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Creative metacognition and self-ratings of creative performance: A 4-C perspective ☆

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ABSTRACT

Creative metacognition (CMC) refers to a combination of self- and contextual-knowledge used to make decisions about one's own creative efforts and accomplishments. Competent creators use CMC to judge whether their contributions might be considered creative. Do novice creators have the ability estimate their own level of creativity? The purpose of this study was to examine this question. Specifically, this article reports on an exploratory study that examined whether elementary students' domain specific mini-c and little-c self-ratings aligned with external ratings of creativity. Students (N = 242) completed three performance tasks (i.e., a visual, verbal, and scientific task). Immediately following each task, students were asked to judge whether their resulting product was creative at the mini-c level (i.e., creative to the self, but not others) and little-c level (i.e., recognized as creative by others). External raters also scored the creativity of each completed task. Results indicate that students were able to differentiate their performance on different creative domains (i.e., visual, verbal, scientific) and across levels of quality (i.e., mini-c and little-c). In addition, their self-ratings were also predictive of creativity scores as assigned by expert raters. The specific patterns of the relationships between students' self-ratings and creativity are discussed and implications for subsequent research are provided.

> "I had a pleasant talent but not an incredible talent. I was not my father or my son. And you have to abandon all kinds of things."– Mary Rodgers (daughter of composer Richard Rodgers, mother of composer Adam Guettal), quoted in Green (2003)

Mary Rodgers, who passed away this year, was a remarkable creator. She wrote the hit Broadway musical *Once Upon a Mattress* and the popular kids' book *Freaky Friday*, which spawned two film adaptations. She contributed songs to many well-known revues (such as *Free to Be You and Me* and *The Mad Show*) and was the chair of the board at Juilliard for years. Yet Rodgers recognized that her talent, while prodigious, had a limit. In contrast, her father was Richard Rodgers, the composer of *Oklahoma*, *South Pacific*, and other classic shows. Her son, Adam Guettal, is a groundbreaking, Tony Award-winning composer of *Floyd Collins* and *Light in the Piazza*. Her father was clearly Big-C (demonstrating genius-level creativity), and her son is a strong contender to join these ranks someday. Rodgers herself will be remembered, but is probably a better fit for high Pro-c, or expert creativity (Kaufman & Beghetto, 2009).

In her quote, is Rodgers just being disarmingly modest? Or is she showing a level of self-insight that is painfully rare? Knowing your own limitations is not the first attribute that might come to mind when considering a creative life, yet it is an underrated ability. Self-confidence is often trumpeted as an essential quality for successful performance. Yet too much self-confidence can lead to narcissism, and although narcissists believe themselves to be more creative, they do not demonstrate actual higher creative performance (Furnham, Hughes, & Marshall, 2013; Goncalo, Flynn, & Kim, 2010). Past theorists have argued that creativity represents an investment in ideas (Sternberg & Lubart, 1996). People with overconfidence or narcissism may overvalue mediocre ideas and spend their time pursuing these paths. They may continue to believe themselves to be very creative yet not demonstrate high creative ability, leading to a potentially harsh encounter with reality when they encounter professional-level feedback.

Another topic to consider is that people show an implicit dislike of creativity both in everyday life (Mueller, Melwani, & Goncalo, 2012), the workplace (Mueller, Goncalo, & Kamdar, 2011), and, especially, in the classroom (Aljughaiman & Mowrer-Reynolds, 2005; Westby & Dawson, 1995). Such views can obscure the relationship between creativity and learning (Beghetto, in press) and undermine efforts aimed at the development of students' creative competence (Beghetto & Kaufman, 2007, 2014). Are these feelings rooted in an actual dislike of

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creativity? Or are the negative associations due to people not liking creative people who do not know when or how to be creative?

Creative metacognition (CMC) has been defined as "a combination of creative self-knowledge (knowing one's own creative strengths and limitations, both within a domain and as a general trait) and contextual knowledge (knowing when, where, how, and why to be creative)" (Kaufman & Beghetto, 2013b, p. 160). This definition is consistent with the larger concept of metacognition (e.g., Flavell, 1979; Pintrich, Wolters, & Baxter, 2000), which focuses on how people can recognize and monitor their own intellectual abilities.

Creative metacognition (not always explicitly given this label) has been studied along a few different lines of research. Some people have explored the relationship between metacognitive ability and creativity. For example, several theorists (Davidson & Sternberg, 1998; Feldhusen & Goh, 1995 Jausovec, 1994; Sternberg, 1998) have argued that metacognition is connected to creative problem solving and that someone who is high in metacognition should be a more creative problem solver. Feldhusen (1995) further argued that metacognition is one of the key factors related to creativity.

It is possible, however, that the relationship could be the exact opposite. Being higher at metacognitive abilities and being better able to regulate your performance could also mean that one is less prone to daydreaming or mind-wandering. Both daydreaming (McMillan, Kaufman, & Singer, 2013) and mind-wandering (Baird et al., 2012) are linked to increased creativity.

Some initial studies have shown that the presence of higher levels of metacognitive processing are correlated with more creative work in both art (Kozbelt, 2008) and engineering (Zeng, Proctor, & Salvendy, 2011). Another study examined self-reported creative metacognitive processes and found that this variable was correlated with creativity as measured by divergent thinking tests (de Acedo Lizarraga & de Acedo Baquedano, 2013). There is a danger in measuring any type of metacognition with self-report, given that people with low metacognition may not be able to respond to such a measure in an accurate way; indeed, the Dunning-Kruger effect (Dunning, Johnson, Ehrlinger, & Kruger, 2003; Kruger & Dunning, 1999) argues that people low in metacognitive abilities not only underperform but also are unable to recognize their own low level of ability.

A different way to examine this question is to see if people can identify their most creative ideas. Silvia (2008) asked participants to choose which responses to a divergent thinking task they felt were their most creative. He found that people were generally able to select the same responses that external raters chose as the most creative. In both his study and earlier work (e.g., Grohman, Wodniecka, & Klusak, 2006), more creative people tend to be better at this type of evaluation.

Another way of studying creative metacognition is to examine general self-reported creativity and see how it is related to actual creative performance. Many studies have a correlation between creativity self-beliefs and scores on measures such as divergent thinking (Batey, Furnham, & Safiullina, 2010; Furnham, Batey, Anand, & Manfield, 2008; Park, Lee, & Hahn, 2002; Phillips, 1973), rated creativity (Beghetto, Kaufman, & Baxter, 2011), and self-reported creative activities (Furnham et al., 2008; Reiter-Palmon, Robinson-Morral, Kaufman, & Santo, 2012). However, there are also a stream of studies that show no relationship between self-reported creativity and divergent thinking (Lee, Day, Meara, & Maxwell, 2002) and rated creativity (Kaufman, Evans, & Baer, 2010; Priest, 2006).

A more specific way of studying this question is to have people engage in a creative activity, ask them to assess their performance, and then see how accurate they are in their assessments (comparable to Silvia, 2008, but with actual creative products). Pretz and McCollum (2014) conducted this type of study on a population of college students using divergent thinking, an essay task, and a caption. They found that global self-assessments of creativity were not particularly related to creative performance (consistent with some of the past findings discussed earlier). However, when people specifically rated their creativity on each individual task, these self-assessments did predict how experts rated their creativity on each task.

In most studies of creative metacognition, participants are asked to rate their creativity with broad terms. The two questions used by Pretz and McCollum (2014), for example, were "My responses to the task were creative" and "My responses were more creative than those of the average person my age" (p. 230). One way of studying the question of creative metacognition with greater depth would be to align the responses within the larger framework of the Four-C Model of Creativity.

Building off of the little-c/Big-C distinction, Kaufman and Beghetto (2009, 2013a), Beghetto and Kaufman (2007, 2014) propose four "C"s of creativity that follow a developmental trajectory. First there is mini-c, or personal creativity, which represents the subjective self-discoveries that are part of the learning process. These new and personally meaningful insights and interpretations may not be considered creative by other people. They can, under the right conditions, develop into creative contributions that are recognized by others (Beghetto & Kaufman, 2014). Next is little-c, or everyday creativity, is the kind of creativity that all of us can reach; it is work that others would recognize and enjoy as being creative. Pro-c, or expert-level creativity, comes from years of practice and hard work (e.g., Hayes, 1989); this level may be the highest that most people can strive for in their lifetime. Big-C, or genius creativity, is the type of field-changing contributions that are remembered for generations to come.

If people were to rate their creativity with specific questions that targeted the different types of C's as opposed to a broad scale, might the accuracy of their creative metacognition rise? Laypeople are able to distinguish the concepts of not creative, mini-c, and little-c (although Pro-c is harder to separate from little-c; Kaufman & Beghetto, 2013a). Past investigations of creative metacognition have typically focused on college students (e.g., Furnham et al., 2008; Pretz & McCollum, 2014). Younger students have been shown to demonstrate some level of creative metacognition (Beghetto et al., 2011); we would argue that it is important to determine whether elementary school-age children are capable of creative self-awareness to know whether potential interventions to improve creative metacognition are poised to succeed (Kaufman & Beghetto, 2013b). Further, elementary school creativity is a particularly important developmental time. Creativity often is shown to grow up to a certain point; some studies have found that a slump begins around fourth grade (Torrance, 1968) and more recent studies have found that a decline can occur around sixth grade (Lau & Cheung, 2010). One example of a natural population to study would be children who have not yet entered into such a decline.

Do young students have the ability to recognize different levels of creativity (i.e., mini-c and little-c) and can they differentiate between their creative performances on different domains (e.g., visual, verbal, scientific)? The goal of this study was to examine whether students had the metacognitive ability to judge their creative performance on a task such that their ratings would correspond with expert ratings.

1. Method

1.1. Participants

The 242 participants were elementary school students enrolled in grades one through six. Slightly over half of the participants reported their gender as female ($n = 122$, 50.4%). Breakdowns of gender by grade can be seen in Table 1. There were 37 students in 1st grade, 47 students in 2nd grade, 41 students in 3rd grade, 48 students in 4th grade, 29 students in 5th grade, and 40 students in 6th grade. Information on ethnicity was not collected, but the school was in a district in Southern California composed of primarily lower to middle socioeconomic status Caucasian and Hispanic American students.

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