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Cross-Cultural Studies of Implicit Theories of Creativity: A Comparative Analysis
Between the United States and the Main Ethnic Groups in Singapore.

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Cross-Cultural Studies of Implicit Theories of Creativity: A Comparative Analysis
between the United States and the Main Ethnic Groups in Singapore

by

Suzanna Jeyanthi Ramos

An Abstract of a Thesis
in
Creative Studies

Submitted in Partial Fulfilment
of the Requirements
for the Degree of

Master of Science

August 2005

Buffalo State College
State University of New York
Department of Creative Studies

ABSTRACT OF THESIS

Cross-Cultural Studies of Implicit Theories of Creativity: A Comparative Analysis between the United States and the Main Ethnic Groups in Singapore

This thesis explored the extent of influence of culture on implicit theories of creativity among laypeople from the United States and Singapore, as well as the ethnic groups in Singapore - the Chinese, the Malays, and the Indians, in regard to adaptive and innovative styles of creativity as well as their own conceptions of creativity. A total of 523 participants were involved in this study. They comprised 139 participants from the United States and 199 participants from Singapore, 84 Chinese, 54 Malays, and 47 Indians. The participants completed the first part of a questionnaire that consisted of a ten-point scale to rate the creativity level for the descriptors of the Adaptor and Innovator derived from Kirton's explicit theory of creativity called the Adaptor-Innovator Theory. They also completed the second part of the questionnaire where they were asked to give words they believed were associated with creativity. The data were analyzed and compared with each other as national cultures as well as amongst the three ethnic groups in Singapore. The results revealed that the participants had an implicit belief that high creativity was associated with Kirton's innovative style of creativity. Also, the words they believed were associated with creativity seemed to have an innovator bias. Implications of these findings raise new questions on the extent of influence of culture on laypeople's perceptions of creativity. Recommendations for future research were also discussed.

Suzanna Jeyanthi Ramos

Date

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A Thesis in
Creative Studies

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Master of Science
August 2005

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Chapter I: Statement of the Problem

Introduction

The purpose of this research is to compare the extent of influence of culture on implicit theories of creativity among laypeople from the United States and Singapore. Since Singapore consists of three main ethnic groups – the Chinese, the Malays, and the Indians, comparisons among them will also be explored.

This chapter begins with a brief background of two concepts in psychological studies; culture and creativity, which provide the framework of this study. The chapter continues with the rationale of this research and core research questions that guided this study. Key concepts and theories associated with this study are offered in the later sections of this chapter. These are (1) issues of cross-cultural studies, (2) definitions and research in the field of creativity, (3) Kirton's (1976) Adaption-Innovation Theory (KAI), an explicit theory involved in this study and (4) implicit theories, a form of psychometric approach to the study of creativity.

Background

For the purpose of this study, the following definition of culture is used: Culture is "the set of attitudes, values, beliefs, and behaviors, shared by a group of people, communicated from one generation to the next via language or some

other means of communication” (Matsumoto, 1994, p. 4). From the definition, it is noted that culture allows us to define who we are and what is meaningful, as well as to manage our physical and social milieu. Our cultures have a tremendous influence on the way we think and feel, the way we view the world, the way we communicate, and the way we behave. At the very heart of the concept of culture is the expectation that people brought up in different cultures will possess different values, beliefs, and motives reflected in numerous behaviors (Kim, 2001).

The inclusion of culture in understanding the complexities of human behavior is no longer a topic of debate in current psychological studies or in any other area of science that deals with human behavior (Matsumoto, 2001). In fact, culture is now considered to be an important precursor and corollary of human behavior, especially in psychological studies. Over the past few decades, the conclusions and findings derived from many cross-cultural studies have challenged traditional knowledge gained in conventional psychology. These studies are done, not with the intent of reshaping psychology, but rather, to add value to the discipline to make it expansive and all-encompassing (Adamopoulos & Lonner, 2001).

Apart from cross-cultural studies, psychologists have also expressed an interest in the phenomenon of creativity. Psychological research in this topic only expanded after J.P. Guilford, in his 1950 APA presidential address, made a plea to make creativity a focal point of psychological inquiry (Guilford, 1950). Many

psychologists responded to this call and creativity research flourished in the 1960s and early 1970s. The literature on creativity includes several of the core disciplines of psychology, mainly personal attributes, cognitive processes, the acquisition and actualization of creative potential, and the influence of social context on individuals' creativity (Simonton, 2000).

Rationale for Present Study and Core Research Questions

The early research on creativity tended to adopt an individualistic perspective, where creativity was viewed as a process that occurred in the minds of individuals who possessed suitable personal characteristics and experiences (Barron, 1968, 1969; MacKinnon, 1965). This person-centered perspective was rooted in the fact that the vast majority of the creativity researchers were psychologists and, as a result, adopted an individualistic perspective (Simonton, 2000). In the 1960s and 1970s, however, more psychologists began to take note that creativity should be understood within a social context (Harrington, 1990), although the magnitude of influence of cultural factors on the development and expression of creativity was generally underestimated (Rudowicz, 2003).

It was only in the 1980s and 1990s that interest in the role of culture in creativity studies gained momentum, as it has been argued that "creative expression is a universal human phenomenon that is firmly grounded in culture and has its own profound effect on culture itself" (Rudowicz, 2003, p. 273). This study will provide further insight on how culture influences the conceptualization

of creativity, where creativity is seen to be a mental process that cannot be divorced from the cultural system in which a particular individual functions. The results from this study can help in understanding what individuals in a given cultural group mean when referring to creativity. This in turn can be useful in formulating common cultural views of creativity as their conceptions of creativity are derived from their belief systems within that particular cultural setting.

In addition to this, a survey by Raina and Raina in 1974 revealed that only 0.58% of literature in creativity is devoted to cross-cultural studies. During the past decade or so, there has not been a marked increase in the number of cross-cultural studies in the *Journal of Creative Behavior*, *Creativity Research Journal* or *Journal of Cross-Cultural Psychology* (Raina, 1999). This study serves to address this deficit by comparing the extent of influence of culture on implicit theories of creativity among laypeople from the United States and Singapore - two very different national cultures in terms of their social and cultural contexts, so as to provide a deeper understanding of the role of culture in the conception of creativity.

Although there have been comparative studies between a Western culture and an Eastern culture (Li & Shallcross, 1992; Soh, 1999; Wonder & Blake, 1992), there have not been studies done in regard to ethnic groups within a particular national culture. In this study, Singapore, as a national culture, is multi-racial in nature because it comprises three main ethnic groups – the Chinese, the Malays, and the Indians. Comparisons among these ethnic groups will provide

deeper insight as to whether issues of race and other cultural mores distinct in each ethnic group play a role in how creativity is conceived.

Creativity has been studied using a myriad of approaches. They include the pragmatic approach, where the concern is primarily with developing creativity (De Bono, 1971; Osborn, 1953); the cognitive approach, where mental representations and processes underlying creative thought are understood (Finke, Ward & Smith, 1992; Sternberg & Davidson, 1995), and the psychometric approach, where a battery of tests can be designed to study creativity in individuals (Torrance, 1974).

A fairly recent application of a person-oriented psychometric method is the use of implicit theories. This method has been used in investigations of implicit intelligence theories (Lynott & Woolfolk, 1994; Sternberg, 1985a), but there have been very few studies of implicit theories of creativity (Plucker & Renzulli, 1999). This study utilizes this method of inquiry to investigate if these implicit theories match explicit theories of creativity in the literature. In this case, the explicit theory of Kirton's (1976) Adaption and Innovation Inventory (KAI), where he posits that individuals lie within a cognitive style continuum ranging from adaptive to innovative orientation, will be compared to laypeople's implicit theories of creativity. This study will investigate whether laypeople's implicit theories of creative style indicate that adaptors and innovators are equally creative and that the style of creativity is orthogonal to level of creativity as posited by Kirton.

On a broader perspective, the purpose of this research is to provide a clear understanding of the implicit theories of creativity in various cultures so that the meaning of creativity can be fully appreciated on a global basis. It permits us to question our understanding of creativity, which remains skewed because it is based on studies where the role of culture has been marginalized. Perspectives on creativity can be extended when there is greater sensitivity to how different cultural societies conceive creativity in terms of the creative process and the forms and expressions of creativity.

Finally, the International Center for Studies in Creativity in Buffalo State College has been engaged in a program of research that had examined implicit theories of creativity in various cultural settings like the United States (Puccio & Chimento, 2001), Argentina (Gonzalez, 2003), Saudi Arabia (Alkeaid, 2004), and Japan (Muneyoshi & Kagawa, 2004). This study can add to the repository of research already conducted in these cultures so that it provides an extension to the body of knowledge in this area.

The specific research questions that guided this study were as follows:

1. Using Kirton's explicit theory of Adaption and Innovation to access laypeople's implicit views of creativity, to what extent do laypeople from the United States and Singapore have similar views of Kirton's contention that adaptors and innovators are equally creative?

2. Using Kirton's explicit theory of Adaption and Innovation to access laypeople's implicit views of creativity, to what extent do different ethnic groups within Singapore (i.e. Chinese, Malays, and Indians) have similar views of Kirton's contention that adaptors and innovators are equally creative?
3. When asked to define creativity in their own words, to what extent do laypeople from different national cultures in the United States and Singapore hold similar or different conceptions of creativity?
4. When asked to define creativity in their own words, to what extent do laypeople from different ethnic groups in Singapore hold similar or different conceptions of creativity?

To ensure a clear understanding of this study, definitions and explanation of the main concepts and theories that underlie this investigation will be provided. They are (1) Cross-Cultural Psychology (2) Creativity (3) Adaption-Innovation Theory and (4) Implicit Theories. These will be dealt with in the following sections of this chapter.

Cross-Cultural Psychology

The term 'culture' does not have a unilateral definition. It could be defined from a historical perspective where traditions are passed on to future generations or from a behavioral perspective, that is, the learned, shared ways of behaving in life. It could also be defined from a symbolic perspective where arbitrarily assigned meanings are shared by the society. Yet again, it could be defined from a normative perspective, which are, the ideals, values, and rules for living (Jandt, 2004).

Thus, it is acknowledged that culture can be one or a combination of all these perspectives. The common thread underlying these perspectives, is that culture is learned rather than biologically inherited and involves arbitrarily assigned, symbolic meanings. Individuals are not viewed as being manipulated by their cultures but rather, "as cognizers, appraisers, and interpreters of them" (Segall, Lonner & Berry, 1998, p. 1104). Culture is not a static construct but created daily through contacts, exchanges, and communication between individuals and their social milieu.

In fact, Segall (1979) asserted that "human behavior is meaningful only when viewed in the sociocultural context in which it occurs" (p. 3). Although there have been several articles calling for more attention to culture in psychological research (Betancourt & Lopez, 1993; Fowers & Richardson, 1996; Greenfield, 1997), psychology in general did not regard "culture" as a factor of influence on the behavior of humankind. One example of this is an inventory of the contents of

undergraduate textbooks in psychology done several years ago, which showed that culture in relation to behavior had been nearly always absent (Lonner, 1990). However, it can be noted that during the past few years, there have been attempts to remedy the situation (e.g. Sternberg, 1995; Wade & Tavris, 1996).

One of the first pioneers to explore possible relationships between culture and basic psychological processes was W.H.R. Rivers of Cambridge University, who led a group of psychologists and anthropologists on an expedition in 1901 to gather seminal data in the east coast of India and the South Pacific (Adamopolous & Lonner, 2001). Although there were few notable exceptions, the first two thirds of the last century were marked with a lack of a coherent program of research to guide such expeditions. In fact, such expeditions were what Adamopolous and Lonner (2001) termed as “sabbatical opportunism” (p. 13), where psychologists, mainly from the United States or United Kingdom, would travel to exotic places and test a principle or theory in another culture. A statistically significant difference would usually emerge and this was then reported, often implying that the two populations had different responses in their underlying psychological processes (Jahoda, 1980).

Although these reports were illuminating at that time, there was still a lack of continual effort to develop a plan of methodical and well-organized research. As Jahoda (1980) pointed out, the result has been largely “a patchwork – often fascinating and sometimes insightful, but not as a *cumulative* science” (p. 71). There is either a search for differences across groups, or for similarities, or as is

increasingly the case, for both (Jahoda & Krewer, 1997). However, the overall image of cross-cultural psychology as an isolated and disconnected discipline changed radically when a meeting was organized at the University of Nigeria in Ibadan in 1965. This meeting attracted about 100 social psychologists and it served as a platform in which various perspectives of social psychology were discussed with respect to their cultural generalizability and theoretical grounding (Adamaopolous & Lonner, 2001).

The main catalyst was the inaugural meeting of the International Association for Cross- Cultural Psychology (IACCP) held in Hong Kong in 1972. It was a meeting of more than 100 psychologists, anthropologists, and psychiatrists, where there was an international and cross-cultural focus. This event is held once every two years and it was only recently, in 1998, that its first ever international congress took place in the United States (Segall, Lonner & Berry, 1998).

Individuals like Gustav Jahoda, Harry Triandis, and Douglass R. Price Williams are among a small number of scholars instrumental in initiating the 'modern' movement in cross-cultural psychology (Adamopoulos & Lonner, 2001). Basically, "Cross-cultural psychology...comprises the many ways of studying culture as an important context for human psychological development and behavior" (Segall et.al, 1998, p. 1102). Furthermore, Triandis (1980), in his introduction to *Handbook of Cross-Cultural Psychology*, underscores the importance of cumulative science, where he stated that "Cross-cultural

psychology is concerned with the systematic study of behavior and experience as it occurs in different cultures, is influenced by culture, or results in changes in existing cultures” (p. 1).

The next section provides an overview of creativity research as well as the place of culture in creativity studies.

Creativity

As stated earlier in this chapter, J.P. Guilford, in his 1950 APA Presidential Address, challenged psychologists to pay more attention to what was considered to be a neglected but fundamental attribute, namely creativity (Guilford, 1950). Guilford reported that less than two tenths of one percent of the entries found in *Psychological Abstracts* up to 1950 was devoted to creativity. In contrast, from 1975 to 1994, there was an increase, where one half of one percent of the articles indexed in *Psychological Abstracts* concerned creativity (Sternberg & Lubart, 1996). This highlights the fact that interest in creativity has grown.

As to the definitions of creativity, most of the authors in the *Handbook of Creativity* support the idea that creativity involves the creation of an original and useful product (Mayer, 1999). For example, Feist (1999) stated that “Psychologists and philosophers who study the creative process, person, and product are in consensus about what is ‘creative’: novel and adaptive solutions to problems” (p. 274). Also, according to Nickerson (1999), “Although not everyone considers it possible to articulate clear objective criteria for identifying creative

products, novelty is often cited as one of their distinctive characteristics, and some form of utility – usefulness, appropriateness, or social value – as another” (p. 392).

Thus, it can be noted that there seems to be a general agreement on the basic definition of creativity. The underpinning idea is that creativity involves the creation of new and useful products, which include ideas and concrete objects. It also follows then that creative individuals are those who create these new and useful products, and that creative thinking processes occur whenever these products come into being.

The diversity of the field of creativity can be illustrated by providing a few examples of research studies. One particular area is the view that creativity is an attribute of individuals (e.g. Davis, 1989, Torrance & Khatena, 1970). Others include the unique characteristics of people (e.g. Hall & MacKinnon, 1969, Simonton, 1999), analysis of creative production (e.g. Besemer & Treffinger, 1981, Treffinger & Poggio, 1972, Wallach, 1976) as well as creativity as a cognitive process (e.g. Runco & Okuda, 1988, Ward, Smith & Finke, 1999).

Apart from the people, product, and process, another question that arises is whether creativity is a personal or social phenomenon, where creativity is understood with respect to the social context (Mayer, 1999). The first of these social contexts is the interpersonal environment, for example, the expectation of displaying creativity at work or in school and the intrinsic and extrinsic incentives for performing a task (Amabile, 1996). Another social context is that creativity

takes place within a particular scientific, artistic or intellectual discipline, where creativity occurs as a result of the dynamic interactions between the creator (the individual in question), domain (a set of rules or range of techniques that define a particular approach to creativity) and the field (persons or institutions within the same domain that decide the quality of the creations) (Csikszentmihalyi, 1988).

Of particular importance to this study is the third social context - the socio-cultural environment, where sociologists and anthropologists have long pointed out that creativity is mostly a socio-cultural phenomenon (e.g., Kroeber, 1944). These include political influences (Simonton, 1984), bilingualism (Lambert, Tucker & d'Anglejan, 1973) or ethnic marginality (Nemeth & Kwan, 1987), all of which affect the degree of creativity that is manifested by a corresponding population. These studies highlight the fact that the concept of creativity cannot be isolated from a social, cultural, and historical milieu. Also, because creativity permeates in areas such as motivation, attitudes, emotions, and thinking (Nisbett, Peng, Choi & Norenzayan, 2001), it would indeed be beneficial to explore how culture influences people's perceptions of creativity.

Furthermore, to study creativity by focusing on the individual alone is "like trying to understand how an apple tree produces fruit by looking only at the tree and ignoring the sun and the soil that supports its life" (Csikszentmihalyi, 1990, p. 203). One must consider the holistic nature of the individual as part of an evolving system within a cultural setting. As M.K. Raina (1999) succinctly noted, "There exists a cultural and national dimension to both the concept and the

phenomenon of creativeness that affect creative process and its end result” (p. 454).

Now that cross-cultural psychology and creativity have been briefly explored, the next section will deal with a particular explicit theory of cognitive style, Kirton’s (1976) Adaption-Innovation Theory, which focuses on the preferred style of individuals for creativity and problem solving.

Adaption-Innovation Theory

Prior to the mid-1970s, the psychometric approach to creativity assessment was dominated by a focus on measuring an individual's level of creativity. Michael Kirton, a British psychologist, introduced a different approach that focused on an individual's style of creativity. He concluded that people have different preferred creativity styles with regard to how they solve problems. It is based on the assumption that all individuals are creative but they differ in their creativity styles.

His theory offered a new approach from other theories of creativity, where much of the research focused on the level approach, where the focus was on people’s ability to produce novel and useful ideas, solutions to problems, and challenges and products (Mudd, 1996). Kirton (1976) developed the Kirton Adaption-Innovation Inventory (KAI), which measures cognitive style differences along a single continuum. At one end of the continuum is the high *Adaptor*, who tends to accept the problem and stay within the current paradigms, rules,

policies, and structures. They work to improve on them and generate solutions that are conventional, less disruptive, and easier to implement. At the other end of the continuum, is the high *Innovator*, who tends to abandon the current paradigm and redefines the problem with a new approach. Thus, Adaptors *do things better* while Innovators *do things differently* when solving problems (Kirton, 1999). Despite their various styles, Kirton asserts that we are all creative, albeit in various ways.

For this particular study, the KAI theory is utilized to access the implicit theories of creativity from laypeople to investigate if their theories of creativity match the explicit theory of KAI. In other words, the assumption is that if there is indeed a matching between these two types of theories, laypeople will have an innate understanding that they are creative but in different ways within the continuum of an Adaptor or Innovator.

The next section provides an explanation of implicit theories and its relationship with implicit theories of creative style from four studies conducted in countries comprising various cultures.

Implicit Theories of Creativity

Perhaps one of the more recent developments in the social sciences in general is implicit or folk theories of psychological constructs. Unlike explicit theories where they are “opinions and views held by scientists” (Runco, 1999a, p.

27) and typically based on “some psychological or scientific construct” (Runco, 1990, p. 236), implicit theories are tacit knowledge held by an individual and are often “personal rather than shared” (Runco, 1999a, p. 27). They are theories or conceptions held in people’s minds and can serve as “mental prototypes that can be used to decide if a product, behavior or person is creative” (Davis, 2004, p. 70). Thus, their thoughts and actions are guided by their own personal definitions of creativity and they have their own beliefs about how to foster and judge creativity, which may be similar to the theories developed by experts in the field of creativity.

Sternberg (1993) underscores the reason for the study of implicit theories: “In studying implicit theories, one is trying to find out what the stereotypes are, to find out how people process the information” (p. 16). For example, in a study by Runco, Johnson, and Bear (1993), they found that teachers and parents held similar implicit definitions of creativity that included adjectives such as (a) adventurous, (b) enthusiastic, (c) active, (d) artistic, (e) curious, and (f) imaginative. Runco’s (1990) research also compared implicit theories of artists and non-artists. He found that both groups agreed that artists were *imaginative* and *expressive* and that everyday creativity was characterized by being *active*. However, artists added (a) humorous, (b) open-minded, and (c) emotional while non-artists endorsed (a) intelligent, (b) original, and (c) draw well. Thus, it can be noted that the core characteristics of creativity reported by non-artists were similar to the implicit theories by the artists themselves.

Furthermore, when college students were involved in studies of their implicit theories of creativity, wisdom, and intelligence, it was noted that characteristics of definitions of creativity provided by the college students were quite different from those definitions provided for intelligence and wisdom. For example, creativity was associated with (a) aesthetic taste, (b) imagination, and (c) flexibility, intelligence was associated with (a) practical problem-solving ability and (b) goal orientation, while wisdom was associated with (a) reasoning ability and (b) judgment (Sternberg, 1990). The conclusion was that implicit theories of creativity generally correspond with explicit theories and that implicit theories of creativity are markedly different from implicit theories of other psychological constructs (Plucker & Renzulli, 1999).

However, implicit theories of creativity apparently may be similar but not necessarily identical on a worldwide basis. One of the main considerations is cultural values. In India, Kapur, Subramanyam, and Shah (1997) reported that Indian scientists described creativity as contributing to something new, with the abilities to synthesize and integrate, both of which distinguished creative scientists from just simply being productive scientists. Also, to them, scientific creativity was governed by rules and logic and seen to have a greater impact on society compared to artistic creativity. When describing personality traits, adjectives like (a) curiosity, (b) self-motivation, (c) risk-taking, and (d) open-mindedness were offered. However, they considered themselves less creative than their Western counterparts and attributed this to the “cultural influence of

Indian society, in which the obedience, religion, superstition, and social etiquette required for diverse hierarchical relationships are encouraged more than individual development” (Niu & Sternberg, 2002, p. 275).

Furthermore, when an explicit theory of creativity was used to access implicit theories from laypeople of various cultures, they did not seem to correspond. For example, in contrast to Kirton’s assertion that adaptors and innovators are equally creative, Puccio and Chimento (2001) explored the perceptions of the adaptors and innovators of American laypeople and found that the participants rated the innovator as more creative than the adaptor. The implication is that the laypeople did not differentiate between level and style but that the innovator style was associated with a higher level of creativity than the adaptor style.

Another study was conducted in Argentina (Gonzalez, 2003), where the perceptions of laypeople there indicated a similar conclusion. The preliminary findings seem to indicate a perceptual bias across cultures towards the innovator style of creativity, which is in direct contrast to Kirton’s theoretical position. The Argentineans associated words like (a) imagination, (b) intelligence, (c) ingenious, and (d) innovation to creativity.

Similarly, investigations conducted in Japan (Muneyoshi & Kagawa, 2004) showed that the innovator was seen as more creative. The preliminary conclusion is that from the Japanese perspective, the characteristics of an innovator are rather similar to Japanese traditional artists. In fact, the words

associated with creativity, in order of frequency are (a) new, (b) create, (c) art, and (d) intuition.

However, when Alkeaid (2004) conducted his research in Saudi Arabia, the results showed that participants significantly perceived the adaptor as more creative than the innovator. He attributes this to the cultural factors involving family, school, university, and the workplace. In fact, some of the characteristics that Kirton described in regard to the innovator are not appreciated in Saudi Arabian culture, for example, (a) seen as abrasive, (b) impractical, and (c) irreverent of group consensual views.

From all these studies, it can be noted that laypeople's implicit theories of creativity do not seem to correspond with Kirton's view that adaptors and innovators are equally creative. Furthermore, these studies show that cultural factors play a significant role in the way creativity is viewed.

Statement of Significance

The focus of this research is to compare the extent of influence of culture on implicit theories of creativity among laypeople from the United States and Singapore. Furthermore, a comparison of the implicit conceptions of creativity amongst the three main ethnic groups within Singapore – the Chinese, the Malays, and the Indians, will also be explored. In the literature, it is noted that interest in implicit theories of creativity only gained momentum in the late 1980s in North America and only then in the 1990s did empirical studies of implicit

theories of creativity in other cultural settings were found (Rudowicz, 2003). Examples of these cultural settings include Britain (Fryer & Collings, 1991), Finland (Saarilahti, Cramond, & Sieppi, 1999), Hong Kong and China (Chan & Chan, 1999), and India (Singh, 1987).

In all these cultural settings, the assumption is that each national culture represents a certain implicit conception of creativity. However, it is argued that neither the cultures in the West nor the East are totally homogenous as there are intra-sociocultural dynamics at work (Khaleefa, Erdos & Ashria, 1996; Rudowicz, 2003). Since there is no research to date that highlights the heterogeneous nature of national cultures, the purpose of this research is to extend the understanding of creativity not only within the particular national cultures of the United States and Singapore but in the sub-cultures that make up the national culture of Singapore. In this case, a comparative analysis of the implicit conception of creativity from the three main ethnic groups can allow for more meaningful interpretation of creativity as it serves to demonstrate the effects of traditions, values, and sociopolitical factors on creative expression within a particular national culture.

Another area of significance is the contribution of knowledge in the wider arena of cross-cultural psychology. This form of psychological studies highlights the emergence of important themes in the body of literature, such as the role of contextual influences, applications to issues of social policy, and cognitive development (Gardiner, 2001). Since culture and creativity are two constructs

associated with cross-cultural psychology, the findings and insights gained from this research can add new knowledge to this field as well as to raise questions on the validity of adopting Western concepts and instruments, which are assumed to be of universal value. As noted by Eysenck (1995):

Psychology is split along a number of fault lines...Such a science needs concepts, theories, and measuring instruments which are as universal as possible; otherwise our empirical findings will remain incapable of generalization beyond the narrow confines of a particular nation or state. Psychology cannot be American, or Japanese, or African; it must be universal. We can and must achieve greater unification through seeking greater cross-cultural coherence. (p. 26)

Furthermore, in cross-cultural psychology, there has been a significant increase in concern with cultural diversity within a multi-cultural society, where cultural societies within a pluralistic society are deemed as 'cultures' within their own right (Camilleri & Malewska-Peyre, 1997). This is the challenge facing cross-cultural psychology as culture is seen to be a central rather than a peripheral entity in psychological inquiry.

In a similar vein, this research highlights this challenge in the field of creativity. Is creativity a culturally-loaded term or a term devoid of cultural connotations? Do theories of creativity developed from empirical studies in the United States represent the more than 90% of the rest of the world's population? The field of creativity calls for a need for a cross-cultural theory of creativity where a more comprehensive theory of creativity can be developed and formulated.

Summary

This chapter briefly introduced the importance of taking cultural settings into account when studying people's psychological constructs as well as the relevance of conducting cross-cultural studies to provide a holistic view of creativity. The rationale for conducting this research as well as the core research questions that guided this study was offered. The chapter also covered salient points on the four main pillars of this study, namely cross-cultural psychology, creativity, Kirton's Adaption-Innovation Theory and implicit theories, as well as a statement of significance of this particular study.

Chapter Two further defines the concepts and relationships between cross-cultural psychology, creativity, cognitive style, and implicit theories. A historical perspective between Western and Eastern ideologies will also be presented to gain a better understanding of cognitive differences between them. Finally, a comparison of cultural dimensions between the United States and Singapore will be explored to highlight the distinctiveness of each national culture.

Chapter II: Literature Review

Introduction

Chapter One briefly introduced two concepts in psychological studies – creativity and culture, which provide the framework for this particular study. The nature of implicit theories and the relevance and benefits of exploring people’s implicit views of creativity were also explored. In addition to this, a brief discussion of Kirton’s Adaption-Innovation Theory was presented as this explicit theory served to access the implicit theories of laypeople in this study. The specific research questions of this study and the statement of significance were also included.

The purpose of this chapter is to review the literature associated with key concepts of (a) implicit theories, (b) cross-cultural psychology, (c) creativity, and (d) cognitive style and their interrelationships. This chapter also presents an overview of a comparative analysis between the national cultures of Singapore and the United States.

To set the stage for further discussion of Easterners and Westerners, it should be noted that the terms ‘East’ or ‘West’ are very broad terms that cannot be defined easily (Lau, Hui & Ng, 2004). The terms ‘Asian’ or ‘Eastern’ usually refer to East Asian countries like China and other countries influenced by its culture like Japan, Taiwan, and Korea, as most published work on cross-cultural studies involve these groups (Lau et al. 2004). For the purposes of this literature

review, the researcher has included another Asian country that is not East Asian; and that is India, since there are general similarities in terms of the social and cultural aspects distinct from Western countries. One of these similarities is the tradition that traces its origin from Asian thought like Buddhism, Confucianism, Taoism, and Hinduism (Word Reference. com Dictionary).

As for the term “Western’, although a broad brush term, this usually refers to the United States, Canada, western Europe, Australia, and New Zealand (Weiner, 2000). One of the main features is that it has a long association with ancient Israel and Greece and, the ideas of Christianity, capitalism, as well as the scientific method, are inherently different from the Eastern cultures (Weiner, 2000).

Implicit Theories

Every individual uses implicit theories in daily life. These implicit theories are also termed as lay theories, naïve theories, intuitive theories, common sense theories, background beliefs (Hong, Levy & Chiu, 2001), or self-theories (Dweck, 1999). Implicit theories influence people’s inferences, reactions, and judgments towards themselves, other people, and the situations they may face. They may not necessarily be aware of their own implicit theories as well as the impact of these theories on their social understanding.

The emergence of the importance of implicit theories stemmed from Kelly’s (1955) work on the theory of personality. According to Kelly, “a person’s

processes are psychologically channelized by the ways in which he anticipates events, and that these ways exist in the form of constructs” (Kelly, 1955, p. 120). Thus, a major component of personality involves personal constructs or intuitive assumptions about the self and the social reality that surrounds that individual. In his view, just as hypotheses of any scientific investigation requires implicit assumptions that help to interpret any scientific findings, the assumptions of a naïve model of an individual can shed light on the way information about the self and other people is processed, understood, and applied.

Later, Heider’s (1958) seminal work on laypeople’s theories indicated that naïve perceivers often try to process and understand their social world in a way scientists do. People generally create hypotheses based on their implicit theories and frequently test their efficacy. Although many of these theories may lack the rigor of scientific theories, people tend to rely on them to create “a stable, meaning system and to understand, interpret, and predict their social world in a relatively stable way” (Hong, Levy & Chiu, 2001, p. 98). In fact, Kruglanski (1990) views laypeople as intuitive scientists – because just like scientists, laypeople use implicit theories to understand events and make sense of them by making inferences on their social reality.

The role of implicit theories in the identification, organization, and interpretation of information has given rise to the increasing acceptance of its value among both cognitive and social psychologists (Carey & Smith, 1993, Dweck, Chiu & Hong, 1995), clinical psychologists (Beck, 1996) and cross-

cultural psychologists (Shweder, 1993; Shweder & Levine, 1984). Studies have been conducted on the role of implicit theories and their influence on self-perception (Ross, 1989; Sternberg, 1985a), judgments of others (Dweck, et al., 1995; Levy & Dweck, 1998; Wright & Murphy, 1984), predictions to behavior (Henderson & Dweck, 1990), as well as the study of groups (Haslam & Fiske, 1992; Hirschfield, 1998).

People have at their disposal tools to interpret, explain, and predict human behavior. They develop beliefs that organize their world and provide meaning to their experiences. In fact, Dweck (1999) terms these beliefs as “meaning systems” (p. xi). These meaning systems can create diverse psychological worlds that lead them to think, feel, and behave differently in particular ways. Furthermore, implicit theories “need to be discovered rather than invented because they already exist, in some form, in people’s heads” (Sternberg, 1985b, p. 608). He further explains that when such theories are discovered, they can be valuable in helping to formulate the common views that dominate thinking about a particular psychological construct, be it laypeople of one cultural group or a group of psychologists.

According to Kelly (1955), in order to understand constructs, there needs to be a way to concretize them. Because people’s theories are mostly implicit, systematic effort and investigation needs to be carried out to surface and identify these theories and to make sense of their relevance to interpreting human actions. A search in the literature on implicit theories revealed that a high

proportion of such theories have been studied and utilized in the area of intelligence. In fact, Sternberg (1985b) has indicated that the largest number of studies of implicit theories has been carried out in the area of intelligence. In view of this, in order to understand the various types of implicit theories and the models associated with them, it would be worthwhile to delve into this particular domain.

Implicit Theories and Intelligence

A literature search through the relevant databases that involve studies in intelligence shows that explicit theories have dominated the literature. For example, there are psychometric theories like Guilford's (1967, 1982) Structure-of-Intellect Model, Spearman's (1927) theory of intelligence and Vernon's (1950) hierarchical model of intelligence; cognitive theories such as Sternberg's (1983) componential theory of intelligence or developmental theories like Piaget's (1972) theory of equilibration. All these represent explicit theories of intelligence.

However, there seems to be a decreasing trend in the literature with regard to explicit theories of intelligence as there are vast differences of how psychologists view intelligence since there is a realization that there is a lack of a common accepted definition on which a particular explicit theory can be based on (Sternberg, 1982, 1985b). In view of this, there has been a growing interest in implicit theories because implicit theories from scientists or laypeople can be

useful to help formulate a conceptual framework on which explicit theories can be further developed (Sternberg, 1985b).

In general, people have different ideas to ascertain the meaning of intelligence. From the literature, three kinds of implicit theories will be presented in the sub-sections that follow. They are (a) the prototype model, (b) the exemplar model, and (c) the entity and incremental theories. These three models are pertinent to this study as they serve to provide how laypeople in this study perceive the construct of creativity and they can also provide a means of interpreting the data obtained for this study.

The Prototype Model

The *prototype model* was initially suggested by Neisser (1979), which is built upon an approach supported by Rosch (1975) in the categorization of colors and physical objects. According to Olssen, Wennerholm, and Lyxzen (2004) “people form abstract summary representations of categories and form classification decisions based on the similarity of an item to the prototypes” (p. 936). The idea is that there are no defining components of a construct such as ‘intelligence’, but there exists typical features. Thus, the more of these typical features that characterize a person, the more intelligent that individual is viewed to be. Neisser (1979) postulated that intelligence is cognitively stored as a prototype, which consists of a template of attributes representing an ideal intelligent individual. The way we judge others as intelligent tends to match the

attributes in whatever prototype of intelligence we hold. There has been much empirical support for this view (Minda & Smith, 2001; Smith & Minda, 2000; Sternberg, 1985a, 1988; Sternberg, Conway, Ketron & Bernstein, 1981).

Since implicit theories are constructions by individuals, the most direct way of getting people to articulate these theories is simply by asking them what they are. For example, Sternberg, Conway, Ketron, and Bernstein (1981) conducted a study that involved experts and laypeople. Lists of intelligent and unintelligent behaviors were elicited from these individuals and they were asked to rate their defining features in an ideally intelligent person. The results of the experts and laypeople were amazingly similar. In fact, a factor analysis of the results revealed similar basic factors that included (a) practical problem-solving ability, (b) verbal ability, and (c) social competence. Other studies also support the view that laypeople's conceptions of intelligence are relatively close to the views held by experts (Fitzgerald & Mellor, 1988; Raty & Snellman, 1997; Siegler & Richards, 1982; Sternberg, 1985b, 1988; Yussen & Kane, 1985).

Another finding was that subjects not only utilized the three factors of practical problem-solving ability, verbal ability, and social competence, they also appeared to use them to rate their own intelligence as well as to evaluate the intelligence of other people (Sternberg, 1985a). Other studies supporting this have been done by Yussen and Kane (1985) and Siegler and Richards (1982). Thus, there seems to be a consensus that a person is viewed as intelligent to the extent that s/he resembles some implicit prototype of what s/he imagines an

intelligent person to be. Also, as Sternberg (1985b) points out, despite the numerous standardized tests, it seems that the largest proportion of people's evaluations on abilities is informal, observational, and not based on psychometric approaches. In short, people use their implicit theories to make their judgments.

The Exemplar Model

Apart from the prototype theory, another theory that explains the representation of concepts is the *exemplar model* (Paulhus & Landolt, 2000; Smith & Zarate, 1992). In this theory, people represent categories by storing exemplars of that category "as separate memory traces rather than as abstracted prototypes, and classify items based on their similarity to these stored exemplars" (Olssen, Wennerholm & Lyxzen, 2004, p. 936). Thus, an individual's cognitive conception of "intelligence", for example, contains memories or experiences of intelligent individuals with whom the perceiver associates. Just like the prototype model, there has been much empirical research in this area (Hintzman, 1986; Nosofsky, 1986, 1992).

For example, Paulhus and Landolt (2000) examined the constancy across sixteen years of famous exemplars who were reported by college students. The reasoning was that the popularity of the exemplars cited would reveal something about a culture's conception of intelligence. Popular exemplars included Albert Einstein, Leonardo Da Vinci and William Shakespeare. It was noted that the top 15 exemplars accounted for 83% of the reports received by the college students.

This suggests that a relatively small group of exemplars played a significant role in the conception of intelligence.

Paulhus, Wehr, Harms, and Strasser (2002) built on this research and conducted further investigations on implicit theories of intelligence. Their studies revealed that individuals like Mother Theresa, Martin Luther King, Mahatma Gandhi, and Jesus Christ epitomize intelligence. This seems to relate with Emmons' (2000) study where he noted that the ability to understand spiritual concepts and to apply them to everyday problems is considered to be a form of intelligence. Thus, Paulhus et al. (2002) point out that laypeople may not share the traditional explicit approaches to intelligence. In fact, there seems to be an overlap in the domains of personality and intelligence as exemplified by studies such as Ackerman and Heggestad (1997) where extensive meta-analysis personality-intellectual ability correlations are provided.

Exemplars need not be individuals held in high esteem. Another study by Smith and Zarate (1992) highlighted the notion that specific past experiences with the individual in question or other individuals as well as basic abstract knowledge, influence perceptions and social judgments of people and groups. For example, the authors provide an example of Saddam Hussein, who might be judged to be dangerous not only based directly on his attributes and acts, but consciously or unconsciously, may remind the perceiver of Adolf Hitler, whom the perceiver considers dangerous. They also provide evidence that even something as inconsequential as to the fact that Saddam Hussein wears a moustache will

tend to increase his dangerousness. Another example in the domain of intelligence is that people can associate an exemplar of intelligence like Einstein with coincidental features like a disheveled appearance. Thus, they inadvertently associate this with intelligence. These findings suggest that people store information and judgments in memory linked to specific exemplars and generalize those attributes to new stimuli based on those stored exemplars.

During the last thirty years, numerous researchers have shown preference for exemplar models over prototype models (e.g. Medin, Altom, Edelson & Freko, 1982; Smith & Minda, 2000). However, there have been researchers articulating that the exemplar model may not be accurate (e.g. Minda & Smith, 2001; Smith, Murray & Minda, 1997) and contend that the formation of prototypes occurs first in the representation of categories. This controversy in the literature has still not resolved itself.

So far, the two implicit theories that have been reviewed are the prototype model, which hinges on the typical features associated with a particular construct, and the exemplar model, where memories or experiences of a particular construct are associated. The third model is the entity and incremental model, where it is proposed that there are basically two worldviews of a particular construct – a static worldview as well as a dynamic world view. This will be dealt with in greater detail in the next sub-section.

At this juncture, it should be noted that 'entity theorists' and 'incremental theorists' refer to the individuals or laypeople involved in the studies cited in the following sub-section, and not the psychologists who carried out the studies.

Entity and Incremental Theories

Research by Dweck, Chiu, and Hong (1995a) have led to the identification of implicit theories that they believe set the stage for analyzing and interpreting human behavior and actions. This refers specifically to the assumptions that people make about the malleability of personal attributes. The *entity theory* is the belief that human attributes are fixed and by and large, resistant to change. On the other hand, the *incremental theory* is the belief that human attributes are malleable and can be developed.

There is mounting literature that demonstrates that these two theories give rise to distinct patterns of social perception (Henderson & Dweck, 1990; Levy, Plaks, Hong, Chiu & Dweck, 2001; Plaks, Levy, Dweck & Stroessner, 2004; Zhao & Dweck, 1994). For example, an entity theory of intelligence is the belief that intelligence is a fixed trait that cannot be changed or developed. On the other hand, an incremental theory of intelligence is the belief that intelligence can be increased and developed through effort and training.

The underlying assumption of this theoretical model is that the conception of personal attributes as fixed traits will emphasize on traits to understand human behavior and actions, while the conception of personal attributes as dynamic

qualities may lessen the importance on traits (Dweck, et al., 1995a). The implication is that an entity theorist will tend to understand an individual's behaviors or outcomes in terms of that person's fixed traits more than an incremental theorist. Also, an incremental theorist will place more emphasis on other factors apart from an individual's traits, such as, emotional states, needs, intentions, related situations, and prior behaviors. When connected to cross-cultural studies, for instance, it was noted that U.S. samples reported stronger beliefs in traits than contextual factors, a feature consistent in individualistic cultures than in collectivist cultures (Markus & Kitayama, 1998; Triandis, 1995). On the other hand, collectivist cultures like East Asian cultures place more emphasis on contextual information (Choi, Nisbett & Norenzayan, 1999).

In addition to this, understanding these two theories can help explain why very bright individuals may display a helpless pattern where they tend to denigrate their abilities while less intelligent individuals may display a master-oriented pattern, where they do not focus on their failures, but rather, seek ways to improve themselves. For example, Diener and Dweck (1978, 1980) highlight the fact that once students have adopted a particular theory of intelligence, it affects what they value, how they approach and manage intellectual tasks, and how they interpret and respond to the situation. For instance, they gave fifth- and sixth-grade students a series of conceptual problems to solve. All of them managed to solve the first eight problems, but the next four problems proved to be too difficult for children their age. As their problem-solving strategies, along

with the thoughts and feelings they expressed, were tracked, the researchers found two very distinct patterns emerge.

One group showed the helpless response where they quickly denigrated their abilities and blamed their intelligence for their failures. Even more striking was that despite their earlier unbroken success at being able to solve the first eight problems, they lost perspective on the successes they had achieved earlier. In fact, when asked to remember how many problems they had solved correctly (there were eight) and how many problems they had difficulty with (there were four), they remembered only five successes, but remembered six failures. They had actually shrunk their successes and inflated their failures, perhaps because the failures were very meaningful to them.

However, the other group (the mastery-oriented group) recalled the numbers quite correctly. Also, they did not focus on reasons for the failures. In fact, they did not even consider themselves to be failing and displayed a positive demeanor throughout the task. Other studies have also shown that entity theorists of intelligence tend to react helplessly in the face of setbacks while incremental theorists focus more on behavioral factors like effort or problem-solving strategies (Dweck, 1975; Dweck & Legget, 1988; Mueller & Dweck, 1998).

In addition to this, Dweck, Chiu, and Hong (1995b) emphasize that although some people do have one generalized theory that span all human attributes, others may have an entity theory of one attribute and an incremental

theory of another. For example, an individual may hold an entity theory for intelligence but may assume an incremental approach to moral character – that is, an entity theorist may view someone stealing bread as dishonest but an incremental theorist will view him as stealing because of a desperate situation in the home environment (Dweck, et al. 1995b).

In the literature, it is noted that the distinction between fixed and malleable worldviews, although simple, can be applied to people, processes, traits, objects, and attributes (Dweck, Chiu & Hong, 1995b). This distinction can generate some predictions for how individuals should perceive the world where they form impressions, make judgments, and serve as guides to behavior.

The next sub-section deals with how the core assumptions of entity and incremental theories create varied frameworks for understanding, judging, and reacting to groups and their members. The information in the next sub-section serves to highlight the extent and impact of implicit theories on people's worldviews, not only in terms of particular constructs like intelligence, but also in the arena of perception of other individuals or groups.

The Role of Entity and Incremental Theories in People and Group Perception

Apart from creating meaningful social worlds, implicit theories also guide social judgment and provide the basis for social actions. In view of this, implicit theories are relevant to the understanding of group perception and stereotyping (Levy, 1999; Levy & Stroessner, 1998). For example, an entity theory is about

fixed traits and thus, it is associated with the expectation that there will be a high degree of consistency in people's behavior over time and even across various contexts (Chiu, Hong & Dweck, 1997; Erdley & Dweck, 1993). Thus, the traits become the basic components of analysis in understanding others (Hong, 1994; Levy & Dweck, 1999). On the other hand, in the case of incremental theory, social understanding is not limited to simply diagnosing people's underlying traits but rather, the psychological and situational factors acting on them (Chiu, 1994; Hong, 1994).

The implication is that traits will be seen as very useful in perceiving people and also, they have a high predictive value. Traits can also be reliably inferred from small samples of behavior. A number of studies on people's perception have been conducted on preadolescents and college students (Levy, 1998; Levy & Dweck, 1998). For example, Erdley and Dweck (1993) showed fourth- and fifth-grade children a narrated slide show depicting negative behaviors of a new boy at school (e.g. he made up an impressive story about his past, he took markers from the art table which were not supposed to be removed; he copied a classmate's assignment). The entity theorists made significantly stronger inferences than the incremental theorists about the boy's global moral traits where they attached negative labels like "bad" and "mean".

Another study by Chiu, Hong, and Dweck (1997) involved college students where they were told about one student (Jack) who outperformed another student (Joe) on one occasion. The college students were then asked to predict

who would display a better performance in another completely different situation. It was found that individuals with an entity view believed that Jack would win again but in sharp contrast, individuals with an incremental view thought the other student (Joe) would outperform in a new situation. It was interesting to note that just based on one piece of information, the incremental theorists were not willing to make general judgments.

Research on social cognition has surfaced essential cognitive process in the formation of stereotypes (Fiske, 1998; Hamilton & Sherman, 1994; Levy, Stroessner & Dweck, 1998). There have been similar social judgment processes in the areas of self- and person perception through implicit theories (Chiu, Hong & Dweck, 1997; Erdley & Dweck, 1993). In the light of this, the question remains as to whether entity and incremental theorists differ in their judgments of groups of people.

Given that entity theorists strongly associate with traits and invest heavy meaning in them, and that stereotyping is basically attributing a set of fixed traits to individuals or groups (Hewstone, 1990; Pettigrew, 1979) based on limited information (Ford & Stangor, 1992; Levy, Stroessner & Dweck, 1998), the prediction is that entity theorists would exhibit a greater belief in social stereotyping than incremental theorists. Research has indicated that people who hold entity theories were more likely than incremental theorists to display signs of social stereotyping as they make more extreme trait judgments (Levy, 1998; Levy, Stroessner & Dweck, 1998). This is particularly true for existing groups like

racial, ethnic, and occupational groups as well as groups about which they have just learnt.

Although both entity and incremental theorists are equally aware and knowledgeable about social stereotypes, studies reveal that entity theorists agreed more strongly with such stereotypes. For example, Levy and Dweck (1998) had college students list all the stereotypes they could think of for a number of racial and ethnic groups. They were then asked to go back to their lists and rate how true they thought each of the stereotypes was. First, they simply reported what they thought society's stereotypes were. Then, they reported to the researchers what theirs were. It was noted that across the traits and ethnic groups, entity theorists gave more credence to societal stereotypes.

Thus, there seems to be much support for the role of implicit theories in how people view their social milieu. The question to ask now is: Why do people have different conceptions of their environment? The next section highlights the role of culture in understanding human behavior across increasing diversity in thought, emotion, motivation, and all aspects of psychology. In view of this, research from cross-cultural psychology will provide greater understanding about knowledge of people and human functioning.

Cross-Cultural Psychology

Cross-cultural psychology is considered to be a specialized method of inquiry that has raised questions about the nature of the knowledge gained from

mainstream psychological research. Cross-cultural psychology deals with “the systematic study of behavior and experience as it occurs in different cultures, is influenced by culture, or results in changes in existing cultures” (Triandis, 1980, p. 1). The study of diverse cultures not only “tests the generality of a theory developed in one culture” (Clark, 1987, pg. 2), but if carried out systematically, may lead to theories of how cultures can exert their influence on individuals. Furthermore, a great value of cross-cultural studies is that “they enhance our sense of human variation” (Tronick, 1992, p. 566). When that description is guided by theory, our understanding of human functioning is greatly enriched.

There are a few reasons why cross-cultural psychology is important. Firstly, learning about other cultures is beneficial to the individual for more effective intercultural communication. Secondly, understanding other cultures is considered to be one of the hallmarks of an educated individual; one who goes beyond his or her own realms of cultural identity (Cole, 1984). But the most important reason for cross-cultural psychologists is for the field to “extend the range of psychological functioning” (Adamopoulos & Lonner, 2001, p. 15).

For example, most theories and research in psychology have been developed by European Americans, where there was no consideration placed on the cultural context (Hall, 1997). In the initial stage of cross-cultural research, the methodologies were borrowed from mainstream psychology, which originated in Western psychology. The acronym WASP (Western Academic Scientific Psychology) was used to describe this reality, which included psychology

practiced in the United States and Great Britain (Berry, Poortinga & Pandey, 1997). In fact, the United States is considered “the first world” (Moghaddam, 1987, p. 912) of psychology.

In such studies, culture has often assumed a secondary role in psychology, either as a moderator or qualifier of theoretical hypotheses that were assumed to be universal in nature (Gergen, Gulerce, Lock & Misra, 1996). However, there has been an increasing awareness that European American psychological theories and models may not be applicable to individuals from other cultures, and that a consideration of cultural issues will only serve to make psychology more comprehensive, expansive, and relevant (Gergen et al., 1996; Hall, 1997; Marsella, 1999; Segall, Lonner & Berry, 1998). In short, Segall (1979) suggested “human behavior is meaningful only when viewed in the sociocultural context in which it occurs” (p. 3).

van de Vijver (2001) has outlined the progression of cross-cultural psychology in terms of significant phases in the growth of this field. The first phase was the application of Western psychological research in a variety of cultural contexts, highlighting the cultural differences as an area of investigation. Researchers were merely concerned with the documentation of these differences as well as the testing and formation of theories to explain those differences (Matsumoto, 2001a). For example, the earliest use of cross-cultural comparison can be traced to W.H.R. Rivers, who conducted fieldwork research in India and New Guinea. This comparative method was considered to be the heart of the

scientific method as it was argued that without comparison, differences and similarities cannot be observed or inferred (Berry, 1980).

Furthermore, an analysis by Lonner and Adamapolous (1997) indicate that most cross-cultural theories view culture primarily as an antecedent to behavior. Explanations of cross-cultural differences are often based on very simple reasoning (van de Vijver, 2001). For example, if Indian and American women exhibit different behavior, it is due to their difference in cultural background. But from a scientific perspective, this particular reasoning is hardly illuminating as the specific factors that account for these differences are not sufficiently explored (Lonner & Adamapoulos, 1997; Poortinga & van de Vijver, 1987). They point out that to understand culture one should be able to go beyond mere description and explain it or even predict it in some form.

The second phase is where there is a change of existing theories, methods, and models to elucidate cultural differences by “mediating context variables” (Matsumoto, 2001a, p. 4). Many cross-cultural studies are at this stage, as they are concerned with picking out the pertinent and explicit psychological variables that explain any cultural differences. Differences in cultures exist because we have focused on and developed different aspects of our particular environments and attached meanings and values to them. For example, the difference between a weed and a vegetable is not simply determined by qualities that are innate in a plant, like whether it is edible, or whether it grows from a seed. It really has to do with how we attach meaning to it

(Shweder, 1991). What is considered to be a weed in one country (e.g. seaweed in France) is considered an important vegetable in another (e.g. Japan). Shweder (1991) also noted that if a cabbage were to grow in a rose garden, it would be treated as a weed and plucked out, since it is not the intention to grow a cabbage patch. Thus, Kim (2001) points out that the distinction between a plant and a weed includes concepts like edibility, meaningfulness, and purpose.

Also, in the second stage, there has been realization that methods and instruments developed with a Western perspective as the frame of reference might not be advantageous in field research involving non-Western subjects (Adamopoulos & Lonner, 2001). For example, in the field of psychology, research in Asian populations has increased dramatically. The Asians represent 60% of the world's population and they have been found to exhibit significant differences from non-Asians, particularly Westerners in terms of cognitive strategies, modes of behavior, and self-enhancement tendencies (Sue & Chang, 2003). Thus, the issue remains as to whether imported measures of assessment, especially from a Western country, are useful and applicable.

van de Vijver and Leung (1997) have dealt with this issue and have described three different types of validity enhancement in cross-cultural and multilingual studies. One of them involves a literal translation of an instrument where no changes to the instrument are needed to avoid construct or method bias. One example is the Beck Depression Inventory that includes translation of measures of depression and anxiety (Leong, Okazaki & Tak, 2001). These literal

translations constitute the most common method of validity enhancement. A second possible enhancement involves adapting the instrument for use in a different culture where items are made appropriate for a specific cultural context. One example is the Minnesota Multiphasic Personality Inventory (MMPI-2) that has been adapted successfully for international consumption (Butcher, Cheung & Lim, 2003).

The third and final enhancement is where a particular instrument is considered ineffective or unsuitable in a certain cultural context, and therefore, a new instrument is constructed for that particular cultural context. A good example is the Chinese Personality Assessment Inventory (CPAI), which is the measure sensitive to aspects of Chinese culture (Cheung, Cheung, Wada & Zhang, 2003). It is pointed out that this approach is generally not favored as it creates problems for direct comparisons. Thus, there has been concerted effort to improve the suitability of measures and assessment.

The third stage of the evolution of cross-cultural psychology, as envisioned by Matsumoto (2001a), is the “creation of universal theories of psychological processes” (p. 4), where these models and theories can be applied to individuals of various cultural backgrounds, even to the point of superseding current mainstream theories and models. In this way, developments in methodology and statistics are truly considered to be tailor-made for cross-cultural research. As van de Vijver (2001) points out, this may require combined

experiences derived from various branches of psychology to develop new frameworks of assessment and measures.

Cross-Cultural Psychology and Cognition

In the literature, it has been noted that one basic psychological process that has been well-studied and researched in mainstream psychology as well as cross-cultural psychology is *cognition*. Cognition is defined as “that group of processes by which individuals obtain and utilize knowledge of objects in their environment” (Mishra, 2001, p. 119). These include processes like recognition, labeling, categorization, reasoning, and planning (Mishra, 2001).

A widely shared view in cross-cultural psychology is that cognitive processes are universal. However, there has been mounting research to challenge these universalist assumptions about human thought and inference (Nisbett, 2003). In fact, such studies of cognition and cognitive processes across cultures is especially enlightening because it provides information on how the environment and other socio-cultural factors help to shape and alter the way we perceive, process, think, and act in the world.

The following sub-sections provide an overview of some studies of cognitive processes to provide a greater understanding of the role of cultural factors on human groups.

Categorization

Our perception impacts the way we view the world. Cross-cultural research on the categorization of colors and objects provide invaluable insight on how people from different cultures use varied principles of category formation. Early studies on color codability from Whorf (1956) indicated that people in different cultural societies did not have a similar array of terms to separate the color spectrum. If the philosophy underlying the perception of color is universal, then the assumption is that there should be an agreement on the main divisions of color despite varied vocabulary contained in diverse languages. For example, Berlin and Kay (1969) first noted that culturally simpler societies tended to have fewer basic color terms than industrial or large-scale societies that were culturally more complex.

There have been studies to suggest that language affects cognition (Davidoff, Davies & Robeson, 1999; Levinson, 1996; Martinez & Shatz, 1996). For example, Davidoff et al. (1999) reported that the number of basic color terms in a particular language affects categorization. However, there are also studies that provide support for a weak linguistic effect on color categorization (Davies & Corbett, 1997; Perez-Pereira, 1991). For example, Davies and Corbett (1999) studied speakers of English, Russian, and Setswana languages as they all differ in the number of basic color terms as well as how the blue-green region is categorized. The subjects were given 65 colors and asked to sort them into groups.

The findings revealed significant similarity among the patterns of choice of all three samples. However, considerable differences were also noted. They found that the Setswana speakers have a single basic term for blue and green and thus, were more likely to group blue colors with green colors than the other speakers of Russian and English. On the other hand, the Russian speakers who have two basic color terms for blue were no more likely than English speakers to group light and dark blue separately. Thus, there is a lack of evidence of linguistic effects on categorization. However, it does suggest that color perception is not universal and that cultural factors are at work.

Apart from colors, another way of studying categorization is to discover how people place various objects in groups (Segall, Dasen, Berry & Poortinga, 1999). A common finding in cross-cultural work is that instead of classifying items into taxonomic categories used by Western nations (e.g. animals in one group, utensils in another group), peoples from other cultures will tend to sort items into functional groups (a hoe is put with a potato into a group since it is an implement used in digging up potatoes) (Mishra, Sinha & Berry, 1996; Rogoff & Chavajay, 1995).

For example, Nisbett (2003) and his colleagues conducted an experiment with American and Chinese children, where pictures of objects - a cow, grass, and a hen were shown. The finding was that American children preferred to group objects based on taxonomy (the hen and the cow were grouped together as they were animals), but the Chinese children tended to group the items on the

basis of relationships (the cow and the grass because cows eat grass). Thus, cultural groups have been found to vary in the preferred dimensions of classification.

Learning and Memory

Learning and memory are very crucial cognitive processes that are associated with acquisition and retention of information (Mishra, 2001). One of the earliest studies of memory skills suggested that memory skills in preliterate societies developed differently from those in literate societies (Bartlett, 1932). The difference as explained by Bartlett (1932) was that daily life in non-literate societies placed a high premium on remembering even details that should be put in writing. There is some evidence to show that people from societies with a strong oral tradition also have a strong memory capacity. For example, Ross and Millsom (1970) compared Ghanaian university students (oral tradition) with American university students (written tradition) in regard to their abilities to recall themes in the stories read aloud in English. It was found that in general, the Ghanaian students recalled the themes better although English was not their first language.

Apart from this, some studies have tested the effect of culture on memory by introducing the element of 'cultural knowledge' in the stories (Reynold, Taylor, Steffensen, Shirley & Anderson, 1982). Reynold et al. (1982) compared African American and White American students using a story about a certain incident

that could be interpreted as either a fight or a ritualistic game. The findings showed that White students interpreted the incident as a fight whilst the African American students viewed it as a game. This highlights the fact that the interpretations are coherent with their own cultural knowledge.

Another study by Steffenson and Calker (1982) involved American and Australian Aboriginal women where they were asked to recall stories about a sick child treated by Western medicine in one story and native medicine in another. The findings showed that the women had better recall of stories that were consistent with their own cultural knowledge. Other studies with similar findings include Harris, Schoen, and Lee (1986), in their study of American and Brazilian cultural groups as well as Harris, Schoen, and Henlsey (1992), with American and Mexican cultural groups.

Now that implicit theories and cross-cultural psychology have been discussed, the next section presents a literature review of the relationship between implicit theories and culture.

Implicit Theories and Cross-Cultural Psychology

Psychologists proposing implicit theories have not expounded on where these theories originate and have tended to follow Piaget's (1960) emphasis on each child's acquisition of theories as a result of direct experimentation with the world, focusing on logical thinking and its development (Morris, Menon & Ames, 2001). However, it is noted that even Piaget came to believe in the meaning

systems that people adopted which could be even more important in shaping their thinking (Overton, 1990; Piaget, Garcia, Davidson & Easley, 1991).

Morris, Menon, and Ames (2001) point out that implicit theories described by early psychologists like Kelly (1955) and Heider (1958) are tied to broadly Western culture and contend that integrating implicit theory of social perception with cultural psychology “is mutually enriching” (Morris et al, 2001, p. 170). In addition to this, research has indicated that cultural differences found in studies of self-concepts, self-perceptions, and biases may be the result of cultural differences in implicit theories (Heine, Lehman, Markus & Kitayama, 1999; Kitayama, Markus, Matsumoto & Norasakkunkit, 1997; Markus & Kitayama, 1998; Triandis, 1995).

In studies of North Americans, cultural practices are organized in accordance with a model of self that includes the notions that an individual is an independent entity defined by a set of attributes and qualities and that these attributes are relatively absolute and constant across situations (Markus & Kitayama, 1991). This model of self is manifested in situations such as corporations that base promotions on individuals’ achievements or schools emphasizing the nurturing of self-esteem (Heine, Lehman, Markus & Kitayama, 1999; Lewis, 1995). In accordance with this model of the self, North Americans who are brought up in a cultural context composed of such practices are likely to develop “habitual psychological tendencies to identify positive attributes of the

self, confirm them in private, and then express them in behavior” (Heine, Kitayama, Lehman, Takata, Ide, Leung & Matsumoto, 2001a; p. 510).

These psychological tendencies are motivated and sustained in part by an implicit theory whereby the cultural assumption is that the self is a relatively fixed and stable entity. This squares with one type of implicit theory that Dweck and her colleagues have called an entity theory (e.g. Chiu, Hong & Dweck, 1997; Dweck, Hong & Chiu, 1993; Hong, Dweck, Lin & Wan, 1999) that was discussed in the first section of this chapter. Thus, the self is essentially defined by a set of relatively fixed, unchangeable, and consistent inner attributes where there is a motivation to view the self in the most positive light (Campbell, Trapnell, Heine, Katz, Lavalley & Lehman, 1996). Receiving a positive evaluation of the self becomes a more central concern than the process of becoming a better self and therefore, people in such cultural contexts not only attend to selected positive aspects of themselves but also, are motivated to work hard on tasks in which they excel (Bandura, 1999).

On the other hand, in many cultural contexts outside North America, especially in East Asia, the model of the self includes the notions of an individual occupying a position within a hierarchical set of social relationships. In addition to this, the self is malleable as it needs to be responsive to role obligations within one’s relationships and thus, adjustments are necessary (Markus & Kitayama, 1991; Su, Chiu, Hong, Leung, Peng & Morris, 1999). In this case, the type of implicit theory that they hold is one of incremental theory, where the emphasis is

on improving oneself in a variety of achievement contexts. Also, the implicit understanding of the self is context dependent, adjustable, and improvable (Kanagawa, Cross & Markus, 2001).

This view has been largely shaped by Confucian thought, where the emphasis is on the importance of understanding one's roles within a hierarchy and of fulfilling obligations to others who are associated with those roles (Heine et al., 2001). There is an enhanced concern for role perfection and an attitude towards learning that must be accompanied by hard work (Tweed & Lehman, 2002). In contrast to the North American cultural context, practices in contemporary East Asian cultures include seniority-based systems of promotion (Kang, 1990) as well as child-rearing practices that underscore self-discipline and working well with others (Hess & Azuma, 1991).

This dichotomy between Westerners focusing on the individual and the Easterners focusing on the social situation can be noted from studies in ethnography and philosophy (Fiske, Kitayama, Markus & Nisbett, 1998). Lay or implicit theory in the West is described as 'dispositionism', where the responsibility for behavior is primarily in the individual, where "They expect their environment to be sensitive to them" (Chiu, 1972, p. 236). On the other hand, the lay theory in East Asia focuses on the whole context of behavior called 'situationism' or 'contextualism' (Lloyd, 1990; Markus & Kitayama, 1991; Triandis, 1995), where they "...are situation-centered" (Chiu, 1972, p. 236).

For example, Cousins (1989) asked Japanese and American college students to describe themselves using statements beginning with “I am”. The findings revealed that American participants used general abstract traits like “I am curious” or “I am sincere” more times than the Japanese. The Japanese descriptions of self were more often reflected in their social identities, for example, “I am a student” or “I play mahjong on Fridays”. A study by Rhee, Uleman, Lee, and Roman (1996) found similar findings for the Koreans.

The focus on the individual by Westerners can be attributed to the ancient Greeks with philosophies of Aristotle and Galileo, where the locus of behavior lie in the attributes of the person in terms of attitudes, preferences, and motives (Choi, Nisbett & Norenzayan, 1999) and where the world was viewed as composing of “objects which are understood as individuals or particulars which instantiate or ‘have’ properties” (Hansen, 1983, p. 30). Thus, Westerners tend to be analytic, paying attention primarily to the object, categorizing it on the basis of its attributes (See discussion on ‘Categorization’ in the previous section) and ascribing rules about category memberships (Choi, Nisbett & Smith, 1997; Lloyd, 1990; Nakamura, 1985).

As for the Asians, Peng and Nisbett (1999) describe some assumptions that underpin Eastern dialectical reasoning. One is that the principle of change suggests that reality is a dynamic process. Also, since change and contradiction are constant, nothing in human life or nature is isolated or independent. This

shows that Easterners are seen to be more concerned with relationships and harmony (Nisbett, 2003).

Thus, studies have indicated that the holistic cognition characteristic of ancient China has had much influence on East Asia whilst the more analytic cognition of the ancient Greeks has wielded its influence on contemporary Western peoples (Cromer, 1993; Ji, Nisbett & Peng, 2000).

The next section focuses on the relationship between implicit theories and creativity.

Implicit Theories and Creativity

During the last 40 years or so, studies in creativity received immense attention in the United States. This has led to a number of conceptualizations and theories about creativity in terms of person, product, process, and press or the environment (Csikszentmihalyi, 1997; Guilford, 1950, 1956; Simonton, 1984; Sternberg & Lubart, 1991, 1995; Torrance, 1981, 1988). Chapter One alluded to the various approaches to the study of creativity. It is pointed out that these approaches to creativity are basically explicit in nature, where psychologists or other experts test their own hypotheses using some form of measurement or assessment.

Interest in implicit concepts of creativity gained ground in the United States in the late 1980s (Runco & Bahleda, 1987; Sternberg, 1985b, 1988). Most studies on implicit conceptions of creativity have concentrated on creative

individuals (Csikszentmihalyi, 1997; Helsen, 1996; Montgomery, Bull & Baloché, 1993; Runco & Bahleda, 1986; Runco, Johnson & Bear, 1993). For example, Runco and Bahleda (1986) compared implicit theories of artistic, scientific, and everyday creativity amongst undergraduate students and artists. They were asked to list the characteristics of creativity. The findings suggest that the basic characteristics of creativity perceived by the respondents correspond to similar characteristics found in explicit theories in the literature. Some terms associated with creativity are (a) imaginative, (b) confident, (c) independent, (d) intelligent, and (e) possessing intrinsic motivation.

However, another finding suggests that people also distinguish core characteristics of creativity in different domains. For example, words like (a) logical and (b) thorough were indicative of scientific creativity but not in artistic or everyday creativity. Also, words like (a) expressiveness and (b) perceptive were associated with artistic creativity while (a) helpfulness and (b) active were associated with everyday creativity.

Implicit theories which focus on characteristics of a creative person can be categorized into motivational factors, cognitive traits, and personality attributes (Rudowicz, 2003). For example, motivational qualities like (a) inquisitive, (b) adventurous, (c) self-confident, (d) enthusiastic, and (e) curious have been identified as part of the implicit conceptions of creativity (Sternberg, 1985b; Westby & Dawson, 1995). In a study of cognitive traits, Sternberg (1985b) identified (a) ability to make connections, (b) ability to grasp abstract ideas, and

(c) ability to see concepts and theories in a new way as some of the traits identified in his study of implicit theories of intelligence, creativity, and wisdom. As for personality attributes, studies frequently listed (a) free spirit, (b) non-conformist, (c) artistic, (d) individualistic, and (e) sense of humor as characteristics of a creative individual (Runco & Bahleda, 1987; Runco, Johnson & Bear, 1993; Sternberg, 1985b).

Studies on implicit theories of creativity on a conceptual level have also been carried out (Runco & Bahleda, 1987; Sternberg, 1985b). For example, Sternberg (1985b) asked experts in the fields of art, business, and physics as well as laypeople about the characteristics of an ideally intelligent, creative, and wise individual. He discovered that people were able to distinguish the concepts of intelligence, creativity, and wisdom and they use these theories in judging themselves and others. Another interesting finding was that despite some distinct differences, the conception of creativity overlapped with conceptions associated with intelligence and wisdom. Furthermore, it was noted that there was less emphasis on analytical abilities in conceptions of creativity but more on imagination and intuition.

From the above studies, it is noted that empirical research on the implicit theories of creativity is mostly within the Western context, particularly in American society. Cumulative evidence obtained from studies of implicit theories of creativity across a wide spectrum of social groups and age groups like teachers and students (Runco, 1984; Runco & Johnson, 1993; Westby &

Dawson, 1995), parents (Runco, 1989) as well as laypeople (Hoskens & Deboeck, 1991, Puccio & Chimento, 2001) suggest some main characteristics that are important in the Western conception of creativity. These are "...innovation/imagination, intrinsic motivation, independence, risk taking, a wide range of interests, intelligence, high levels of activity/energy, and a sense of humor" (Niu & Sternberg, 2002, p. 272).

One controversy in the creativity literature concerns whether the concept of creativity has a universal meaning or is perceived differently in various cultures (Csikszentmihalyi, 1997; Plucker & Runco, 1998). For example, some researchers believe that there is a universal understanding of the concept of creativity (Guilford, 1975; Plucker & Runco, 1998) while another group suggests that people in different cultures perceive creativity differently (Lubart & Sternberg 1998; Rudowicz & Hui, 1997). Although there seems to be a major breakthrough where theories of creativity have been established based on the latter point of view, some researchers have suggested that there are "multiple roots for people's conceptions of creativity" with a "different philosophical base" (Niu & Sternberg, 2002, p. 270).

A literature review of implicit theories of creativity in various cultures in the next sub-section will provide evidence that creativity could be viewed differently from the North American perspective.

The Place of Culture in Implicit Theories of Creativity

Studies on implicit conceptions of creativity in other cultural contexts other than the North American context suggest that despite the numerous similarities, there are also some differences in how creativity is viewed (Chan & Chan, 1999; Dinca, 1999; Fryer & Collings, 1991; Lim & Plucker, 2001; Raina, Kumar & Raina, 1980; Rudowicz & Hui, 1997; Rudowicz & Yue, 2000).

Anecdotal data regarding implicit theories of creativity from non-Asian cultures suggest that the differences across cultures refer to slight variations rather than an essential divergence. For example, Finnish teachers view creativity from both the individual and social perspectives. Their implicit theories include not only attributes like (a) finding new solutions, (b) hard work, (c) using old knowledge in new ways, and (d) humor and imagination, but also flexibility in social situations (Saarilahti, Cramond & Sieppi, 1999). This highlights the fact that a creative individual is able to maintain a balance of self-reliance and identification with a group.

As for the Brazilians and Cubans, there seems to be much emphasis on emotional sensitivity like intuition, humor, curiosity, and being a dreamer. These humanistic characteristics outweigh the more cognitive process associated with creativity (Welchsler & Martinez, 2001).

Much of the literature on cross-cultural studies of implicit theories of creativity involves Eastern conceptions of creativity, particularly in Asian cultures. For example, Rudowicz and Hui (1997) found that, similar to the Western

conception of creativity, the Chinese included characteristics like (a) innovative ideas, (b) imagination, (c) intelligence, and (d) independence. However, the characteristics of (a) humor and (b) aesthetic tastes were not present in the list of characteristics. A study by Rudowicz and Yue (2000) also found that the word 'artistic' was absent in the implicit theories of undergraduates in Mainland China, Hong Kong, and Taiwan. Instead, attributes like (a) inspirational, (b) makes a contribution to the progress of society and, (c) is appreciated by others, were included and not present in the American samples.

This seems to suggest a pragmatic approach to creativity, where creative acts are considered to serve the greater good of the society. Further, Yue and Rudowicz (2002) found that Chinese undergraduates nominated politicians as being the most creative individuals, followed by scientists and inventors. In fact, artists and musicians were rarely named. This supports findings that characteristics related to aesthetics or sensitivity is hardly present in Hong Kong Chinese implicit theories of creativity (Rudowicz & Hui, 1998; Rudowicz & Yue, 2000). As Yue and Rudowicz (2002) point out, "This finding is attributed to a strong utilitarian view of creativity that lies in Chinese young people's perception of creativity. They are much more concerned with a creator's social influence or contribution in society than with his or her innovativeness in thinking" (p. 88).

In the case of India, very few studies have directly researched the Indian concept of creativity (Niu & Sternberg, 2002). One study by Kapur, Subramanyam, and Shah (1997) focused on scientific creativity where Indian

scientists believed that scientific creativity required more rules and logic than artistic creativity. In view of this, scientific creativity is seen to have a more profound impact on society as compared to artistic creativity. In addition to this, although they shared a Western view of characteristics of creative individuals, like (a), open-mindedness, (b) curiosity and, (c) risk-taking, they considered themselves to be less creative than their Western counterparts and attributed this to the socio-cultural norms which required them to place more emphasis on diverse hierarchical relationships that encourage group development rather than individual development. This is in line with studies of Indian culture, where the welfare and integrity of the family always supersedes individual needs and self-identity (Das & Kemp, 1997).

Studies related to Japanese and Korean implicit conceptions of creativity are also very sparse. One study by Muneyoshi and Kagawa (2004) asked laypeople of their conception of creativity. They were, in order of frequency, (a) new, (b) create, (c) art, and (d) intuition. The researchers concluded that the Japanese attach the value of creativity to traditional arts (personal communication, 2005). As for the Korean conception, they have similar views with the American view of creativity in terms of personality, perseverance, independence, and cognition. However, the Koreans view the creator as a loner and viewed less favorably than the Americans (Lim & Plucker, 2001).

This section discussed implicit theories of creativity in various cultures. Since part of this research is to test whether the explicit theory of creative style

by Michael Kirton represents the implicit thinking of laypersons not acquainted with his study, the next section provides an overview of cognitive style and cognitive ability.

Cognitive Style

Cognitive style is defined as "...consistent, individual differences in the ways people experience, organize, and process information" (Martinsen & Kaufmann, 1999, p. 273). Cognitive style applies to thinking, memory, perception, decision-making as well as general problem-solving strategies (Martinsen & Kaufmann, 1999). Thus, it refers to the way in which information is processed rather than the content itself.

Cognitive styles were first assumed to be personality traits or dimensions along which individuals of a population differ (Guilford, 1980). In fact, interest in cognitive style goes back at least to Jung (1923), who proposed a theory of psychological types, which still can be seen today in assessments of styles, for example, the Myers-Briggs Type Inventory (MBTI) (Myers & McCaulley, 1985; Myers & Myers, 1980). Research in cognitive styles then became concerned with styles representing an interface between work on cognition and personality (Messick, 1976; Pettigrew, 1958). Cognitive styles represent a bridge between cognition and personality; two fairly distinct areas of psychological research (Sternberg & Grigorenko, 1997). In this respect, psychologists saw the need to

link personality with cognition (Costa, & McCrae, 1992; Peabody & Goldberg, 1989).

In fact, in Guilford's speech (1950) to the APA, he called for research on two basic questions. The first was how to find the promise of creativity in the children and the second was how to enhance the development of the creative personality. He pointed out that, "creative abilities determine whether the individual has the power to exhibit creativity to a noteworthy degree" (p. 444). After this address, researchers focused their efforts on psychometric study that involved attempts to measure facets of creativity associated with creative people. Instruments to measure personality correlates of creative behavior were generally designed by studying highly creative individuals so that common personality traits could be determined (Plucker & Renzulli, 1999).

Studies of the creative person yielded personality traits like (a) awareness of their creativity, (b) originality, (c) independence, (d) risk taking, (e) high energy, (f) curiosity, (g) humor, (h) attraction to complexity and novelty, and (i) open-mindedness (Davis, 2004, p. 84-91). Other personality traits were 'tolerance for ambiguity' (Dacey, 1999; MacKinnon, 1978) and 'aesthetic sensitivity' (Frois & Eysenck, 1995). Thus, early creativity research focused on studying how much creativity an individual possessed in order to be able to identify highly creative individuals. This is referred to as the level approach, where the focus was primarily on understanding and predicting people's ability to produce novel ideas,

products, or solutions, as well as the potential or competence to produce them (Mudd, 1996).

Much of the literature on cognitive styles has made an effort in differentiating cognitive styles and abilities (Goldstein & Blackman, 1978; Messick, 1984; Riding & Cheema, 1991). While cognitive styles describe how people process information, cognitive abilities “describe how much, or how well, or how accurate we process visual, semantic, or numerical stimuli...” (Martinsen & Kaufmann, 1999, p. 274). In the case of cognitive abilities, the goal is to measure the level of a particular capacity. For example, divergent thinking in creativity is seen to represent the potential for creative thinking and problem solving. Abilities that are associated with divergent thinking include fluency, flexibility, elaboration, and originality. Thus, divergent thinking tests are among the commonly used in creativity research (Runco, 1999b). In this case, creative abilities are measured in terms of the level of performance, where scores range from high to low. This implies that one pole of the construct is more valued than the other.

In contrast with the unipolar nature of abilities (Messick, 1976), cognitive styles are bipolar in nature, where both poles of the construct are considered to be value free (Martinsen & Kaufmann, 1999). Unlike abilities, where a high value connotes high ability, cognitive styles are value neutral in that one end of a style continuum is associated with certain characteristics, while the other end is associated with another, neither of which is considered better than the other.

Since style refers to the manner of performance, the scores range from one extreme to another and movement from the center of the continuum simply highlights the stronger preference for that particular style.

Although there are differences between cognitive style and cognitive ability or level, the distinction between these two constructs is not so clear-cut. In theory, one cognitive style is not deemed to be better than the other. However, Martinsen and Kaufmann (1999) point out that “In practice, one pole of most style constructs has tended to be more valued than the other” (p. 274). Further, Messick (1976) stated, “There are varying degrees of difference and overlap between particular cognitive styles and abilities in terms of both conception and measurement” (p. 11). For example, Messick (1976) pointed out that creative abilities such as fluency and flexibility can be present in the constructs of abilities as well as style.

Since fluency and flexibility are inextricably linked with creativity research, Messick (1976) stated, “In the realm of creativity, there is an intimate intertwining of abilities and cognitive styles and other stylistic dimensions that share some of the features of both, suggesting that distinctions in this area are labile and boundaries permeable” (p. 11). To blur the boundaries even more, although creativity researchers showed an interest in the relationship between cognitive styles and creativity (Guilford, 1980; Kogan, 1976; Messick, 1984), they were still caught in the level paradigm (Messick, 1976, 1984; Witkin, 1977).

In view of this, Kirton (1976) proposed the Adaption-Innovation theory, which posits that cognitive style develops around underlying personality traits and as such, each person displays a definite preference to approach and solve problems. Kirton (1976) further argues that his theory explains the manner in which an individual is creative, as opposed to level of ability. In short, the concepts of level and style are unrelated.

Kirton's Adaption-Innovation Theory

Michael Kirton introduced the Adaption-Innovation theory of cognitive style in 1976. His theory contends that regardless of level of ability, skill, or talent, each person has a natural or preferred tendency to solve problems using a certain style. He posits that people can be located along a continuum representing a personality dimension, which ranges from adaptor to innovator, depending upon the way they solve problems and make decisions (Kirton, 1976).

The first basic assumption underlying his theory is that cognitive style relates to an individual's preferred manner of cognitive strategies of problem-solving and decision-making in bringing about change. The second is that cognitive style is not a capacity, competence or aptitude. The third is that cognitive style is related to personality traits and is considered to be stable over time and across situations. Thus, an individual will consistently approach any problem using his/her preferred manner or style (Kirton, 2003). He also contends that all people are creative, since "creativity is a subset of problem solving"

(2003, p. 8). Kirton (2003) further emphasized that “This theory is directly concerned only with style: with *how* people solve problems. Both potential capacity (intelligence or talent) and learned levels (such as management competence) are completely independent characteristics and assessed by other measures” (p. 4).

As mentioned earlier, everyone is located on a continuum ranging from highly adaptive to highly innovative. In fact, Kirton (2003) asserted that “the terms ‘more adaptive’ or ‘more innovative’ are more precise than ‘adaptors’ and ‘innovators’, for the theory describes a normally distributed continuous range and not just two types” (p. 4). For the purpose of clarity, the terms ‘Adaptor’ and ‘Innovator’ will be used in this section to highlight the main attributes between them.

According to Kirton (1976, 1987, 1994, 2003), there are a number of characteristics that are indicative of people who have an adaptive orientation to their creativity style. Adaptors like to work within a structure, system or paradigm to bring about incremental improvement or change. They are described as (a) reliable, (b) dependable, (c) precise, (d) efficient, (e) organized, and (f) methodical. They are generally concerned with the norms of the group and prefer to have rules with which they can follow. When solving a problem, the adaptor works at a disciplined pace in a predictable manner.

On the other hand, the Innovator (Kirton, 1976) is described as less conforming to rules, social norms, and accepted work patterns. They often do not

recognize that there is a structure, system, or paradigm to work within, so they often create solutions which would bring about radical change. They prefer not to have rules which they have to follow and are described as (a) energetic, (b) individualistic, (c) spontaneous, (d) unconventional, (e) thinking tangentially, and (f) abrasive. A more complete list of characteristics associated with these two styles is found in Appendix A. The following section briefly describes the measure used to determine the cognitive styles of the adaptor and innovator.

Kirton Adaption / Innovation Inventory (KAI)

Kirton (1976) has asserted that adaptors and innovators possess equal levels of creativity but they are manifested in very different ways. To evaluate adaptor and innovator styles, Kirton (1976; 1987) developed an instrument called the Kirton Adaption / Innovation Inventory (KAI) to validate his theory. An individual's overall score may range from 32, on the extremely adaptive end of the continuum, to 160 on the extremely innovative end. The theoretical mean of the instrument is 96. Research (Kirton, 1987; Mudd, 1986) has indicated that the actual mean of the general population stands close to the theoretical mean at 95.

Kirton (1976) has also stated that style is non-pejorative. Having one style preference is not better or worse than the other and that all styles are equally able to demonstrate high levels of creativity – where theoretically, there are highly creative adaptors and innovators as well as less creative adaptors and innovators. Both the adaptor and innovator are able to flex to the opposing style,

but this requires much energy and stress. Thus, Kirton (1989) suggests that while people are able to flex to different styles, they will most likely return to their preferred style.

Studies have indicated that the style of creativity is theoretically different from level of creativity (Goldsmith, 1987; Kirton, 1978; Isaksen & Puccio, 1988, Torrance & yun Horng, 1980). For example, scores from psychometric measures of creative ability like 'Word Fluency from the Primary Mental Abilities' battery (Kirton, 1978), 'What Kind of Person Are You' (Goldsmith, 1887) as well as 'Torrance Tests of Creative Thinking' (Isaksen & Puccio, 1988; Torrance & yun Horng, 1980) have been compared to the KAI and found to support the view that style of creativity is orthogonal to level of creativity.

However, there is some ambiguity in the creativity literature regarding this level-style distinction (Goldsmith & Matherly, 1987; Isaksen & Puccio, 1988; Puccio, 1987; Torrance & yun Horng, 1980). For example, studies (Isaksen & Puccio, 1988; Puccio, 1987) have found a significant positive relationship between creative abilities of fluency, flexibility, and originality on the 'Torrance Tests for Creative Thinking' (TTCT), a psychometric measure of creative level, and the innovative style of creativity on the KAI. Torrance and yun Horng (1980) and Goldsmith and Matherly (1987) could not conclusively support Kirton's level-style distinction as it was noted that some correlations existed between innovativeness and a few of their level measures.

Since this present study aims to make a direct comparison between Kirton's explicit theory where he posits that adaptors and innovators are equally creative against laypeople's implicit theories of creativity, the next section will discuss some research findings to show that there is a general perceptual bias towards the innovative style of creativity. It is noted that all the studies utilized Kirton's Adaption-Innovation theory to assess laypeople's implicit theories of creativity.

Implicit Theories of Creative Style

Puccio and Chimento (2001) conducted a study of American laypeople including college students, to explore their perceptions of creative style between adaptors and innovators. The participants involved in the study consisted of two groups. The first group consisted of 113 participants from diverse backgrounds in terms of ages, occupations, and educational levels. The second group consisted of 75 participants from two undergraduate courses in creative studies at Buffalo State College. This was a homogenous group in terms of age and educational background.

The respondents were required to read descriptions of two different types of people – the Adaptor and Innovator, and asked to use their personal view of creativity and rate the creativity of each person (the Adaptor or Innovator) based on a scale of 1 to 10. It was noted that they gave higher scores to the innovator. This highlights the fact that the respondents perceived the innovators to be

significantly more creative than the adaptors. The finding from this study seems to contradict Kirton's theoretical position, where he has stated that the adaptors are equally creative as the innovators (Kirton, 1976), at least with regard to laypeople.

Puccio and Chimento (2001) believe that culture could have played a role in influencing the perception of the innovator style as being more creative since 'innovation' is highly valued, marketed, publicized, and sought after. Furthermore, they suggest that, "the popular phrase often used to describe creativity, 'out-of-the-box-thinking', seems to reflect a bias towards the paradigm-breaking style associated with Kirton's innovator" (p. 679).

Another possibility put forward by the researchers is that explicit studies of creativity may have exacerbated the situation by putting undue emphasis on the innovator style of creativity. In fact, some of the characteristics of a highly creative individual like (a) innovation, (b) imagination, (c) independence, (d) risk taking, and (e) high levels of activity/energy (Niu & Sternberg, 2002), tend to be more associated with the innovator style. Also, as Talbot (1997) pointed out:

...the majority of interest in the creativity field has been devoted to Creative Innovators (often in implicit contrast to Uncreative Adaptors). It leads to the commonly held belief (not least by themselves) that Adaptors are not creative, and that Innovators are always creative (p. 177).

Another study by Gonzalez (2003) shared similar findings in an Argentinean sample that reinforces the perception that the innovator is more creative than the adaptor. One out of four respondents gave the adaptor a rating

of '5' on a scale of 1 to 10 points, while more than one out of four respondents gave an innovator a rating of '8'. Further, there were two respondents who even gave a rating of '0' for the adaptor.

One of the observations made by Gonzalez (2003) is that the "Argentinean laypeople possess a built-in bias regarding creativity level of adaptors and innovators" (p. 57). She also postulated that the disparity between implicit and explicit theories could have three possible reasons: (a) Kirton's explicit theory is correct and laypeople have misconceptions about his theory, (b) the laypeople are correct and therefore, Kirton's theory is inaccurate and possesses inherent problems, and (c), there are no correct or incorrect conclusions but the results highlight the fact that relatively new theories like Kirton's may take some time to be accepted by the society at large (Gonzalez, 2003).

In the case of an Asian society like Japan, a study (Muneyoshi & Kagawa, 2004) revealed that the mean scores of 4.2 for the adaptor rating and the mean score of 6.99 for the innovator rating again showed the perception bias towards the innovator being more creative than the adaptor. In fact, the mean score of 6.99 for the innovator was even higher than the mean score of 6.5 obtained from the American sample from Puccio and Chimento's study (2001). Muneyoshi and Kagawa (2004) attribute this to the Japanese view where the people make the link between the traits of an innovator and Japanese traditional artists, especially in the area of creating something novel as opposed to an adaptor who improves

on what they already have. They also note that if innovators are viewed to be more creative, then creative scientists or engineers who may be adaptive will not be considered creative.

In these examples cited above, it is noted that the innovator was viewed to be more creative than the adaptor. However, findings from Saudi Arabia (Alkeaid, 2004) revealed that the adaptor was considered more creative than the innovator. The researcher attributed this to the close social network within the family where members are expected to follow the rules set by the head of the household, regardless of age or gender. Schools and universities also display similar authority, where students and teachers must keep an appropriate distance of each other because of the different statuses.

In fact, descriptions associated with the innovator, such as (a) seen as undisciplined, (b) irreverent of group consensus, and (c) seen as abrasive, are not appreciated in Saudi Arabian culture as they go against the cultural norms of the society (Alkeaid, 2004). Ironically, when the laypeople were asked to list words that associated with creativity, words like (a) innovation, (b) discovery, and (c) novelty were cited. The researcher pointed out that although the descriptions of an innovator are not tolerated, laypeople in Saudi Arabia “might look at innovation within the existing system and paradigm” (2004, p. 15). In this study, the adaptor is seen as being more creative, thereby emphasizing the level of creativity rather than the manner in which creativity is manifested.

The conclusions that can be drawn from all these studies show that laypeople use the level distinction to describe the adaptive or innovative manner of creativity, despite Kirton's contention that all people are creative, albeit in various ways. Also, it is clear from these studies that culture has played a major role on how laypeople view creativity.

This research study based in Singapore, will build upon the results obtained from the American, Argentinean, Japanese, and Saudi Arabian cultures. Furthermore, since Singapore is a pluralistic society made up of three main ethnic groups, results from these groups will also be sought. The next section provides a brief overview of the culture of Singapore and it also includes a comparative study with the United States.

Singapore as an Asian Culture

Singapore is a nation dominated by immigrant populations and this accounts for its multi-racial demographic composition. The country consists of a total population of 4.3 million with 76.7% Chinese, 14% Malays, 7.9% Indians as well as 1.4% of other ethnic groups (July, 2004 estimates from the World Factbook, 2004). Singapore was granted internal self-government by the British colonial government in 1959. In 1963, it joined the Malaysian Federation as the country was seen to be less economically viable on its own as a newly independent nation. After two years, Singapore separated from the Malaysian Federation and became an independent political entity in 1965 (Chua, 1998a).

One's race in Singapore is officially defined strictly by patriarchal descent. Thus, one's race evidently determines one's culture and is "...assumed to be embedded in the language of the race..." (Chua, 1998b, p. 190). Although English is the main medium of instruction in schools and is considered a working language of the masses, Chinese, Malay, and Tamil are also the country's official languages. Thus, the country is able to claim for itself a neutral position towards all racial groups (Chua, 1998b).

Against this backdrop of multiculturalism, the next sub-section will compare the national cultures of Singapore and the United States based on Hofstede's (1984, 1991, 1998) analysis of national cultures.

Dimensions of National Culture

Hofstede (1984) worked with the responses of IBM employees (117, 000 protocols), covering a wide array of occupations and demographic variables in 66 countries. He summed up the responses of the subjects from each country to several value items and conducted a factor analysis of the mean responses to each of the value items based on a sample size of 40 (the number of countries with enough employees to provide stable means). In his study, Hofstede (1984) highlighted differences in national cultures, where culture is defined as "the collective programming of the mind which distinguishes the members of one human group from another" and this "includes systems of values..." (p. 21).

Hofstede (1984) identified four main dimensions along which dominant value systems in these countries can be “ordered and which affect human thinking, organizations, and institutions in predictable ways” (p. 10). These four dimensions are (a) Collectivism-Individualism, (b) Power Distance, (c) Masculinity-Femininity, and (d) Uncertainty Avoidance. These dimensions will be useful in comparing the national cultures of Singapore and the United States.

Collectivism-Individualism

This dimension has received the most attention in the social science literature (Triandis, 2001). Triandis (2001) points out that individualism and collectivism are not opposites but instead, are conceived as multidimensional constructs. Basically, individualism is often related to competition, emotional distance from in-groups and hedonism. Conversely, collectivism is often related to high family integrity, high sociability, interdependence, and a small distance from in-groups (Hofstede, 1984; 1991).

Although self-reliance is often related to individualistic cultures, later work has indicated that self-reliance is also associated with the collectivist culture, albeit in a different meaning (Triandis, 2001). For instance, while individualists consider self-reliance as “free to be able to do my own thing”, collectivists think of self-reliance as “not being a burden on my in-group” (Triandis, 2001, p. 38).

Triandis, et al. (1988) emphasized the basic difference in the relationship to individuals to in-groups. Collectivists usually have one or two in-groups and

are deeply interrelated to them. Individualists, on the other hand, have many in-groups but they are superficial in nature. For example, individualists may work in one company but if they receive a better offer somewhere else, they will not hesitate to join the other company. In this respect, collectivists tend to have more loyalty to one company.

The United States has been rated as the highest individualistic country with the Individualism Index (IDV) of 91. Singapore has an IDV of 20 (Hofstede, 1984). This ties in with the concept of 'dispositionism' in the West, where the responsibility for behavior lies primarily with the individual (Chiu, 1972). In an Asian society like Singapore, the individual is controlled by a need for not losing face and maintaining one's proper place amongst others. In addition to this, meta-analyses of the studies have indicated that collectivism is related to conformity (Bond & Smith, 1996). Thus, Singapore can be considered a relatively conformist culture.

Power Distance

Cross-cultural variations in power distance reflect differences in the prevalence of established hierarchies, the preference for vertical versus horizontal relationships as well as the importance of status (Hofstede, 1991). The United States registered a Power Distance Index ((PDI) value of 40 while Singapore had 74. Thus, the people of the United States, a relatively low power distance culture, prefer horizontal or equal relationships and are generally

informal in their social interactions. One example is the use of first names as a form of address (Ward, 2001). In the case of Singapore, a relatively high power distance indicates that the people are more likely to use more formal forms of address or those that reflect status differences.

Masculinity-Femininity

This scale derived from Hofstede's study concerns the extent to which values of assertiveness, money, and success prevail in a society as opposed to the values of nurturance, quality of life, and people (Hofstede, 1998). Masculinity refers to the first set of attributes whilst Femininity refers to the latter part.

Singapore has a score of 48 on the Masculinity Index (MAS) Values and is ranked 28th out of 50 countries. On the other hand, the United States has a score of 62 and is ranked 15th. This indicates that Singapore is a relatively feminist culture where emphasis is placed on harmony and caring while in the United States achievement and material success are emphasized. In addition to this, in a country with a higher score, there is a greater belief in independent decision-making as opposed to group decision-making leading to a stronger achievement motivation and higher job stress (Best & Williams, 2001).

Uncertainty Avoidance

This dimension is defined as "the extent to which the members of a culture feel threatened by uncertain or unknown situations (Hofstede, 1991, p. 113).

Thus, it refers to the willingness to tolerate ambiguity. Cultures with high uncertainty avoidance tend to develop institutions, rituals, and structures to deal with the anxiety created by uncertainty (Matsumoto, 2001b).

Singapore has a weak Uncertainty Avoidance Index (UAI) value of 8 and is ranked last out of 50 countries and 3 regions. In the case of the United States, the country has a score of 46 and is ranked 43rd. The implication here is that Singapore has a greater capacity to tolerate ambiguity and deviance of ideas.

In short, it can be noted that the United States and Singapore differ significantly in all four dimensions of national cultures.

Summary

This chapter provided a literature review associated with key concepts of (a) implicit theories, (b) cross-cultural psychology, (c) creativity, and (d) cognitive style. An attempt was made to highlight the relationships between these four strands. The chapter concluded with a comparison between the two national cultures under study in this research.

The next chapter will present the procedures, methods, and materials utilized in this research to explore implicit theories of creativity from laypeople in Singapore and the United States.

Chapter III: Methods and Procedures

Introduction

The purpose of this chapter is to outline the methods and procedures for this study. First, the chapter begins with a description of the participants. Second, materials used to gather the data are discussed. This included a questionnaire that contained close and open-ended questions. Third, procedures for data collection and analysis are provided. The chapter concludes with a summary as well as a preview of Chapter Four, which presents the results of the data analysis.

Participants

There were three sets of samples that had to be sought. The first set was Sample A, which consisted of participants from the national culture of the United States. The second set was Sample B, which consisted of participants from the national culture of Singapore. As for the third set of Sample C, it consisted of Singaporean participants from the three main ethnic groups, the Chinese, the Malays, and the Indians.

Sample A (The United States)

This sample was already obtained by Dr. Gerard Puccio, Director and Professor of the International Center for Studies in Creativity, Buffalo State College, between 2003 and 2004. It was a sample of convenience, that is, the data was collected from individuals who were readily available and who volunteered to fill out the questionnaires. The sample originally consisted of 113 participants. However, it was noted that there was a high proportion of educators. Thus, the researcher sought the help of a fellow creative studies student, who is American, to obtain more participants from a wider variety of occupations and to assume the role of a research assistant. The population now consisted of 139 laypeople, which represented a cross-section of gender, age, occupation, and educational levels. The participants had no formal training or background in creativity studies, as well as prior knowledge of Kirton's Adaption Innovation (KAI) theory. All the participants were 18 years of age and above. Table 3.1 shows a summary of the demographic information of Sample A.

Table 3.1: Demographic information of Sample A (The United States)

Age range	Number	Males	Females	Examples of occupations
18-25 years	8	4	4	educator, engineer, administrative personnel, pastor, nurse, police officer, counselor, student, retiree, housewife
26-39 years	44	12	32	
40-55 years	65	26	39	
56 years & above	22	6	16	
Total	n=139	48	91	

Sample B (Singapore)

This sample was already obtained in 2003 by a Singaporean creativity studies student but was not analyzed. The population consisted of 199 laypeople, which also represented a cross-section of gender, age, occupation, and educational levels. Just like Sample A, these 199 laypeople were a sample of convenience. Similarly, the participants had no formal training or background in creativity studies, as well as prior knowledge of Kirton's Adaption Innovation (KAI) theory. All the participants were 18 years of age and above. Table 3.2 shows a summary of the demographic information of Sample B.

Table 3.2: Demographic information of Sample B (Singapore)

Age range	No. (%)	Males	Females	Examples of occupations
18-25 years	27	8	19	educator, administrative personnel, sales executive, customer service, architect, manager, auditor, pastor, student, retiree
26-39 years	86	18	68	
40-55 years	79	31	48	
56 years & above	7	6	1	
Total	n=199	63	136	

Sample C (Singapore - Chinese, Malays, and Indians)

Since this study was designed to also compare implicit theories of creativity from the ethnic groups of Singapore, another sample from Singapore (Sample C) was sought, as participants in Sample B did not indicate their ethnicity in the questionnaires. A colleague in Singapore who teaches creativity in a tertiary institution was asked to help obtain participants from Singapore and assume the role of a research assistant. This was also a sample of convenience as the participants were obtained from personal contacts and ethnic self-help groups. Sample C consisted of 84 Chinese participants, 54 Malay participants, and 47 Indian participants, making it a total of 185 participants. All the participants were 18 years of age or older and willingly agreed to participate in the study.

The sample obtained was also diverse with respect to occupation and educational levels. They had completed at least secondary school education, while there were others who had diplomas and university degrees. Just like the previous two samples, the participants did not have prior knowledge of KAI and did not have any formal educational background in creativity studies. Tables 3.3.1, 3.3.2, and 3.3.3 show a summary of the demographic information of the three ethnic groups of Sample C – the Chinese, the Malays, and the Indians in Singapore.

Table 3.3.1: Demographic information of Sample C (Singapore Chinese)

Age range	Number	Males	Females	Examples of occupations
18-25 years	33	14	19	educator, administrative personnel, engineer, managing executive, clerk, quantity surveyor, student
26-39 years	22	14	8	
40-55 years	25	8	17	
56 years & above	4	3	1	
Total	n=84	39	45	

Table 3.3.2: Demographic information of Sample C (Singapore Malays)

Age range	Number	Males	Females	Examples of occupations
18-25 years	27	12	15	educator, administrative personnel, graphic designer, translator, secretary, librarian, housewife, student
26-39 years	16	5	11	
40-55 years	11	2	9	
56 years & above	0	0	0	
Total	n=54	19	35	

Table 3.3.3: Demographic information of Sample C (Singapore Indians)

Age range	Number	Males	Females	Examples of occupations
18-25 years	13	6	7	educator, administrative personnel, stenographer, research assistant, journalist, student
26-39 years	24	12	12	
40-55 years	9	5	4	
56 years & above	1	1	0	
Total	n=47	24	23	

Materials

The study utilized a questionnaire that contained a close-ended section and an open-ended section. A sample of the questionnaire can be found in

Appendix A. The close-ended section was a replication of the original survey created by Puccio and Chimento (2001). This questionnaire was again replicated by Gonzalez (2003).

In this close-ended section, the participants were given descriptions of two different people. The two descriptions were characteristics of the adaptor and innovator, which were directly taken from Kirton's work (1994). As in the earlier two studies, the two sets of characteristics were labeled as Person A and person B. Approximately half of the questionnaires had characteristics of the innovator and labeled as Person A, while the other half had characteristics of the innovator but labeled as Person B. This arrangement would help to suppress any bias and counter balance the effect of reading first one description and for that reason, rating one person higher than the other. A response scale ranged from 1 to 10 (one meaning 'not at all creative' and ten meaning 'exceptionally creative').

In addition to the quantitative close-ended question, the questionnaire also included an open-ended question. This question was included in Gonzalez's study (2003) to better capture the implicit conception of creativity in the Argentinean sample. The open-ended question was: "When you hear the word creativity, what words come into your mind? Please list below those words you associate with creativity".

Procedures

The researcher worked remotely from the United States with a research assistant based in Singapore. The researcher also had a research assistant in the United States to help her obtain more participants for the American sample (Sample A) around the Buffalo (New York) area. Since the researcher already had Sample A, she proceeded to prepare them for analysis. The section that follows refers to the data collecting procedures for Samples B and C.

The researcher conducted on-line discussions with the two research assistants so that they were familiar with the goals and procedures of the study. Ethical considerations like voluntary participation of the respondents and use of the consent forms were thoroughly discussed and explained. They were given a detailed description of the study on paper so that they would be familiar with the procedures for obtaining participants for the study.

Since the method of obtaining participants was through convenience sampling, both research assistants were given specific instructions with regard to the diversity of participants required. These were in terms of age groups and occupational backgrounds. The research assistants used their personal contacts at work, college, and places of worship to obtain the participants. In the case of the research assistant based in Singapore, he approached the self-help agencies for the various ethnic groups so that he could obtain more participants. The researcher also used her personal contacts via electronic mail so that a larger sample could be obtained.

Before engaging an individual to participate in the study, the research assistants in both countries explained clearly the conditions of participation in the study. The participants read and signed the consent form and indicated their gender, occupation, and age on the front cover of the questionnaire. Participants from the Singaporean sample also indicated their ethnicity – Chinese, Malay or Indian, as well as their religion. Care was taken to ensure that the Singaporean sample consisted of only Singapore citizens, as the country has a large proportion of permanent residents from various countries. The forms were in English as this is the lingua franca, so translation to the various languages was not necessary.

Once they had filled out the consent form, the participants proceeded to complete the questionnaire. They read the descriptions carefully and were asked to use their personal view of creativity to rate the creativity of each person described in the survey. Participants had to rate each person (adaptor or innovator) based on the scale of 1 to 10.

After completing this part of the survey, they went on to the open-ended question: “When you hear the word creativity, what words come into your mind? Please list below those words you associate with creativity”. The participants were given as much time as they needed to complete the full questionnaire. Overall, the survey took less than ten minutes to complete.

The survey forms were then collected by the research assistants and returned to the researcher. The original surveys from the Singaporean sample

were returned by airmail while the original surveys from the American sample were given personally. Questionnaires that the researcher had sent to her Singaporean contacts via electronic mail were also returned electronically. The photocopies of the questionnaires were kept by the research assistants.

Analysis

The first analysis of the close-ended questions in the questionnaire used *t*-tests to compare the participants' ratings of the Adaptor and Innovator across the three samples. Further, inferential statistics were used to assess the differences between countries, gender, ethnic cultures, and the ordering of the questionnaires in terms of the characteristics of the adaptor written first and the characteristics of the innovator written second and vice versa.

The second analysis of the data involved the open-ended question where a qualitative analysis was done. The method of coded data was employed to sort the responses for the open-ended question (Huberman & Miles, 1994). In this study, all the responses from each sample were compiled and each response was assigned a category. A category was created as long as there was a minimum of two similar responses from each sample. For each category, the frequency of similar responses was noted. A 'Miscellaneous' category was set up to include responses that did not fit into any assigned categories.

Summary

This chapter reviewed the methods and procedures used to conduct this study. Participants, materials, and procedures for data collection and analysis were also discussed. The next chapter will present the results of statistical and qualitative analysis of data gathered in this study.

Chapter IV: Presentation and Analysis of Data

Introduction

The purpose of this chapter is to present the results of the statistical analysis of quantitative and qualitative data gathered for this study. SPSS Version 12.0 was used to calculate the statistics presented in this chapter. Descriptive statistics will be presented, whereby the mean ratings of Adaptor and Innovator will be highlighted from Sample A (the United States), Sample B (Singapore), and Sample C (the three ethnic groups in Singapore – the Chinese, Malays, and Indians). This will be followed by inferential statistics, where tests of significance were computed. The *t* test for independent samples was used to determine any significant differences between the mean ratings of Adaptor and Innovator for each sample as well as for each ethnic group. Comparison between differences in how men and women rated the Adaptor and Innovator were also noted. Furthermore, an analysis of variance (ANOVA) was used to determine whether there was an overall significant difference among all three samples. As for the qualitative analysis, the most frequent responses connected with creativity from Samples A, B, and C will be presented. In the case of Sample C, responses from each of the three ethnic groups in Singapore will also be presented.

Results

Quantitative Analysis

The first part of the questionnaire consisted of a close-ended question where the participants were given descriptions of two different people. The two descriptions were characteristics of the adaptor and innovator, which were directly taken from Kirton's (1976) work. The two sets of characteristics were labeled as Person A and Person B. Participants were asked to rate how creative they believed the persons were on a scale of 1 (not at all creative) to 10 (exceptionally creative).

Table 4.1 summarizes the descriptive statistics obtained for Sample A (United States), Sample B (Singapore), and Sample C (Chinese, Malay, and Indian groups in Singapore). They indicate the minimum and maximum ages of participants from each sample, the minimum and maximum ratings of the adaptor and innovator styles, the mean adaptor and innovator ratings as well as the standard deviations of each sample.

Table 4.1
Descriptive Statistics for Samples A, B, and C

	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>Mean</i>	<i>SD</i>
Sample A – United States	139				
Age (years)		18	75	43.5	11.7
Adaptor Rating		1.0	10.0	4.6	2.2
Innovator Rating		1.0	10.0	7.3	1.9
Sample B – Singapore	199				
Age (years)		18	62	36.4	10.1
Adaptor Rating		1.0	10.0	4.8	1.9
Innovator Rating		1.0	10.0	7.1	2.0
Sample C – Singapore (including Chinese, Malay, and Indian ethnic groups)	185				
Age (years)		18	60	31.7	12.2
Adaptor Rating		1.0	10.0	4.9	1.9
Innovator Rating		1.0	10.0	7.3	2.0

As can be noted from Table 4.1, the minimum age of the participants from all the three samples was 18 years while the maximum age ranged from 60 to 75 years. The mean ages are 43.5 years for the United States sample, 36.4 years for the Singaporean sample, and 31.7 years for the Singaporean sample with the three ethnic groups. Thus, the sample from the United States consists of laypeople that are comparatively older than the laypeople from the two Singaporean samples. The mean rating for the adaptive style ranged from 4.6 to 4.9 while the mean rating for the innovative style ranged from 7.1 to 7.3. In all the three samples, the innovative style received higher ratings for creativity. It is also pointed out that both the adaptor and innovator styles received ratings across the

full continuum; that is, both the adaptor and innovator styles were rated as 1 (not at all creative) and 10 (exceptionally creative).

Since Sample C comprised the three ethnic groups in Singapore (i.e. the Chinese, the Malays, and the Indians), descriptive statistics for these specific subgroups are shown in Table 4.2. This table also indicates the minimum and maximum ages of participants from each sample, the minimum and maximum ratings of the adaptor and innovator styles, the mean adaptor and innovator ratings as well as the standard deviations from each sample.

Table 4.2
Descriptive Statistics for Sample C – Chinese, Malays, and Indians

	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>Mean</i>	<i>SD</i>
Chinese	84				
Age (years)		18	60	33.4	13.7
Adaptor Rating		1.0	9.0	4.9	1.7
Innovator Rating		2.0	10.0	7.5	1.6
Malays	54				
Age (years)		18	50	27.9	9.8
Adaptor Rating		1.0	10.0	5.4	1.9
Innovator Rating		1.0	10.0	7.3	2.2
Indians	47				
Age (years)		18	56	33.0	10.9
Adaptor Rating		1.0	9.0	4.5	2.2
Innovator Rating		2.0	10.0	6.9	2.1

In Table 4.2, the minimum age of the participants from all the three ethnic groups was 18 years while the maximum age ranged from 50 to 60 years. The mean ages are 33.4 years for the Chinese group, 27.9 years for the Malay group, and 33.0 years for the Indian group. Thus, it can be noted that the Malay group comprises laypeople that are relatively younger than the other two ethnic groups. The mean rating for the adaptive style ranged from 4.5 to 5.4 while the mean rating for the innovative style ranged from 6.9 to 7.5. Just like Table 4.1, the innovative style received higher ratings for creativity. However, it is also noted that only the Malay group had both the adaptor and innovator styles receive ratings across the full continuum; that is, both the adaptor and innovator styles were rated as 1 (not at all creative) and 10 (exceptionally creative).

Next, *t* tests were used to analyze the significance of differences between mean ratings for adaptors and innovators for Samples A, B, and C combined. Table 4.3 shows the *t* test analysis of the mean ratings of the adaptor and innovator for the total number of participants from all the three samples combined.

Table 4.3**Implicit Perceptions of Adaptor-Innovator Creativity (across all samples)**

Sample	N	Mean	SD	t	p
A, B, and C	523				
Adaptor Rating		4.85	2.03	-19.51	.00
Innovator Rating		7.28	1.99		

Table 4.3 indicates that there is a significant difference between mean ratings for adaptors and innovators of all the participants involved in this study ($n=523$) with a p-value less than .00.

The *t* test was also used to analyze the significance of difference between mean ratings for adaptors and innovators for each individual sample - Sample A, B, and C. Since Sample B and Sample C comprised Singaporean participants, these two samples were collapsed as one group. The results are noted in Table 4.4.

Table 4.4
Samples' Implicit Perceptions of Adaptor-Innovator Creativity

Sample	Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Sample A – United States (<i>n</i> =139)	Adaptor Rating	4.6	2.2	-10.7	.00
	Innovator Rating	7.3	1.9		
Sample B and Sample C - Singapore (<i>n</i> = 384)	Adaptor Rating	4.9	1.9	-16.3	.00
	Innovator Rating	7.2	2.0		

From Table 4.4, it is noted that that there is a significant difference between mean ratings for adaptors and innovators in both samples, Sample A and Sample B and C combined. When Sample C was broken down into the three ethnic groups – the Chinese, the Malays, and the Indians, a significant difference between the mean ratings of the adaptor and innovator was also noted ($p < .00$). Table 4.5 shows the breakdown of the analyses.

Table 4.5
Chinese, Malay, and Indian (Sample C) Implicit Perceptions of
Adaptor-Innovator Creativity

Sample	Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Chinese (<i>n</i> = 84)	Adaptor Rating	4.9	1.7	-10.0	.00
	Innovator Rating	7.5	1.6		
Malays (<i>n</i> = 54)	Adaptor Rating	5.4	1.9	-4.6	.00
	Innovator Rating	7.3	2.2		
Indians (<i>n</i> = 47)	Adaptor Rating	4.5	2.2	-5.3	.00
	Innovator Rating	6.9	2.1		

A one-way analysis of variance (ANOVA) was used to determine if there was a significant difference among the mean ratings of the adaptor and innovator from all the three samples; Sample A, Sample B, and Sample C. The results are shown in Table 4.6.

Table 4.6
One-Way Analysis of Variance (ANOVA) across Samples A, B, and C

Sample	Variable	<i>F</i>	<i>p</i>
Sample A, Sample B, and Sample C	Adaptor Rating	0.94	0.39
	Innovator Rating	1.06	0.34

Table 4.6 shows that there is no significant difference among the mean ratings of the adaptor and innovator. Thus, adaptors were perceived in similar ways across all three samples, and the lack of significant difference found for the innovative style also indicates no difference in perception for this creativity style across the three samples.

Table 4.7 shows the *t* test analysis of the mean ratings of the adaptor and innovator of Sample B (Singapore) when compared to Sample C (Chinese, Malay, and Indian groups in Singapore).

Table 4.7
Implicit Perceptions of Adaptor-Innovator Creativity
(Samples B and C)

	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Sample B – Singapore	199				
Adaptor Rating		4.87	1.91	-0.49	0.62
Innovator Rating		7.11	1.99	-1.23	0.21
Sample C – Singapore (including Chinese, Malay, and Indian ethnic groups)	185				
Adaptor Rating		4.97	1.97	-0.49	0.62
Innovator Rating		7.36	2.00	-1.23	0.21

In Table 4.7, the innovator style received higher ratings for creativity than the adaptive style. No significant difference was found between the mean ratings of the adaptor and innovator when Sample B was compared with Sample C. Much like the non-significant findings for oneway ANOVA for all three samples,

when adaptor ratings for the two Singaporean samples are compared there are no significant differences. The same was true for the innovator ratings for both of the Singaporean samples.

As mentioned in Chapter Three, there were two versions of the questionnaire. One version had the characteristics of the adaptor listed under Person A (version 1) while the second version had characteristics of the innovator listed as Person A (version 2). This was done to help suppress any bias and counter balance the effect of reading first one description and for that reason, rating one person higher than the other. A *t* test was done to see if ordering had any effect on the participants' perceptions of the adaptor and innovator in Sample A, Sample B, and Sample C. The results from each sample are displayed from Table 4.8.1 to Table 4.8.3.

Table 4.8.1
Order Effect of Sample A (United States)

Rating	Mean scores		<i>t</i>	<i>p</i>
	A-I order (n=62)	I-A order (n=77)		
Adaptor	4.17	5.05	-2.28	0.024
Innovator	7.67	7.15	1.57	0.117

In Table 4.8.1, there were 62 participants who responded using the questionnaire where Person A was the adaptor and Person B was the innovator. This group had a mean rating for the adaptor as 4.17 and the innovator as 7.67. The rest of the participants in Sample A (77 in total) responded to the questionnaire where Person A was the innovator and Person B was the adaptor. The mean rating of the adaptor from this group was 5.05, while the mean rating of the innovator was 7.15. There seems to be an ordering effect on the participants' perceptions of the adaptor in the mean rating as the p-value was significant at 0.024, as the adaptor received a higher rating when this style followed the innovator style. However, there did not appear to be an ordering effect in the mean rating of the innovator as the p-value was 0.11.

Table 4.8.2 shows the results of the order effect for Sample B.

Table 4.8.2
Order Effect of Sample B (Singapore)

Rating	Mean scores		t	p
	A-I order (n=128)	I-A order (n=71)		
Adaptor	4.50	5.53	-3.74	0.00
Innovator	7.67	6.11	5.57	0.00

In Table 4.8.2, there were 128 participants who responded using the questionnaire where Person A was the adaptor and Person B was the innovator. The mean rating for the adaptor was 4.50 and the innovator was 7.67. The rest of the participants in Sample B (71 in total) responded to the questionnaire where Person A was the innovator and Person B was the adaptor. The mean rating of the adaptor from this group was 5.53, while the mean rating of the innovator was 6.11. In this case, the ordering appeared to have an effect on the participants' perceptions of both the adaptor and innovator as a significant difference was noted, with the p-value at 0.00. Like the previous analysis, the adaptor received a more favorable rating when this style came second. Likewise, the innovator style received a significantly better rating when it followed the adaptor style description.

Table 4.8.3 shows the results of the order effect for Sample C.

Table 4.8.3

Order Effect of Sample C (Singapore – Chinese, Malays, and Indians)

Rating	Mean scores		t	p
	A-I order (n=90)	I-A order (n=95)		
Adaptor	4.85	5.08	-0.78	0.43
Innovator	7.45	7.28	0.57	0.56

In Table 4.8.3, there were 90 participants who responded using the questionnaire where Person A was the adaptor and Person B was the innovator. The mean rating for the adaptor was 4.85 and the innovator was 7.45. The rest of the participants in Sample C (95 in total) responded to the questionnaire where Person A was the innovator and Person B was the adaptor. The mean rating of the adaptor from this group was 5.08, while the mean rating of the innovator was 7.28. In this sample, ordering did not appear to have an effect on the participants' perceptions of the adaptor and innovator as there was no significant difference noted for the adaptor ($p=0.43$) or the innovator ($p=0.56$).

When Sample B and C were combined, a t test was carried out to determine if ordering had any effect on the participants' perceptions of the adaptor and innovator in this Singaporean group. The results are shown in Table 4.9.

Table 4.9
Order Effect of Sample B Combined with Sample C (Total Singaporean Sample)

Rating	Mean scores		t	p
	A-I order (n=218)	I-A order (n=166)		
Adaptor	4.65	5.27	-3.16	0.02
Innovator	7.58	6.78	3.94	0.00

In Table 4.9, there were 218 participants who responded using the questionnaire where Person A was the adaptor and Person B was the innovator. The mean rating for the adaptor was 4.65 and the innovator was 7.58. The rest of the participants in this combined sample (166 in total) responded to the questionnaire where Person A was the innovator and Person B was the adaptor. The mean rating of the adaptor from this group was 5.27, while the mean rating of the innovator was 6.78. In this group, the ordering appeared to have an effect on the participants' perceptions of both the adaptor and innovator as significant differences were noted, with the p-value at 0.02 for the adaptor and p-value at 0.00 for the innovator.

Since Sample C consists of the Chinese, the Malays, and the Indians, a *t* test was done to see if ordering had any effect on the participants' perceptions of the adaptor and innovator. A summary of the results from each ethnic group is found in Table 4.10.1 for the Chinese, Table 4.10.2 for the Malays, and Table 4.10.3 for the Indians.

Table 4.10.1
Order Effect of Sample C (Singapore - Chinese)

Rating	Mean scores		<i>t</i> □	<i>p</i> □
	A-I order (n=36)	I-A order (n=48)		
Adaptor	5.11	4.75	0.91	0.36
Innovator	7.41	7.72	-0.80	0.40

In Table 4.10.1, there were 36 participants who responded using the questionnaire where Person A was the adaptor and Person B was the innovator. The mean rating for the adaptor was 5.11 and the innovator was 7.41. The other 48 participants responded to the questionnaire where Person A was the innovator and Person B was the adaptor. The mean rating of the adaptor from this group was 4.75, while the mean rating of the innovator was 7.72. In this group, the ordering did not appear to have an effect on the participants' perceptions of both the adaptor and innovator as there were no significant differences noted, with the p-value at 0.36 for the adaptor and p-value at 0.40 for the innovator.

Table 4.10.2 shows the results of the order effect for the Malays in Sample C.

Table 4.10.2
Order Effect of Sample C (Singapore - Malays)

Rating	Mean scores		<i>t</i>	<i>p</i>
	A-I order (n=27)	I-A order (n=27)		
Adaptor	5.14	5.74	-1.10	0.27
Innovator	7.74	6.96	1.25	0.21

In Table 4.10.2, there were 27 participants who responded using the questionnaire where Person A was the adaptor and Person B was the innovator. The mean rating for the adaptor was 5.14 and the innovator was 7.74. The other half of this group, also 27 participants, responded to the questionnaire where Person A was the innovator and Person B was the adaptor. The mean rating of the adaptor from this group was 5.74, while the mean rating of the innovator was 6.96. Just like the Chinese group in Table 4.10.1, the ordering did not appear to have an effect on the participants' perceptions of both the adaptor and innovator as there were no significant differences noted, with the p-value at 0.27 for the adaptor and p-value at 0.21 for the innovator.

Table 4.10.3 shows the results of the order effect for the Indians in Sample C.

Table 4.10.3
Order Effect of Sample C (Singapore - Indians)

Rating	Mean scores		<i>t</i>	<i>p</i>
	A-I order (n=27)	I-A order (n=20)		
Adaptor	4.22	5.00	-1.19	0.23
Innovator	7.22	6.65	0.88	0.38

In Table 4.10.3, there were 27 participants who responded using the questionnaire where Person A was the adaptor and Person B was the innovator. The mean rating for the adaptor was 4.22 and the innovator was 7.22. The remaining participants (20 in total) responded to the questionnaire where Person A was the innovator and Person B was the adaptor. The mean rating of the adaptor from this group was 5.00, while the mean rating of the innovator was 6.65. Again, the ordering did not appear to have an effect on the participants' perceptions of both the adaptor and the innovator as there were no significant differences noted, with the *p*-value at 0.23 for the adaptor and *p*-value at 0.38 for the innovator. Thus, it is noted that in all the three ethnic groups, ordering did not have any effect on how the adaptor and innovator were perceived.

Next, gender differences were examined using the *t* test. Table 4.11 summarizes the results across the full sample, which consists of Sample A, Sample B, and Sample C.

Table 4.11
**Gender Differences Across the Full Sample (Sample A, Sample B,
 and Sample C)**

Variable	Gender		<i>t</i> □	<i>p</i> □
	Males (n=193)	Females (n=330)		
Adaptor	4.82	4.86	-0.20	0.83
Innovator	7.47	7.16	1.74	0.08

Table 4.11 shows there were a total of 193 males and 330 females in the full sample. The males gave the adaptor a mean rating of 4.82 while the females gave a mean rating of 4.86. In the case of the innovator, the males gave a mean rating of 7.47, while the females gave a mean rating of 7.16. In comparing the mean ratings of the males and females, the *p*-value for the adaptor was non-significant at 0.83, while the *p*-value for the innovator was also non-significant at 0.08, with males giving a statistically higher rating to the innovator.

When gender differences were examined in each of the ethnic group - the Chinese, the Malays, and the Indians, it was noted that the *p*-values for the adaptor and innovator were also not significant.

Qualitative Analysis

The second part of the questionnaire included an open-ended question to better capture the implicit conception of creativity from laypeople in Samples A, B, and C. The open-ended question was: “When you hear the word creativity, what words come into your mind? Please list below those words you associate with creativity”.

All the responses from each sample were compiled and each response was assigned a category. A category was created as long as there was a minimum of two similar responses from each sample. A total of 87 categories including the ‘Miscellaneous’ category, were formed. Table 4.12 shows the top categories from Sample A and Sample B, while Table 4.13 shows the categories of responses from the three ethnic groups of Sample C – the Chinese, the Malays, and the Indians. A master list of categories with the corresponding responses is provided in Appendix B.

Table 4.12
Top Categories Reported From Sample A and Sample B

Sample	Category	Frequency	%
Sample A – United States (<i>n</i> =139)			
Total number of responses = 879	1) Arts/Artistic	90	10.2
	2) Think outside the box	50	5.6
	3) New	40	4.5
	4) Open	32	3.6
	5) Intelligent	30	3.4
	6) Problem solver	27	3.0
	8) Imagination	27	3.0
	10) Unusual	27	3.0
	11) Different	21	2.3
	12) Innovative	20	2.2
	14) Flexible	20	2.2
	16) Unique	20	2.2
Total		404	45.9
Sample B – Singapore (<i>n</i> =199)			
Total number of responses= 871	1) New	100	11.4
	2) Think outside the box	60	6.8
	3) Innovative	43	4.9
	5) Different	43	4.9
	6) Unusual	41	4.7
	7) Arts/Artistic	36	4.1
	9) Ideas	36	4.1
	10) Problem solver	22	2.5
	12) Bold	22	2.5
	13) Imagination	21	2.4
Total		424	48.6

It can be noted that in Table 4.12, the top categories accounted for 404 responses (45.2%) out of a total of 879 responses. The top category for Sample

A is 'arts/artistic', which accounted for 10.2% of all the responses. In Sample B, the top categories accounted for 424 responses (48.3%) out of a total of 871 responses. The top category was 'new', which accounted for 11.4% of all the responses. Both samples have 'think out of the box' as the category with the second highest number of responses.

It is interesting to note that while the category 'arts/artistic' is the top category for the American sample (Sample A) with 10.2% of the total responses, this category was placed in the seventh position for the Singaporean sample (Sample B), where it accounted for only 4.1% of the total responses. Another observation is that Sample A had categories like 'open' and 'flexible', which were clearly absent in Sample B. On the other hand, Sample B had 'bold' and this was not evident in the categories in Sample A.

Since Sample C consists of the three ethnic groups – the Chinese, the Malays, and the Indians, a breakdown of categories from each ethnic group is provided in Table 4.13.

Table 4.13**Top Categories Reported From Each Ethnic Group in Sample C (Singapore)**

Sample	Category	Frequency	%	
Chinese (n= 84)				
Total number of responses = 415	1) Think outside the box	54	13.0	
	2) New	53	12.7	
	3) Unusual	24	5.7	
	4) Innovative	22	5.3	
	5) Unique	17	4.0	
	7) Different	17	4.0	
	8) Problem solver	15	3.6	
	10) Bold	15	3.6	
	11) Arts/Artistic	11	2.6	
	13) Interesting	11	2.6	
	14) Abnormal/ Weird	9	2.1	
	Total		248	59.7
	Malays (n= 54)			
	Total number of responses= 299	1) Arts/Artistic	28	9.3
2) Think outside the box		18	6.0	
3) Unique		17	5.6	
4) New		11	3.6	
5) Innovative		10	3.3	
7) Different		10	3.3	
8) Abnormal/ Weird		9	3.0	
9) Imagination		8	2.6	
11) Intelligent		8	2.6	
Total			119	39.7
Indians (n= 47)				
Total number of responses= 259	1) New	23	8.8	
	2) Think outside the box	21	8.1	
	3) Innovative	17	6.5	
	4) Unique	15	5.7	
	5) Unusual	14	5.4	
	7) Different	14	5.4	
	8) Imagination	10	3.8	
	9) Arts/ Artistic	7	2.7	
	11) Problem solver	7	2.7	
	13) Abnormal/Weird	7	2.7	
	Total		135	52.1

In Table 4.13, the top category for the Chinese group is 'think outside the box', which accounted for 13.0% of all the responses. The top category for the Malay group was 'arts/artistic' which accounted for 9.3% of all the responses while the top category for the Indian group was 'new', which accounted for 8.8% of all the responses. Also, the Chinese had two categories, 'bold' and 'interesting', which were absent from the Malay and Indian samples. It is also noted that in all the three ethnic groups, a new category, 'abnormal/weird' is found. This category is absent in Sample A (United States) and Sample B (Singapore).

Summary

This chapter presented the analysis of quantitative and qualitative data collected to assess and access the implicit theories of creativity of laypeople from the United States and Singapore, as well as the Chinese, the Malay, and the Indian groups. Conclusions and recommendations of the findings are discussed in the following chapter. Implications for future research will also be presented.

Chapter V: Conclusions, Implications for Further Study, and Recommendations

Introduction

The purpose of this chapter is to present the major findings of this study in the light of the research questions identified in Chapter One. Next, the implications of conducting this research are discussed. Lastly, recommendations for future research in this area are proposed.

Interpretation of the Research Outcomes

The purpose of this research was to compare the extent of influence of culture on implicit theories of creativity among laypeople from the United States and Singapore. Since Singapore consists of three main ethnic groups – the Chinese, the Malays and the Indians, comparisons among them were also explored. A quantitative analysis of the data revealed that the innovative style was rated as more creative than the adaptive style in samples from the United States as well as Singapore. Within the Singaporean sample, the three ethnic groups – the Chinese, the Malays, and the Indians, also rated the innovator as more creative than the adaptor. Also, a qualitative analysis of the data revealed that words associated with creativity seemed to have an innovator bias. In addition to this, the implicit understanding of what constitutes creativity did not seem to correspond totally with the explicit conceptions of creativity found in the

literature. Furthermore, each ethnic group, although part of one national culture, Singapore, registered differences in their implicit conceptions of creativity.

The following section discusses the analysis and interpretation of findings to the research questions that guided this study and which were initially introduced in Chapter One.

1) Using Kirton's explicit theory of Adaption and Innovation to access laypeople's implicit views of creativity, to what extent do laypeople from the United States and Singapore have similar views of Kirton's contention that adaptors and innovators are equally creative?

One clear pattern that emerged from the mean ratings of the adaptor and innovator was that the participants in the United States and Singapore indicated an implicit belief that a high level of creativity was more associated with Kirton's (1976) innovative style of creativity. There was a consistent higher mean rating to the innovator than the adaptor. If a generalization of these findings can be made, there seems to be a perceptual bias towards the innovator being more creative than the adaptor. This is in direct contention with Kirton's (1976) explicit theory where he has stated that the adaptors are equally creative as the innovators, at least with regard to laypeople.

Studies by Puccio and Chimento (2001), Gonzalez (2003), as well as Muneyoshi and Kagawa (2004) have noted similar findings where the innovator was rated as more creative than the adaptor. Chapter Two had already alluded to

the possible reasons as to why the innovator is considered more creative than the adaptor. For example, Puccio and Chimento (2001) believe that culture could have played a role in influencing the perception of the innovator style as being more creative since 'innovation' is highly valued, marketed, publicized, and sought after. Furthermore, they suggested that, "the popular phrase often used to describe creativity, 'out-of-the-box-thinking', seems to reflect a bias towards the paradigm-breaking style associated with Kirton's innovator" (p. 679).

Another possibility put forward by the researchers is that explicit studies of creativity may have exacerbated the situation by putting undue emphasis on the innovator style of creativity. In fact, some of the characteristics of a highly creative individual like (a) innovation, (b) imagination, (c) independence, (d) risk taking, and (e) high levels of activity/energy (Niu & Sternberg, 2002), tend to be more associated with the innovator style.

Another possible explanation is that in the case of the United States, Western values on creativity are dominated by the American ideology, whereby creativity is viewed as creating new and useful objects and ideas that significantly depart from existing ones (Weiner, 2000). Also, because of a strong emphasis on freedom of expression, individualism, and democracy as reinforced by a political system that protects freedom and protesting rights, Americans are imbibed in a culture where they are encouraged to go beyond the existing frontiers (Weiner, 2000). This implies that breaking paradigms and questioning the norms are

hallmarks of a creative society, and these in turn seem to reflect the innovator style of creativity.

A similar situation is also found in the Singaporean samples. Although Singapore is an Asian country that is considered to be more collectivist in nature (Hofstede, 1984), the innovator style is deemed more creative, not unlike the participants in the American sample. One possible reason could be the overt importance of creativity for the survival of the country since the 1980s. For example, there have been calls by the government to intensify the drive to foster creative thinking in students by having innovative curriculum and pedagogy as well as emphasizing the importance of creativity in the economy (Ang & Yeoh, 1990; Lim & Gopinathan, 1990). In fact, the knowledge-based economy is considered to be an innovation-led economy where “ideas, creativity, entrepreneurship, technology and knowledge converge and connect...” (Green Paper on ‘Investing in Singapore’s Cultural Capital’, 2002, p. iii). These examples underscore the importance of creativity in the survival of the nation, where breakthrough creativity is valued. This type of creativity is closely associated with the innovative style rather than the adaptive style.

It is interesting to note that in the questionnaire given out to all the participants involved in this study, the characteristics associated with the adaptor seemed to have more positive connotations compared to the characteristics of the innovator. For example, the adaptor had the following characteristics listed in the questionnaire: (a) precise, (b) reliable, (c) disciplined, (d) resolving problems,

(e) improvement, (f) greater efficiency, (g) sound, (h) dependable, and (i) maintain high accuracy. However, there were more negative connotations in the characteristics of the innovator and these are listed as follows: (a) undisciplined, (b) discover problems, (c) manipulates problems, (d) irreverent of group's consensual views, (e) abrasive, (f) unsound, (g) impractical, and (h) shocks others. Despite this, the innovator was still seen as more creative than the adaptor. This highlights the fact that the implicit view of creativity by laypeople is stereotypical in nature, "where a widely held creative person schema includes traits such as unconventionality, non-conformity, independent-mindedness, rebelliousness, ..." (Kasof, 1995, p. 328).

2) Using Kirton's explicit theory of Adaption and Innovation to access laypeople's implicit views of creativity, to what extent do different ethnic groups within Singapore (i.e. Chinese, Malays, and Indians) have similar views of Kirton's contention that adaptors and innovators are equally creative?

Even within the national culture of Singapore, the three ethnic groups comprising the Chinese, the Malays, and the Indians, registered a similar implicit belief that high creativity is associated with the innovative style of creativity. It can be noted that the largest difference in the mean ratings can be seen in the Chinese group, where the mean rating for the adaptor was 4.9 and the mean rating for the innovator was 7.5. There was a difference of a mean rating of 2.6. This was followed by the Indians with a difference of 2.4 (adaptor rating=4.5,

innovator rating=6.9), and then the Malays with the smallest difference of 1.9 (adaptor rating=5.4, innovator rating=7.3).

One possibility could be is that the Malay group is more homogeneous than the other participants in the Chinese and Indian groups. For example, the Chinese group had various dialect groups like the Hokkiens, Teochews, and Hakkas, and different religions like Buddhism, Taoism, Christianity, and 'free thinker' (a euphemism used in Singapore when an individual does not embrace any particular faith). In the case of the Indian group, there were Sikhs and Punjabis apart from those of South Indian origin. Also, this group registered various religious backgrounds that included Hinduism, Islam, and Christianity. Compared to these groups, the Malay group was relatively homogeneous as all Malays are by constitutional definition Muslims (Chua, 1998b). Although grossly simplified, this could provide a reason why there was a small difference between the mean rating of the adaptor and innovator in the Malay group.

However, a major point to note is that despite these differences, the fact remains that there is a significant difference between the mean ratings of the adaptor and innovator ($p \leq 0$), where the innovator was perceived to be more creative than the adaptor across the three ethnic groups. As mentioned earlier, the three ethnic groups were multi-faceted in terms of ethnicity, race, dialect, and religion. Even in the face of these differences, their implicit view of the innovator as being significantly more creative than the adaptor highlights the fact that the

explicit theory that Kirton (1976) espouses certainly does not match laypeople's implicit theories.

In the minds of laypeople, the notion that all individuals are creative, albeit in different ways, does not exist. Instead, contrary to Kirton's (1976) view that level of creativity is orthogonal to style of creativity, laypeople still hold the conception that one style of creativity is considered to be more creative than the other. In this case, the innovative style of creativity is deemed to be more creative than the adaptive style of creativity. This then leads to the assumption that if an individual possesses a more adaptive style of creativity, then that individual is not considered to be highly creative.

3) When asked to define creativity in their own words, to what extent do laypeople from different national cultures in the United States and Singapore hold similar or different conceptions of creativity?

Both the American and Singaporean samples yielded 879 and 871 responses respectively. In view of this, direct comparisons can be made. One clear similarity between the samples was that most of the top categories of responses seemed to have an innovator bias in the laypeople's implicit theory of creativity. For example, words like (a) think out of the box, (b) new, (c) innovative, (d) unusual, and (e) different were some of the top categories from each national culture. This finding further corroborates the participants' implicit belief that

creativity is more associated with the innovative style of creativity rather than the adaptive style.

However, some differences can also be noted. The top category from the American sample was 'arts/artistic' which accounted for 10.2% of all the responses while this category accounted for only 4.1% of the Singaporean sample. This indicates that being involved in the arts or being artistic is one of the main hallmarks of creativity in this sample of participants and that artistic creative expression is one of the clear indicators of a creative individual. As Leung, Au, and Leung (2004) have noted, "In the West, creativity is often viewed as an individual activity, and that may be why creativity is typically associated with artists or scientists" (p. 121). If generalizable, this confirms the individualistic nature of the American society, with an Individualism Index (IDV) of 91 compared to Singapore, with an IDV of 20 (Hofstede, 1984).

Also, the top response from the Singaporean sample was 'new', which accounted for 11.4% of the responses compared to the American sample, with 4.5%. Further, the two other top categories for the Singaporean sample were 'think out of the box' and 'innovative'. Not only do they indicate an innovator bias, but these responses reflect the country's desire to incorporate creativity and innovation in all spheres of the economy. In fact, Singapore has received considerable support for creativity education and research from its political leaders (Tan, 2004), where breakthrough thinking and innovation are

emphasized. In this case, socio-political factors could have had an influence on how the laypeople in the Singaporean sample perceive creativity.

4) When asked to define creativity in their own words, to what extent do laypeople from different ethnic groups in Singapore hold similar or different conceptions of creativity?

One similarity that can be noted from all the three ethnic groups is that again, most of the categories indicate a perceptual bias towards the innovator style. For example, words like (a) think out of the box, (b) new, (c) innovative, (d) unusual, and (e) different were some of the top categories from each ethnic group. However, one category that seemed to be absent from the two national cultures of the United States and Singapore was 'abnormal/weird'. Words in this category included (a) crazy, (b) irrational, (c) eccentric, and (d) wacky. Thus, it seems that creativity is associated with ideas, behaviors or products that are out of the norm or particular paradigm. This again reinforces the idea that creativity is more associated with the innovative style of creativity rather than the adaptive style.

Furthermore, it can be noted that the categories 'new' and 'think out of the box' are within the top two categories for the Chinese (25.7%) and Indian samples (16.9%). As mentioned earlier, Singapore's emphasis on breakthrough thinking and innovation as part of raising the intellectual capital of its people could have had an impact on how laypeople perceive creativity. Furthermore, a

conversation with Dr. Hui Ming Fai, an education specialist from Hong Kong, indicated that in the Chinese language, the Chinese character, 'create', connotes producing something new or producing something that did not exist before (personal communication, February 8, 2005). In fact, in Rudowicz and Hui's (1998) study, the Hong Kong Chinese laypeople generally described creativity as 'something new' and 'non-existing before', again emphasizing the concept of newness. Together with Singapore's emphasis on breakthrough thinking and innovation, it could shed some light as to why the categories 'think outside the box' and 'new' are prominent in the Chinese and Indian perceptions of creativity.

However, the Malay sample, although part of the national culture of Singapore, revealed that the categories of 'new' and 'think outside the box' have a lower percentage (9.6%) than the Chinese and Indian samples. In fact, the top category for the Malay sample is similar to the American sample, where 'arts/artistic' is the top category, which accounted for 9.3% of the responses. One common conception is that the Malays are highly artistic and thus, would think of creativity in this respect. However, it can be argued that the Chinese and Indians also have deep roots in their own cultures, traditions, and the arts. As pointed out by Professor Lily Kong, Vice-Provost of the National University of Singapore and one of the leading cultural geography researchers in Singapore, "this might be rather essentialist in approach" (personal communication, 3 July, 2005). Instead, she provides the following conjecture:

...It is true that the Chinese and Indian populations in Singapore are largely migrant populations of the working class, rather than the literati and upper classes with their artistic and cultural traditions. One might therefore argue that these groups (both the early migrants and their later descendents) do not share the same cultural "ancestry" of others [Malays] in their race in the homelands. (personal communication, 3 July, 2005).

Although this is pure conjecture, the main implication here is that there could be cultural factors at work in regard to the different conceptions of creativity for migrant populations like the Chinese and the Indians, compared to the Malays, who are considered regionally indigenous. Furthermore, it is also interesting to note that studies elsewhere have indicated that 'aesthetic taste' and 'being artistic' are consistently absent in the Chinese conception of creativity (Rudowicz & Yue, 2000; Sternberg, 1985). Again, this highlights the fact that there are indeed differences in how the ethnic groups perceive creativity even within one national culture of Singapore.

Implications

This study explored the extent of influence of culture on implicit theories of creativity among laypeople from the United States and Singapore, as well as the Chinese, Malay, and Indian groups in Singapore. This section discusses how this research has implications in regard to two theoretical topics, Kirton's (1976) Adaption-Innovation theory and cross-cultural implicit theories of creativity.

Results revealed that the research participants' perceptions in all the samples indicate an implicit belief that high creativity is more clearly associated

with Kirton's innovative style of creativity. The conclusion is that laypeople's implicit theories of creativity have been contrary to Kirton's explicit theory of creativity styles. This finding confirms other research studies using Kirton's explicit theory of Adaption and Innovation to access laypeople's implicit theories of creativity (Gonzalez, 2003; Muneyoshi & Kagawa, 2004; Puccio & Chimento, 2001). These three very distinct cultures – Latin, Anglo-Saxon, and Asian, consistently gave higher scores to the innovator. If these results can be generalized, then this indicates a perceptual bias across various types of cultures towards the innovator style of creativity, which is in direct contention to Kirton's theoretical position.

Gonzalez (2003) has alluded to three possible reasons as to why there is a disagreement between the explicit and implicit theories of creativity. She postulates that it could be that Kirton is correct and that laypeople may have a misconception, or that the laypeople are correct and it could be possible that Kirton's theory may not be accurate, or it could be a question of not who is right or wrong but that the results could "simply reflect the process of how new ideas are slowly adopted..." (p. 57). Although it is not within the scope of this study to ascertain if Kirton was correct or not, the fact remains that there seems to be a chasm between laypeople's implicit theory of creativity and the explicit theory of creativity outlined in Kirton's theory of creative styles. There are a few implications for this built-in bias towards the innovative style of creativity.

Firstly, in the case of Singapore, the clarion call to students and educators alike has been to have a change in mindset where the task of education is to equip students for a future that cannot be predicted (Goh, 1997). The assumption is that a defining feature of the future is rapid change. Thus, the innovator style of creativity is considered to be a style to strive for if the nation is to be globally competitive. The innovative style of creativity is considered to be the type of creativity that should be fostered and nurtured in every student so that they will be highly creative and innovative workers who will be at the forefront of ideas and scientific breakthroughs. In fact, the former Prime Minister of Singapore, Mr. Goh Chok Tong, explicitly encourages Singaporeans to learn from the Americans, who are seen as “unsurpassed in their ability to produce highly creative, entrepreneurial individuals” (Goh, 2004, ¶ 9).

In the light of this, the adaptive style of creativity, where working within a paradigm and improving upon it, is implicitly viewed to stymie the progress of the nation trying to brace itself for a future of intense competition and where technologies and concepts are replaced at an escalating pace. In the United States as well as in Singapore, the adaptive style of creativity is not considered as creative as the innovative style as the assumption is that this style does not produce innovative solutions to problems that are inherent in a knowledge-based economy.

Secondly, in the area of business, the same can be noted. The key source of economic growth is the ability of businesses to seek out new ideas,

knowledge, practices, and technologies that can steer them one step ahead of others. All these connote the demand for the innovative style of creativity, where tangential thinking and working out of the paradigm are required. Again, the adaptive style of creativity, characterized by long-term efficiency and seeking solutions in tried and tested ways, is viewed as unproductive and perhaps even detrimental to an organization that emphasizes the proverbial 'thinking out of the box' mindset. The tried and tested methods are seen as irrelevant to an organization that demands solutions to heuristic problems.

Thus, it appears that in the general society, creativity as a concept seems to reflect an innovative style of creativity. If Kirton is indeed correct in his view of creativity where different styles exist, then there should be a more concerted effort on the part of researchers to communicate his explicit theory to the population. Otherwise, individuals who are more comfortable with the adaptive style of creativity are marginalized and seen as less creative than their peers. In the quest for a more innovative style, the adaptive style of creativity is squelched or overlooked and the true potential of individuals with the adaptive style of creativity will not be realized. The belief that everyone is creative but in different ways will not hold true as there is undue emphasis on how creative an individual is as opposed to acknowledging how an individual is creative.

The above discussion highlights the implicit belief of laypeople that an innovative style of creativity is considered to be more creative than the adaptive style. However, Alkeaid (2004), in his research of Saudi Arabian laypeople, found

that the adaptor was rated more creative than the innovator. Again, this is contrary to Kirton's (1976) explicit view that adaptors and innovators are equally creative. However, when they were asked about their conceptions of creativity, words like (a) innovative, (b) distinguished, (c) novelty, and (d) discovery were most frequently mentioned (Alkeaid, 2004). These words seemed to be more associated with the characteristics of the innovator rather than the adaptor. Alkeaid (2004) alludes to the fact that laypeople view innovation from a different lens in that innovation can still occur within an existing paradigm or system.

Thus, it can be noted that even the term 'innovator' holds different connotations in a society. In some cultures, like the United States, Singapore, Japan, and Argentina, innovative thinking occurs only when existing paradigms are challenged, whereas in Saudi Arabia, innovative thinking can still occur within the existing paradigm. Furthermore, Alkeaid (2004) points out that characteristics unique to Saudi Arabian culture like (a) development, (b) distinguished, and (c) proficiency, were also frequently mentioned when asked about their conceptions of creativity. Alkeaid (2004) postulated that these attributes could have come about as a result of a strong Islamic influence which undergirds the Saudi Arabian culture. However, when compared to the Malay group in Singapore, which also has Islam as its main religion, they (the Singaporean Malay group) viewed the innovator as significantly more creative than the adaptor. Although religion (in this case Islam) is the common denominator between these two cultures, yet their implicit views of creativity are significantly different. In this

case, Kirton's (1976) explicit theory does not take into account the rich cultural diversity that exists in various societies. One style is viewed as more creative than the other, and this goes against the grain of Kirton's (1976) contention that both styles are equally creative.

On a larger scale, when the categories of responses were analyzed, it is noted that they do not share the explicit notion of what creativity is. Most of the authors in the *Handbook of Creativity* support the idea that creativity involves the creation of an original and useful product (Mayer, 1999). In fact, this definition is referred to as the "Western" view (Lubart & Georgsdottir, 2004). However, in the implicit theories of laypeople in this study, the concept of 'useful' is clearly absent in their responses, even in the sample from the United States, a western culture. There is a possibility that laypeople's implicit view is based solely on novelty and nothing else. Thus, perhaps one can argue that the explicit theories espoused by the experts could derive from their own implicit theories of what constitutes creativity.

In studies between Western and Eastern conceptions of creativity, typical approaches can be observed. For example, Asian cultures are normally seen by Westerners as embracing a central ideology like Confucianism or Taoism or beliefs and assumptions like collectivism, filial piety, orientation to a group or being conforming as characteristics that typify an Asian culture. However, studies have pointed out that Asians like the Chinese youths in Hong Kong, Mainland China, and Singapore share individualistic mores like their American

counterparts in terms of value orientation (Lau, 1992). This highlights the fact that sociopolitical factors like modernization and globalization are at work. It might be simplistic to state that the study of creativity within a particular culture only takes into account the beliefs and traditions of that culture. Thus, when creativity is studied within a particular culture, a more holistic approach should be utilized, taking into account its political system and ideology, history as well as other social factors.

In addition to this, a Western or Eastern culture is not entirely homogeneous. These are very broad terms that do not allude to a myriad of sub-cultures within a particular national culture. The vast historical and sociopolitical differences in the Western and Eastern cultures simply do not justify treating these groups as uniform entities. Thus, the findings from this study imply that research in Western and Eastern conceptions of creativity should give way to more research within a particular national culture so as to unearth the richness of how creativity is conceived in various sub-cultures within a larger entity. Perhaps instead of coming up with a common definition of creativity that can cross all cultures, the complexities of how creativity is conceived in various cultures should be recognized.

In conclusion, it can be noted from the discussion that an explicit theory cannot be assumed to have a shared global understanding of its concepts and ideas. Perhaps this can pave the way for more research in creativity on implicit theories, where there can be a deeper appreciation of how creativity is viewed all

over the globe. Also, any explicit theory on a psychological construct can incorporate testing it on the general population by way of implicit theories so as to add more rigor and acceptance within a given society.

Recommendations

This study took an initial step in examining the various conceptions of creativity within the national cultures of the United States and Singapore as well as the sub-cultures of the Singaporean Chinese, Malays, and Indians. It would indeed be valuable to replicate this study in the future, keeping in mind the following recommendations. Firstly, instead of a convenience sampling of laypeople whereby they were purely volunteers and were willing to participate in the study, random sampling of laypeople could be employed as this is the best way to obtain a representative sample. Furthermore, differences that do occur would be a result of chance, and not the researcher's conscious or unconscious bias in the selection of the sample.

Secondly, in this study, the second part of the questionnaire asked for the participants' responses that they associate with creativity. It would be more useful to indicate the four Ps of creativity – the person, the product, the process, and the press, so that participants could list their responses in the various categories. This structure may help the researcher to categorize the responses under overarching parameters of the four Ps, since the creativity literature is also

concerned with the creative person, creative product, creative process, and the creative press.

Thirdly, one limitation is that the sorting of the responses into various categories bring with it the researcher's bias in how the response should be categorized. Another researcher familiar with creativity, possibly a finishing graduate student of creative studies, could also categorize the responses and the final categorization compared. This exercise can ensure that the responses are more accurately categorized to reduce any bias.

Fourthly, the participants in the American and Singaporean samples comprised laypeople with at least a high school or secondary education. A wide range of laypeople from different educational levels and backgrounds would be more desirable. If this is the case, translations in the Singaporean samples into Mandarin, Malay, and Tamil would have to be considered. To obtain an accurate translation of the questionnaire, a back-translation by bilinguals and translators could be carried out and then compared.

Lastly, this research can be extended by including religion in the American and Singaporean samples to see if this factor plays a role in how creativity is conceived. Furthermore, since this study looked at the three main ethnic groups in Singapore, it would be interesting to see if sub-cultures within the American sample show any differences in how laypeople view creativity when compared to the national culture of the United States. A possible breakdown of the sub-

cultures could include the Anglo-Saxon, the African-American, the Native American, and the Hispanic populations.

Summary

This final chapter answered each guiding question by presenting the conclusions drawn from the analysis of the quantitative and qualitative data. Implications of this study were also noted, especially in the areas of Kirton's Adaption-Innovation Theory as well as the role of implicit theories of creativity of laypeople. The chapter concluded with recommendations for future research as well as the limitations of the present study.

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Project: “Perceptions of Creativity Across Cultures”

Consent form:

You have been invited to participate in a research study about perceptions of creativity across cultures by the International Center for Studies in Creativity, Buffalo, **State University of New York**, U.S.

Goal: To explore the conceptions of creativity across cultures.

Procedure: You will be asked to complete two simple questions that reflect your personal conception of creativity. These questions can be completed in less than 5 minutes.

Please note: There are no right or wrong answers. Your participation in this study is completely voluntary. You may quit at any time you want without penalty. All information we obtain from you is strictly confidential. You must be 18 years of age or older to participate in this study.

If you have more questions: Please contact Dr. Gerard Puccio (pucciogj@buffalostate.edu) or Suzanna Ramos (ramosj48@buffalostate.edu) or by phone at 716-200-8300, NY, USA.

Please complete:

Gender (F/M): _____

Occupation: _____

Age: _____

Ethnicity (Chinese/Malay/Indian): _____ (for Singapore only)

Religion: _____

Your responses will help us
expand our understanding of
creativity in other cultures.

Thank you for participating!

Carefully read the descriptions below and respond to questions 1 and 2.

Person A:

- Precise, reliable, efficient, disciplined and prudent
- Concerned with resolving problems rather than finding them
- Seeks solutions to problems in tried and understood ways
- Solves problems through improvement and greater efficiency
- Seen as sound, conforming , safe, dependable
- Seems able to maintain high accuracy in the long run

Person B:

- Seen as undisciplined, thinking tangentially, approaching tasks from unsuspected angles
- Could be said to discover problems and discover solutions
- Queries the assumptions, manipulates the problem
- Is catalyst to settled groups, irreverent of their consensual views
- Seen as abrasive
- Seen as unsound, impractical, shocks others

1) Using your view of what you believe creativity is, please rate how creative you feel the above persons are:

1	2	3	4	5	6	7	8	9	10
<i>Not at all creative</i>			<i>Moderately creative</i>				<i>Exceptionally creative</i>		

(Select a number from the above scale that best represents your view of each person.)

Rating for Person A:

Rating for Person B:

2) When you hear the word “creativity”, what words come into your mind? Please list below the words you associate with “creativity”.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Sample A (The United States)

A1) Accurate

accurate
precise

A2) Approaches problems in a different way

ability to approach problems at a different angle
approaches from new angle
approaching obstacles in a different way using brainstorming techniques to come up with ideas
approaching things from a different angle
different angles
different ways to approach problem
sees things and objects in a new and sometimes different light
sees things in a different light

A3) Arts / Artistic

art
art crafts minded
artful
artistic
artistic in all areas - dance, performing arts, media etc
arts
artsy
arty
fine arts
song
acting
authors
writer
writing
visual
doodle
drawing
scribble
painter
painting
poet
poetic
needle arts like knitting, crocheting
crafts
sewing
sewing quilts
dance
sculptor
sculpture
musical

A4) Beauty

appreciative of beauty
beautiful
beauty

A5) Big picture

all-seeing
expansive
global thinker
good at seeing the whole picture
less concerned with details
not looking at the surface but rather, trying to go to the core or seeing a bigger picture
perspective
sees the big picture

A6) Bold

bold
courageous
daring
not afraid to change
unafraid

A7) Brainstorm

brainstormer
divergent

A8) Caring

caring

A9) Change

change
changing
not stagnant

A10) Child-like

childlike

A11) Collaborative

ability to work with diverse personalities
collaborative

connecting
integrating

A12) Colorful

color
coloring of the lines
sees in color

A13) Confident

confident

A14) Crafty

crafty

A15) Create

create
hands on
make something you like to do
produce
re-building
start from scratch - end result a masterpiece
start with raw materials
to do
to make

A16) Curiosity

curious
eager
inquisitive
investigative
keen

A17) Designer / Decorator

decorating
decorator
design
designer
developer

A18) Different

different
different drummer

different thinking
different vision
different ways of doing

A19) Discovery

discover problems and solutions
discovery

A20) Dreamer

day dreamer
dreamer
dreams

A21) Eccentric

eccentric
eccentric (at times)
minimal common sense
off-beat
warped

A22) Efficient

efficient

A23) Energetic

dynamic
energetic
enthusiastic
frenetic
high energy
vibrant

A24) Engineer

engineer

A25) Excitement

excitement
exciting

A26) Explore

exploration
exploratory

explore
exploring

A27) Expressive

expression
expressive

A28) Feelings

compassionate to other person's feelings (empathetic)
emotional
feeling
feelings
intuitive
passion
passionate

A29) Flexible

adaptive
easy
easy going
experimental
finds various uses for different things
flexibility
flexible
loose
non-prescriptive
redefined
versatility

A30) Flow

flowing
fluid
free flowing

A31) Focused

focused
goal-oriented
purposeful

A32) Free-spirited

care-free
free
free spirit

free spirited
free thinker
free thinking
free-floating
liberal
play
playful

A33) Fresh

fresh

A34) Fun

doesn't take everything so seriously
fun
make fun

A35) Futurist

futurist

A36) Gifted

gifted

A37) Holistic

holistic

A38) Hopeful

hopeful

A39) Humor

funny
humorous
uses humor in style
witty

A40) Ideas

good ideas
idea person
ideas
many ideas

A41) Imagination

"left-brain"
imaginable
imagination
imaginative
imagine

A42) Impractical

impractical

A43) Impulsive

impulsive

A44) Independent

independent

A45) Ingenious

having ingenuity
ingenious

A46) Initiative

initiative
shows initiative

A47) Innovative

innovation
innovative
innovative ideas
innovative process which produces a living growing solution or product
innovative thinking
innovator

A48) Insightful

insightful

A49) Inspiration

inspirational
inspired

A50) Intelligent

bright
brilliant
broad focused
clever
educated
intelligent
smart
smart thinker

A51) Interesting

interesting
special

A52) Inventive / Invention

invent
inventing
invention
inventive
inventor

A53) Listening

good listener
listening
listens

A54) Motivation

motivated
motivation from within

A55) New

authentic
can put ideas in new ways
cutting edge
finding new ways to do things
new
new idea
new ideas
new ways for old things
novel
original
originality
pioneer

something new
something new and different
trailblazer
uses knowledge of different things to put together new ideas
willing to try new things

A56) Non-conformity

non-conforming
non-conformist
nonconformity
non-traditional
opposite the norm
unruly

A57) Open / Open-minded

open
open minded
open to new ideas
open-mindedness
receptive
respect differences

A58) Outgoing

extrovert
outgoing

A59) Perceptive

extremely perceptive
perceptive

A60) Proactive

proactive

A61) Problem solver

able to solve problems
find solutions within guidelines
finding solutions to unexpected problems
finds more than one solution
hits the nail on the head
looks for problems and solutions
problem solver
problem solving

problem/solutions
resolving
sees possible new solutions and ways to organize existing things
solution finder
solution-oriented
solutions
solution-seeker
solver
tries things in many ways

A62) Random

random

A63) Reflective

pensive
reflective

A64) Resourceful

drawing from the well
pulling from multiple resources
resourceful
resourcefulness

A65) Responsive

responsive
responsive to the world around them

A66) Risk taker

challenge seeking
challenging
likes a real challenge
risk
risk taker
risk taking

A67) Skilled

skilled

A68) Spontaneous

spontaneity
spontaneous

A69) Surprise

ah ha!
 surprise
 surprising
 unexpected
 wonder
 wow

A70) Talented

flair
 talented

A71) Tangential

tangent
 tangential

A72) Think outside the box

"out there"
 a person that thinks outside the box
 able to see the possibilities and not the limitations
 creativity is an "out of the box" way to come up with solutions that lead to success
 doesn't necessarily go by the rules - radical
 goes beyond "safe" boundaries
 looks outside the box
 minimal boundaries
 no boundaries
 not thinking in the box
 out of the box
 out of the box thinker
 out of the box thinking
 out of the ordinary
 outside the box
 think outside the box
 thinking out of the box
 thinking outside the box
 thinking outside the norm
 thinks outside the box
 using methods that are not part of the norm to problem solve

A73) Thinker

a thinker
 able to think up a question (as Einstein did)
 abstract
 abstract-thinking

big thinker
broad thinker
sharp
thinkers
thinking

A74) Thoughtful

thoughtful
thought-provoking
understanding of issues
well thought out

A75) Unassuming

unassuming
unpretentious
unsuspecting

A76) Unconventional

antithesis of the "party line"
go against the grain
radical
rebel
spunky
stands out
unconventional

using materials in unusual ways

A77) Unexplored

unexplored
unknown
unlocked
untried

A78) Unique

exception
exception focused
extraordinary
unique
unorthodox
unorthodoxed

A79) Unlimited

unlimited
unrestricted

A80) Unusual

unpredictable
unusual

A81) Variety

diverse
eclectic
forever seeking exploratory variables
options
variety
variety of materials and resources
variety of solutions

A82) Vision / Visionary

vision
visionary
with vision

A83) Miscellaneous

ambitious
analogy
archeology
architect
believable
better
birth
busy
catalyst
child-centered
cliches used to be creative
concentrate
conventional
culture
difficult
dirty hands
distracting
dramatic
emergent
epiphany
essence

forthright
frantic
fulfill
good
graceful
grey (not black or white)
hairstyles
helpful
high self-esteem
higher order
intimate
introverted
jack the box
loud
makes lemonade from lemons
messy
metaphor
mind going 100 miles a minute
motion
obscure
observer
opinionated
optimistic
organized
Pandora's box
paradigm shift was creative 20 years ago
patient
physically and emotionally prepared for challenges
planner-ideas
pleasant
political
positive
practical
problem generator
progressive
prolific
pushy
relaxation
relevance
seeking
serendipity
shapes
soul
sound
speaker
suddenly
tangible
that there are handy
the original question is more important than the answer
top down

troublesome
twisted
urgent
wandering (mind)
wise
woodworking
works

Sample B (Singapore)

B1) Abnormal / Weird

abnormal
abnormality
crazy
insanity
irrational
outrageous
ridiculous
weird

B2) Accurate

sharp
spot on

B3) Active

active
active mind
creativity in putting thoughts into action
doing
lively

B4) Adaptability

adapt things to serve right
adapt to change with positive mindset
adaptability

B5) Adventurous

adventurer
adventurous

B6) Approaches problems in a different way

consider all factors
different angles
different approach
different perspective
different views
different ways of doing things
look at different angle
look at things from different angles
look at things in different perspective
look at things or problems at a different angle

looking from different angles

B7) Arts / Artistic

art
artistic
artist
artistically-inclined
arts
arts
dance
design
drawing
food presentation
music
origami

B8) Beauty

beautiful
beauty

B9) Big picture

look at big picture
see complete picture from all angles

B10) Bold

beyond the call of duty
bold
brave
courageous
dare to dream
dare to try
dare to try and explore
dare to try new things
dares to change
daring
forward
gutsy
not afraid of being criticized

B11) Brainstorm

able to diverge and converge
brainstorming

B12) Change

change
change mindset
change 'normal looking' things to something different
changes
embrace changes
transforming
tsunami
willing to change
willing to change for better

B13) Colorful

Colorful

B14) Confident

'can do' attitude
'cannot be done' is not in the vocabulary
confident
cool
cool and calm

B15) Create

create
creation
creation of something

B16) Curiosity

curiosity
curious
inquisitive

B17) Different

a tool to be better than and differentiate from your competitors
be different
being different
can try things in different ways
difference
different
different from normal
different from others
do differently
do something different and reasonable
do things differently

doing and seeing things differently
doing things differently
doing things in a better, different way
exception
makes a difference
something different
think different angles
think different from other person
think differently
think differently from norm
thinking differently from the norm
very different

B18) Discovery

discover
discover new things/methods/solutions and even foresee problems
discover problems and discover solutions

B19) Dreamer

dream
dreamer
dreams

B20) Energetic

energetic
enthusiasm
restlessness
vibrant

B21) Entrepreneur

entrepreneur
entrepreneurial

B22) Excitement

exciting

B23) Explore

explore
explore new things
investigate

B24) Expressive

expressive

B25) Flexible

ability to expand
adopts an alternative but workable approach
flexible
not rigid
versatility

B26) Free-spirited

carefree
free
free spirit
play
plays with colors
uninhibited

B27) Fresh

fresh
fresh perspective
freshness

B28) Fun

fun
funky

B29) Humor

humorous
sense of humor

B30) Idealistic

idealistic

B31) Ideas

a lot of ideas
a person who got a lot of ideas
ability to generate ideas
full of ideas
give ideas

idea
idea come from your mind
idea from your mind
ideas
light bulb
light bulb is switched on
lots of ideas
more ideas
provide more or own ideas
to give ideas

B32) Imagination

imagination
imagination has no boundaries
imaginative

B33) Impractical

impractical

B34) Improvement

continual inner drive to improve things to make life better
improve
improved
improvement
improvise on existing ideas
to improve

B35) Independent

independence
independent

B36) Initiative

full of initiative
initiative

B37) Innovative

innovate
innovation
innovative
innovativity

B38) Insightful

insightful

B39) Inspiration

inspiration
inspiration and perspiration
inspirational
inspiring

B40) Intelligent

bright
brilliant
clever
genius
intellectually charged
intelligent
smart
street smart

B41) Interesting

interesting
special

B42) Inventive / Invention

inventing
invention
inventive
inventiveness
inventor
re-inventing
to invent something new

B43) Maverick

maverick

B44) New

able to generate new ideas
able to mix and match concepts and ideas to come up with new solutions
able to think of new idea
always can think better than others
always come up with funny ideas
bold new action which differs from conventional methods

bringing into being something not there before
 bringing together of two previously unrelated planes of thought
 creativity that applies in the form of art expression in presenting a new form
 create new technique but in the same product e.g. with the same product we can use many
 ways to make the product look more beautiful
 creation of the new
 develop new ideas
 do new things
 do something new and discover something new
 do things or even think of new methods
 extra originality
 find new ways of doing things
 get the new idea
 give new ideas
 implement new ideas
 implement new products
 invent new ideas
 likes to try new things
 never before
 new
 new idea
 new ideas, products, services
 new solutions
 new views and possible ideas
 new way of doing things
 new ways of doing things
 novel
 novelty
 original
 originality
 others have not thought of before
 pioneering
 rearranging of the old in new and different ways
 recommend new things
 re-creation
 renew each day is a power of creativity, so even in mission life, he can endure a very dull life
 and allows his mission to carry on
 revolutionary
 seeing old things in new ways
 seek new ideas for improvement
 shift paradigm
 something new
 the ability to conceptualize and conceive something from nothing
 think new ideas
 think to get new method to do for easy way
 to find new approach in doing things
 try new things
 try to do new things
 unheard
 untried
 untried paths

use newly invented methods to do things
Why didn't I think of that?

B45) Non-conformity

non-compliance
non-conformance to standard processes/procedures
non-conformer
non-conforming
non-conformist
non-conformity
non-tradition
non-traditional

B46) Open / Open-minded

open
open mind
open-minded
open-mindedness

B47) Proactive

advance
advancement
pre-empt problems
proactive
proactive, decisive and assertive in doing things in a new way facing new era of competitions
thinking ahead what is the future to be like

B48) Problem solver

a person who does things works, that uncalled for achieving that similar objective in an efficient way
ability to solve life problems or ministry problems when no one beside him
analyze problem positively
constantly working on solving problems
decision
ease of implementation of solutions
problem solving
problem solving process
provide constructive solutions, not destructive
resolving problems
seems almost obvious solution
short cut to achieve end result
simple and straightforward solutions
solution
solutions
solutions (successful)

solve problems
solver
solving problems in a different manner
to provide solutions

B49) Questioning

question
questioning

B50) Refreshing

refreshing

B51) Resourceful

resourceful
resourcefulness

B52) Risk taker

challenge traditions and norms
challenger
challenging
risk-taker
risk-taking

B53) Shocking

absurd
illogical
shocking

B54) Skilled

creativity in the way one plays sports e.g. basketball
everybody wants it and claims to do it, few really know how to

B55) Spontaneous

spontaneous

B56) Strength / Power

power
strength
strong

B57) Surprise

surprise
surprising
surprising but not outrageous
unbelievable
unexpected
unexpected ideas

B58) Talented

flair
talent
talented

B59) Temperamental

temperamental

B60) Think outside the box

all things possible
break out of the norm
looking beyond the obvious
no boundaries
no boundary
no rules
not constrained by current status/position
not restricted
out of the box
out of the norm
out of this world
out-of-box thinker
possibilities
possibility thinking
think out of the box
think out the box
think outside the box
think wild
thinking out of the box
thinking/doing things without reservations/restrictions

B61) Thinker

ability to think on your feet
able to think quickly on the feet
lateral
quick thinking
quick witted

reasoning
think more ideas
think openly
think very quickly on their feet
thinker
thinking
thinking fast
thinking process

B62) Unconventional

Are you sure?
doing things very unusual
ideas form an unusual angle
non-conventional
not having a conventional kind of thinking
not just using/depending on practical solutions to problems
not mainstream
radical
strange
uncommon
unconventional
unconventional solutions and approaches

B63) Unique

extraordinary
extra-ordinary
grabs attention
unique
unique ideas
unorthodox

B64) Unsystematic

disorganized
messy
no sense of time
no time for details
not systematic
off the cuff
sloppy/untidy
unsystematic

B65) Useful

constructive
save costs
save time

turn/make something useless into useful
useful

B66) Unusual

unusual
unusual designs
unusual ideas
very unusual

B67) Wild thinking / ideas

wild
wild ideas
wild ideas
wild imagination
wild thinking

B68) Miscellaneous

belief
concept
consultation
control
cosmetic
critical
destructive
developmental
Edward de Bono
effective
enhancing
enterprising
entertaining
expensive
fast
firm
food
food
forgetful/absentminded
games
gathering
great
happy
hardworking
high self-esteem
hungry
identify
image
imagery
implement

individualistic
initiating and exploring specific results orientation
instinct
irreverence
leading the pack
learn things fast
learner
less efficient
less practical
loud
lower costs
more advance
natural
natural ability
nature
non-judgmental
not a follower
opinionated
opinion
optimistic
people
performance
persistent
positive attitude
practical
productivity
realistic
rebellion
results
sample
self-instinct
serious
shadows
silly
simple
simple and elegant
space technology
style
testing
to provide good quality
usually perceived as a positive trait to have
variation
work
work
worldly

Sample C (Singaporean Chinese)

C1) Abnormal / Weird

abnormal
absurd
crazy
crazy ideas
eccentric
insane
misunderstood
weird things
weirdo

C2) Adventurous

adventurous
adventurous
be adventurous

C3) Amazing

amazing

C4) Arts / Artistic

art
artist
artistic
arty
drawings

C5) Beauty

beautiful
beauty
lovely

C6) Bold

always try
courage
dare to fail
dare to try
dare to try new things
daredevil
daring
daring to try out
determined

willing to try

C7) Brainstorm

convergence

divergence

C8) Change

changes

modified

C9) Colorful

colorful

colors

C10) Create

able to create order out of chaos

creation

C11) Curiosity

curiosity

curiosity - able to find problems

curious

C12) Different

able to produce a piece of work different from others which is usually attractive

able to think differently

being different from the crowd

dare to be different in almost anything

different

different from the norm

different mindsets

different perspective

do things differently

looking at things from a different perspective

to make a difference

C13) Discovery

discover

exploration

explorer mentality

frontier

willingness to explore seemingly unrelated threads

C14) Excitement

exciting

C15) Feelings

emotion oriented
passion
passionate
personal feelings and opinions
romantic

C16) Freedom

freedom
freedom to express and explore

C17) Free-spirited

free
free spirit
free thinker
playful

C18) Fresh

fresh
fresh different approach to problems and to solutions

C19) Fun

fun
fun loving
hip
quirky

C20) Ideas

full of ideas
ideas
many ideas
sharing ideas to spark more ideas

C21) Imagination

imaginative

C22) Improvement

constantly making improvements
improvement
improvement of a system
improvements
optimization of a system

C23) Initiative

initiative

C24) Innovative

innovation
innovative

C25) Intelligent

clever
clever
genius
intelligent
smart

C26) Interesting

interesting
special
special particular

C27) Inventive / Invention

invent
invention
new inventions that will benefit a lot of people

C28) Joy

enjoyment
joy
joyful

C29) New

a whole new world of experience
able to connect existing thoughts, views, paradigms, into new dimensions
breaking new grounds

discover new things
 explore new ways to implement
 finding new solutions to the same problem
 joining 2 or more seemingly disparate ideas / concepts together i.e. connecting dots
 make a new product from two or three existing ones
 never had before
 never seen before
 new
 new and interesting idea
 new angle
 new ideas
 new ways
 new ways of doing things
 new ways to do something even better
 new, coming up with different and revolutionary ideas that enhances life.
 novel
 original
 originality
 something out of nothing
 something totally brand new or modified better
 think of new ideas
 tired of the same old thing
 to come up with novel ideas
 try something new
 unheard
 unheard of before
 unseen of before
 unthinkable
 untried ways
 willing to try new things

C30) Non-conformity

does not follow rules
 non-conformist
 non-traditional

C31) Open / Open-minded

more open or incline to non-conforming news
 open
 open-minded

C32) Proactive

proactive
 responsive

C33) Problem solver

ability to apply one solution to another situation
 able to tackle problems/ issues successfully, regardless of the personality or impression the person gives
 competency- able to solve problems
 does not mind doing his or her own things in solving the problem even though there is risk, even though laughed at.
 eureka
 practical workable solutions to existing methods of doing things
 problem solving
 shortcuts - simpler and more efficient ways of achieving the desired outcomes
 simple solutions
 simple solutions to problems
 solution
 solutions
 solving some problems in the system

C34) Questioning

disruptive
 questioning
 rebellious
 to challenge the norm

C35) Risk taker

challenge assumptions
 challenges authority
 challenging
 challenging assumptions
 no risk, no venture
 risk
 take risks

C36) Surprise

surprise
 surprising
 unexpected

C37) Talented

talent
 talented

C38) Think outside the box

able to see constraints and open space within space

think out of the box

C39) Thinker

abstract
abstract things
positive way of thinking
thinker
thinking
thinking cap
thinking hats

C40) Unconventional

not be restrained by conventional methodology and traditions
radical
unconventional

C41) Unique

exception
extraordinary
extraordinary ideals
out of extraordinary thoughts
outstanding
unique
unorthodox
wonders
wow

C42) Unlimited

"auto-roaming"
depth
has no definite form
wide

C43) Unpredictable

unpredictable
unpredictable

C44) Unsystematic

chaos
undisciplined
unplanned
unstructured

C45) Unusual

unusual
unusual skills

C46) Wild thinking / ideas

let your mind run wild
unruly
wild

C47) Miscellaneous

break the ice
convicted
design
doing things and adding value in the process
efficient
enhancement
enterprising
expensive, copyright, patent
eye opening
failure
fast walking pace
glint in the eyes
illegal
Japan
Japanese rock bands
mischief
observe
possible
shape
simplicity
sophisticated
spark
spendthrift
stubborn in own belief
unresolved

Sample D (Singaporean Malay)

D1) Abnormal / Weird

irrational
a little bit abnormal in thinking and behavior
craziness
crazy
crazy ideas
eccentric
wacky
weird

D2) Active

active
kinesthetic
lively

D3) Arts / Artistic

aesthetic
art
artistic
artists
design
music
musicians
nice design
nicely decorated
paintbrush
poetry
songwriters
theater
writers

D4) Bold

bold
bravery
daring
not afraid to make mistakes
not afraid to try
outspoken

D5) Brainstorm

brainstorming
no judgment of ideas

tools

D6) Change

adapt to changes
change
changes

D7) Colorful

colorful
colors
nice color

D8) Confident

confident
'never say die' attitude

D9) Create

ability to create
creation
creative
creativity
creator

D10) Different

differences
different
different perspectives
differently
doing something different from what others do

D11) Entrepreneur

entrepreneurial
entrepreneurship

D12) Explore

alternative
explorer

D13) Expressive

expressive
means of expression

D14) Feelings

able to get the "ahhh" feeling out of me
emotional intelligence
emotions
passion in interests
temperamental
understanding

D15) Flexible

flexibility
flexible

D16) Fun

fun

D17) Ideas

ideator
full of ideas
ideas

D18) Imagination

imagination
imaginative

D19) Improvement

improve
keep suggesting improvements

D20) Innovative

innovation
innovative

D21) Inspiration

inspirations
inspire

D22) Intelligent

cleverness
cunning
genius
intelligent
interesting
quick-witted
witty

D23) Inventive / Invention

invent
inventions
inventive
inventiveness
inventor

D24) New

new
new idea
new idea comes from your mind
original
originality

D25) Non-conformity

non-conformist
non-conformity
non-traditional
transgressing the status quo or social conformity
view things above the norm

D26) Open / Open-minded

open-minded
open up to more possibilities

D27) Problem solver

problem solving

D28) Resourceful

enterprising
productive
resourceful

resourcefulness

D29) Risk taker

challenge
challenges

D30) Spontaneous

spontaneity

D31) Think outside the box

beyond borders
do things beyond the norm
think out of box
thinking beyond the box

D32) Thinker

abstract
analytical
someone who can think
talking out from different angles
think positively - attitude and mindset
thinking
thought

D33) Unconventional

controversial
unconventional, yet feasible

D34) Unique

exceptional
extraordinary
one-of-kind
produce distinct piece of work or idea
something unique
the outcome or output usually is out of the norm and could be fascinating
unique
want to stand out

D35) Miscellaneous

characteristics
people's behavior
a picture tells a thousand words

appearance
architects
avant-garde
awareness of surrounding
be able to visualize
bubbles
commitment
computer
concept
critical
culture
culture
cupboard
easy to understand
faster
fix
flour
formula
function
green
has deep understanding of human behavior
humanities
inclined in non-academic areas
laid back
language flair
learning
lies
literature
M & M chocolates
messy
MTV
myself
nurture not nature
on his / her own
opinionated
organization
pencil
personality
practicality
prototype
rainbow
research
responsible
seeming contradiction
sensitive
smooth
there is no need to be smart
use
visual -people can think visually in any aspect of angle
well furnished

Sample E (Singaporean Indian)

E1) Abnormal / Weird

a little weird
abnormal
crazy
quirky
weird

E2) Active

active mind

E3) Amazing

amazing
astounding
remarkable
sensational

E4) Approaches problems in a different way

look at any problem from different angles
the road less traveled

E5) Arts / Artistic

art
artist
artistic
arts
drawings

E6) Bold

bold
daring
not afraid of challenging established conventions
willing to try

E7) Different

different
different perspective
different way of doing things
thinking differently

E8) Discovery

discovery

E9) Explore

enjoys exploring new ideas
ready to explore

E10) Ideas

ideas

E11) Imagination

being imaginative
imagination
imaginative

E12) Innovative

innovation
innovations
innovative

E13) Inspiration

inspiration
inspired

E14) Interesting

interesting

E15) Inventive / Invention

invention
inventive

E16) New

coming up with new ideas no matter how weird they can be
create new things/ideas
looking for new ways to solve problems
new
new ideas
new ways of doing things
novel

novelty
original
original ideas
original in ideas
originality
originality in ideas
originate
renewal

E17) Non-conformity

against the grain
against the rules
non-conformism
non-conformist
non-conformity

E18) Open / Open-minded

open mind
open-minded
opportunity

E19) Problem solver

able to seek solutions
able to solve problems with ease
any person who can solve problems faster and simpler than others
decision maker
resolve but amicably
solution

E20) Questioning

challenging assumptions
challenging the norm
questions

E21) Risk taker

risk
risk-taker
risk-takers
willing to take risks

E22) Spontaneous

spontaneous

E23) Talented

talented
talents

E24) Think outside the box

able to think out of the box
beyond norm
breaking the norm
goes against the norm
out of the box
out of the norm
think out of the box
thinking out of the box

E25) Thinker

abstract
critical analysis
inductive reasoning
lateral thinking
quality thinking which helps in growth
thinking

E26) Unconventional

beyond logic
non-conventional
strange
unconventional

E27) Unexplored

uncharted
untested
untried

E28) Unique

captivating
exceptional
eye-catching
outstanding
special
unique
unique sense of style
unorthodox
unorthodox methods

E29) Unlimited

no limits
restrictless
unrestrained

E30) Unusual

unusual

E31) Miscellaneous

anti-thesis
beneficial
betterment
brainobics
committed
development
dialectic
efforts
enlightening
face challenges
flamboyant
futuristic
helpful
high accuracy
hypothesis
individualistic
initiates
marketable
moody
nice
not successful - end up on the streets
obstacles
overused at times
perceptions
personality flair
phrases
popular
premises
problems
productive
quantum jump
resourceful
shocking
simplistic
sleepless
sound, conforming, dependable
stress
syllogism

to increase sensory perceptions
to make pariah
undisciplined
very successful

Theme:
Organizing, Developing and Disseminating Knowledge about Creativity

Initiative:
Cross-cultural perspectives in the domain of creativity

Thesis Title: Cross-cultural studies of implicit theories of creativity: A comparative analysis between the United States and the main ethnic groups in Singapore

Purpose and Questions:

The purpose of this thesis is to compare the extent of influence of culture on implicit theories of creativity among laypeople from the United States and Singapore in regard to adaptive and innovative styles of creativity as well as their own conceptions of creativity. Since Singapore consists of three main ethnic groups – the Chinese, the Malays and the Indians, comparisons among them will also be explored.

The research questions that will guide this study are as follows:

- Using Kirton's explicit theory of Adaption and Innovation to access laypeople's implicit views of creativity, to what extent do laypeople from various cultures have similar views that adaptors and innovators are equally creative?
- Using Kirton's explicit theory of Adaption and Innovation to access laypeople's implicit views of creativity, to what extent do different ethnic groups like the Chinese, the Malays and the Indians within a national culture have similar views that adaptors and innovators are equally creative?
- When asked to define creativity in their own words, to what extent do laypeople from different national cultures in the United States and Singapore hold similar or different conceptions of creativity?
- When asked to define creativity in their own words, to what extent do laypeople from different ethnic groups in Singapore hold similar or different conceptions of creativity?

Rationale and Statement of Significance:

Our cultures have a tremendous influence on the way we view the world, the way we communicate and the way we behave, whether we are aware of it or not. At the very heart of the concept of culture is the expectation that different people will possess different values, beliefs and motives reflected in numerous

behaviors (Kim, 2001). The term 'culture' does not have a unilateral definition. It could be defined from a historical perspective where traditions are passed on to future generations or from a behavioral perspective, that is, the learned, shared ways of behaving in life. It could also be defined from a symbolic perspective where arbitrarily assigned meanings are shared by the society. Yet again, it could be defined from a normative perspective, which are, the ideals, values and rules for living (Jandt, 2004). Thus, it is acknowledged that culture can be one or a combination of all these perspectives. However, the common thread underlying these perspectives, is that culture is learned rather than biologically inherited and involves arbitrarily assigned, symbolic meanings.

Further, culture can be seen as an implicit theory that guides our behavior (Bruner, 1990). Since culture plays a part in the way we perceive the world, it can be noted that individuals possess implicit theories that give meaning to their experiences. Implicit theories "are opinions and views held by people other than scientists" and "reflect a kind of tacit knowledge which is quite common" (Runco, 1999, p. 27). These implicit theories can create different psychological worlds for individuals, leading them to think, feel, behave and perceive in different ways. As implicit theories provide the key to understanding the social perception of people, the integration of culture in implicit theories can shed further light on how people perceive their environment.

Furthermore, by accessing implicit theories from people of various cultures, a framework for analyzing and interpreting human actions can be set up. Thus, explicit theories to explain how reality is constructed can eventually emerge. In fact, cross-cultural psychologists emphasize that the study of diverse cultures not only "tests the generality of a theory developed in one culture" (Clark, 1987, pg. 2), but if carried out systematically, may lead to theories of how cultures can exert their influence on individuals. Furthermore, a great value of cross-cultural studies is that "they enhance our sense of human variation" (Tronick, 1992, p. 566). When that description is guided by theory, our understanding is greatly enriched.

One controversy in the creativity literature concerns whether the concept of creativity is meaningful universally (Csikszentmihalyi, 1997; Plucker & Runco, 1998). Some researchers suggest that people in different cultures perceive creativity differently (Lubart & Sternberg, 1998, Rudowicz & Hui, 1997) while another group believes that there is a universal understanding of the concept of creativity (Guilford, 1975; Plucker & Runco, 1998). Although there seems to be a major breakthrough where theories of creativity have been established based on the latter point of view, some researchers have suggested that there are "multiple roots for people's conceptions of creativity" (Niu & Sternberg, 2002, p. 270) with a "different philosophical base" (p. 270). Because creativity is considered to be an important concept of human cognition such as motivations, attitudes, emotions and thinking (Nisbett, et al, 2001) it would indeed be beneficial to explore how culture influences people's perceptions of creativity.

In addition to this, to study creativity by focusing on the individual alone is “like trying to understand how an apple tree produces fruit by looking only at the tree and ignoring the sun and the soil that supports its life” (Csikszentmihalyi, 1990, p. 203). One must consider the holistic nature of the individual as part of an evolving system within a cultural setting. Since cultural knowledge is conceptualized to be like a lens that affects the individual’s perceptions of visual stimuli (Hong, et al, 2000), it would be beneficial to conduct cross-cultural studies to explore how certain constructs are viewed to be similar or different.

The International Center for Studies in Creativity in Buffalo State College has been engaged in a program of research that had examined perceptions of creativity in various cultural settings like the United States (Puccio & Chimento, 2001), Argentina (Gonzalez, 2003), Saudi Arabia (Alkeaid, 2004) and Japan (Muneyoshi & Kagawa, 2004). The goal of this research is to add to this knowledge base by exploring perceptions of creativity in Singapore, a culture that varies in many aspects from the countries mentioned above.

Description of the Method or Process:

This study will replicate and extend Chimento’s (2001) approach with convenience samples taken from laypeople in the United States as well as the three main ethnic groups in Singapore, consisting of the Chinese, the Malays and the Indians. A more detailed description is provided below:

(A) Sample populations:

(i) Sample from the United States:

An American sample (Sample A) would have to be sought since Chimento’s (2001) study did not include an additional open-ended question that was indicated in Gonzalez’s (2003) study. The population will consist of 120 laypeople from all walks of life. The participants involved in this study will be selected randomly with respect to gender, age, occupation and education level. Also, they will consist of people who have not had any formal training or background in creativity studies.

(ii) Sample from Singapore:

A sample from Singapore (Sample B) was already sought in 2003 by a Singaporean creativity studies student, but this sample was not analyzed. The sample consisted of 200 participants, who were also selected randomly with respect to gender, age, occupation and educational level. Just like the American sample, they had no formal training or background in creativity studies. Another sample from Singapore (Sample C) would have to be sought for this study as

respondents in Sample B did not indicate their ethnicity in the survey forms. Sample C will consist of at least 40 participants from each main ethnic group in Singapore – the Chinese, Malays and Indians, making it a total of 120 participants in Sample C.

A direct comparison between the implicit views of creativity of the national cultures of Sample A (American) and Sample B (Singaporean) will be carried out. To expand this study, a comparison of the implicit views of creativity from the three ethnic groups in Singapore (Sample C) will also be made.

(B) Survey Form:

The survey questions will replicate Gonzalez's study (2003) but the only change to the survey forms will be an additional section where the respondents in Sample C will indicate their ethnicity and religion. This is standard practice for Singaporeans when filling out official forms.

In the close-ended part of the survey, participants of the study will be asked to rate two different people (Person A and Person B) with accompanying descriptions of creativity, based on Kirton's descriptions of styles of creativity of the adaptor and innovator. It is noted that approximately half of the survey forms will have characteristics of the innovator and labeled as Person A, while the other half will have characteristics of the adaptor but labeled as Person B. This arrangement would help to suppress any bias and counter balance the effect of reading first one description and for that reason, rating one person higher than the other. The participants will be asked to rate each person on a numbered scale from one (not at all creative) to ten (exceptionally creative). As for the open-ended part of the survey, the participants will be required to list words that come into their minds that are associated with creativity.

(C) Procedure:

Research assistants in the United States and Singapore have been appointed by the researcher to help carry out the surveys. They will be given guidelines by the researcher on how to administer the surveys properly. Prior to administering the survey, each participant would have to complete a consent form authorizing his/her willingness to participate in this research study. Survey forms to participants from the American sample (Sample A) will be given individually through personal contacts, keeping in mind the composition of the participants. As for the Singapore samples (Sample C), the surveys will be sent via email to the research assistant based in Singapore so that copies can be made, keeping in mind that half the survey forms have a different arrangement to suppress bias.

Participants in Singapore (Sample C) are sought from personal contacts, ethnic self-help community groups like CDAC (Chinese Development Assistance

Council), Yayasan MENDAKI (a Malay self-help group) and SINDA (Singapore Indian Development Association), schools and colleges. Care will be taken to ensure that the Singaporean samples consist of only Singapore citizens as the country has a large proportion of permanent residents from various countries. The survey forms will be in English as this is the lingua franca. Thus, translation to the various languages will not be necessary.

When the surveys are completed, photocopies of the forms are kept with the research assistants while the original copies are given to the researcher. Hard copies from the Singapore sample (Sample C) will be sent by the research assistant.

Personal Learning Goals:

- Become familiar with pertinent literature and scholars associated with cross-cultural studies of creativity and implicit theories;
- Gain knowledge and experience with quantitative and qualitative research in the field of creativity;
- Understand the role of implicit theories in other cultures so that the concept of creativity can be understood universally;
- Challenge myself to learn from the process of writing this thesis as much as from the content of the thesis itself; and
- Share the findings to a wider group of people interested in cross-cultural studies in creativity through conference sessions or publications.

Outcomes:

- Quantitative and qualitative data to build on the existing repository of data obtained from the United States, Argentina and Saudi Arabia;
- (2) Executive Summaries for Creativity Based Information Research (CBIR);
- (1) Annotation of this thesis; and
- Thesis write-up.

Timeline:

- | | |
|------------------|---|
| • September 2004 | Propose concept to potential advisor |
| • October 2004 | Become acquainted with related literature
Begin work on concept paper for approval |
| • November 2004 | Complete concept paper
Complete Human Subjects Form
Continue literature review
Concept paper approved
Begin correspondence with research assistants |

- December 2004 Approval of Concept Paper
Send survey forms
Track responses of surveys
Maintain contact with advisor
Continue literature review
Complete draft of Chapter One

- February 2005 Complete data collection
Maintain contact with advisor
Complete literature review
Complete draft of Chapter Two

- March 2005 Analyze survey results
Interpret the information
Maintain contact with advisor
Complete draft of Chapter Three

- April 2005 Refine previous drafts of thesis
Complete drafts of Chapters Four and Five

- June 2005 Refine and finalize draft of thesis
Submission of final draft of thesis

- July 2005 Master's thesis approved and signed
Graduate

Principal Investigators:

- **Faculty Advisor** : Dr. Gerard J. Puccio
- **Master's Candidate** : Suzanna Jeyanthi Ramos

Related Literature:

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