

Measurements, Causes, and Effects of Creativity

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In this article, I express my appreciation for the Korean teacher who recognized my potential and my American mentors who helped me identify the creative energy in myself. I discuss how living a “wonderful” Korean life smothered the essence of my being. Next, the overview of my research in creativity is discussed in 3 categories: measurement of creativity, causes of creativity, and effects of creativity. One effect of creativity summarizes how creativity can manifest itself as either a gift or a curse. The article ends with affirming that individualism promotes creativity and a discussion of the direction of my future research, which centers on helping students and adults identify the creative energy in themselves.

Keywords: creative potential, creativity, creativity assessment, culture, mentor, TTCT

My Appreciation

Growing up in a small, poor village in rural South Korea, it would have been very difficult for me to imagine being the recipient of this honor. After all, in the 1970s, young women in Korea were expected to attend occupational school or immediately begin working in sweatshops, and I, too, was expected to follow this path. My parents were uneducated: My mother and father had a fourth grade and second grade education, respectively. But my teacher, Mr. Cho, was able to convince them that girls can be professionals if they are given an opportunity to get an education. He was forced to make many attempts before my parents finally agreed, and I became the first female in my village to attend an academic high school—much less a college. I chose a college that is well known for teacher education specifically because I wanted to become a teacher just like Mr. Cho—the teacher who changed my life. After teaching English to Korean students for several years, a marriage was arranged. Unless you have lived in South Korea, it is difficult for me to impart to you how women were expected to be totally and completely subservient to the wishes of a man and of their elders, which was an expectation based on Asian culture, Confucianism. As such, my mother-in-law forbade me from continuing my teaching career. After my marriage, my life looked wonderful from the outside: All of my friends envied me because I had a big house, and my children were obedient. But I was very unhappy. I was somebody’s daughter-in-law, somebody’s wife, and somebody’s mother. And I was expected to be subservient at all times. My essence, my creative being, was smothered by the life I was living. I could not be myself.

I was sad and depressed, and eventually I decided to escape the restrictions of Confucian Asian society by leaving Korea and coming to the United States. My friends, whose only exposure to America was through movies, painted the United States as one of the most dangerous and immoral countries in the world. However,

nothing could dissuade me from leaving Korea and the shackles of its 17th century cultural confinement! I arrived in America 9 years ago with my 9-year-old daughter and my 4-year-old son, and inhaled my first breath of freedom. I felt completely free and able and capable. However, after arriving in the United States, I realized that I lacked many of the skills necessary to excel in this country. Fortunately, I found my way to the University of South Florida where I became acquainted with the first of many mentors, Kofi Marfo, an African from Ghana. Dr. Marfo encouraged me to begin the exploration of the Asian culture, Confucianism. After studying Confucianism and having lived in the culture for many years, I began my research on understanding Asian culture to determine how it influences creativity, which incidentally is a major educational goal of Korea. A year later, Dr. Marfo recommended that I apply to the University of Georgia because of E. Paul Torrance, a world-renowned scholar in the field of creativity research. I was accepted to the PhD program in educational psychology where I met another influential mentor, Bonnie Cramond, the director of the Torrance Center for Creativity and Talent Development, who changed me from a student to a scholar. When I came to the United States, I had two small children and no other family. However, now I have a huge family because of all my colleagues and my students, both at The College of William & Mary and at Eastern Michigan University. When I was in Korea, I felt and believed that I was the puppet of others and had no identity of my own. Since my arrival in the United States, I have earned a PhD, become a professor, and received several national awards for my research on creativity—and now I am the recipient of the Berlyne Award. I would like to thank my mentors and colleagues, both past and present, for their contributions to my success. I will do my best to pass on the generosity and support I have received from these wonderful individuals to the next generation by being the best teacher and mentor that I can be to my students. I also want to thank my God and the United States of America, “Land of Opportunity,” for giving me every opportunity for my success.

Overview of My Research

Until I started a PhD program in Korea, I had been an English teacher in public middle and high schools. One of the goals of

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Korean national education is to foster creativity in students. However, since I came to the United States, I realized that the educational systems in both countries are affected by the cultures of each: Confucianism in Asian countries and individualism in the United States. Although creativity is not emphasized by U.S. education, creativity is fostered by the culture, in contrast to Korea. I began to hypothesize that culture is more influential than creative strategies and skills for fostering creativity in individuals. This led to a second PhD program at the University of Georgia and my investigations and following of Dr. Torrance's work. My research can be categorized into three areas: measurements of creativity, causes of creativity, and effects of creativity. For measurements of creativity, I have conducted creativity test score analyses, validity studies, and meta-analyses of the relationships of creativity with IQ. For causes of creativity, I have explored factors that influence creativity, such as Confucianism, teachers, schools, personality, bilingualism, and so forth. For effects of creativity, I have found that creativity can be either a gift or a curse. If an individual's creative needs are met, they can become exceptional or gifted, but if their needs are not met, the individual will typically cause problems rather than suppress their creative urges. Although it is true that some individuals can still have problems if the effort is made to meet their creative needs, there exists the possibility of channeling the creative undertakings of these individuals into more productive areas.

On the positive side, I have explored the roles of creativity in giftedness and compared giftedness concepts and identification criteria for gifted programs between the United States and Korea. I have even studied a Korean creative prodigy. Currently, I am conducting a meta-analysis for evaluating the effectiveness of gifted programs. On the other side, I have explored the roles of creativity in underachieving students and high school dropouts. I am conducting a meta-analysis of the relationship between mental illness and creativity.

Causes of Creativity

My dissertation for the University of Georgia was on the cultural influence on creativity. I explored the relationship between Confucianism and creativity among Korean educators. Confucianism, teachings of Confucius, is practical ethics of daily life and is a major cultural influence in Chinese-influenced societies, including China, Korea, Japan, Vietnam, Hong Kong, Singapore, and Taiwan. The four principles of Confucianism are importance of education, the family system, hierarchical relationships, and benevolence. I used the framework of Rhodes's (1961) "four Ps of creativity," which include Product (ideas expressed in the form of language or craft), Person (cognitive abilities, biographical traits, personality), Process (mental processes that are operative in creating ideas), and Press (person-environment relationship). The hypothesis based on my literature review (Kim, 2007) is that Confucianism (Press) may present some creativity blocks (Kim, 2004, in press). Using a sample of 184 Koreans, I found a negative relationship ($r = -.439, p < .01$) between Confucianism measured by the Eastern Western Perspective Scale (EWPS; Kim, 2004) and the Creativity Index of the Torrance Tests of Creative Thinking (TTCT). I compared creative styles and Confucian ideas between the two countries using 227 Americans and 352 Koreans (Kim & Lee, 2007). I found a negative relationship between

creativity (adaptive creative style, $r = -.23, p < .001$; creative strengths, $r = -.30, p < .001$) and Confucianism. Among the 49 EWPS items, items that are categorized under suppression of expression, gender inequality, gender role expectations, self-effacement, devaluing play/work-play dichotomy, and conformity have particularly strong negative relationships with creativity. Suppression of expression items that have the strongest negative relationships with creativity include, "It should not be easy to fall in love" and "Showing emotion is a sign of immaturity." Gender inequality items that have the strongest negative relationships with creativity include, "An obedient woman is better than a willful woman" and "A man should be the head of the household." Gender role expectation items that have the strongest negative relationships with creativity include, "It is inappropriate for husband to hug his wife in front of his parents" and "A man who talks to his wife about his life outside the home is not considered a real man." Self-effacement items that have the strongest negative relationships with creativity include, "Affection should be kept within the heart rather than expressed" and "The better you are, the more self-effacing you should be." As will be discussed later, adaptive creative style and creative strengths are related to age, gender, and Confucianism, whereas an innovative creative style is not related to these.

As expected, the results showed that Koreans have more Confucian ideals than Americans. The biggest differences in Confucianism elements between Americans and Koreans were around conformity, which are exemplified by the following EWPS items (most Koreans agree, but most Americans disagree with): "I should be like everyone else" and "I would rather be normal than be creative and a little different." The second differences were around gender role expectations and gender inequality. The results showed that males, regardless of culture, have more Confucian ideals than females, which may be explained by the male-dominant aspects of Confucianism. Men, who benefit from gender role elements of Confucianism, would naturally favor such beliefs. Consequently, the biggest differences were found in inequality and gender role expectations, which are exemplified by the following EWPS items (most males agree, but most females disagree with): "A man should be the head of the household" and "Kitchen work is a woman's job." Using 376 Korean students and their mothers ($n = 254$) and fathers ($n = 122$), I explored parents' Confucianism influence on their child's creativity (Kim, Park, Shim, & Hull, 2009). The results showed stronger negative relationships between fathers' elements of Confucianism (suppression of expression and filial piety) and their children's creativity than those between mothers' Confucianism and their children's creativity. I then compared the IQ and creative potential between gifted ($n = 283$) and regular ($n = 314$) students in rural and urban settings using 340 rural and 257 urban Korean students (Shim, Kim, & Park, 2009). Results showed that there is no difference in creativity between rural and urban students, but rural gifted students have higher creativity than urban regular students. Urban students have higher IQ than rural students, and gifted students have higher IQ than regular students.

Effects of Creativity: Gift

I compared giftedness concepts and identification criteria for gifted programs between the United States and Korea (Kim, Shim,

& Hull, 2009). The results showed that the concept of giftedness among Korean people (including parents, scientists, and students) is different compared with Renzulli's (1986) concept of giftedness in the United States. This suggests that giftedness comes from the interaction of above-average ability, task commitment, and creativity. Korean concepts of giftedness emphasize additional traits such as interpersonal relationship skills, moral values, and artistic talents besides the three components above. The result that Koreans emphasize moral values of giftedness is consistent with my earlier study (Seo, Lee, & Kim, 2005) in that Korean people identify how creativity affects society, whereas Western people identify how the environment affects creativity, and that Korean teachers ignore the importance of environment (Press) of the four Ps of creativity. The results also demonstrated that there is no difference in creativity and artistic talent between gifted and regular students, which might indicate that the Korean gifted students' identification procedures overlook creative students. Gifted students have, however, higher intelligence and task commitment than regular students, whereas regular students have higher interpersonal relationship skills than gifted students.

I have studied a Korean creative prodigy, YS, who was admitted to a college at age 9 years and to a graduate school at age 11 (Kim, Shim, Park, & Hull, 2009). Developing creative personalities is essential for a prodigy to accomplish his or her ultimate potential. However, if the prodigy is immersed in a culture that does not value, or discourages, the expression of the creative personality, then the person's creativity cannot flourish (Kim, 2004, 2007, in press). Confucianism has been found to be negatively associated with creativity (Kim, 2004, in press). As a result, the conflict between YS's creative personality and his professors' Confucian beliefs has begun to drag the prodigy into the realm of "the ordinary." Korean cultural norms have been forced on him, and one enforcer of cultural normative behavior is social isolation. This social isolation stems from the fact that YS's only social outlets are his parents and professors. This study has not ended yet, and thus more findings will be reported in the future.

Effects of Creativity: Curse

I studied underachieving students and found that there is a relationship between behavior problems and creativity (Kim & VanTassel-Baska, in press). In addition, I found that about 80% of the top 20% creative students are missed if gifted students are identified solely by IQ.

I studied high school dropouts using national data sets to examine the roles of creative play (Kim & Hull, 2008). Creative dropouts show signs of maladjustment, problems with authority, nonconformity, family conflicts, hostility, suspiciousness, oversensitivity, and egotism. Creative students were identified using National Educational Longitudinal Study of 1988 and Longitudinal Study of 2002 items. The results indicated that having a creative personality is associated with a 62% increase in the odds of becoming a dropout. Other items that increase the odds of dropping out are "Okay to disobey school rules (30% increase in the odds) and "Being put down by teachers" (28% of increase in the odds).

Measurements of Creativity

Some researchers believe that creativity and IQ are separate constructs, some believe that they are related, and others believe in the threshold theory. The threshold theory suggests a correlation between creativity and an IQ below 120, but that there is no correlation above an IQ of 120. Using more than 100 studies from 1961 to summer 2004, I retrieved 447 correlation coefficients from 21 studies ($N = 45,880$; Kim, 2005). The results indicate a negligible relationship between creativity and IQ ($r = .174$), thus not supporting the threshold theory. Among all of the creativity measures used in the analysis, Wallach-Kogan divergent thinking tasks had the lowest relationship with IQ ($r = .116$), which might be because these examinations are administered in a game-like manner with unlimited time. On the other hand, Guilford divergent thinking tasks had the highest relationship with IQ ($r = .250$), which might be because these are administered as a serious test with a time limit and the test-takers are not specifically instructed to be creative when these tests are administered. The results also indicate that creativity scores are less associated with IQ in the younger group (kindergarteners-fifth graders) than older groups, which might be due to less educational influence over their cognitive functions. This might be also related to the "fourth grade slump" that indicates decreases of creativity in upper grade elementary students due to socialization and schooling (Nash, 1974; Torrance, 1968).

I conducted another meta-analysis of the relationship of creative achievement with scores on creativity measures as well as IQ (Kim, 2008). Using 238 correlations ($N = 15,118$) between creativity test scores and creative achievement and 89 correlations ($N = 5,113$) between IQ and creative achievement, I found that creative achievement is predicted by creativity test scores ($r = .26$) better than by IQ ($r = .18$). In this analysis, creative achievement was assessed in different domains such as art, music, writing, science (including mathematics, medicine, and engineering), leadership, and social skills. Musical achievement was predicted better by IQ than by creativity test scores, whereas art, science, writing, and social skills were predicted better by creativity test scores than by IQ. Among the measures of creativity in this analysis, the TTCT predicted creative achievements the best ($r = .33, p < .0001$).

Using 3,000 kindergartners and third and sixth graders, I examined the latent structure and measurement invariance issues of scores on the TTCT (Kim, Cramond, & Bandalos, 2006). Although Torrance suggested that there are multiple factors in the TTCT, many researchers have argued that there is only one factor. Using the framework of Kirton's (1976) adaptive and innovative creative styles, I hypothesized a two-factor model on the five norm-referenced subscales of the TTCT, excluding the 13 criterion-referenced checklists of creative strengths. According to Kirton, creativity is a continuum of styles ranging from adaptive to innovative preferences; adaptors create original ideas that fit the existing paradigm, whereas innovators create original ideas that challenge the existing paradigm. The Innovative factor is associated with fluency, originality, and resistance to premature closure, whereas the Adaptive factor is associated with elaboration, abstractness of titles, and resistance to premature closure on the scores of the TTCT. Resistance to premature closure is double-loaded on both factors. The results of the confirmatory and multiple group analyses indicated that the two-factor model has a

much better fit than the one-factor model (Kim, 2006; Kim et al., 2006). I added creative strengths to the two creative styles, which leads to three distinctive factors on the TTCT scores, as Figure 1 shows. The latent structure of the TTCT scores shows more differences across grade levels than gender, and also shows that different grade-level groups not only have different mean scores, but also different factor structures.

I have consistently found that both adaptive creative style and creative strengths have relationships with other measures (e.g., personality types, Confucianism, bilingualism, people from different cultures, people’s age and gender, etc.), whereas innovative creative style has no relationship or has a different relationship with these measures. I found that Confucianism has a strong negative relationship with both adaptive creative style and creative strengths, but no relationship with innovative creative style (Cheng, Kim, & Hull, in press; Kim, in press; Kim & Lee, 2007; Lee & Kim, 2009). In addition, I found that American educators perform better than Korean educators on adaptive creative style and creative strengths, whereas Korean educators perform better than American educators on innovative creative style. Similarly, I found that American college students perform better than Taiwanese college students on adaptive creative style (Cheng et al., in press).

I also found that age has significant negative relationships with both adaptive creative style and creative strengths, but no relationship with innovative creative style. In addition, I found that females perform better than males on adaptive creative style and creative strengths, whereas there is no gender difference on innovative creative style (Kim, in press; Kim & Lee, 2007).

I investigated the relationship between personality types and creative styles and found that intuition (as opposite to sensing:

Intuitive people tend to focus on the large pattern of meanings and possibilities, whereas sensing people tend to focus on information in terms of practical and tangible details) is highly related to both adaptive creative style and creative strengths and that perceiving (as opposite to judging: Perceiving people prefer a flexible and spontaneous approach to life and keeping their options open, whereas judging people prefer a planned and organized approach to life and having things settled) is highly related to creative strengths (Cheng et al., in press).

I found that bilingualism measured by the Word Association Test has positive relationships with both adaptive creative style and creative strengths, but no relationship with innovative creative style (Lee & Kim, 2009).

Therefore, the results of my studies indicate that both adaptive creative style and creative strengths may function as a part of and be further influenced by society and, correspondingly, gender, language, age, and so forth. On the other hand, innovative creative style can always be creative, regardless of social constructs, and is less influenced by society. Furthermore, divergent thinking refers to fluency, flexibility, and originality (Runco, 2008), and thus as Figure 1 indicates, innovative creative style (e.g., fluency and originality) may be related to divergent thinking. In contrast, adaptive creative style and creative strengths are not related to divergent thinking. This means that the TTCT is a better measure of creative potential than of divergent thinking.

Future Directions of My Research

Many researchers have investigated the potential relationship between creativity and mental illness. Although it is still not clear

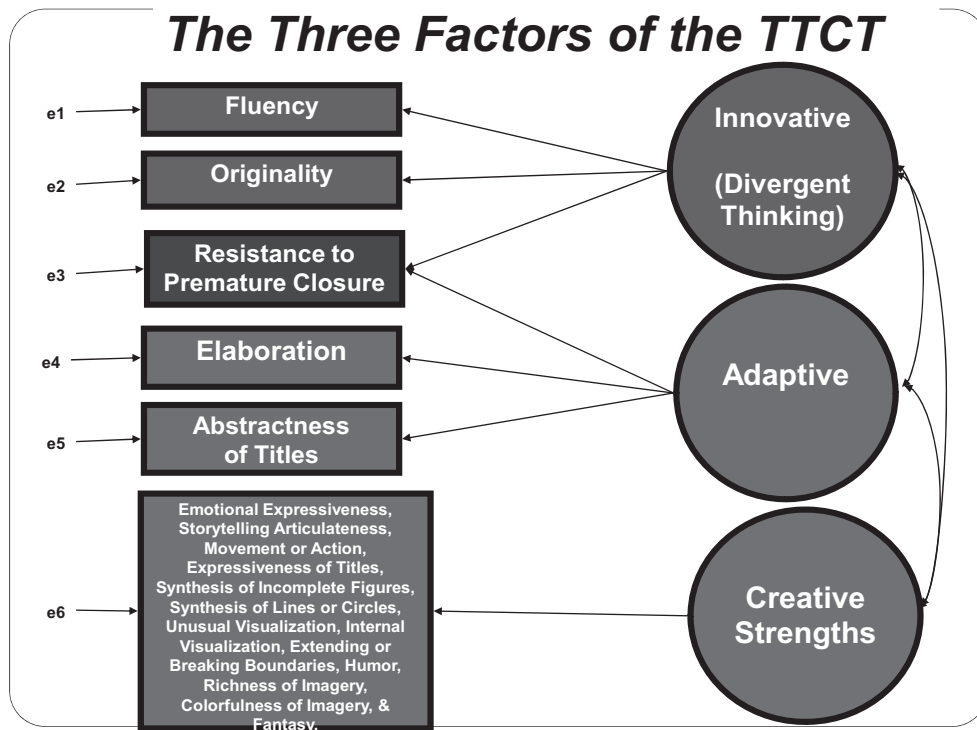


Figure 1. A three-factor-model for the Torrance Tests of Creative Thinking—Figural.

whether creativity is related to mental illness (Silvia & Kaufman, in press), it seems to be clear that if Vincent van Gogh or Virginia Woolf had not had the creative outlets that exemplify their careers, it is likely that they could have been destructive or died even earlier. If I had not come to the United States, where being different is more acceptable than in Korea, and had not been exposed to mentors and a culture that facilitated my creativity, I could have become severely depressed. However, I came to the United States and have become happy and successful. As a consequence, one goal of my future research is to study individuals' creative strengths and to identify creative outlets for them by identifying what environments encourage their creativity.

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Received December 3, 2009

Revision received December 3, 2009

Accepted December 7, 2009 ■