

Relationships Among Sophisticated Epistemological Beliefs, Implicit Theories and Cognitive Processes of Creativity

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abstracts

The purpose of this study was to examine relationships among implicit theories of creativity, sophisticated epistemological beliefs, and cognitive processes of creativity of college students. A total of 709 college students (freshmen, sophomore, and junior) of D University in Korea participated in this study. The results of this study were as follows: First, the results of Pearson correlation analyses showed that there were statistically significant positive correlations among sophisticated epistemological beliefs (nature and source) and cognitive processes of creativity (flow, analogy, idea generation, incubation, imagery, manipulation), and sophisticated epistemological belief showed positive correlations with enhancement view and negative correlations with fixed view of creativity. Second, the result of the path and model fit tests showed that all the model fit indices of χ^2 / df ($p < .001$), TLI, CFI, RMSEA were met the acceptable model fit criteria, and shown to be a suitable model structure. The significance and implications of this study were suggested.

Key Words: implicit theories of creativity, entity, incremental, sophisticated epistemological beliefs, cognitive processes of creativity

Introduction

Implicit theories are our mindsets of the causal nature and structure of mental events and behaviors. They are not formal but guide us in identifying and describing those events (Dweck, 2006; Runco & Bahleda, 1986; Sternberg, 1985). Researches on implicit theories has shown that we hold them for a

wide variety of mental events and that those theories influence our perception of our abilities, motivation, affect, intelligence, and achievement (Ablard & Mills, 1996; Dweck, 1995; Little & Lopez, 1997; Schommer, 1994). Implicit theories of creativity (entity theory vs incremental theory), then, should help us define what behaviors and thought processes are a part of creativity, as well as aid us in assessing creativity in ourselves and others.

The mindset of creativity are more consistent predictors of creative activities. Lim & Plucker (2001), Sternberg (1985) found that adolescents' implicit theories influence their creative behavior, creative task performance and creative hobby participation. It appears then, that implicit theories of creativity may be the key component explaining the consistent link with creativity. Creativity has long been recognized as a powerful force in shaping human society and new developmental progress and knowledge production. Many researchers like Cropley (1992), Sternberg (2006, 2007), and many others have focused on the importance of creative thinking in the field of education. Root-Bernstein (1999), Mishra, et al., (2011) suggested the structure that involves a range of specific cognitive thinking skills-perceiving, patterning, abstracting, embodied thinking, modeling, play, and synthesis. Also, Miller (2014) suggested the components of cognitive processes of creativity as brainstorming, metaphorical/analogical thinking, perspective taking, imagery, incubation, flow. Based on these sub-factors, this study examined how the mindsets of creativity affect on the cognitive processes of creativity- idea manipulation, imagery/sensory, flow, metaphorical/analogical thinking, idea generation, incubation.

At the same time, the body of literature related to individuals' beliefs about the nature of knowledge and learning, known as epistemological beliefs, have been examined in a number of studies in relation to a range of variables including thinking, comprehension, meta cognition, interpretation of information, persistence on difficult academic tasks, moral reasoning, teaching practices, and locus of control (Hofer, 1994; Hofer & Pintrich, 1997; Schommer, 1990, 1994, Schommer-Aikins & Hutter, 2002; Schommer, Crouse, & Rhodes, 1992; Spiro, Coulson, Feltovich, & Anderson, 1988; Topcu 2011); Yilmaz and Kaya, 2010; Terzi, Cetin, and Eser, 2012). The effects of epistemological beliefs are most obvious in higher order thinking, reasoning and argumentation (Kuhn, 1992).

Although the evidence linking epistemological beliefs to higher order thinking is accumulating, one can obtain more convincing evidence by conducting research with the cognitive processes of creativity. Schommer (1998) recognized that a set of core beliefs may characterize "the learner's default approach to learning and interpreting information" (p. 131). Engendering sophisticated epistemological beliefs (nature and source of knowledge) in college students is a critical function of higher order thinking, especially cognitive processes of creativity.

To put together, this study examined the relationships among mindset of creativity, sophisticated epistemological beliefs, and cognitive processes of creativity. are important to examine in that students since the research data indicates that they potentially influence the learning outcomes and teaching practices.

Method

Participants

Seven hundred and nine college students (freshmen, sophomore, and junior) responses of D University in Korea were analyzed in this study. They enrolled in elementary teachers' education program.

Measures

Creative Mindset Scale (Lee, M. & Choi, B., 2014), Sophisticated Epistemological Belief Scale (Lee, 2012), and Cognitive Processes of Creativity Scale (Miller, 2014; Lee, M. & Choi, B., in press) were used in this study. The reliabilities of these measures α were .827, .953, and .952 in vice versa.

Results

The data were analyzed by using SPSS 23.0 and AMOS 22.0. First, the results of Pearson correlation analyses showed that there were statistically significant positive correlations among sophisticated epistemological beliefs (nature and source) and cognitive processes of creativity (flow, analogy, idea generation, incubation, imagery, manipulation) with range of $r = .182^{**}-.390^{**}$, positive correlations between enhancement perspective of creativity and sophisticated epistemological belief ($r = .140^{**}-.175^{**}$) and negative correlations between fixed perspective of creativity and sophisticated epistemological beliefs ($r = -.086^{*}-.201^{**}$), and also cognitive processes of creativity showed positive correlations with enhancement belief of creativity ($r = .307^{**}-.421^{**}$) and negative correlations with fixed belief of creativity ($r = -.079^{*}-.199^{**}$). Second, the result of the path and model fit tests showed that all the model fit indices of $\chi^2 = 3.427$ ($p < .001$), TLI = .940, CFI = .956, RMSEA = .078 were met the acceptable model fit criteria, and shown to be a suitable model structure. Third, in the final model, the standardized estimates of path enhancement theory \rightarrow cognitive processes, enhancement theory \rightarrow sophisticated epistemological beliefs, and sophisticated epistemological beliefs \rightarrow cognitive processes were .385***, .200***, and .367***. The sophisticated epistemological beliefs had the mediating effect (.128***) on students' cognitive processes of creativity. Understanding the structural relations among the creative mindsets, sophisticated epistemological beliefs, and cognitive processes of creativity may serve as an important information for the territory of teacher education pedagogy as well as their nurturing their creativity.

References

- Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York: Random House.
- Kuhn, D., & Weinstock, M. (2002). What is epistemological thinking and why does it matter? In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 121-144). Mahwah, NJ: Lawrence Erlbaum.
- Lee, M. S., & Choi, B. Y. (2014). Development and validations of creative mindset scale. *The Journal of Creativity Education*, 14(4), 1-11.