Thinking Skills and Creativity 22 (2016) 142–151

Contents lists available at ScienceDirect

Thinking Skills and Creativity

journal homepage: http://www.elsevier.com/locate/tsc

Creative self-efficacy and teacher ratings of student creativity in Chinese elementary classrooms☆

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ARTICLE INFO

Article history:
Received 3 October 2016
Accepted 3 October 2016
Available online 6 October 2016

Keywords:
China
Creative self-efficacy
Elementary education
Replication
Science education

ABSTRACT

The purpose of this study was to conduct a cross-cultural, conceptual replication of the study reported in Beghetto, Kaufman, and Baxter (2011), which examined the relationship between elementary students' creative self-efficacy (CSE) beliefs, their demographic characteristics, and teacher ratings of students' creative expression during science instruction. In this study, third through sixth grade science teachers (N = 60) and their students (N = 3,623) from public elementary schools in central China were surveyed about their CSE perceptions and student creative expression. This study expanded on the original study by collecting additional teacher level data so we could examine the relationship between teachers' beliefs that they encourage student CSE and their class' mean CSE during science instruction. Overall, we report similar results as those found in the original study. The expansion component of our study indicated there was not a significant correlation between teachers' self-reports of encouraging CSE scores and the mean of their class' CSE scores. This data also indicated a significant difference between teachers' perceptions that they encourage student CSE and the mean of their class' CSE.

1. Introduction

1.1. A definition and model for creativity

Although Mandarin does not have a word for creative products (Lan & Kaufman, 2013; Niu, 2013), there is a general consensus among creativity scholars that the Chinese definition of creativity has a very strong Western influence, specifically the inclusion of originality and usefulness (Lan & Kaufman, 2013; Niu, 2013; Niu & Sternberg, 2002; Pang & Plucker, 2013). Therefore, in this study we use the definition of creativity developed in Plucker, Beghetto, and Dow (2004): "Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptual product that is both novel and useful as defined within a social context" (p. 90).

☆ The authors thank Professor Weiguo Pang at East China Normal University and Professor Ronald Beghetto at the University of Connecticut for their support and assistance throughout this project. Special thanks go to Po-Ju Wu for his translation assistance.
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http://dx.doi.org/10.1016/j.tsc.2016.10.001
1871-1871/

Researchers have studied Big-C (eminent) creativity and little-c (everyday) creativity for decades. In recent years, it has been argued that this dichotomy may be too restrictive, especially in the context of learning new concepts (Beghetto & Kaufman, 2007, 2010; Kaufman & Beghetto, 2009). The Four C model provides a more detailed perspective of creativity, one that acknowledges eminent accomplishments (Big-C), every day innovation (little-c), transformative learning (mini-c), and professional creative expertise (Pro-c). Beghetto and Kaufman (2010) stated, "The sociocultural emphasis [of the model] underscores how internal (mini-c) insights and interpretations are influenced by interactions and experiences with domain-relevant knowledge and how, under the right conditions, those internal (mini-c) insights can potentially develop into external (larger-C) contributions" (p. 193). The Four C model suggests that individuals do not just happen upon creativity, it takes encouragement and nurturing, especially to transform interpretive creativity into everyday creativity and everyday creativity into professional or eminent creativity.

1.2. A closer look at mini-c in the classroom

Mini-c creativity represents "novel and personally meaningful interpretations of experience, actions, and events" (Beghetto & Kaufman, 2007; p. 73) that occur when learning new things. This concept is related to an individual's creative self-efficacy (CSE), "the belief that one has the ability to produce creative outcomes" (Tierney & Farmer, 2002; p. 1138). Beghetto, Kaufman, and Baxter (2011) noted that CSE is a particularly promising way to measure mini-c creativity because it represents personally subjective perspectives of one's creativity ability. Tierney and Farmer (2002) also found a connection between CSE and creative behavior, which was further supported by Karwowski (2011). When an individual believes that they can produce creative outcomes, their CSE should increase. Creativity, like other skills or habits, has to be encouraged, nurtured, and supported in order to develop (Sternberg, 2010). According to Beghetto and Kaufman (2007, 2010), there are many opportunities to nurture mini-c creativity within classroom content, but they most certainly take conscious effort by the teacher and students.

1.2.1. Creative self-efficacy in the classroom

As noted by Karwowski (2011), CSE does not have a single predictor. Recent classroom research with Polish secondary students has found a positive relationship between students' domain-general CSE and a variety of variables, including creative ability, demographic characteristics, and self-reported originality. Meanwhile, among secondary students in the United States, Beghetto (2006) concluded that students' CSE is positively correlated with students' age, home language, mastery beliefs, performance beliefs, and perceptions of teacher feedback of creative ability. In these two studies, CSE was measured using three items developed by Beghetto (2006): "I am good at coming up with new ideas," "I have a lot of good ideas," and "I have a good imagination."

Furthermore, Beghetto et al. (2011) explored the relationship between elementary students' CSE and teachers' ratings of student creative expression in science. Unlike Beghetto (2006) and Karwowski (2011) who used domain-general CSE, the authors used domain-specific CSE, or CSE in science, as a proxy for the sum of mini-c creativity beliefs. This CSE was measured by five questions specifically targeted at science classes: "I am good at coming up with new ideas during science class," "I have a good imagination during science class," "I have a lot of good ideas during science class," "I am good at coming up with my own science experiments," and "I am good at coming up with new ways of finding solutions to science problems."

In this research project, Beghetto et al. (2011) reached several interesting conclusions. First, students' demographic characteristics, such as grade, gender, and ethnicity, explained a small but significant proportion of the variance in students' CSE beliefs. Second, students' CSE beliefs explained a small but significant amount of the variance in teachers' ratings of students' creative expression in science. Third, two studies in this project showed contrasting results regarding the relationship between teacher ratings of their students' creative expression in science and students' self-ratings of their creative expression in science. In study 1 focusing on creative expression in science, there was not a significant difference between the two variables. However, in study 2 focusing on creative expression in mathematics, there was a significant difference between the two variables.

Given both the potential importance of the Beghetto et al. (2011) results for student creativity in science and the growing emphasis on scientific creativity in education in many countries, we chose to conduct a conceptual replication of the Beghetto et al. (2011) research. Replication of research results has been strongly emphasized in recent years, especially in the social sciences (Makel, Plucker, & Hegarty, 2012). More to the point, both creativity and education research are marked by low replication rates (Makel & Plucker, 2014a, 2014b). Specifically, in this study we attempt to address the extent to which these findings replicate in a different cultural context.

1.3. Infusing creativity in Chinese schools

Most observers agree that creative thinking should be nurtured in compulsory education (e.g. Ness, 2011; Plucker & Beghetto, 2003; Sternberg & Lubart, 1991), but our understanding of the extent to which this is being done globally is limited. In China, a country well known for its cultural creativity but stereotyped for its teacher-centered approach to compulsory education, creative thinking and problem solving have become a major focus of the public school curriculum at all grade levels in the past a few decades (Hui & Lau, 2010; Pang & Plucker, 2013).