Toward Untangling Creative Self-Beliefs

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Terminological infelicities have a way of breeding conceptual confusion
Davidson (2001, p. 154)

During the past decade, creative self-beliefs have garnered a great deal of attention in the creative studies literature. Three key self-beliefs that researchers have focused on during the past several years include the following: creative self-efficacy (CSE, i.e., perceived confidence to creatively perform a particular task), creative metacognition (CMC, i.e., beliefs based on a combination of creative self-knowledge and contextual knowledge), and creative self-concept (CSC, i.e., general beliefs about one’s creative abilities). Researchers view these (and related*) self-beliefs as shaping one’s creative identity (CI; Karwowski & Barbot, 2016) and have further asserted that they play a key role in determining whether a person will engage in creative performance opportunities, sustain effort when faced with challenges, and ultimately, demonstrate higher levels of creative achievement (see also Bandura, 1997; Farmer & Tierney, this volume; Hsu, Hou, & Fan, 2011; Tierney & Farmer, 2002, 2011).

Although the development of positive self-beliefs can be viewed as a desirable outcome in its own right (Beghetto, 2010; Karwowski, 2016; Mathisen & Bronnick, 2009), a key question is whether creative

* A more thorough discussion of related beliefs is beyond the scope of the present chapter. We therefore refer readers interested in related beliefs to work on creative personal identity, creative role identity (Jaussi, Randel, & Dionne, 2007; Karwowski, Lebuda, Wiśniewska, & Gralewski, 2013), and creative mindsets (Karwowski, 2014; see also Hass, Reiter-Palmon, & Katz-Buonincontro, this volume; Karwowski & Brzeski, this volume).
self-beliefs predict actual creative performance. Research on this issue has yielded promising, but somewhat variable results ranging from virtually zero to moderately positive associations between self-beliefs and actual creative performance (Beghetto, Kaufman, & Baxter, 2011; Furnham & Bachtia, 2008; Furnham, Batey, Anand, & Manfield, 2008; Karwowski, 2011). These mixed results are found not only across studies but also within studies (e.g., Kaufman, Beghetto, & Watson, 2015; Pretz & McCollum, 2014).

What might account for these variable and somewhat underwhelming results? One possibility is that self-beliefs play a less important role in creative performance than what many researchers think. Although this is a possibility that warrants further exploration, we would argue that there is a more fundamental issue at play: lack of clarity in how creative self-beliefs have been conceptualized and measured.

Specifically, we would argue that the way researchers (including ourselves) have conceptualized and measured creative self-beliefs, may blur important distinctions among these beliefs. In making this claim, we are not casting dispersions on previous work, but rather attempting to clarify and refine how we conceptualize and measure such beliefs. This is particularly important given the continued and growing interest in studying creative self-beliefs. Doing so requires that we take a step back and focus on clarifying theoretical similarities and differences among these beliefs. This is the aim of this chapter.

**A SYSTEM OF BELIEFS**

Prior to discussing how these beliefs differ, we first highlight how they work together (Fig. 1.1). More specifically, we assert that CSE, CMC, and CSC work together as a system of beliefs that helps to shape one’s CI (Beghetto, 2013; Beghetto & Dilley, 2016; Karwowski & Barbot, 2016; Karwowski & Lebuda, 2016, 2017; Tierney & Farmer, 2002). Indeed, these beliefs play a role in influencing whether a person will engage with (or avoid) a particular performance opportunity (CSE, CMC), sustain effort (CSE, CMC), perform at a particular level of creative achievement (CSE, CMC), and ultimately judge themselves as creative in various performance domains (CSC) and as a creative person (CI).

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A more detailed discussion of CI—how it develops and the role that self-beliefs play in its development—is beyond the scope of this chapter. We mention CI here to indicate that creative beliefs are not disjointed psychological ephemera, but rather integrated into a larger, more robust system. We refer readers interested in CI to the recent and excellent reviews and discussion presented in this volume by Dollinger and Clancy Dollinger (this volume), Barbot and Heuser (this volume), and Glâveanu (this volume).
DEFINITIONS AND DISTINGUISHING DIMENSIONS

I. BROAD CONSIDERATIONS

CREATIVE SELF-EFFICACY

CSE refers to a person’s perceived confidence to creatively perform a given task, in a specific context, and at a particular level. As depicted in Table 1.1, CSE beliefs are focused on perceived confidence and are the most...
## TABLE 1.1 Creative Self-Beliefs: Definitions, Dimensions, and Measurement Suggestions

<table>
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<tr>
<th>Construct</th>
<th>Working Definition</th>
<th>Central Focus</th>
<th>Temporal Dimension</th>
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<th>Stability Dimension</th>
<th>Measurement Suggestions</th>
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<tr>
<td><strong>CSE</strong></td>
<td>Perceived confidence to creatively perform a given task, in a specific context, at a particular level</td>
<td>Confidence (i.e., perceived confidence to creatively perform a particular task)</td>
<td>Future (i.e., focused on judging one’s ability to creatively perform an impending task)</td>
<td>Highly specific (i.e., influenced by specific features of a particular task and context)</td>
<td>Dynamic (i.e., dynamic self-belief that varies as a function of perceived features of a particular task, context, and psychological and physiological state)</td>
<td>Measures of CSE should have a future orientation, focus on perceptions of confidence in performing key features or levels of task performance, and use broad response scales (e.g., 0–100)</td>
</tr>
<tr>
<td><strong>CMC</strong></td>
<td>Self-beliefs based on a combination of creative self-knowledge (i.e., belief about one’s creative strengths and weaknesses) and contextual knowledge (i.e., beliefs about when, why, and how to be creative)</td>
<td>Accuracy and regulation (i.e., accuracy of perceived creative strengths and weaknesses and regulatory beliefs related to creative task performance)</td>
<td>Present (i.e., focused on judging whether creative performance is warranted and feasible and whether adjustments are needed while engaged in a task)</td>
<td>Moderately specific (i.e., influenced by a combination of specific task features, prior self and contextual knowledge, and current task performance)</td>
<td>Moderately stable (i.e., somewhat stable self-belief, but can vary depending on changing features of the context and task performance)</td>
<td>Measures of CMC should dynamically measure both accuracy and regulatory beliefs, account for confidence bias and task difficulty, and assess recalibrations of beliefs across multiple trials</td>
</tr>
<tr>
<td><strong>CSC</strong></td>
<td>Creative self-belief based on holistic cognitive and affective judgments of creative ability in and across particular domains</td>
<td>Competence (i.e., perceived creative competence in a domain)</td>
<td>Past (i.e., focused on holistically judging one’s domain-specific creative ability based on prior performance)</td>
<td>General (i.e., influenced by the accrual of self- and social-judgments of prior creative performance in a particular domain)</td>
<td>Stable (i.e., generally stable self-belief that changes overtime as a result of aggregate performance appraisals and feedback)</td>
<td>Measures of CSC should focus on retrospective self and social perceptions of competence and assess both cognitive and affective features of CSC</td>
</tr>
</tbody>
</table>

CSE, Creative self-efficacy; CMC, creative metacognition; CSC, creative self-concept.
future-oriented, task-specific, and malleable of the three self-beliefs discussed herein. CSE beliefs are triggered when a person encounters a performance situation. This, in turn, results in a self-judgment about one’s confidence to creatively perform an impending task at a particular level (e.g., “I am confident that I can creatively solve three of these five problems”).

CSE beliefs, like all efficacy beliefs (Bandura, 1997), play a role in determining whether a person will attempt to engage with or avoid a task. Efficacy beliefs also play a role during task engagement (e.g., helping to determine whether a person will sustain effort when facing difficulty with a task), as well as following task engagement (e.g., recalibrating one’s confidence in the ability to perform similar tasks in the future).

There are various factors that can influence efficacy beliefs. Indeed, as Bandura (1997) has explained, efficacy beliefs are dynamically shaped by a person’s prior performance history with similar tasks, as well as the sociopsychological circumstances of the performance setting, including one’s physiological state (e.g., feeling tired vs. energized), social persuasion (e.g., receiving encouragement from trusted sources), and vicarious experiences (e.g., performance of relatable models).

We assert that there are various other sociopsychological and material features of the performance setting (Beghetto, 2017; Glăveanu, this volume; Glăveanu & Beghetto, 2016) that can dynamically influence CSE beliefs, including the creative affordances recognized by the material objects in the environment (e.g., coming up with different uses for a can vs. a brick), current and prior relational histories with people in the environment (e.g., a bully), and even dialogical features (e.g., inner dialogues with real or imagined interlocutors).

**Creative Metacognition**

CMC refers to a combination of beliefs based on one’s creative self-knowledge (i.e., knowledge of one’s creative strengths and limitations) and contextual knowledge (i.e., knowing when, where, how, and why to be creative) (Kaufman & Beghetto, 2013). As noted in Table 1.1, CMC beliefs are focused on making accurate self and situational appraisals and regulating creative behavior while engaged in an activity. More specifically, CMC beliefs help people judge whether creative performance is warranted and feasible in light of one’s self-assessed strengths and features of the current situation.

A bit more explanation here may be helpful to illustrate how material features of a situation can influence self-beliefs. In the case of multiple uses of an aluminum can versus a brick, a person may recognize that a can is more malleable than a brick (e.g., bent, twisted, reshaped) and therefore may lend itself to more uses than a brick, which is more fixed and difficult to transform.
In this way, CMC beliefs tend to have a present moment orientation and are moderately specific and stable. These beliefs are moderately specific because a person appraises and regulates their specific task performance based on a combination of more general self and contextual knowledge that the person views as relevant for the particular situation (e.g., prior performance on similar tasks; knowledge of general strategies, techniques, or principles). CMC beliefs also tend to be moderately stable because they are formed by more constant aspects of the self (e.g., self-appraisals of prior performance), but can change in light of the more dynamic and unexpected features of a particular situation.

CMC beliefs are triggered when a person confronts a performance situation and serve as the basis for appraising the feasibility (e.g., “I am highly confident that I can solve this problem in a creative way”) and appropriateness (e.g., “It’s worth the risk to try a creative approach to this problem”) of creatively engaging with the situation. CMC beliefs also play a role during task engagement (e.g., “This isn’t working, I need to try something different”) and can result in the recalibration of self and task appraisals based on changing conditions of the situation (e.g., “I’m running out of time, I don’t think I’ll be able to creatively solve this problem”) or performance on the task (e.g., “This task is more challenging than I thought”). In this way, CMC beliefs can overlap with CSE beliefs with respect to judging feasibility prior to and during task engagement (i.e., confidence in one’s ability to creatively perform in a particular situation). CMC beliefs also overlap with CSC beliefs in that they inform and are informed by one’s general self-judgment of creative ability.

Although CMC beliefs overlap with CSE and CSC beliefs, CMC beliefs are, arguably, the most complex of the three self-beliefs discussed herein. This is because they reflect a combination of self-awareness and creative self-regulation. With respect to creative self-awareness, CMC involves being able to accurately assess one’s creative strengths and weaknesses and thereby influences and is influenced by the accuracy of one’s CSE and CSC beliefs. With respect to creative self-regulation, CMC beliefs influence one’s ability to make strategic decisions in a particular situation. This requires drawing on knowledge of the self and situation to determine whether, when, and how to act in a creative way (Kaufman & Beghetto, 2013).

Creative Self-Concept

CSC refers to a general cognitive and affective judgment of one’s creative ability. Although CSC beliefs represent more general perceptions as compared to CSE (and CMC), this does not mean that CSC beliefs are restricted to domain-general beliefs (e.g., “I am creative”). Indeed, researchers who have studied self-concept in other fields (Bong & Skaalvik, 2003) assert that self-concept can be assessed using domain-specific measures.
What differentiates CSC beliefs from CSE beliefs is not that CSC beliefs are domain general, but rather pertain to more global perceptions of competence in a domain (e.g., “I am a creative dancer”; “I am a creative writer”), whereas CSE beliefs represent more particular perceptions of confidence in one’s ability to creatively perform particular tasks (e.g., “I am confident that I can write a creative tall-tale about my 10th birthday”).

CSC beliefs also differ from CSE and CMC beliefs in that CSC beliefs are based on a combination of affective (e.g., “I like creative writing”) and cognitive (e.g., “I am a good creative writer”) self-appraisals of competence (Bong & Skaalvik, 2003). This is not to say that emotion plays no role in CSE or CMC beliefs, but rather that CSE and CMC beliefs tend to have more of a cognitive orientation. Moreover, CSC beliefs tend to be based on more generally focused social comparisons (e.g., “Compared with other students in my class, I am good at creative writing”) and appraisal feedback from others (e.g., “I have been told I am a creative writer”), whereas CSE beliefs tend to be focused more directly on the specific performance features of a task. Again, this is not to say that CSE or CMC beliefs are not influenced by social comparisons or social persuasion, but rather that CSC beliefs are influenced by more generally focused social influences (Bong & Clark, 1999).

CSC beliefs are also retrospective, rather than prospective (CSE) or focused on real-time appraisals (CMC). CSC beliefs also tend to be more stable than CSE or CMC beliefs, because they are based on aggregate judgments across time. It is, of course, possible that a single, critical incident can alter one’s CSC—particularly for young people who are in the early stages of developing their creative competence (Beghetto & Dilley, 2016). Generally speaking, however, we assert that CSC is more of a trait-like belief and less volatile than CSE or CMC beliefs.

Taken together, these three self-beliefs influence a person’s creative identity (CI), general (or trait-like) assessments of creative abilities (CSC), self and task appraisals of the feasibility and appropriateness of creatively engaging with particular situations (CMC), and more specific (or state-like) confidence in creatively performing particular tasks, at particular times, in particular contexts (CSE). Given that these beliefs have conceptually shared and distinct features, they present researchers with nontrivial measurement challenges. In what follows, we offer suggestions for how creativity researchers can develop more precise measures of these three creative self-beliefs.

MEASURING SELF-BELIEFS: RECOMMENDATIONS AND NEW DIRECTIONS

As we noted in our introduction, previous work examining the relationship between creative self-beliefs and creative performance has yielded heterogeneous and somewhat underwhelming results. We also asserted
that these findings likely have been constrained by the way we (and other creativity researchers) have measured CSE, CMC, and CSC. In this section, we offer specific suggestions for how creativity researchers might develop more sensitive measures of each of these beliefs. We close this section by outlining a few general measurement recommendations.

Measuring Creative Self-Efficacy

When it comes to measuring CSE, researchers will need to modify existing (or develop new) measures to elicit a person’s prospectively focused confidence in creatively performing a particular task, at a particular level, in a particular context. Indeed, as self-efficacy researchers in other fields have asserted (Bandura, 1997; Bong & Skaalvik, 2003; Pajares, 1996; Zimmerman, 2000), a key requirement for measuring self-efficacy beliefs is that they are tailored to elicit a person’s confidence in performing specific features of a task (e.g., “I am confident I can correctly spell all the words that I will use in my three page essay”; “I am confident I can run a mile in under ten minutes”; “I am confident I will score above an 80% on this math exam”).

We therefore have the following recommendations for researchers interested in modifying existing or developing new measures of CSE:

- **Future orientation**: CSE measures should have a future orientation. This orientation should be made explicit in how items are worded (e.g., “I am confident that I will …”) and when the CSE beliefs are assessed (i.e., prior to engaging in a performance). Depending on the particular goals of a study, the future orientation may have an immediate focus or more distal focus. Although we might expect less accurate judgments with more distal predictions of creative performance, researchers may yield important insights into factors that contribute to more or less accurate CSE predictions when examining both proximally oriented and distally oriented CSE beliefs.

- **Perceptions of confidence**: CSE measures should elicit respondents’ perceptions of their confidence (e.g., “How confident are you that you can …”) and not their competence (e.g., “I am good at …”). We recommend making this clear in the measurement instructions provided to respondents in studies of CSE, as well as the items written to assess these beliefs.

- **Key features or levels of task performance**: CSE measures should focus on key performance features of a particular task (e.g., “… creatively use internal rhymes when writing my poem”) or different levels of task performance (e.g., “… creatively solving three of these five ill-defined problems”). Again, we recommend clarifying this focus in how items are written and the instructions provided to research participants.
- *Use broader-ranging response scales*: CSE measures should use scales that have a longer range of responses (e.g., 0–100, per the recommendation in Bandura, 2006). This can help avoid range restriction and potentially inflated self-ratings and, instead, offer more sensitive, reliable, and accurate predictions (Bandura, 2006; Pajares, Hartley, & Valiante, 2001).

Our recommendations differ from how we (and other creativity researchers) have typically measured CSE in prior studies (e.g., Beghetto, 2006; Karwowski, 2011, 2012; Pretz & McCollum, 2014; Tierney & Farmer, 2002). Indeed, we have typically measured CSE using items that assess more trait-like or global beliefs (e.g., “I have a good imagination”) with short response scales (e.g., 5-point Likert scales). We now recognize that more global and shorter-response measures may provide limited insights into CSE beliefs and, in turn, constrain the predictive power of traditionally measured CSE beliefs.

We therefore have started implementing our CSE measurement recommendations in some of our more recent work (e.g., Karwowski & Beghetto, in preparation; Karwowski, Gralewski, & Szumski, 2015). In these initial efforts, we have expanded the range of response scales (e.g., 1–100), focused respondents to report on their perceived confidence prior to performing specific tasks, and attempted to more tightly align CSE measures with specific tasks. We plan to expand on such efforts, in subsequent studies, by assessing CSE in relation to specific levels of task performance and by comparing the predictive validity of updated CSE measures in relation to more traditional measures of CSE. We invite researchers to join us in this line of work by developing studies that implement, test, and refine our CSE measurement recommendations.

**Measuring Creative Metacognition**

There are two aspects of CMC that researchers need to take into account when measuring CMC: accuracy of performance appraisals and regulation of behavior. We define metacognitive accuracy as the relationship between a person’s level of confidence in performing a task and that person’s actual level of performance—yielding four possibilities (see also Fleming & Lau, 2014): high confidence, high performance (accurate high alignment); high confidence, low performance (inaccurate overestimation); low confidence, high performance (inaccurate underestimation); and low confidence, low performance (accurate low alignment). Consequently, a person

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4Our definition and conceptualization of metacognitive accuracy differs somewhat from metacognitive sensitivity as described by Fleming and Lau (2014) and we therefore refer interested readers to their excellent discussion of metacognitive sensitivity as well as their measurement recommendations.
with high metacognitive accuracy is someone who demonstrates significantly higher frequency of accurate judgments (i.e., creative confidence matches creative performance) as compared to inaccurate judgments (i.e., creative confidence does not match creative performance).

Metacognitive regulation refers to a person’s ability to make adjustments to their beliefs and behaviors during and after task performance. Given the goals of this chapter, we limit our focus to regulatory beliefs. Examples of such beliefs include a person believing that he or she needs to increase (or decrease) effort, try a different strategy, or persist with (or withdraw from) a task. Another way of examining regulatory beliefs is to assess whether people recalibrate their confidence beliefs (i.e., CSE) while engaging with and completing a task and whether those recalibrations increase or decrease metacognitive accuracy.

We have the following recommendations for researchers interested in measuring CMC beliefs:

- **Measure accuracy and regulatory beliefs.** When designing studies assessing CMC beliefs, we recommend that researchers assess both metacognitive accuracy and metacognitive regulation. Although important insights into CMC can be gained by assessing only one of these facets, we argue that a more complete understanding of CMC beliefs can be gained from studies that measure both metacognitive accuracy and metacognitive regulation.

- **Use CSE when measuring metacognitive accuracy.** Given that measuring metacognitive accuracy involves eliciting respondents’ perceived confidence, researchers should use measures of CSE (as described in the previous section) as their assessment of confidence. We recognize that other proxies and measures of confidence can be used, but given our assertion that CSE is part of an overall system of self-identity beliefs, we recommend using CSE as the preferred measure of confidence.

- **Account for confidence bias and task difficulty.** When measuring metacognitive accuracy, two additional issues need to be assessed: confidence bias and task difficulty. As Fleming and Lau (2014) note, confidence bias (e.g., an overly cautious or humble person consistently underestimates confidence level on tasks regardless of task performance) and task difficulty (e.g., easier tasks tend to be judged more accurately) can result in erroneous conclusions with respect to a person’s metacognitive accuracy. We refer readers to Fleming and Lau (2014) for a discussion of analytic techniques that may prove useful in studies of CMC.

*Metacognitive regulation of behaviors can, for instance, be assessed using observational measures. Given our focus on beliefs in this chapter, we do not discuss observational methods or measures. We urge researchers to develop ways to measure both beliefs and behaviors when assessing CMC regulation.*
• **Use dynamic, real-time measures.** When measuring regulation beliefs, creativity researchers likely would benefit from using experience sampling methods (Conner, Tennen, Fleeson, & Barrett, 2009) and other relevant techniques, such as ecological momentary assessment (see Shiffman, Stone, & Hufford, 2008 for an overview), to assess people’s perceptions of tasks and their ability to creatively perform those tasks in real time.

• **Assess recalibrations of confidence.** We recommend assessing changes in confidence before, during, and after having completed a task. This will allow researchers to more dynamically assess regulation in relation to metacognitive accuracy.

• **Use multiple trials and microlongitudinal designs.** Given that metacognition involves regulation, it is important to measure how performance outcomes influence recalibration of CMC beliefs over multiple trials of performance tasks.

Research on CMC beliefs is in the early phases and there are only a few studies that have attempted to explore this construct. Initial efforts (e.g., Kaufman et al., 2015; Pretz & McCollum, 2014) have focused primarily on metacognitive accuracy (i.e., associations between self-beliefs and external performance ratings) and, as noted earlier, have yielded somewhat mixed and modest results. Similar to prior work on CSE, previous work on CMC is somewhat limited by the types of measures and methods used. Still, the findings from initial CMC studies serve as an important point of comparison for researchers interested in using and testing out our recommendations. It will be important to explore whether and how revised CMC measures perform in comparison with previously used measures. We therefore urge researchers to design studies that will compare, test, and further refine our recommendations for assessing CMC beliefs.

**Measuring Creative Self-Concept**

When it comes to measuring CSC, researchers should develop measures that assess people’s general beliefs about their creative abilities. These measures should also be based on a respondent’s retrospective and social-comparative appraisals of competence. As noted earlier, this does not mean that items should be restricted to domain-general appraisals.

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1Just to provide a bit of context, we conducted a brief search of the three beliefs discussed herein as a way to provide a rough estimate of the relative popularity and focus placed on each of these three beliefs. As of this writing, a quick Google search yielded more than 20,000 hits related to CSE (as compared to nearly 10,000 hits for CSC and slightly more than 1000 hits for CMC). An even more disproportionate ratio was yielded when conducting the same search using Google Scholar (slightly more than 2500 hits for CSE, 158 for CSC, and 94 for CMC).
but rather focus more on cognitive, affective, and social-comparative appraisals of creative competence.

We have the following recommendations for researchers interested in designing new (or revising existing) items to assess CSC:

- **Focus on retrospective, general perceptions of competence.** Items assessing CSC should focus on retrospective, general perceptions of creative competence. This would include developing items that represent more global self-appraisals (e.g., “I am a creative dancer”) as well as highlight the specific retrospective and aggregate nature of CSC beliefs (e.g., “As I reflect on all my experiences as a dancer, I would consider myself a creative dancer”).

- **Measure both cognitive and affective self-appraisals.** Given that CSC beliefs have both cognitive features (e.g., “I am good at coming up with creative solutions when solving math problems”) and affective features (e.g., “I enjoy coming up with creative solutions when solving math problems”), we recommend that researchers develop items that assess both of these facets of CSC. Following Bong and Skaalvik (2003), we also recommend that these features be measured in a way that allows researchers to examine the dimensionality of these two facets (e.g., developing enough items to treat CSC-affect and CSC-cognitive as separate, but interrelated scales).

- **Include social comparisons and perceptions of external appraisals of competence.** Given that self-concept beliefs represent an aggregate appraisal of creative competence—which includes social comparison and social feedback—we recommend that researchers include items in their CSC measures that generally assess social comparisons of creative competence and self-reported social feedback about creative competence (e.g., “Compared to other people my age, I am good at creatively solving problems”; “Other people have told me I am good at creatively solving problems”).

- **Measure CSC beliefs in and across domains and over time.** As we have discussed, CSC beliefs tend to be more general (i.e., less focused on specific features of tasks or actions) and stable (i.e., less likely to change based on contextual features or singular experiences) as compared to CSE and CMC beliefs. Importantly, however, this does not mean that measurement of these beliefs should be restricted to domain-general perceptions (e.g., “I am creative”). We therefore recommend that researchers measure these beliefs in and across domains and over time to examine whether and how such beliefs differ and change over time.

- **Use different types of response scales.** Given potential problems with common method variance in studies of self-beliefs, we urge researchers to explore different ways of measuring CSC, including
different types of response scales (including but not limited to Likert-type scales). An example of how self-concept has been measured in other fields (e.g., Bong & Skaalvik, 2003; Harter & Pike, 1984), which could be applied to CSC, involves the following: (1) providing respondents with two contrasting statements on opposite sides of the page (e.g., “Some people are good at coming up with creative solutions to math problems”; “Other people are not good at coming up with creative solutions to math problems”), (2) asking respondents to select which statement best describes them, (3) asking respondents to indicate how true that statement is for them (e.g., very true, somewhat true), and finally (4) calculating a score, ranging from 1 to 4, for each item (e.g., 1 = selecting “other people are not good at …” and selecting “very true”; 4 = selecting “some people are good at …” and selecting “very true”). This approach is just an example of one alternative approach to traditional Likert scale items that creativity researchers might use when measuring CSC.

At this point, it should be clear that the way we (and other creativity researchers) have previously measured creative self-beliefs—in particular CSE (e.g., Beghetto, 2006; Karwowski, 2011, 2012; Tierney & Farmer, 2002)—has likely confounded CSE with CSC. Indeed, given that traditional scales of CSE have lacked contextual and task specificity, such measures likely have assessed respondents’ more general (or CSC) creative competence beliefs rather than their CSE beliefs (i.e., perceived confidence to creatively perform a given task, in a specific context, at a particular level). Indeed, a recent meta-analysis (Karwowski & Lebuda, 2016) has convincingly demonstrated that while domain-specific, situational creative self-beliefs are to a large extent independent from personality, more-CSC-like or domain-general beliefs are almost synonymous with a personality meta-factor of plasticity (composed of openness and extraversion).

We thereby suggest that researchers, who are interested in using traditional CSE scales in their research, alert readers to the potential issues with the use of traditional CSE measures. We also suggest that researchers engage in the empirical work necessary to examine whether and how findings from traditional CSE scales differ from updated measures of CSE and updated measures of CSC (i.e., designed according to our recommendations presented herein). Indeed, given the conceptual overlap between self-efficacy and self-concept, it is possible that in some situations more general CSC measures will yield essentially the same pattern of results as more task- and context-specific CSE measures. Again, this is a claim that requires empirical testing.

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8It would also be helpful for researchers to clearly denote differences between traditional CSE measures and revised CSE measures by using a simple notation in the way the scales are labeled (e.g., tCSE, traditional CSE measure; rCSE, revised CSE).
General Recommendations for Measuring CSE, CMC, and CSE

Having outlined several specific suggestions for measuring each of the three self-beliefs, we turn our attention to providing some general recommendations.

Design Studies that Measure All Three Beliefs

In light of what we discussed in the previous sections, we would recommend that researchers design studies that include measures of all three beliefs. This is particularly important when designing studies that explore the role that such beliefs play in predicting creative performance. Doing so will help clarify how these beliefs work together in particular performance situations and can also help clarify direct, mediating, and moderating influences of these beliefs on creative performance (see also Karwowski & Barbot, 2016).

Consider, for example, a person who has little or no familiarity with a task. In such a case, we would expect a high degree of overlap between CSE and CSC, with more variability in CSE and CMC judgments during the duration of task engagement. Continuing with this example, if a person lacks relevant task-specific experiences (e.g., “I have no experience trying to creatively solve a math problem like this particular one”), then we would expect that person to appeal to his or her more global CSC belief in that situation (e.g., “… I’m generally good at coming up with creative solutions to math problems”). In this way, differences in CSC and CSE would likely be negligible.

Moreover, we would expect that the person’s CMC accuracy (based on the initial CSE judgment) would also be lower. We would also expect variability in metacognitive regulation if the person decided to engage with the task. If, for instance, the task proved to be more difficult than expected, the person might come to believe that the effort is not worth it and thereby disengage with the task. This, in turn, may result in a recalibration of his or her CSE belief about this particular type of task (e.g., “I’m not confident I can creatively solve this kind of math problem”). Alternatively, a person with an exaggerated sense of CSE/CSC might believe that successful performance is possible and thereby persist with the task. Assuming a negative performance outcome, the person may ignore the outcome and in essence buffer his or her CSE/CSC beliefs from a more accurate downadjustment (Kruger & Dunning, 1999). Depending on the intensity or the frequency of similar

We would argue that enhanced or exaggerated self-beliefs are not always a problem. In the case of young people developing their competence in a domain, such exaggerated self-beliefs may help them persist in developing their competence and eventually recalibrating their beliefs to align with their actual level of performance. Importantly, just because a belief is exaggerated—particularly in a “one-shot” rating situation—does not mean that it will continue to be inflated over multiple trials or the creative life span. Indeed, as Fleming and Lau (2014) note, one-shot ratings are not reliable and researchers therefore need to examine CMC judgments across multiple trials.

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negative outcomes, however, we would argue that it would eventually have a negative impact on a person’s CSE, CSC, and even CI (e.g., “Maybe I’m not as creative at solving math problems as I thought I was”).

As the earlier example illustrates, similarities and differences among creative self-beliefs can differ depending on the performance situation. Indeed, each of the three self-beliefs can play different background and foreground roles prior to, during, and after engaging in performance tasks. We therefore urge researchers to examine whether and under what conditions measures of CSC and CSE serve as proxies for each other, when they substantially differ, and how the beliefs work together across the shorter time span of task engagement and the longer time span of CI development. Such work will help provide further conceptual and empirical clarity on these creative self-beliefs.

**Test Domain Specificity of Self-Beliefs Using More Robust Methods**

Although previous work has suggested that creative-self beliefs seem to be domain-specific (e.g., Baer, this volume; Kaufman et al., 2015; Pretz & McCollum, 2014), we recommend that researchers further test domain specificity using more robust analytic techniques. Correlational analysis may be considered the most natural method for testing domain specificity (e.g., if correlations among self-beliefs are low across domains, then there is evidence of domain specificity). Although a correlational approach is intuitively appealing, it can serve only as tentative evidence in making claims about domain specificity. As we have discussed, self-beliefs typically have been measured using a few items with short response scales (e.g., 5-point Likert scales) and thereby the reliability of such scales may be limited. Consequently, what may initially seem like lower correlations between measures of self-beliefs across domains may actually be substantially higher once corrected\(^1\) for attenuation and restricted variability (and, instead, provide evidence for domain generality).

We thereby suggest that creativity researchers use more robust methods to test whether creative self-beliefs are domain general or domain specific. Two promising analytic techniques used by creativity researchers include latent class analysis (LCA) (e.g., McKay, Karwowski, & Kaufman, in press; Silvia, Kaufman, & Pretz, 2009) and confirmatory factor analysis (CFA), using a bifactor scheme (Barbot, Besancon, & Lubart, 2016). These two

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\(^1\)Here is a quick illustration. Assume that we obtain \(r = 0.30\) for measures of self-beliefs in two different domains. Given that this relationship accounts for only 9% of variance, we might feel justified in asserting domain specificity of these beliefs. However, if the reliability of both self-assessments is moderate (assume \(\alpha = 0.60\)), then a correction for attenuation (Thorndike, 1949) could increase the correlation from \(r = 0.30\) to 0.50. Going further, if the variability is restricted by ceiling effect (e.g., obtained variance is twice lower than could be expected), the correlation could grow from \(r = 0.50\) to 0.76.
techniques are promising because they allow researchers to overcome the limitations of traditional techniques when testing the domain specificity of creativity and creative self-beliefs. In the case of LCA, researchers can, for instance, test whether people’s perceptions of being creative are best classified in a domain-specific versus domain-general way. Similarly, researchers can use bifactor CFA to examine different models of self-belief factors and determine whether the best fitting models are domain specific or domain general. Given the potential benefits of these techniques, we encourage creativity researchers to include them in studies designed to examine the nature of creative self-beliefs.

Use Blended Methods and Data Sources

There are many individual and sociocultural factors that can influence self-beliefs. Previous work has provided useful insights into potential correlates—including everything from personality traits, motivational beliefs, and environmental supports (Beghetto, 2006; Karwowski, 2011, 2015; Tierney & Farmer, 2002) to creative activity and achievement (Silvia, Wigert, Reiter-Palmon, & Kaufman, 2012). Previous work has provided important insights that can be built on and further tested using the recommendations we propose herein.

Ideally, researchers should use methods that blend more dynamic quantitative measurement (e.g., experience sampling methods; Silvia et al., 2014) with in-depth, process-immersive qualitative studies (Glăveanu, 2015) to better understand the dynamic nature of creative self-beliefs. This includes developing programs of research that allow researchers to examine more microlevel features of creative beliefs, such as examining how particular features of the sociopsychological and material features of a performance setting dynamically influence creative-self beliefs (Beghetto, 2017). This also includes designing longitudinal studies that allow researchers to take a broader view and explore how creative beliefs develop and help shape one’s CI. Such efforts are ambitious and resource intensive, but they can go a long way in clarifying the multifaceted role that self-beliefs play in influencing creative thought, behavior, and identity.

Bifactor models have several advantages over the typical exploratory factor analysis or even testing and comparing the fit of several models (e.g., one factor, several factors, or models with higher-order factors) obtained in CFA. The most crucial advantage is the possibility to simultaneously test for domain generality (having one general factor in the model) and domain specificity—thanks to factors loaded by domain-specific items. This allows researchers to examine to what extent items or tasks measure general versus specific aspects of creativity. Applications of bifactor models have been quite common among intelligence researchers (see, e.g., Frisby & Beaujean, 2015), but this method is underused in creativity literature (see Barbot et al., 2016 or Jankowska & Karwowski, 2015 for exceptions).
CONCLUDING THOUGHTS

Our goal in this chapter was to untangle three key self-beliefs in the creativity studies literature. We discussed how previous work has provided important starting points for understanding these beliefs and how the findings from such work (including our own) have been limited due to lack of conceptual and methodological clarity. We thereby attempted to clarify how these beliefs are similar (e.g., representing a system of beliefs that help shape one’s CI) and how they differ in their focus (i.e., perceptions of confidence, appraisal and regulatory beliefs, and perceptions of competence) and how they differ across three key dimensions (i.e., temporal, task, and stability dimensions). We closed by offering suggestions for how researchers can modify or develop new measures of these beliefs.

In reflecting on our own work, we can safely say that studying creative self-beliefs is, at times, a humbling experience, but always a fascinating one. We hope that creativity researchers find some promising new ideas and directions for their research in this chapter. We also hope that researchers will join us in our efforts to test and refine the ideas and recommendations we have presented herein. Doing so will go a long way in clarifying the somewhat mercurial and complex role that creative self-beliefs play in helping to shape creative thought, action, and identity.

References

Baer, J. (this volume). Why you are probably more creative (and less creative) than you think. In M. Karwowski, & J. C. Kaufman (Eds.), The creative self. San Diego, CA: Academic Press.


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Further Reading


