# Beliefs About Creativity Influence Creative Performance: The Mediation Effects of Flexibility and Positive Affect

### Creativity and Beliefs About Creativity

Psychologists agree upon the definition of creativity as the ability to produce work that is novel (original and unique) and useful ([Stein, 1953](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B78); [Sternberg and Lubart, 1993](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B79); [Runco and Jaeger, 2012](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B70)). From a cognitive perspective, creativity is concerned with two types of thinking, namely divergent thinking and convergent thinking, both of which lead to creative production ([Cropley, 2006](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B18)). Divergent thinking involves searching through various directions, and multiple solutions to a problem are generated; in convergent thinking, thought is directed to one correct or best solution ([Guilford, 1956](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B29), [1959](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B30)).

Despite the growing number of studies done on creativity, there is still much to be learned ([Runco and Albert, 2010](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B69)). Throughout the years, researchers have studied creativity from various perspectives, including how individuals’ beliefs influence creativity. The topic of beliefs about creativity has been approached from different angles such as how people view themselves (i.e., creative self-beliefs) and how people perceive the nature of creativity. In this paper, we focuses on creative self-efficacy which is one of the key self-beliefs, and beliefs about the malleable nature of creativity (i.e., creative mindsets) which have attracted more researchers recently.

Creative self-efficacy is the belief that one can produce creative outcomes ([Tierney and Farmer, 2002](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B80)). As in most fields, research on creative self-efficacy has been grounded in [Bandura’s (1977)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B3) work on self-efficacy beliefs. Within this framework, self-efficacy beliefs determine how efficient people function through cognitive, motivational, affective, and decisional processes ([Bandura, 1993](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B5), [2011](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B6)). Self-beliefs of efficacy influence how much effort people put into a task, how persistent they are, and what task choices they prefer ([Bandura, 1977](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B3); [Zimmerman, 2000b](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B90); [Schunk and DiBenedetto, 2016](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B76)). When facing a challenge, people gauge their capacity to keep themselves motivated, focus on the task at hand, and manage negative thoughts and feelings ([Bandura and Locke, 2003](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B7)). Self-efficacy and performance mutually influence each other ([Bandura, 1989](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B4); [Williams and Williams, 2010](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B87)). Past experiences shape people’s current beliefs and their current beliefs drive their future actions.

Previous research has revealed evidence of the association between creative self-efficacy and creativity as assessed by various measures. For instance, in organizational settings, [Michael et al. (2011)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B54) found that employees’ creative self-efficacy was positively related to their self-reported innovative behaviors. Studies by [Tierney and Farmer (2002](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B80), [2011](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B81)) also demonstrated that employees with high levels of creative self-efficacy tended to be rated with high levels of creativity by their supervisors as well. In school contexts, [Beghetto et al. (2011)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B11) investigated elementary school students’ self-efficacy in creativity and found more self-efficacious students were given higher ratings of creative expression by their teachers. [Karwowski (2011)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B37) studied high school and gymnasia students’ creative self-efficacy. Using an unfinished, framed drawing task as a measure of divergent thinking, Karwowski also found a positive link between students’ self-efficacy and their performance of the task. Based on prior research, the connection between creative self-efficacy and creativity is quite promising.

Unlike creative self-efficacy, creative mindsets are not self-beliefs but rather implicit theories concerning the source and nature of creativity ([Karwowski and Brzeski, 2017](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B40)). The work of Dweck and her colleagues on malleability beliefs has guided research on creative mindsets (e.g., [Dweck and Leggett, 1988](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B26); [Mueller and Dweck, 1998](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B56); [Hong et al., 1999](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B35)). According to their research, it makes a difference whether people believe that a certain attribute is fixed or unchangeable (fixed beliefs) or that a certain attribute is developable through hard work (incremental beliefs). When engaging in a task, people with fixed beliefs attribute their success or failure to the presence or lack of ability; conversely, people with incremental beliefs ascribe the task outcome to effort ([Hong et al., 1999](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B35); [Haimovitz and Dweck, 2017](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B31)). As such, holding incremental beliefs is linked to desirable behaviors such as persistence, adoption of adaptive goals, and resilience in the face of setbacks ([Mueller and Dweck, 1998](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B56); [Yeager and Dweck, 2012](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B88)). Holding fixed beliefs, on the other hand, is related to maladaptive behaviors such as learned helplessness ([Hong et al., 1999](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B35)). Compared to fixed beliefs, therefore, incremental beliefs lead to achievement in the long term ([Blackwell et al., 2007](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B13)). [Dweck (2006)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B25) has introduced the terms “growth mindsets” and “fixed mindsets.” People with incremental beliefs endorse a growth mindset, while people with fixed beliefs endorse a fixed mindset. In this paper, the term “creative mindsets” is used to refer to beliefs concerning the malleable nature of creativity.

The concept of creative mindsets is relatively new. As a result, the connections between creative mindsets and creativity have been explored less than creative self-efficacy has. [O’Connor et al. (2013)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B59) conducted a series of studies to examine creative mindsets and creativity. Using their self-developed scale, they found that the creative growth mindset positively predicted interest in creative thinking, creative performance as assessed by the Unusual Uses Task (also known as the Alternative Uses Task), self-reported creativity (Study 1), and prior creative achievements across various domains (Study 2). Manipulation of creative mindsets (Study 3) also demonstrated that participants in the growth-mindset-induced group performed better in the Unusual Uses Task. This study provided evidence that creative mindsets affect creative performance. [Karwowski (2014)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B38) developed a scale to measure creative mindsets and examined their relations to creative problem-solving as measured by insight problems. He found that the fixed mindset was related to inefficient problem-solving performance.

Besides using different instruments to measure creativity and creative mindsets, [O’Connor et al. (2013)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B59) and [Karwowski (2014)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B38) viewed two types of mindsets differently in terms of their constructs. The research done by [O’Connor et al. (2013)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B59) was based on the premise that people endorse either fixed beliefs or incremental beliefs. That is, growth and fixed mindsets together form one construct. This view is in accordance with the research done by Dweck and her colleagues (e.g., [Hong et al., 1999](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B35); [Blackwell et al., 2007](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B13)). However, [Karwowski (2014)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B38) argued that people can hold two kinds of mindsets simultaneously, which means that the fixed mindset and the growth mindset should be conceived of as two correlated yet separate constructs. This view has been supported by correlational results of factor analyses conducted by [Hass et al. (2016)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B33), who found a negative correlation between fixed mindsets and growth mindsets, but the correlation was too small for the two to be considered as one construct. Furthermore, they found a positive correlation between the creative growth mindset and self-efficacy, but not between the fixed mindset and self-efficacy. As such, they concluded that while the two mindsets are related, they are indeed two distinct constructs. Additionally, applying a bifactor modeling approach and a latent profile analysis, [Karwowski et al. (2018b)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B43)demonstrated that people can hold both fixed and growth mindsets. In fact, their results showed that people could be classified as people as those with high growth and low fixed mindsets, those with low growth and high fixed mindsets, those with high growth and high fixed mindsets, and those with low fixed and malleable mindsets.

Overall, evidence from past research has established the associations between these two types of beliefs about creativity and creativity. Specifically, high creative self-efficacy and growth mindset, rather than fixed mindset, appear to be linked to desirable creative outcomes. However, some inconsistencies regarding how researchers have hypothesized the direction of the associations should be addressed, especially if studies have involved creativity tasks. For instance, [Karwowski (2011)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B37) used a creativity task, specifically a divergent thinking task, to study the association between creative self-efficacy and creativity. In his study, the performance in the task was treated as a predictor of self-efficacy. The direction of the divergent thinking performance and self-efficacy found in this study is in alignment with [Karwowski and Beghetto’s (2018)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B39) Creative Behavior as Agentic Action model, which proposes that the link between creative potentials and creative achievement is mediated and moderated by creative confidence and valuing creativity. According to this model, divergent and convergent thinking abilities are viewed as creative potentials and essentially these abilities influence self-efficacy. Creative mindsets were later included in the Elaborated Creative Behavior as Agentic Action model ([Karwowski et al., 2016](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B41)). According to this model, creative mindsets influence the relationships between creative potential, creative self-beliefs, and creative behavior. In this later model, divergent and convergent thinking are also perceived as creative potentials which are neither predictors of self-efficacy nor creative mindsets. Conversely, some studies on creativity’s relationship with creative mindsets examined performance in a divergent thinking task, such as the Alternative Uses Task ([O’Connor et al., 2013](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B59)) or a convergent thinking task (e.g., insight problems; [Karwowski, 2014](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6165896/#B38)), as an outcome of creative mindsets. This indicates that performance in divergent or convergent thinking tasks can be used as both a predictor and an outcome of beliefs. This difference may simply depend on how researchers view the performance of the tasks. As a predictor, performance may serve as a reference for people to evaluate their abilities and form their beliefs. As an outcome, performance represents some form of creative behavior which is a result of how beliefs influence actions. The present research is based on the premise that beliefs influence creative performance and it aims to explore some psychological factors that could potentially explain this mechanism.