversity hypothesis, by showing how exposure to counter-stereotypical diversity, or what I called a 'diversity shot', triggers the cognitive dynamics leading to creative outcomes in individuals who don't endorse multiculturalism.

THEORETICAL CONTRIBUTIONS

An Integrative Framework

The research conducted in this thesis tested an integrative theoretical model drawing on findings from cross-cultural, small group, educational, developmental, intergroup and cognitive research. Doing so, it forged important theoretical links between existing theories underlying what we know about prejudice and stereotyping, theories about multiculturalism, and cognitive processes in people. Although researchers in these fields have been pursuing distinct theoretical questions, the findings converge in the prediction that experiences of diversity, represented by inconsistent cognitive representations, lead to a shift in processing and (in the long-term) the development of higher flexibility and creativity in people. This specification of preconditions and processes offered by the inconsistency resolution model will help to make predictions for future research on cultural adaptation, stereotype reduction and creativity.

Underlying Processes

The present research specified the cognitive mechanisms that lead to higher flexibility and creativity in people with diversity experiences. While previous authors speculated that benefits in multicultural individuals and sojourners occur through a cultural adaptation process (e.g., Maddux, Adam, Galinsky, 2010), the present model offers a widely applicable mechanism that could explain benefits to creativity in many of the demonstrated cases.

When inconsistent categorizations define a target person, impressions are conceptually integrated in a way that draws, not on stereotypic information stored in long-term memory, but on an alternative process leading to the generation of non-stereotypic attributes. Two distinct elements are necessary for this type of inconsistency resolution process: generative thought (re-construing the target with individualized “emergent” attributes) and “constituent disinheritance” (abandoning stereotypic thought, Hutter & Crisp, 2005). The model further specified that only sustained experiences of this type of diversity will aid creativity. This is because prolonged diversity experiences boost individuals’ tendencies to inhibit existing knowledge, allowing more cognitive resources for the generative thinking component (Crisp & Turner, in press). Following that, participants gain the capacity to perform more creatively; this is because creativity, by definition, goes beyond existing knowledge, and so any situation where new knowledge is generated, such as when people resolve inconsistency, is creative.

The argument about these cognitive dynamics was supported in the literature review and across many studies presented in this thesis (Studies 1 & 2, 5 – 7, 9). Attempts at reconciling cognitive inconsistencies between bicultural

individuals' cultural frames contribute to developing more complex cognitions, as demonstrated by higher awareness of the complexity of cultural issues (Benet-Martínez et al., 2006) higher integrative complexity on culturally-neutral tasks (Tadmor, Hong, Chiu, & No, 2010; Tadmor & Tetlock, 2006; Tadmor et al., 2009), lower personal need for structure (Tadmor et al., 2009) and higher levels of innovation (Maddux et al., 2010; Tadmor, Hong et al., 2010). However, unlike the above studies in cross-cultural and social psychology, the present research explains in detail how benefits to creativity occur and are sustained over time.

Antecedents of Successful Adaptation

Studies presented in this thesis specify not only why, but also when individuals cognitively adapt to experiences of social and cultural diversity. First of all, the sort of benefits observed in cross-cultural literature will only be seen when diversity is experienced in a way that challenges pre-existing or stereotypic expectations. It is not simply the experience of diversity that is important, but the experience of diversity that compels the perceiver to draw, not upon existing stereotypes or dominant responses in memory, but on more creative solutions; to literally think outside of the box.

Furthermore, the experiences need to occur repeatedly. For the process of inconsistency resolution to result in enhanced creativity will take repeated experiences of the sort observed by Maddux and Galinsky (2009). If these sorts of challenging situations occur regularly (i.e., with immersion and long-term contact), then the individual may not only develop more positive attitudes

towards their host nation counter-parts, but also an improved ability to carry out conceptual integration that will aid creative skills.

Finally, the model points to individual difference variables – especially high epistemic needs – as factors that can aid cultural adaptation to diversity experiences, and facilitate the expression of a flexible categorization mindset. Consistent with the prediction that individuals need to be motivated to process inconsistencies (Crisp & Turner, in press) my studies demonstrated that individuals with high epistemic need (low NFC in Study 2, low PNS in study 5) are more likely to experience successful adaptation to counter-stereotypical diversity.

Extending Implications Beyond Intergroup Relations

The research reported in this thesis draws attention to alternative outcome variables that could be utilized in intergroup research. Although classically, categorization and intergroup researchers look at effects to prejudice and stereotyping, the model outlined in this work argues that we should also consider benefits beyond intergroup relations. Thinking of multiple criteria for categorization can not only reduce bias, but it will also lead to a shift in information processing, from stereotype-based to more individuated impression formation (Crisp, Hewstone, & Rubin, 2001; Hall & Crisp, 2005; Hutter & Crisp, 2005; Hutter et al., 2009). This can have profound benefits for flexibility and creativity (Cheng et al., 2008; Tadmor, Galinsky et al., 2010; Tadmor & Tetlock, 2006; Tadmor et al., 2009). In practice this means, that any attempts at changing inter-group attitudes through processes of categorizations, for instance during interventions in schoolchildren, will have effects to other aspects of

cognitive functioning, in this case, school performance. While maintaining the importance of looking at interventions to reduce prejudice, the challenging diversity perspective suggests that we should also consider the more cognitive outcomes of diversity-related experiences.

How Social Factors Shape Creativity

The model outlined in this thesis is testament to how the right environmental conditions and individual differences can contribute to higher creativity in people. The research presented here resonates with the highly integrative, social-psychological understanding of creative processes (e.g., Amabile, 1996, De Dreu et al., 2008). My studies looked at creativity as a confluence of personality and environmental variables. This research was informed by and made predictions on the basis of findings of how flexibility and effort are necessary for creative accomplishments (De Dreu et al., 2008), how the right sort of life experiences can lead to creative benefits in later life (Amabile, 1996), and how epistemic motivations can moderate the impact of environment on creativity (e.g., Leung and Chiu, 2010).

This type of social-personality account has important practical implications for creativity research. Given a high demand for practical knowledge on how to foster and recognize creative talent (e.g., IBM, 2010), researchers need to investigate what characteristics of working environments can benefit creativity. They also need to know how these environmental factors will interact with peoples' personalities. The current thesis contributes to this knowledge too; for instance two studies presented here demonstrated that individuals with high epistemic motivations are most likely to benefit from

social diversity (Studies 2 & 5). But experiences of diversity can also hamper creativity when individuals have not had the chance to recuperate from the previous task, or have not had much practice in resolving inconsistencies (Studies 3 - 5).

In sum, the research presented in this thesis has important implications to several sub-fields of psychology. An understanding of how counter-stereotypical diversity fosters creativity can help us to better explain the recent findings of a diversity-creativity link and the cognitive processes that occur as a result of diversity experiences; it can help to distinguish different stages in the cognitive adaptation processes, and shed light on what constellations of personality and environmental characteristics are important to fostering creativity.

LIMITATIONS

Manipulation

One potential criticism of this research might be directed to the manipulations of counter-stereotypicality. The studies employed in this thesis have consistently used a *female mechanic* (versus a *male mechanic*) as the operational definition of diversity leading to inconsistency resolutions. There was a strong reason behind picking this particular category combination: participants found the female mechanic combination most surprising and unfamiliar (Hutter & Crisp, 2005), and most difficult to process (pilot study). Utilizing this particular manipulation would therefore be best in order to demonstrate effects of instant depletion, but could at the same time serve as a realistic prime the inconsistency resolution processes. Secondly, retaining the

same manipulation throughout most of the studies enabled higher internal consistency of this research programme.

Nonetheless, future studies should attempt to replicate the current findings using other manipulations of challenging diversity. Using manipulations that are not cognitively depleting, for instance asking participants to recall meeting a counter-stereotypical individual in the past, could provide a clearer picture of the benefits of counter-stereotypical diversity, because they would not counter-act effects to cognitive flexibility. It would also seem prudent to conduct additional studies with the use of neutral control groups, to be able to distinguish if the effects described in this thesis are driven by counter-stereotypicality, stereotypicality, or both. Such studies could also shed light on the apparent inconsistency between Study 4 and Study 9, which presented inconsistent effects to the same creativity measure, but based on using a different control comparison.

Ecological Validity

Although the studies presented in the current thesis have utilized multiple measures of creativity, their applicability to real-life settings may be limited. These experiments utilized creativity measures that were easy to apply in laboratory settings, but may have seemed quite “artificial” and had little resemblance to every-day creativity, which I would like these findings to be generalized to. Therefore, in order to understand how counter-stereotypical diversity affects creativity in real life, I’d like in the future to look at operationalizations that are closer to actual creative accomplishments: for instance individuals’ levels of innovation at work, school or university.

A similar criticism can be made of the counter-stereotypical manipulation employed in this experiment. It would be useful to design a measure (not manipulation) of the degree to which individuals have experienced counter-stereotypical diversity, and look at whether these correlate with actual levels of innovation throughout individuals' lifespan. Finding a way of doing that may also open doors for future inquiries: for instance, does higher experience of counter-stereotypicality immunize people against stereotype-threat or prejudice? Will individuals with the ability to resolve inconsistencies be better at adapting to new environments? Will they be better able to spot potential for creativity and innovation, that others have not noticed? Will they, as a result of the counter-stereotypical exposure, become more liberal in their political beliefs? Such questions are definitely worth to investigate in the future.

Measurement Issue

The studies presented in this thesis could also benefit from increasing internal validity, especially with regard to creativity measures. Creativity has been operationalized in many ways, and it would be fair to point to certain issues with regard to this construct's validity. Researchers are often unclear about the exact cognitive processes that underlie some of the creativity measures, and some accounts can be inconsistent about what is measured through a given research tool.

For instance, some may consider the RAT an effortful, hypothesis-testing task (Kray, Galinsky, & Wong, 2006; Markman et al., 2007), while other suggest that it relies on unconscious, remote associations (Dijksterhuis et al., 1998; Zhong, Dijksterhuis, & Galinsky, 2008). However neuropsychological

research suggests that both of these accounts are true, and cognitive processes involved in RAT solutions can differ across single test items: some of them are solved through an effortful hypothesis-testing process, while others through an instant moment of insight (Kounios & Beeman, 2009). Which process people engage in could be, to a certain extent, controlled using different exposure times. When answering items of the RAT participants have to find a word analogous to three examples (e.g., actor, dust, shooting – the answers is “star”). If presented at short intervals, the same items will measure an ability to quickly and automatically form flat (remote) associations (Mednick, 1962; Mednick & Mednick, 1967), but won't capture individuals' motivation or ability to think deeply about a problem. However, If given plenty of time for the solution (as was done in the current research) participants will be more likely to engage in effortful hypothesis-testing process.

Largely for technical reasons, most of the experiments presented in this thesis have not measured or controlled the time it took participants to answer particular items. When utilizing the RAT in Studies 3-5 participants were simply given 10 to 15 RAT items on a sheet of paper or in an internet questionnaire, and asked to find the right solutions. Future studies could benefit from computerized tasks which control or measure the time participants take to answer questions. Employing experimental software to this end could give me better control over these measurements, and produce more information about the nature of processes in question.

FUTURE STUDIES

Further Consequences of Challenging Diversity

Support for the challenging diversity hypothesis has several implications for future research. This hypothesis states that following experiences of a stereotypically challenging diversity, individuals experience a shift in processing, that when exercised over extended periods, can carry-over and generalize to other cognitive domains. Thinking about challenging diversity requires people to suppress dominant, stereotypic responses (i.e., having to form an impression of a female engineer requires suppression of the existing stereotypes of women and engineers, and the instigation of new, emergent traits to define the person). This mindset will then carry over to other relevant tasks (i.e., creativity tasks that also require a suppression of dominant, prototypical responses in favour of 'thinking out of the box').

The studies presented in this thesis supported the challenging diversity hypothesis by showing that individuals with prior diversity experience, and those low in epistemic needs, experience boosts to creativity following a counter-stereotypical prime. Although predictions made by the challenging diversity hypothesis were confirmed, more research is necessary to demonstrate that the process behind the relationship is indeed an increased propensity for stereotype suppression. More evidence of a counter-stereotypical mindset could be provided by using a series of computerized tasks that will test individuals' generalized tendency to suppress stereotypic responses (which should be higher in individuals with a flexible mindset).

These measures could include implicit testing methodologies, for instance

the IAT (Greenwald, MGhee, & Schwartz, 1998). In an IAT participants are required to categorize stimuli that correspond to either congruent or incongruent categories (e.g., *male-mechanic*; *female-mechanic*). Looking at reaction times in congruent (stereotypical) versus incongruent (counter-stereotypical) trials could give support to the idea of decreased stereotyping in individuals with prior expertise in resolving inconsistencies. Similarly, one could employ the Stroop test (Stroop, 1935) to measure if individuals with more diversity experiences, following resolving conceptual inconsistencies, respond with lower levels of cognitive depletion.

Another interesting question is whether repeatedly engaging in inconsistency resolution could increase individuals' propensity for more systematic processing. When people encounter challenging diversity, they switch to more effortful impression formation (Hutter & Crisp, 2005; Fiske & Neuberg, 1999); but could this result in developing a tendency for systematic thought and mindfulness? Could the prolonged practice of stereotype suppression result in enhanced executive functioning, as described in bilingual individuals (Bialystok et al., 1999)? A further investigation of even more precise cognitive benefits associated with challenging diversity could lead to new empirical predictions: for instance that more mindfulness and systematic thinking in diversity experienced individuals would lead to better, more rational decision-making in important life areas such as health or finance.

Further Support for the Adaptation Model

Secondly, further research is needed to strengthen support for the adaptation model, i.e., the idea outlined by Crisp and Turner (in press) that the

extent to which individuals benefit from challenging diversity depends on the length and intensity of their experiences of such diversity. One way to establish this is to compare experiences of being counter-stereotypical, and perceiving counter-stereotypical individuals. For instance, being a *woman engineer* will likely lead to greater experience, and personal relevance of counter-stereotypicality, than being a *male engineer* who works some of the time with a woman engineer. Both scenarios may be beneficial, but not necessarily to the same extent, or may not lead to benefits equally fast. The male engineer who works with a woman engineer will have many opportunities to think differently about occupational gender stereotypes, but will also be exposed to many (stereotype confirming) male engineers, and may find it initially difficult to think of his female colleague.

In contrast, the woman engineer will confront her apparent counter-stereotypicality on a daily basis. One could expect that this degree of immersion in the challengingly diverse context will have an impact on the degree of benefits to creative performance. This could easily be established, for instance by comparing female psychology students' and engineering psychology students' reactions to counter-stereotypical primes. Another way of strengthening the adaptation account is to conduct a longitudinal study and compare if, over time, individuals exposed to diversity (whether in real life, or in lab based stimulations) would become more efficient at suppressing stereotypical information and engaging in generative thought, and whether these effects would be accompanied by increased creativity. These hypotheses could also be tested using the Stroop test or IAT tasks described in the previous section.

Does Living vs. Travelling Abroad Matter?

It would also be interesting to look at how the challenging diversity hypothesis relates to the “travelling” versus “living abroad” distinction proposed by Maddux and Galinsky (2009). In their eminent paper, Maddux and Galinsky (2009) demonstrated that only living abroad, but not travelling can bring benefits to creative performance. But extrapolating from the challenging diversity hypothesis, the degree to which people engage with others while being abroad should matter more than whether these individuals label themselves as expatriates or travellers. The crucial difference lies not in whether people “live abroad” or “travel abroad”, but in how they approach either of those experiences. Consider a British person moving to a (predominantly British) district in Southern Spain, and another one who backpacks through Asia with the goal of meeting new, interesting people on the way. The latter one will probably experience more diversity, and following that more benefits to cognitive performance, than the former. The crucial difference here being, that the vagabond traveller considers social interactions part of his or her journey, while the “expat” may simply be looking for more sun and sandy beaches, but not necessarily a different culture or any sort of social diversity. In this case, again, finding an accurate *measure* of prior challenging diversity experiences would help to strengthen support for the challenging diversity model.

Executive Control

Somewhat separately from the challenging diversity hypothesis, it could be interesting to explore the interplay of automatic and controlled processes in the diversity-creativity link. The challenging diversity hypothesis suggests that

individuals exposed to counter-stereotypical diversity will “automate” the ability to go beyond stereotypical knowledge. However, in individuals who experience diversity and multiculturalism, benefits could also occur due to higher levels of cognitive control, as demonstrated in bilingual individuals (Bialystok, 2005; Bialystok et al., 2004; Kharkhurin, 2007, 2008). In other words, it would be interesting to see, if benefits to executive function in bilinguals are due to bilingualism or biculturalism of participants. Secondly, researchers should ask whether higher executive function in bilinguals/biculturals can be linked to these individuals’ unusually high creativity levels.

One can speculate about the ways in which such improvements to creativity would occur. One possibility is that individuals who exercise self-control through adapting to a given cultural frame, will exhibit extra sensitivity to environmental cues that carry information about the ‘right’ sort of behaviour (e.g., Benet-Martínez et al., 2006). This could be demonstrated through bicultural individuals’ superior understanding of task instructions (e.g., “generate an original product” vs. “generate an original product that the customers will want to use”), good “frame switching” between generative and selective phases of creative tasks, or superior performance on tasks that are adaptive and personally relevant. The latter one should lead to enhanced creativity, because if bilingual/bicultural individuals really have improved executive function, they will be able to persist more, and achieve more creativity through effort (as in the DPCM model, Baas, De Dreu, & Nijstad, 2008; De Dreu, Baas, & Nijstad, 2008). So when asked to perform a task that is personally relevant and important, bicultural/bilingual individuals should persist

more and be more creative, compared to individuals with no bilingual/bicultural experience. This potential increase in executive function could have even more wide-ranging consequences than the „challenging diversity” effect, and additional research would be necessary to establish if these are independent or related processes.

Inclusive Categorizations

A further characteristic of multicultural experiences that may benefit creative performance is linked to more inclusive, categorical thinking. Social categorization is inherently hierarchical, reflecting human classification systems more generally, and more tolerant, “worldly” attitudes have in the past been associated with thinking in terms of higher level social categories. Research into the common ingroup identity model (Gaertner & Dovidio, 2000) has demonstrated that changing the nature of categorical representation from 'us' and 'them' to a more inclusive 'we' it is possible to reduce prejudice and intergroup discrimination. Because multicultural experiences will typically involve more inclusive, higher level categorizations, and this may consequently cue abstract, holistic information processing – a cognitive mindset that aids creative production (Förster & Dannenberg, 2010; Förster, Friedman, & Liberman, 2004).

Research in social cognition demonstrated improved creativity when individuals are encouraged to shift to more holistic, abstract processing (Förster & Dannenberg, 2010; Förster et al., 2004; Friedman, Fishbach, Förster, & Werth, 2003; Friedman & Förster, 2001). A change from thinking in terms of lower-level, more concrete social categories, to a higher-level categorization

helps people to generate more atypical uses of objects (Friedman & Förster, 2001, Förster & Friedman, 2010), to form remote conceptual associations (Mehta & Zhu, 2009), produce more creative titles of a cartoon (Friedman and Förster, 2001), enhance performance on the Snowy Pictures Test (Förster, Friedman, & Liberman, 2004) and Gestalt Completion Test (Förster et al., 2004). These improvements to creativity occur because focusing attention on broad categories can facilitate the ability to activate inaccessible conceptual representations in memory. These studies demonstrate, that super-ordinate, abstract concepts (rather than exemplars, or lower level categories) can activate more remote associations; they enhance performance on creativity tasks (Friedman & Förster, 2010).

Following this reasoning, integrative multicultural experiences that elicit a more inclusive construal of the self within a host nation context (as represented in the common in-group identity model) could establish a holistic mindset, which would in turn facilitate access to remote associations, and through that, enhance creative performance. Research on social categorization, and in particular on the effects of inclusive re-categorization adds further support to this line of thinking. More inclusive category construal can be achieved when individuals focus on similarities rather than differences between two social groups. For example, Crisp and Beck (2005) asked participants to generate similarities between the ingroup and outgroup in order to promote a common ingroup identity, and reduce intergroup bias. This mirrors recent findings of construal level theory that a similarity-focus induced more global, abstract thinking. This means that diversity experiences which will prompt

people to focus on commonalities between the in-group and the out-group, may have beneficial effects to creativity.

An Awareness of the Benefits

Another idea, little explored in previous studies, is to investigate motivational processes related to experiences of diversity. The current thesis looked at motivations to live abroad only to the extent that they were a potentially confounding variable that lead to assumptions of benefits from diversity experiences. But although Study 1 shows that cognitive effects occur over and above motivation to engage in diversity, these findings don't say that people *do not* preselect on the basis of this motivation.

It is still very well possible that some kind of motivational process could operate simultaneously to a counter-stereotypical mindset. Playing devils' advocate one could ask, whether a motivation to engage with diversity could, over and above the inconsistency resolution processes involved in immersive diversity experiences, also contribute to creativity? People who move across the globe to teach English in a remote village in China are clear cases of individuals extremely driven to engage with diversity; but how would they then achieve creativity, if not through a process of inconsistency resolution?

One possibility is that creative and more open-minded individuals will *consciously* choose to engage in diversity experiences, and do it with the purpose of achieving greater creativity in mind. This is consistent with anecdotal evidence showing how creative individuals seek inspiration to help them realize own creative potential. Such individuals could approach diversity *in order* to become more creative. Elsewhere in this thesis I suggested that

engaging in diversity can be construed as life-changing, and character-building experience. Provided that individuals are aware of the link between diversity and creativity (and partial support for that is provided by Study 7), they could then decide to expose themselves to diversity because they believe that this will give them an interesting lifestyle and boost to creativity. Finding support for this notion that an *awareness* of benefits of diversity, and a subsequent motivation, would prompt individuals to engage more, could bring insights to prejudice-reducing interventions. One could for instance ask, whether a systematic training making people *aware* that diversity is good for their creativity would result in improved intergroup relations.

Other, not necessarily *aware* processes could account for the diversity-creativity relationship too. For instance creativity could occur through a mechanism similar to the one described in Study 8. Individuals who *appreciate* diversity should be more likely to *sample ideas from diverse sources* (Leung & Chiu, 2010). This process could be understood as higher receptiveness to different ideas, or in a more self-regulatory manner, as an implicit goal to sample diverse ideas. Furthermore, individuals willing to engage in diversity could employ *approach focus* (e.g., Higgins, 1997) in the presence of diverse or multicultural cues, and approach focus has in the past been linked to increased creativity in people (for a review see Förster & Dannenberg, 2010). Last but not least, if individuals who believe in the value of diversity construe their experience in a positive manner, for instance as character-building, than this could contribute to an increased feeling of *control*, and *power*, the latter of which has in the past been linked with enhanced creativity (Galinsky et al., 2008).

Is Inconsistency Resolution the Only Process?

The inconsistency resolution demonstrated in this thesis is an important and powerful mechanism behind the diversity-creativity relationship, and a good explanatory framework for many of the observed diversity-creativity effects. In their American Psychologist Paper Leung et al. (2008), present an interesting overview of possible mechanisms behind the diversity-creativity relationship. Multicultural experiences could contribute to creativity in five ways: (1) To begin with, new ideas, concepts or scripts acquired during multicultural experiences are the building blocks of creative expansion, because “the more new ideas people have, the more likely they are to come up with novel combinations” (Leung et al., 2008; Weisberg, 1999). (2) Secondly, people who had lived abroad recognize that similar scripts and behaviours may have dynamic functions and multiple meanings in different cultural contexts (Galinsky, Maddux, & Ku, 2006). (3) Thirdly, exposure to other cultures may have destabilized individuals’ pre-existing cognitive structures as these individuals acquired alternative structures and adapted to a new environments. (4) Furthermore, individuals with multicultural experiences will show increased “psychological readiness to recruit and seek out ideas from diverse sources” (Leung et al., 2008, p. 172). (5) Finally, because foreign cultures may contain values and beliefs very different from one another, the process of resolving incongruent ideas may cause increments to cognitive complexity (Tadmor & Tetlock, 2006).

The challenging diversity model does a good job of integrating some of these mechanisms under one label. Inconsistency resolution in multicultural contexts could be related to the recognition (and reconciliation) of multiple

meanings of the same behaviour (Mechanism 2), to de-stabilizing cognitive structures (Mechanism 3), and to a greater cognitive complexity (Mechanism 5). However further research would be necessary to explain the exact nature of the “readiness to recruit diverse ideas” (Mechanism 4) and the “building blocks” idea (Mechanism 1). Together with expectations of benefits to creativity, more inclusive categorizations, and higher receptiveness to diverse ideas, the “building blocks” effect could be a parallel mechanism responsible for the challenging diversity effect demonstrated in the present studies.

PRACTICAL IMPLICATIONS

The results of the current thesis illuminate the ongoing discussion about benefits of social diversity and multiculturalism. Is increasing societal diversity a good thing? Should politicians, policy makers and the public welcome an increasingly pluralistic society? These questions have dominated scholarly, political and public discourse in the 20th century. The current thesis contributes to this discussion by asserting that encouraging individuals to maintain distinct cultural, ethnic and religious identities within an inclusive society can yield considerable social and personal benefits. This thesis capitalizes on past findings that diversity can increase tolerance and reduce prejudice (Crisp & Hewstone, 2007; Gaertner & Dovidio, 2000; Roccas & Brewer, 2002) as well as make people more flexible and creative (Benet-Martínez et al., 2006; Leung et al., 2008; Maddux & Galinsky, 2009; Tadmor et al., 2009).

But diversity has also got its critics, who claim that too much diversity and multiculturalism will decrease social harmony (Schlesinger, 1992), and bring distress to individuals (Gil et al., 1994; Rudmin, 2003; C. Ward et al.,

2001). The findings of the current thesis can contribute to the debate in two respects. First of all, they make predictions of how people will react to diversity, depending on their preparation to deal with this experience. Secondly, they advocate the stance that the right sort of diversity, and under the right circumstances, can bring considerable and important benefits to peoples' perceptions of the world and their levels of innovation.

Explaining Controversies Surrounding Diversity

By understanding why and when some individuals may negatively, and some positively react to diversity, researchers and practitioners alike will be better able to manage individuals' *perceptions* of and *reactions* to diversity in organizations. People's reactions to diversity and multiculturalism depend on their psychological preparedness for thinking about such novel stimuli, and this finding needs to be taken into account when introducing diversity interventions. One important moderator of benefits from challenging diversity is the level of individuals' prior diversity experience. While individuals' with plenty diversity experiences may benefit from even more diversity, those unaccustomed to challenging diversity will feel overwhelmed, and may as a result express negative reactions. This could have important implications for changes in organizations. For instance a company wanting to introduce foreign workers among their midst may first need to consider diversity levels and experiences that existed before. Given high initial levels of homogeneity managers need to be mindful of introducing new employees at a slower pace. If diversity is introduced too fast, this may have adverse effects to how original group members react to their new co-workers.

To a similar extent practitioners need to be mindful of epistemic motivations when introducing changes in their organization. For instance at schools, pupils with high epistemic needs might find it difficult to think of counter-stereotypical diversity, while those with low epistemic need will find the same experience relatively easy. This means that while utilizing stereotype-disconfirming prejudice reduction interventions, practitioners need to be aware that such interventions may actually polarize students' reactions to diversity. Instead of using a "one size fits all" approach, these teachers may first need to consider pupils' levels of epistemic motivation, and tailor the intervention to those levels in children.

The findings presented in this thesis can also partially explain why some individuals who experience *being* diverse will benefit and construe this experience in a positive way, while others may feel tired and overwhelmed by the complexity of their own identities. Some academics assert that immigrants can successfully acculturate and benefit from their experience, but others will focus on negative effects of psychological stigma and marginalization (for a discussion see LaFromboise et al., 1993). This controversy can easily be explained when we take into account individuals' preparedness and cognitive openness towards new, unusual situations such as those represented by social diversity. For instance, while individuals who decide to study abroad will most probably be motivated towards diversity, political refugees or individuals in the host society may participate in diversity involuntarily, enter such situations unprepared, and experience detrimental, rather than beneficial, effects. Further studies should investigate the individual circumstances and motives that lead to multicultural exposure or living-abroad experiences. The knowledge of those

factors might contribute to a better understanding of when and how living abroad and experiencing multicultural settings contribute to the way people process information, and the potential benefits this brings to cognitive skills embodied in innovation, ideation and creative expression. Furthermore, practitioners who want to avoid cognitive detriments (Studies 1 & 3 – 5) or stereotype rebound effects (Macrae, Bodenhausen, Milne, & Jetten, 1994) should be aware that human behaviour results from an interaction of personality variables and environmental factors, and thus any interventions to reduce prejudice need to take to account the cognitive capabilities of the intervention targets.

Reducing Prejudice

Counter-stereotypical individuals are at the forefront of social change in many countries, and investigating the consequences of this phenomenon is important for psychologists, policy-makers and the public. Counter-stereotypical individuals can pay a dear price for eroding the traditional societal order, as many institutional and societal barriers prevent these individuals from membership in non-overlapping social groups. For instance tough border controls and immigration policies aim at preventing Africans or Asians from becoming Europeans. As a result, up to two thousand people every year die trying to enter Europe illegally by crossing the Mediterranean Sea (International Organization for Migration, 2008; 2005). Similarly, despite having acquired increasingly more rights over the last 50 years, women professionals remain controversial and are likely to be discriminated against. According to the World Value Survey 16% of people in Britain, 31% in Poland and 42% in China agree

that *Men should have more right to a job than women* (World Value Survey, 2005-2008). Illuminating when, why and how the experience of stereotypically challenging diversity will be accepted and integrated into individuals' world-views can help to reduce the stigma and prejudice towards counter-stereotypical individuals.

Furthermore, the research presented in this thesis informs about important and measurable benefits that minority and counter-stereotypical individuals bring to the society. An awareness of such findings may be crucial for the improvement of current policies and attitudes towards diversity. Benefits from diversity can be experienced not only by the individuals who comprise minority groups, but also by those in majority groups or the host society. Spreading an awareness of these benefits of social and cultural diversity could serve as an important argument in public debates about the value of diversity and immigration.

Policies in Education and Organizations

Furthermore, a systematic knowledge base about the benefits of diversity is crucial to policy- and decision-makers in organizations, as well as to the public. As I discussed in the previous section, this research could illuminate interventions aimed at reducing prejudice, because it would explain under what circumstances these interventions succeed or fail. But more importantly, knowing about challenging diversity could help practitioners to assess any side effects of such interventions, that is any effects other than to prejudice and stereotyping. Many programs devised to ensure positive inter-ethnic relations utilize counter-stereotypical information about the targets of prejudice (for a

review see: Bigler, 1999) and it is important to consider whether the short-term effects of such interventions, alongside decreased prejudice, could also include effects to school performance of children. Investigating counter-stereotypicality is also important in the context of diverse work groups in organizations. One important consequence is that it might be beneficial for male-dominated organizations to promote female members, but to reap the benefits of this to creative output, they must guarantee a certain amount of open-mindedness from all team players. In a similar vein, it is good to offer individuals the ability to train or work abroad, but this needs to be matched with those employees readiness to embrace the change, and managers need to realize the need for acculturation time in such circumstances.

Changes to How we Understand Diversity

The research presented in this thesis has important implications for the current understanding of diversity in social sciences. Diversity does not only mean that countries are ethnically mixed, but also that more and more people belong to diverse groups and take on jobs that are counter-stereotypical to their gender or ethnic origin. Most currently, Western societies are experiencing this type of diversity a lot. Fairer social and immigration policies contribute to the presence of minority members in positions of power, and equality policies contribute to the erosion of traditional gender-role divides in organizations. This conceptualization of diversity is important, because researchers and practitioners alike need to recognize and respond to all sorts of diversity, and understand that the challenge is not only in having groups or societies that are

ethnically diverse, but other sorts of diversity, for instance defined by individuals' age or gender, count very much as well.

CONCLUSION

Nine experiments presented in the current thesis support the idea that successful adaptation to the experience to social and cultural diversity can bring measurable benefits to individuals' cognitions and creative performance. Engagement with experiences of diversity can change the way people think and solve problems. The reported research program demonstrated that the development of a flexible mindset in response to social and cultural diversity is warranted by certain conditions. My conclusion is that in order to benefit from exposure to counter-stereotypical stimuli individuals must be motivated and able to process the inconsistent cultural or identity representations. It also seems that individuals benefit from counter-stereotypical diversity mostly when they have extensive prior experience of diversity. Finally, the present research broadened the list of antecedents of creative performance. As demonstrated, not only experiences of diversity, but also expressions of support for multicultural ideology, can contribute to creative performance. In sum, the current work advances the understanding of the diversity-creativity relationship by delineating the cognitive, motivational and ideological determinants of how people react to experiences of diversity.

REFERENCES

- Aberson, C. L. (2010). Diversity experiences and intergroup Attitudes. In R. J. Crisp (Ed.), *The Psychology of Cultural Diversity* (pp. 171-189): Wiley-Blackwell.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: testing and interpreting predictions*. Newbury Park, CA: Sage.
- Amabile, T. M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology*, *45*(2), 357-376. doi: 10.1037/0022-3514.45.2.357
- Amabile, T. M. (1996). *Creativity in context. Update to the social psychology of creativity*. Oxford: Westview Press.
- Amabile, T. M., Hill, K. G., Hennessey, B. A., & Tighe, E. M. (1994). The Work Preference Inventory: Assessing intrinsic and extrinsic motivational orientations. *Journal of Personality and Social Psychology*, *66*(5), 950-967.
- Antonio, A. L., Chang, M. J., Hakuta, K., Kenny, D. A., Levin, S., & Milem, J. F. (2004). Effects of racial diversity on complex thinking in college students. *Psychological Science*, *15*(8), 507-510. doi: 10.1111/j.0956-7976.2004.00710.x
- Asch, S. E. (1956). Studies of independence and conformity: A minority of one against a unanimous majority. *Psychological Monographs*, *70*.
- Baker, S. M., & Petty, R. E. (1994). Majority and minority influence: Source-position imbalance as a determinant of message scrutiny. *Journal of Personality and Social Psychology*, *67*(1), 5-19. doi: 10.1037/0022-3514.67.1.5

- Bargh, J. A. (1989). Conditional automaticity: Varieties of automatic influence in social perception and cognition. In U. J. S. & J. A. Bargh (Eds.), *Unintended thought* (pp. 3-51). New York: Guilford Press.
- Barron, F., & Harrington, D. M. (1981). Creativity, intelligence and personality. *Annual Review of Psychology*, 32, 439-476. doi: 10.1146/annurev.ps.32.020181.002255
- Bem, D. J. (1967). Self-perception: an alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, 74(3), 183-200. doi: 10.1037/h0024835
- Benet-Martínez, V., Lee, F., & Leu, J. (2006). Biculturalism and cognitive complexity: Expertise in cultural representations. *Journal of Cross-Cultural Psychology*, 37(4), 386-407. doi: 10.1177/0022022106288476
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology*, 46(1), 5-34. doi: 10.1111/j.1464-0597.1997.tb01087.x
- Berry, J. W., & Annis, R. C. (1974). Acculturative Stress. *Journal of Cross-Cultural Psychology*, 5(4), 382-406. doi: 10.1177/002202217400500402
- Berry, J. W., & Kalin, R. (1995). Multicultural and ethnic attitudes in Canada: An overview of the 1991 National Survey. *Canadian Journal of Behavioural Science*, 27(3), 301-320. doi: 10.1037/0008-400X.27.3.301
- Berry, J. W., Kalin, R., & Taylor, D. M. (1977). *Multiculturalism and ethnic attitudes in Canada*. Ottawa: Minister of Supply and Services Canada.
- Bialystok, E. (1999). Cognitive complexity and attentional control in the bilingual mind. *Child Development*, 70(3), 636-644. doi: 10.1111/1467-8624.00046

Bialystok, E. (2005). Consequences of bilingualism for cognitive development.

In J. F. Kroll & A. M. B. d. Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 417-432). New York: Oxford University Press.

Bialystok, E., Craik, F., & Luk, G. (2008). Cognitive control and lexical access in younger and older bilinguals. *Journal of Experimental Psychology-Learning Memory and Cognition*, *34*(4), 859-873. doi: 10.1037/0278-7393.34.4.859

Bialystok, E., Craik, F. I. M., Klein, R., & Viswanathan, M. (2004).

Bilingualism, aging, and cognitive control: evidence from the Simon task. *Psychology and Aging*, *19*(2), 290-303. doi: 10.1037/0882-7974.19.2.290

Bigler, R. S. (1995). The role of classification skill in moderating environmental influences on children's gender stereotyping: a study of the functional use of gender in the classroom. *Child Development*, *66*(4), 1072-1087. doi: 10.1111/1467-8624.ep9509180275

Bigler, R. S. (1999). The use of multicultural curricula and materials to counter racism in children. *Journal of Social Issues*, *55*(4), 687-705.

Bigler, R. S., & Liben, L. S. (1992). Cognitive mechanisms in children's gender stereotyping: theoretical and educational implications of a cognitive-based intervention. *Child Development*, *63*(6), 1351-1363. doi: 10.1111/j.1467-8624.1992.tb01700.x

Bless, H., Fiedler, K., & Strack, F. (2005). *Social Cognition. How Individuals Construct Social Reality*. Hove: Psychology Press.

Botton, A. D. (2002). *The Art of Travel*. London: Penguin.

- Bowden, E. M., & Jung-Beeman, M. (2003). Aha! Insight experience correlates with solution activation in the right hemisphere. *Psychonomic Bulletin & Review*, 3(10), 730-737. doi: 10.3758/BF03196539
- Bowers, K. S., Regehr, G., Balthazard, C., & Parker, K. (1990). Intuition in the context of discovery. *Cognitive Psychology*, 22(1), 72-110. doi: 10.1016/0010-0285(90)90004-N
- Bowman, N. A. (2010). College diversity experiences and cognitive development: a meta-analysis. *Review of Educational Research*, 80(1), 4-33. doi: 10.3102/0034654309352495
- Brewer, M. B. (1988). A dual process model of impression formation. In R. S. Wyer & T. K. Srull (Eds.), *Advances in Social Cognition* (Vol. Vol. 1, pp. 1-36). Hillsdale, NJ: Erlbaum.
- Buriel, R., Perez, W., De Ment, T. L., Chavez, D. V., & Moran, V. R. (1998). The relationship of language brokering to academic performance, biculturalism, and self-efficacy among Latino adolescents. *Hispanic Journal of Behavioural Sciences*, 20(3), 283-297. doi: DOI: 10.1177/07399863980203001
- Calogero, R. M. (2007). *Development and validation of an implicit lexical measure of need for cognitive closure: A motivated social cognition approach*. PhD, University of Kent, Canterbury.
- Carlson, S. M., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental Science*, 11(2), 282-298. doi: 10.1111/j.1467-7687.2008.00675.x

- Chao, M., Zhang, Z.-X., & Chiu, C.-y. (2010). Adherence to perceived norms across cultural boundaries: The role of need for cognitive closure and ingroup identification. *Group Processes & Intergroup Relations*, *13*(1), 69-89. doi: 10.1177/1368430209343115
- Cheng, C.-Y., Sanchez-Burks, J., & Lee, F. (2008). Connecting the dots within: creative performance and identity integration. *Psychological Science*, *19*(11), 1178-1184. doi: 10.1111/j.1467-9280.2008.02220.x
- Chirkov, V., Vansteenkiste, M., Tao, R., & Lynch, M. (2007). The role of self-determined motivation and goals for study abroad in the adaptation of international students. *International Journal of Intercultural Relations*, *31*(2), 199-222. doi: DOI: 10.1016/j.ijintrel.2006.03.002
- Chirumbolo, A., Mannetti, L., Pierro, A., Areni, A., & Kruglanski, A. W. (2005). Motivated closed-mindedness and creativity in small groups. *Small Group Research*, *36*(1), 59-82. doi: 10.1177/1046496404268535
- Chirumbolo, A., Mannetti, S. L. L., Pierro, A., & Kruglanski, A. W. (2004). Effects of need for closure on creativity in small group interactions. *European Journal of Personality*, *18*(4), 265-278. doi: 10.1002/per.518
- Chirumbolo, A., & Sensales, G. (2004). Need for cognitive closure and politics: Voting, political attitudes and attributional style. *International Journal of Psychology*, *39*(4), 245-253. doi: 10.1080/00207590444000005
- Chiu, C.-y., Morris, M. W., 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*(2), 247-259. doi: 10.1037/0022-3514.78.2.247

- Craik, F. I. M., Bialystok, E., & Freedman, M. (2010). Delaying the onset of Alzheimer disease Bilingualism as a form of cognitive reserve. *Neurology*, *75*(19), 1726-1729.
- Crisp, R. J., & Beck, S. R. (2005). Reducing intergroup bias: the moderating role of ingroup identification. *Group Processes & Intergroup Relations*, *8*(2), 173-185. doi: 10.1177/1368430205051066
- Crisp, R. J., & Hewstone, M. (1999). Differential evaluation of crossed category groups: patterns, processes, and reducing intergroup bias. *Group Processes & Intergroup Relations*, *2*(4), 307-333.
- Crisp, R. J., & Hewstone, M. (2007). Multiple social categorization. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 39, pp. 163-254). Orlando: FL: Academic Press.
- Crisp, R. J., Hewstone, M., & Cairns, E. (2001). Multiple identities in Northern Ireland: Hierarchical ordering in the representation of group membership. *British Journal of Social Psychology*, *40*(4), 501.
- Crisp, R. J., Hewstone, M., & Rubin, M. (2001). Does multiple categorization reduce intergroup bias? *Personality and Social Psychology Bulletin*, *27*(1), 76-89. doi: 10.1177/0146167201271007
- Crisp, R. J., & Turner, R. N. (in press). Cognitive adaptation to the experience of social and cultural diversity. *Psychological Bulletin*.
- Darwin, C. (2010). *The Autobiography of Charles Darwin*: CreateSpace.
- Davies, P. G., Steele, C. M., & Markus, H. R. (2008). A nation challenged: The impact of foreign threat on America's tolerance for diversity. *Journal of Personality and Social Psychology*, *95*(2), 308-318. doi: 10.1037/0022-3514.95.2.308

- De Dreu, C. K. W., Baas, M., & Nijstad, B. A. (2008). Hedonic tone and activation level in the mood-creativity link: Toward a dual pathway to creativity model. *Journal of Personality and Social Psychology, 94*(5), 739-756. doi: 10.1037/0022-3514.94.5.739
- De Dreu, C. K. W., Giacomantonio, M., Shalvi, S., & Sligte, D. (2009). Getting stuck or stepping back: Effects of obstacles and construal level in the negotiation of creative solutions. *Journal of Experimental Social Psychology, 45*(3), 542-548. doi: 10.1016/j.jesp.2009.01.001
- De Dreu, C. K. W., & Nijstad, B. A. (2008). Mental set and creative thought in social conflict: Threat rigidity versus motivated focus. *Journal of Personality and Social Psychology, 95*(3), 648-661. doi: 10.1037/0022-3514.95.3.648
- De Dreu, C. K. W., Nijstad, B. A., & van Knippenberg, D. (2008). Motivated information processing in group judgment and decision making. *Personality and Social Psychology Review, 12*(1), 22-49. doi: 10.1177/1088868307304092
- De Dreu, C. K. W., & West, M. A. (2001). Minority dissent and team innovation: The importance of participation in decision making. *Journal of Applied Psychology, 86*(6), 1191-1201. doi: 10.1037//0021-9010.86.6.1191
- Deschamps, J.-C., & Doise, W. (1978). Crossed category memberships in intergroup relations. In H. Tajfel (Ed.), (pp. 141-158). Cambridge, England: Cambridge University Press.

- Devine, P. G., & Monteith, M. J. (1999). Automaticity and control in stereotyping. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 339-360). New York: Guilford Press.
- Dijksterhuis, A., & Meurs, T. (2006). Where creativity resides: The generative power of unconscious thought. *Consciousness and Cognition, 15*(1), 135-146. doi: 10.1016/j.concog.2005.04.007
- Dijksterhuis, A., Spears, R., Postmes, T., Stapel, D., Koomen, W., Knippenberg, A. v., et al. (1998). Seeing one thing and doing another: Contrast effects in automatic behaviour. *Journal of Personality and Social Psychology, 75*(4), 862-871.
- Dollinger, S. J. (2007). Creativity and conservatism. *Personality and Individual Differences, 43*(5), 1025-1035. doi: 10.1016/j.paid.2007.02.023
- Doosje, B., Spears, R., & Koomen, W. (1995). When bad isn't all bad: Strategic use of sample information in generalization and stereotyping. *Journal of Personality and Social Psychology, 69*(4), 642-655.
- Dovidio, J. F., Gaertner, S. L., & Saguy, T. (2009). Commonality and the complexity of "We": Social attitudes and social change. *Personality and Social Psychology Review, 13*(1), 3-20. doi: 10.1177/1088868308326751
- Dow, G. T., & Mayer, R. E. (2004). Teaching students to solve insight problems: evidence for domain specificity in creativity training. *Creativity Research Journal, 16*(4), 389-402. doi: 10.1080/10400410409534550
- Duncker, K. (1945). On problem solving *Psychological Monographs, 58* (5, Serial No. 270).

- Equality and Human Rights Commission. (2010). The UK's new Europeans. Progress and challenges five years after accession, from <http://www.equalityhumanrights.com/media-centre/2010/january/eastern-european-migrant-employment-patterns-reviewed/>
- Fazio, R. H., Effrein, E. A., & Falender, V. J. (1981). Self-perceptions following social interaction. *Journal of Personality and Social Psychology, 41*(2), 232-242. doi:10.1037/0022-3514.41.2.232
- Fazio, R. H., Eiser, J. R., & Shook, N. J. (2004). Attitude formation through exploration: valence asymmetries. *Journal of Personality and Social Psychology, 87*(3), 293-311. doi: 10.1037/0022-3514.87.3.293
- Fazio, R. H., Zanna, M. P., & Cooper, J. (1978). Direct experience and attitude-behaviour consistency: An information processing analysis. *Personality and Social Psychology Bulletin, 4*(1), 48-51. doi: 10.1177/014616727800400109
- Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. *Personality and Social Psychology Review, 2*(4), 290-309. doi: 10.1207/s15327957pspr0204_5
- Finke, R. A. (1996). Imagery, creativity, and emergent structure. *Consciousness and Cognition, 5*(3), 381-393. doi: 10.1006/ccog.1996.0024
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression-formation, from category-based to individuating processes - influences of information and motivation attention and interpretation. *Advances in Experimental Social Psychology, 23*, 1-74. doi:10.1016/S0065-2601(08)60317-2

- Fiske, S. T., & Taylor, S. E. (2008). *Social Cognition*: McGraw-Hill.
- Florida, R. (2002). *The Rise of the Creative Class*. New York: Basic Books.
- Förster, J., & Dannenberg, L. (2010). GLOMOsys: A systems account of global versus local processing. *Psychological Inquiry*, *21*(3), 175-197. doi: 10.1080/1047840X.2010.487849
- Förster, J., Friedman, R. S., Butterbach, E. B., & Sassenberg, K. (2005). Automatic effects of deviancy cues on creative cognition. *European Journal of Social Psychology*, *35*(3), 345-359. doi: 10.1002/ejsp.253
- Förster, J., Friedman, R. S., & Liberman, N. (2004). Temporal construal effects on abstract and concrete thinking: Consequences for insight and creative cognition. *Journal of Personality and Social Psychology*, *87*(2), 177-189. doi: 10.1037/0022-3514.87.2.177
- Friedman, R. S., Fishbach, A., Förster, J., & Werth, L. (2003). Attentional Priming Effects on Creativity. *Creativity Research Journal*, *15*(2/3), 277.
- Friedman, R. S., & Förster, J. (2001). The effects of promotion and prevention cues on creativity. *Journal of Personality and Social Psychology*, *81*(6), 1001-1013. doi: 10.1037/0022-3514.81.6.1001
- Fu, J. H.-Y., Morris, M. W., Lee, S.-L., 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*, *92*(2), 191-207. doi: 10.1037/0022-3514.92.2.191
- Gaertner, S. L., & Dovidio, J. F. (2000). *Reducing intergroup bias: The common ingroup identity model*. Philadelphia, PA: Psychology Press.

- Gailliot, M. T., & Baumeister, R. F. (2007). The Physiology of Willpower: Linking Blood Glucose to Self-Control. *Personality and Social Psychology Review, 11*(4), 303-327. doi: 10.1177/1088868307303030
- Galinsky, A. D., Maddux, W. W., & Ku, G. (2006). The view from the other side of the table. *Negotiation, 3-5*.
- Galinsky, A. D., Magee, J. C., Gruenfeld, D. H., Whitson, J. A., & Liljenquist, K. A. (2008). Power reduces the press of the situation: Implications for creativity, conformity, and dissonance. *Journal of Personality and Social Psychology, 95*(6), 1450-1466. doi: 10.1037/a0012633
- Galton, F. (1869). *Hereditary Genius*. New York: MacMillan.
- Getzels, J., & Csikszentmihalyi, M. (1967). *The Creative Vision: A Longitudinal Study of Problem Finding in Art*. New York: Wiley.
- Gibson, F. (2003). Nappy-changing, baby-sitting - and lots of testosterone. Meet the manny. *The Observer*. Retrieved from <http://www.guardian.co.uk/society/2003/mar/23/childrenservices.gendereissues>
- Gil, A. G., Vega, W. A., & Dimas, J. M. (1994). Acculturative stress and personal adjustment among hispanic adolescent boys. *Journal of Community Psychology, 22*(1), 43-54.
- Gilhooly, K. J., Fioratou, E., Anthony, S. H., & Wynn, V. (2007). Divergent thinking: Strategies and executive involvement in generating novel uses for familiar objects. *British Journal of Psychology, 98*, 611-625. doi: 10.1348/096317907X173421

- Gocłowska, M. A., Crisp, R. J., Walsh, V. (2010). Living abroad boosts creativity: decoupling motivational and experiential determinants. *Manuscript under review.*
- Gollwitzer, P. M., Heckhausen, H., & Steller, B. (1990). Deliberative and implemental mind-sets: Cognitive tuning toward congruous thoughts and information. *Journal of Personality and Social Psychology, 59*(6), 1119-1127. doi: 10.1037/0022-3514.59.6.1119
- Gough, H. G. (1979). A creative personality scale for the Adjective Check List. *Journal of Personality and Social Psychology, 37*(8), 1398-1405. doi: 10.1037/0022-3514.37.8.1398
- Gough, H. G., & Heilburn, A. B. (1965). *The Adjective Check List manual*. Palo Alto, CA: Consulting Psychologists Press.
- Griskevicius, V., Cialdini, R. B., & Kenrick, D. T. (2006). Peacocks, Picasso, and parental investment: The effects of romantic motives on creativity. *Journal of Personality and Social Psychology, 91*(1), 63-76. doi: 10.1037/0022-3514.91.1.63
- Groborz, M., & Nęcka, E. (2003). Creativity and cognitive control: Explorations of generation and evaluation skills. *Creativity Research Journal, 15*(2-3), 183-197. doi: 10.1207/S15326934CRJ152&3_09
- Guilford, J. P. (1950). Creativity. *American Psychologist, 5*(9), 444-454.
- Guilford, J. P. (1967). *The Nature of Human Intelligence*. New York: McGraw-Hill Book Co.
- Gutierrez, J., & Sameroff, A. (1990). Determinants of complexity in mexican-american and anglo-american mothers' conceptions of child

- development. *Child Development*, 61(2), 384. doi: 10.1111/1467-8624.ep5878987
- Hall, N. R., & Crisp, R. J. (2005). Considering multiple criteria for social categorization can reduce intergroup bias. *Personality and Social Psychology Bulletin*, 31(10), 1435-1444. doi: 10.1177/0146167205276084
- Hambrick, D. Z., & Engle, R. W. (2003). The role of working memory in problem solving In J. E. Davidson & R. J. Sternberg (Eds.), *The Psychology of Problem Solving* (pp. 176-206): Cambridge University Press.
- Hamilton, D. L., & Sherman, J. W. (1994). Stereotypes. In R. S. Wyer, & T. K. Srull (Ed.), *Handbook of Social Cognition. Volume 2: Applications*. (Vol. 2, pp. 1-68). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Hampton, J. A. (1987). Inheritance of attributes in natural concept conjunctions. *Memory & Cognition*, 15(1), 55-71. doi: 10.3758/BF03197712
- Hampton, J. A. (1997). Emergent attributes in combined concepts. In T. B. Ward, S. M. Smith & J. Vaid (Eds.), *Creative thought. An investigation of conceptual structures and processes*. (pp. 83-110). Washington, DC: APA.
- Hasher, L., & Zacks, R. T. (1988). Working memory, comprehension, and aging: A review and a new view. In G. H. Bower (Ed.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 22, pp. 193-225). San Diego, CA: Academic Press.

- Hastie, R., Schroeder, C., & Weber, R. (1990). Creating complex social conjunction categories from simple categories. *Bulletin of the Psychonomic Society*, 28 (3), 242-247.
- Hicks, J. A., Schlegel, R. J., Friedman, R. S., & McCarthy, D. M. (2009). Alcohol primes, expectancies, and the working self-concept. *Psychology of Addictive Behaviours*, 23(3), 534-538. doi: doi:10.1037/a0016259
- Homan, A. C., van Knippenberg, D., Van Kleef, G. A., & De Dreu, C. K. W. (2007). Interacting dimensions of diversity: Cross-categorization and the functioning of diverse work groups. *Group Dynamics-Theory Research and Practice*, 11(2), 79-94. doi: 10.1037/1089-2699.11.2.79
- Hong, Y., Morris, M. W., Chiu, C.-y., & Benet-Martínez, V. (2000). Multicultural minds: A dynamic constructivist approach to culture and cognition. *American Psychologist*, 55(7), 709-720. doi: 10.1037/0003-066X.55.7.709
- Hong, Y.-Y., Benet-Martínez, V., Chiu, C.-Y., & Morris, M. W. (2003). Boundaries of cultural influence. *Journal of Cross-Cultural Psychology*, 34(4), 453-464. doi: 10.1177/0022022103034004005
- Hunter, S. T., Bedell, K. E., & Mumford, M. D. (2007). Climate for creativity: A Quantitative Review. *Creativity Research Journal*, 19(1), 69-90.
- Hurtado, S. (2001). Linking diversity and educational purpose: How diversity affects the classroom environment and student development. In G. Orfield (Ed.), *Diversity Challenged: Evidence on the Impact of Affirmative Action*. Cambridge: Harvard Education Publishing Group.

- Hutter, R. R. C., & Crisp, R. J. (2005). The composition of category conjunctions. *Personality and Social Psychology Bulletin*, 31(5), 647-657. doi: 10.1177/0146167204271575
- Hutter, R. R. C., Crisp, R. J., Humphreys, G., Waters, G., & Moffitt, G. (2009). The dynamics of category conjunctions. *Group Processes & Intergroup Relations*, 12(5), 673-686. doi: 10.1177/1368430209337471
- IBM. (2010). Capitalizing on Complexity: Insights from the 2010 IBM Global CEO Study, from <http://www.ibm.com/news/ca/en/2010/05/20/v384864m81427w34.html>
- International Organization for Migration. (2008). World Migration Report 2008: Managing Labour Mobility in the Evolving Global Economy, from http://publications.iom.int/bookstore/index.php?main_page=product_info&cPath=37&products_id=62
- 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 Behaviour*, 40(3), 201-215.
- Janis, I. (1972). *Victims of groupthink*. Boston: Houghton Mifflin.
- 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(4), 471-485. doi: 10.1016/j.ijintrel.2005.12.003
- Kasof, J. (1997). Creativity and Breadth of Attention. *Creativity Research Journal*, 10(4), 303. doi: 10.1207/s15326934crj1004_2

- Kenworthy, J. B., Hewstone, M., Levine, J. M., Martin, R., & Willis, H. (2008). The phenomenology of minority-majority status: Effects on innovation in argument generation. *European Journal of Social Psychology, 38*(4), 624-636. doi: 10.1002/ejsp.521
- Kharkhurin, A. V. (2007). The role of cross-linguistic and cross-cultural experiences in bilinguals' divergent thinking abilities. In I. Kecskes & L. Albertazzi (Eds.), *Cognitive Aspects of Bilingualism*. Dordrecht, The Netherlands: Springer Verlag.
- Kharkhurin, A. V. (2008). The effect of linguistic proficiency, age of second language acquisition, and length of exposure to a new cultural environment on bilinguals' divergent thinking. *Bilingualism-Language and Cognition, 11*(2), 225-243. doi: 10.1017/s1366728908003398
- Kharkhurin, A. V. (2009). The role of bilingualism in creative performance on divergent thinking and invented alien creatures tests. *Journal of Creative Behaviour, 43*(1), 59-71.
- Kharkhurin, A. V. (2010a). Bilingual verbal and nonverbal creative behaviour. *International Journal of Bilingualism, 14*(2), 211-226. doi: 10.1177/1367006910363060
- Kharkhurin, A. V. (2010b). Sociocultural differences in the relationship between bilingualism and creative potential. *Journal of Cross-Cultural Psychology, 41*(5-6), 776-783. doi: 10.1177/0022022110361777
- Kosic, A., Kruglanski, A. W., Pierro, A., & Mannetti, L. (2004). The social cognition of immigrants' acculturation: effects of the need for closure and the reference group at entry. *Journal of Personality and Social Psychology, 86*(6), 796-813. doi: 10.1037/0022-3514.86.6.796

- Kounios, J., & Beeman, M. (2009). The Aha! moment: the cognitive neuroscience of insight. *Current Directions in Psychological Science*, *18*(4), 210-216.
- Kovacs, A. M., & Mehler, J. (2009). Cognitive gains in 7-month-old bilingual infants. *Proceedings of the National Academy of Sciences*, *106*(16), 6556-6560. doi: 10.1073/pnas.0811323106
- Kray, L. J., Galinsky, A. D., & Wong, E. M. (2006). Thinking within the box: The relational processing style elicited by counterfactual mind-sets. *Journal of Personality and Social Psychology*, *91*(1), 33-48. doi: 10.1037/0022-3514.91.1.33
- Kunda, Z., Miller, D. T., & Claire, T. (1990). Combining social concepts: The role of causal reasoning. *Cognitive Science*, *14*, 551-577. doi: 10.1207/s15516709cog1404_3
- LaFromboise, T., Coleman, H. L., & Gerton, J. (1993). Psychological impact of biculturalism: Evidence and theory. *Psychological Bulletin*, *114*(3), 395-412.
- Lambert, W. E., & Taylor, D. M. (1990). *Coping with Cultural and Racial Diversity in Urban America*. New York: Praeger.
- Lambert, W. E., Tucker, G. R., & d'Anglejan, A. (1973). Cognitive and attitudinal consequences of bilingual schooling. *Journal of Educational Psychology*, *65*(2), 141-159.
- Landau, J. D., & Leynes, P. A. (2004). Manipulations that disrupt generative processes decrease conformity to examples: Evidence from two paradigms. *Memory*, *12*(1), 90 - 103. doi: 10.1080/09658210244000388

- Leung, A. K.-Y., & Chiu, C.-y. (2008). Interactive effects of multicultural experiences and openness to experience on creative potential. *Creativity Research Journal*, 20(4), 376-382. doi: 10.1080/10400410802391371
- Leung, A. K.-Y., & Chiu, C.-y. (2010). Multicultural experience, idea receptiveness, and creativity. *Journal of Cross-Cultural Psychology*(1). doi: doi:10.1177/0022022110361707
- 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(3), 169-181. doi: 10.1037/0003066X.63.3.169
- Levine, R. A., & Campbell, D. T. (1972). *Ethnocentrism: theories of conflict, ethnic attitudes and group behaviour*. New York: Wiley.
- Linville, P. W., & Jones, E. E. (1980). Polarized appraisals of out-group members. *Journal of Personality and Social Psychology*, 38(5), 689-703. doi: 10.1037/0022-3514.38.5.689
- Lorenzo-Hernandez, J. (1998). How social categorization may inform the study of hispanic immigration. *Hispanic Journal of Behavioural Sciences*, 20(1), 39-59. doi: 10.1177/07399863980201003
- Macrae, C. N., & Bodenhausen, G. V. (2000). Social cognition: thinking categorically about others. *Annual Review of Psychology*, 51(1), 93.
- Macrae, C. N., Bodenhausen, G. V., Milne, A. B., & Jetten, J. (1994). Out of mind but back in sight: Stereotypes on the rebound. *Journal of Personality and Social Psychology*, 67(5), 808-817. doi: 10.1037/0022-3514.67.5.808

- Maddux, W. W., Adam, H., & Galinsky, A. D. (2010). When in Rome ... Learn why the Romans do what they do: How multicultural learning experiences facilitate creativity. *Personality and Social Psychology Bulletin*, 36(6), 731-741. doi: 10.1177/0146167210367786
- 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(5), 1047-1061. doi: 10.1037/a0014861
- Markman, K. D., Lindberg, M. J., Kray, L. J., & Galinsky, A. D. (2007). Implications of counterfactual structure for creative generation and analytical problem solving. *Personality and Social Psychology Bulletin*, 33(3), 312-324. doi: 10.1177/0146167206296106
- Markus, H., & Kunda, Z. (1986). Stability and malleability of the self-concept. *Journal of Personality and Social Psychology*, 51(4), 858-866. doi: 10.1037/0022-3514.51.4.858
- Marsh, R. L., Ward, T. B., & Landau, J. D. (1999). The inadvertent use of prior knowledge in a generative cognitive task. *Memory & Cognition*, 27(1), 94-105.
- Martindale, C., & Greenough, J. (1973). The differential effects of increased arousal on creative and intellectual performance. *Journal of Genetic Psychology*(123), 329-335.
- McGuire, W. J. (1960). Cognitive consistency and attitude change. *Journal of Abnormal and Social Psychology*, 60(3), 345-353. doi: 10.1037/h0048563

- McLeod, P. L., Lobel, S. A., & Cox, T. H. (1996). Ethnic diversity and creativity in small groups. *Small Group Research, 27*(2), 248-264.
- Mednick, S. A. (1962). The associative basis of the creative process. *Psychological Review, 69*(3), 220-232. doi: 10.1037/h0048850
- Mednick, S. A., & Mednick, M. T. (1967). *Examiner's manual: Remote Associates Test*. Boston: Houghton Mifflin.
- Monteith, M. J., Ashburn-Nardo, L., Voils, C. I., & Czopp, A. M. (2002). Putting the brakes on prejudice: On the development and operation of cues for control. *Journal of Personality and Social Psychology, 83*(5), 1029-1050. doi: 10.1037/0022-3514.83.5.1029
- Morris, M. W., Menon, T., & Ames, D. R. (2001). Culturally conferred conceptions of agency: A key to social perception of persons, groups, and other actors. *Personality and Social Psychology Review, 5*(2), 169-182. doi: 10.1207/s15327957pspr0502_7
- Moskowitz, G. B., Gollwitzer, P. M., Wasel, W., & Schaal, B. (1999). Preconscious control of stereotype activation through chronic egalitarian goals. *Journal of Personality and Social Psychology, 77*(1), 167-184. doi: doi:10.1016/S0022-1031(02)00001-X
- Mumford, M. D. (2003). Where have we been, where are we going? Taking stock in creativity research. *Creativity Research Journal, 15*(2/3), 107.
- Nelson Laird, T. F. (2005). College students experiences with diversity and their effects on academic self-confidence, social agency, and disposition toward critical thinking. *Research in Higher Education, 46*(4), 365-387. doi: 10.1007/s11162-005-2966-1

- Nemeth, C. J. (1986). Differential contributions of majority and minority influence. *Psychological Review*, *93*(1), 23-32.
- Nemeth, C. J. (1995). Dissent as driving cognition, attitudes, and judgments. *Social Cognition*, *13*(3), 273-291.
- Nemeth, C. J., Brown, K., & Rogers, J. (2001). Devil's advocate versus authentic dissent: stimulating quantity and quality. *European Journal of Social Psychology*, *31*(6), 707-720.
- Nemeth, C. J., & Kwan, J. L. (1987). Minority influence, divergent thinking and detection of correct solutions. *Journal of Applied Social Psychology*, *17*(9), 788-799.
- Newcomb, T. M. (1943). *Personality and social change: Attitude formation in a student community*. New York: Dryden.
- Nguyen, A.-M. D., & Benet-Martínez, V. (2007). Biculturalism unpacked: components, measurement, individual differences, and outcomes. *Social and Personality Psychology Compass*, *1*(1), 101-114. doi: doi:10.1111/j.1751-9004.2007.00029.x
- Novemsky, N., Dhar, R., Schwarz, N., & Simonson, I. (2007). Preference fluency in choice. *Journal of Marketing Research (JMR)*, *44*(3), 347-356.
- Okoh, N. (1980). Bilingualism and divergent thinking among Nigerian and Welsh school children. *Journal of Social Psychology*, *110*(2), 163.
- Phillips, K. W., Northcraft, G. B., & Neale, M. A. (2006). Surface-level diversity and decision-making in groups: When does deep-level similarity help? *Group Processes & Intergroup Relations*, *9*(4), 467-482.

- Piaget, J. (1975). *The equilibration of cognitive structures: The central problem of intellectual development*. Chicago: University of Chicago Press.
- Plant, E. A., Devine, P. G., Cox, W. T. L., Columb, C., Miller, S. L., Goplen, J., et al. (2009). The Obama effect: Decreasing implicit prejudice and stereotyping. *Journal of Experimental Social Psychology, 45*(4), 961-964. doi: 10.1016/j.jesp.2009.04.018
- Population Division, Department of Economic and Social Affairs, The United Nations. (2009). World Migrant Stock: The 2009 Wall Chart Retrieved 11.06, 2010, from http://www.un.org/esa/population/publications/2009Migration_Chart/2009IttMig_chart.htm
- Quinn, E. (1980). Creativity and cognitive complexity. *Social Behaviour & Personality: An International Journal, 8*(2), 213. doi: 10.2224/sbp.1980.8.2.213
- Reber, R., Winkelman, P., & Schwarz, N. (1998). Effects of perceptual fluency on affective judgments. *Psychological Science, 9*(1), 45-48.
- Ricciardelli, L. A. (1992). Creativity and Bilingualism. *Journal of Creative Behaviour, 26*(4), 242-254.
- Richeson, J. A., & Trawalter, S. (2005). Why do interracial interactions impair executive function? A resource depletion account. *Journal of Personality and Social Psychology, 88*(6), 934-947. doi: 10.1037/0022-3514.88.6.934
- Richeson, J. A., Trawalter, S., & Shelton, J. N. (2005). African Americans' implicit racial attitudes and the depletion of executive function after

interracial interactions. *Social Cognition*, 23(4), 336-352. doi:

10.1521/soco.2005.23.4.336

Rietzschel, E. F., De Dreu, C. K. W., & Nijstad, B. A. (2007). Personal need for structure and creative performance: The moderating influence of fear of invalidity. *Personality and Social Psychology Bulletin*, 33(6), 855-866.

doi: 10.1177/0146167207301017

Rietzschel, E. F., Nijstad, B. A., & Stroebe, W. (2007). Relative accessibility of domain knowledge and creativity: The effects of knowledge activation on the quantity and originality of generated ideas. *Journal of Experimental Social Psychology*, 43(6), 933-946. doi:

10.1016/j.jesp.2006.10.014

Roccas, S., & Brewer, M. B. (2002). Social identity complexity. *Personality and Social Psychology Review*, 6(2), 88-106. doi:

10.1207/s15327957pspr0602_01

Rosenthal, R., Rosnow, R. L., & Rubin, D. B. (2000). *Contrasts and effect sizes in behavioural research: A correlational approach*: Cambridge University Press.

Rubin, M., Paolini, S., & Crisp, R. J. (2010). A processing fluency explanation of bias against migrants. *Journal of Experimental Social Psychology*, 46(1), 21-28. doi: 10.1016/j.jesp.2009.09.006

Rudmin, F. W. (2003). Critical history of the acculturation psychology of assimilation, separation, integration, and marginalization. *Review of General Psychology*, 7(1), 3-37. doi: 10.1037/1089-2680.7.3.250

Runco, M. A. (2007). *Creativity. Theories and themes: Research, development and practice*: Elsevier. Academic Press.

- Sam, D. L., & Berry, J. W. (2010). Acculturation. *Perspectives on Psychological Science*, 5(4), 472-481. doi: 10.1177/1745691610373075
- Sassenberg, K., & Moskowitz, G. B. (2005). Don't stereotype, think different! Overcoming automatic stereotype activation by mindset priming. *Journal of Experimental Social Psychology*, 41(5), 506-514. doi: 10.1016/j.jesp.2004.10.002
- Schank, R., & Abelson, R. (1977). *Scripts, plans, goals and understanding*. Hillsdale, N.J.: Erlbaum.
- Schlesinger, A. (1992). *The Disuniting of America*. New York: W. W. Norton.
- Schmeichel, B. J., Vohs, K. D., & Baumeister, R. F. (2003). Intellectual performance and ego depletion: Role of the self in logical reasoning and other information processing. *Journal of Personality and Social Psychology*, 85(1), 33-46.
- Schultz, P. W., & Searleman, A. (1998). Personal need for structure, the Einstellung task, and the effects of stress. *Personality and Individual Differences*, 24(3), 305-310. doi: doi:10.1016/S0191-8869(97)00179-7
- Schulz-Hardt, S., Jochims, M., & Frey, D. (2002). Productive conflict in group decision making: genuine and contrived dissent as strategies to counteract biased information seeking. *Organizational Behaviour and Human Decision Processes*, 88(2), 563-586.
- Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending and a general theory. *Psychological Review*, 84(2), 127-190.

- Simonton, D. K. (1997). Foreign influence and national achievement: The impact of open milieus on Japanese civilization. *Journal of Personality and Social Psychology*, 72(1), 86-94.
- Simonton, D. K. (1999). *Origins of genius: Darwinian perspectives on creativity*. New York: Oxford University Press.
- Sommers, S. R., Warp, L. S., & Mahoney, C. C. (2008). Cognitive effects of racial diversity: White individuals' information processing in heterogeneous groups. *Journal of Experimental Social Psychology*, 44(4), 1129-1136. doi: 10.1016/j.jesp.2008.01.003
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(6), 845-851. doi: 10.1037/0022-3514.89.6.845
- Sternberg, R. J., & Lubart, T. I. (1993). Investing in Creativity. *Psychological Inquiry*, 4(3), 229. Sternberg, R. J., & Lubart, T. I. (2008). The concept of creativity: prospects and paradigms. In R. J. Sternberg (Ed.), *Handbook of Creativity* (pp. 3 -15). New York: Cambridge University Press.
- Suedfeld, P., & Tetlock, P. (2001). Individual differences in information processing. In A. Tesser & N. Schwarz (Eds.), *Blackwell Handbook of Social Psychology: Intraindividual Processes* (pp. 284-304).
- Suefeld, P., Tetlock, P., & Streufert, S. (1992). Conceptual/integrative complexity. . In C. P. Smith, J. W. Atkinson, D. C. McClelland & J. Veroff (Eds.), *Motivation and personality: Handbook of thematic content analysis* (pp. 393-400). New York: Cambridge University Press.

- Tadmor, C. T., Galinsky, A. D., & Maddux, W. W. (2010). Biculturalism and integrative complexity: capturing the key to the creative and professional benefits of multicultural experiences. *Journal of Personality and Social Psychology* (manuscript under review).
- Tadmor, C. T., Hong, Y. Y., Chiu, C. Y., & No, S. (2010). What I know in my mind and where my heart belongs. Multicultural identity negotiation and its cognitive consequences. In R. J. Crisp (Ed.), *The Psychology of Cultural Diversity* (pp. 115-144): Wiley-Blackwell.
- Tadmor, C. T., & Tetlock, P. E. (2006). Biculturalism: A model of the effects of second-culture exposure on acculturation and integrative complexity. *Journal of Cross-Cultural Psychology, 37*(2), 173-190. doi: 10.1177/0022022105284495
- Tadmor, C. T., Tetlock, P. E., & Peng, K. P. (2009). Acculturation strategies and integrative complexity. The cognitive implications of biculturalism. *Journal of Cross-Cultural Psychology, 40*(1), 105-139. doi: 10.1177/0022022108326279
- Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology, 33*, 1.
- Tajfel, H., & Wilkes, A. L. (1963). Classification and quantitative judgement. *British Journal of Psychology, 54*, 101-113.
- Thagard, P. (1997). Coherent and creative conceptual combinations. An investigation of conceptual structures and processes. In T. B. Ward, C. P. Smith & J. Vaid (Eds.), *Creative Thought* (pp. 129-141). Washington DC: APA.

- The Economist. (2005). Decapitating the snakeheads, Article, p. 18. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=18538133&site=ehost-live>
- Torrance, E. P. (1974). *Torrance Tests of Creative Thinking*. Lexington, MA: Personnel Press.
- Triandis, H. C. (1980). A theoretical framework for the study of bilingual-bicultural adaptation. *International Review of Applied Psychology-Revue Internationale De Psychologie Appliquee*, 29(1-2), 6-16.
- Urada, D., Stenstrom, D. M., & Miller, N. (2007). Crossed categorization beyond the two-group model. *Journal of Personality and Social Psychology*, 92(4), 649-664. doi: 10.1037/0022-3514.92.4.649
- Verkuyten, M. (2004). Everyday ways of thinking about multiculturalism. *Ethnicities*, 4(1), 53-74. doi: 10.1177/1468796804040328
- Verkuyten, M. (2005a). Ethnic group identification and group evaluation among minority and majority groups: Testing the multiculturalism hypothesis. *Journal of Personality and Social Psychology*, 88(1), 121-138. doi: 10.1037/0022-3514.88.1.121
- Verkuyten, M. (2005b). Immigration discourses and their impact on multiculturalism: A discursive and experimental study. *British Journal of Social Psychology*, 44, 223-240. doi: 10.1348/014466604X23482
- Verkuyten, M. (2007). Social psychology and multiculturalism. *Social and Personality Psychology Compass*, 1(1), 280-297. doi: doi:10.1111/j.1751-9004.2007.00011.x

- Verkuyten, M. (2010). Multiculturalism and tolerance. An intergroup perspective. In R. J. Crisp (Ed.), *The Psychology of Cultural Diversity* (pp. 147-170): Wiley-Blackwell.
- Walls, L. D. (2009). *The Passage to Cosmos: Alexander von Humboldt and the Shaping of America* University Of Chicago Press.
- Wan, W. W. N., & Chiu, C.-y. (2002). Effects of novel conceptual combination on creativity. *Journal of Creative Behaviour*, 36(4), 227-240.
- Ward, C., Bochner, S., & Furnham, A. (2001). *The psychology of culture shock*. Philadelphia: Taylor & Francis.
- Ward, T. B. (1994). Structured imagination: the role of category structure in exemplar generation. *Cognitive Psychology*, 27(1), 1-40. doi: 10.1006/cogp.1994.1010
- Ward, T. B. (2001). Creative cognition, conceptual combination, and the creative writing of Stephen R. Donaldson. *American Psychologist*, 56(4), 350-354. doi: 10.1037/0003-066X.56.4.350
- Ward, T. B. (2007). Creative cognition as a window on creativity. *Methods*, 42(1), 28-37.
- 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 & Cognition*, 30, 199-216.
- Ward, T. B., Smith, S. M., & Finke, R. A. (2008). Creative Cognition. In R. J. Sternberg (Ed.), *Handbook of Creativity*. New York: Cambridge University Press.
- Ward, W. C. (1974). Creativity in young children. *Journal of Creative Behaviour*, 8(2), 101-106.

- 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.
- Wilkenfeld, M. J., & Ward, T. B. (2001). Similarity and emergence in conceptual combination. *Journal of Memory and Language*, 45(1), 21-38. doi: 10.1006/jmla.2000.2772
- Winkielman, P., Halberstadt, J., Fazendeiro, T. A., & Catty, S. (2006). Prototypes are attractive because they are easy on the mind. *Psychological Science*, 17(9), 799-806. doi: 10.1111/j.1467-9280.2006.01785.x
- Winkielman, P., Schwarz, N., Fazendeiro, T. A., & Reber, R. (2003). The hedonic marking of processing fluency: Implications for evaluative judgement. In J. Munsch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp. 189-217). Mahwah, NJ: Lawrence Erlbaum.
- Wolsko, C., Park, B., Judd, C. M., & Wittenbrink, B. (2000). Framing interethnic ideology: Effects of multicultural and color-blind perspectives on judgments of groups and individuals. *Journal of Personality and Social Psychology*, 78(4), 635-654. doi: 10.1037/0022-3514.78.4.635
- Women's Bureau, United States Department of Labor. (2009). Nontraditional Occupations For Women in 2008, from <http://www.dol.gov/wb/factsheets/nontra2008.htm>
- World Value Survey. (2005-2008). WVS Database, from <http://www.wvsevsdb.com/wvs/WVSanalyzeStudy.jsp>

Wyer, R. S., Chiu, C. Y., & Hong, Y. (2009). *Understanding Culture*. New York: Psychology Press.

Yinger, J. M. (1994). *Ethnicity: Source of Strength? Source of Conflict?* New York: State University of New York Press.

Zenasni, F., Besançon, M., & Lubart, T. I. (2008). Creativity and tolerance of ambiguity: An empirical study. *Journal of Creative Behaviour*, 42(1), 61-73.

Zhong, C.-B., Dijksterhuis, A., & Galinsky, A. D. (2008). The Merits of Unconscious Thought in Creativity. *Psychological Science*, 19(9), 912-918.

Appendix A

Multicultural Experiences Questionnaire (Goçłowska, Crisp, Walsh, 2010)

Instructions: The following statements refer to your experiences in the past year (particularly those involving other people). Read each statement and respond by circling the number that best represents your agreement (1=strongly disagree, 6=strongly agree).

	Strongly Disagree 1	Disagree 2	Slightly Disagree 3	Slightly Agree 4	Agree 5	Strongly Agree 6
I met people with attitudes and values very different from mine	1	2	3	4	5	6
I had the opportunity to meet people outside my usual group of friends	1	2	3	4	5	6
I have had to change some of my habits in order to adapt to the people around me	1	2	3	4	5	6
At least 2 of my close friends came from a culture that's different from my own	1	2	3	4	5	6
Most of my social activities involved my usual group of friends	1	2	3	4	5	6
The people in my neighbourhood mostly had the same cultural background as me	1	2	3	4	5	6
I regularly socialized with people from different countries	1	2	3	4	5	6
I experienced situations that were completely new for me	1	2	3	4	5	6
The majority of my friends were of the same nationality as me	1	2	3	4	5	6
Many of my friends lived abroad	1	2	3	4	5	6
With some of my friends I communicate in a language that is not my first	1	2	3	4	5	6
I acquired knowledge about a culture that is not my own	1	2	3	4	5	6

Appendix B

Creativity Measure: Remote Associates Test

Now please read the following words and find a *fourth* word that is related to all three words listed in each case (for example “cookies, sixteen, heart”, one possible answer would be “sweet”; cookies are sweet; sweet is part of the word “sweetheart” and part of the phrase “sweet sixteen”). You have 3 minutes for this task.

1. surprise, line, birthday _____
2. base, snow, dance _____
3. rat, blue, cottage _____
4. nap, rig, call _____
5. golf, foot, country _____
6. house, weary, ape _____
7. tiger, plate, news _____
8. painting, bowl, nail _____
9. proof, sea, priest _____
10. maple, beet, loaf _____
11. oak, show, plan _____
12. light, village, golf _____
13. merry, out, up _____
14. cheese, courage, oven _____
15. red, star, house _____

Appendix D

Lexical Measure of Need For Cognitive Closure (Calogero, 2007)

For each item below, select one of the two words from the brackets to complete each sentence. Both words are grammatically correct so there are no right or wrong answers. We are interested in your personal responses about which word best completes each sentence.

1. It was best for him to be [**assured, tentative**] about the plans he made with friends. (r)
2. They preferred to have more [**variability, consistency**] in the group's opinions.
3. She liked to be (the) [**same, different**] as everyone else. (r)
4. He preferred to have a series of [**unsteady, steady**] jobs.
5. She felt it was best to consider the advice with some degree of [**certainty, suspicion**]. (r)
6. She prefers to have friends who behave in [**unexpected, expected**] ways.
7. They liked [**clarity, ambiguity**] in the stories they read. (r)
8. They work best under [**unstable, stable**] living conditions.
9. They preferred to keep the sale of their house [**settled, pending**]. (r)
10. She preferred to be [**mysterious, concrete**] about her plans for the party.
11. She likes situations where the outcome is [**known, unknown**]. (r)
12. He preferred to use [**new, old**] ways for solving problems.
13. He [**accepted, rejected**] the group's conclusions. (r)
14. They preferred to have [**spontaneous, planned**] parties.
15. They enjoyed meeting [**similar, diverse**] types of people at the club. (r)
16. Their kitchen was typically [**messy, neat**] whenever friends visited.
17. She preferred to travel to [**familiar, unfamiliar**] places. (r)

Appendix F

Processing difficulty measure

A while ago we asked you to describe a “female mechanic”. We would like to get your feedback on that task:

How surprising did you find the pairing “female mechanic”?

1	2	3	4	5
Not at all surprising				Very surprising

How familiar were you with the pairing “female mechanic”?

1	2	3	4	5
Not at all familiar				Very familiar

How easy did you find it to think up characteristics of a “female mechanic”?

1	2	3	4	5
Not at all easy				Very easy

How complex did you find the pairing “female mechanic”?

1	2	3	4	5
Not at all complex				Very complex

How similar did you find the two groups that made up the pairing “female mechanic”?

1	2	3	4	5
Not at all similar				Very similar

Appendix G

Creativity measure: drawing an alien

Many scientists believe that with so many planets in the universe, it is possible that some form of intelligent life has evolved outside of earth. Please imagine what a creature from the outer space might look like and draw a picture of it. Be creative! The experimenter will knock on your door and tell you when to finish.

Appendix H

Personal Need for Structure Scale (Neuberg & Newsom, 1993)

Read each of the following statements and decide how much you agree with each according to your attitudes, beliefs, and experiences. It is important for you to realize that there are no "right" or "wrong" answers to these questions. People are different, and we are interested in how you feel. Please respond according to the following 7-point scale.

1. It upsets me to go into a situation without knowing what I can expect from it.
2. I'm not bothered by things that interrupt my daily routine.
3. I enjoy having a clear and structured mode of life.
4. I like to have a place for everything and everything in its place.
5. I enjoy being spontaneous.
6. I find that a well-ordered life with regular hours makes my life tedious.
7. I don't like situations that are uncertain.
8. I hate to change my plans at the last minute.
9. I hate to be with people who are unpredictable.
10. I find that consistent routine enables me to enjoy life more.
11. I enjoy the exhilaration of being in unpredictable situations.
12. I become uncomfortable when the rules in a situation are not clear.

Appendix I

Creativity task: names for a new product

Please invent three names for a new kind of pasta. For example: *mandolin*, *picini*, *fettucini*, *calamarini*, *rottellini*.

Pasta no. 1 _____

Pasta no. 2 _____

Pasta no. 3 _____

Appendix J

Creative Personality Scale (Gough & Heilburn, 1965)

Now look at the following adjectives and circle the 10 that best describe you.

capable	egotistical	conventional
honest	original	informal
affected	commonplace	sexy
intelligent	interests narrow	dissatisfied
clever	humorous	submissive
mannerly	reflective	insightful
cautious	conservative	snobbish
interests wide	sincere	suspicious
confident	individualistic	unconventional
inventive	resourceful	self-confident

Appendix K

Support for multicultural vs. assimilationist ideology

In this part, please read the policies below and decide how much you agree or disagree with each of them.

“It’s our culture’s destiny to lead, and we will lead Great Britain by example. Our values, principles, and practices are a model for all British to follow”.

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Do you agree with the stated policy?	1	2	3	4	5	6
How close to ideal is the stated policy?	1	2	3	4	5	6
Does the stated policy reflect your personal values?	1	2	3	4	5	6
Would you publicly support the stated policy?	1	2	3	4	5	6
Is the stated policy insightful?	1	2	3	4	5	6

“We now realize that it’s critical for cultures within Great Britain to have a reciprocal relationship – a healthy balance of give and take that embraces diversity as a source of strength”.

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Do you agree with the stated policy?	1	2	3	4	5	6
How close to ideal is the stated policy?	1	2	3	4	5	6
Does the stated policy reflect your personal values?	1	2	3	4	5	6
Would you publicly support the stated policy?	1	2	3	4	5	6
Is the stated policy insightful?	1	2	3	4	5	6

Appendix L

Support for multicultural ideology (Berry & Kalin, 1995)

First we are interested in attitudes towards “multiculturalism”. Please state whether you agree or disagree with the following statements.

1. We should recognize that cultural and racial diversity is a fundamental characteristic of British society.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

2. We should help ethnic and racial minorities preserve their cultural heritages in Britain.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

3. It is best for Britain if all people forget their different ethnic and cultural backgrounds as soon as possible.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

4. A society that has a variety of ethnic and cultural groups is more able to tackle new problems as they occur.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

5. The unity of this country is weakened by people of different ethnic and cultural backgrounds sticking to their old ways.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

6. If people of different ethnic and cultural origins want to keep their own culture, they should keep it to themselves.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

7. A society that has a variety of ethnic or cultural groups has more problems with national unity than societies with one or two basic cultural groups.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

8. We should do more to learn about the customs and heritage of different ethnic and cultural groups in this country.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

9. Immigrant/ethnic parents must encourage their children to retain the culture and traditions of their homeland.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree

10. People who come to Britain should change their behaviour to be more like us.

1	2	3	4	5
Totally Disagree	Disagree	Neutral	Agree	Totally Agree