Building the Creative Self: The Sources of Creative Self-Concept Scale

Lidia Wojtycka[1], Izabela Lebuda[1], Janika Saretzki[2, 3, 4] and Mathias Benedek[2]

[1] University of Wrocław, Poland

[2] University of Graz, Austria

[3] Department of Psychology, Charlotte Fresenius Hochschule Munich, Munich

[4] Department of Psychology, LMU Munich, Munich

Author Note

Lidia Wojtycka https://orcid.org/0000-0003-0407-1589
Izabela Lebuda https://orcid.org/0000-0002-4715-1928
Janika Saretzki https://orcid.org/0000-0002-6536-8266
Mathias Benedek https://orcid.org/0000-0001-6258-4476

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Correspondence concerning this article should be addressed to
Lidia Wojtycka, Email: lidia.wojtycka@uwr.edu.pl
and Mathias Benedek, Email: mathias.benedek@uni-graz.at

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Abstract

Understanding how individuals form beliefs about their own creativity – referred to as the creative self-concept (CSC) – requires examining the informational sources that shape these self-assessments. In this paper, we introduce and validate the *Sources of Creative Self-Concept Scale* (SoCSC), a questionnaire adapted from self-efficacy research, designed to assess four theorized sources of CSC: mastery experience, vicarious experience, social persuasion, and physiological and emotional states. A sample of 558 adults completed measures of CSC (both global and trait-like) and the SoCSC. Exploratory and confirmatory factor analyses supported a four-factor model aligned with the proposed sources. All sources were significantly associated with CSC, with social persuasion emerging as the strongest individual predictor. However, structural equation modeling revealed that a general factor – reflecting shared variance across all sources – accounted for the majority of the variance in CSC. This finding suggests a dynamic interplay between personal experiences, observed models, social feedback, and affective responses in shaping creative self-perceptions. The results are discussed in the context of Bandura's theory of self-efficacy.

Keywords: creative self-concept, sources of self-beliefs, social persuasion, mastery experience, vicarious learning, physiological states, Bandura,

People use multiple sources of information to reflect on their own creativity, evaluate their creative abilities, and appreciate the importance of creativity. Their hands-on experiences, observed behaviors of others, feedback they received and even their physiological states all drive their self-perception (Bandura, 1997). However, different experiences might leave people with contradicting evidence for their creative ability. For instance, how does one interpret their competence when they receive high praise for their work yet fail to win a competition? What if they win a prize but feel that other contestants were better? Or if they receive enthusiastic applause but experience anxiety and stress throughout their performance? These discrepancies raise important questions about how individuals integrate different sources of creative self-concept. In the present study, we introduce a novel questionnaire aimed at assessing how people build their creative self-concept. Further, we ask which elements – mastery experience, vicarious experience, social persuasion, and physiological states, as outlined by Bandura (1997) – are the most strongly linked to how people assess their creativity.

Creative self-concept (CSC) reflects an individual's beliefs and perceptions about their own creativity (Karwowski & Lebuda, 2017). Oftentimes it is conceptualized as a sum of two groups of creative self-beliefs: creative confidence (also referred to as creative self-efficacy), which relates to one's perceived creative ability, and creative centrality (also known as creative personal identity, creative role identity), which captures how important creativity is to oneself (Karwowski et al., 2018; Zielińska et al., 2022). Both constructs were found to change in parallel (Karwowski & Barbot, 2016; Karwowski, 2016), meaning that they share the same profile of changes across time. Importantly, CSC serves as a motivational driver essential for translating creative potential into action (Karwowski & Beghetto, 2019). In other words, even with sufficient creative ability, individuals are unlikely to engage in a creative activity if they doubt their chances of success or do not consider it important. Without these convictions, high creative potential may remain untapped. At the same time, creative self-concept is a result of

past encounters with creativity — a perspective that has received less attention in the creativity literature. Yet, it offers valuable insights into unlocking creative potential by enhancing creative self-concept.

According to sociocognitive theory, self-concept is formed through means that are often coincidental, rooted in various social interactions, experiences, random and less random successes, failures and their attributions, feedback and opinions by others (Bandura, 2012). As outlined in Bandura's earlier works (1977; 1997), self-concept is influenced by *mastery experience:* Successes, especially those that require resilience, hard work, and overcoming obstacles, are building blocks of self-concept. Failures also shape self-view, but their impact depends more strongly on self-attributed causes and coping mechanisms. Second, self-concept is shaped through social modeling, specifically *vicarious experience:* Witnessing people's actions has an impact on perception of one's own possibilities and desirability of behaviors. People observe and imitate rewarded behaviors, while avoiding those that are punished. Additionally, observing others grants the possibility of self-assessment by comparison. Third, a simple encouragement also can alter convictions of one's capabilities via *verbal persuasion:* Our social environment is full of voices indicating where our strengths supposedly lie (and where they do not), or which way to take to achieve success. The last source of self-concept can be found within our *affective and physiological states* triggered by various experiences*:* people use their inner states as indicators of how well they are doing at that moment. Therefore, experiencing anxiety, and a stress-related physiological response can cast a shadow over one's confidence. All these sources of self-concept speak to its malleable nature (Gist & Mitchell, 1992). Nonetheless, the extent to which each source contributes to self-concept may vary depending on the specific domain.

Theoretically, mastery experiences were singled out as the most influential in shaping self-concept (Bandura, 1997). This notion has been empirically supported across various

domains, including mathematics, music, and teaching (Usher & Pajares, 2009; Zelenak, 2015; Menon, 2020). In the creative domain, however, only recently has this relationship been explored in depth, with findings confirming the importance of mastery experiences (Benedek et al., 2025). Earlier research laid the groundwork for this line of inquiry by demonstrating consistent correlations between creative self-concept and creative performance, achievement, or activity (Haase et al., 2018). People who attain creative success also tend to report higher levels of creative self-concept (Lebuda & Csikszentmihalyi, 2017). Additionally, experimental studies that induce creative skill have observed subsequent increases in creative confidence, providing partial support for the causal influence of mastery experiences on creative self-concept (e.g., Mathisen & Bronnick, 2009; Wojtycka et al., in press). Yet, identifying what constitutes an experience that contributes to the mastery feeling in creativity is often less straightforward. Creative activities tend to lack clear criteria of successful performance (Sidi et al., 2020) and most of us rarely receive systematic feedback regarding our creative efforts. Publicly recognized achievements may be the most evident and objective contributors to mastery feelings, yet many other less clear hands-on situations (e.g., personal achievements; see Runco et al., 2010) might accurately or inaccurately shape one's self-perception. It seems that mastery experiences reflect a very influential component of self-concept; however, further investigation is needed to assess its role for creative self-concept amid other sources of information.

Beyond mastery experiences, previous research has emphasized the role of social persuasion, particularly from teachers and parents, in shaping an individual's creative self-perception (Beghetto, 2006; Karwowski et al., 2015; Pugsley & Acar, 2020). Positive feedback has been shown to strengthen state creative confidence, while negative feedback leads to its decline (Tao et al., 2024). Similarly, encouragement of creativity has been linked to an increased creative confidence (Puente-Diaz & Arroyo, 2017). Interestingly, excessive praise

might have an adverse effect on children with low self-esteem, lowering the goals they set for themselves (Brummelman et al., 2016) and, as a result, potentially diminishing their self-concept (see Cellar et al., 2011; Huang, 2016; Locke et al., 1984). People in our environment indeed influence our creative self-perception through their expressed feedback, attitudes or encouragement.

In terms of vicarious experience, evidence suggests that having highly creative classmates is reflected in elevated creative self-efficacy (Karwowski, 2015), suggesting effective modeling of creative attitudes by peers. Further, coworkers with high creative confidence can strengthen initially low creative self-perception of their colleagues over time (Grosser et al., 2017). However, constantly comparing yourself with others may also amplify negative effects on creative confidence (Jiang et al., 2017). Relatedly, higher tendency for social comparison was linked to lower creative self-concept (Benedek et al., 2025). Observing relevant others, their behaviors and attitudes might be translated to the individual's self-view, through comparison or behavior modeling. Other people may serve as a role model and inspire growth, whereas some observed behaviors that appear far beyond one's reach might drag confidence down. The effect depends not only on the person being observed but also on how the observer interprets what they see.

Regarding physiological states, findings remain mixed. Some studies report negative significant, though weak, relationships between creative self-efficacy and stress at the interindividual level (e.g., Moreno & Jurado, 2023), while others find no significant correlation (Al-Dhaimat et al., 2020). Notably, prior research has not specifically examined stress as experienced during creative performance in relation to creative self-concept, which would have offered a more accurate portrayal of physiological states impact on creative self-perception. Usually, however, stress impairs creative performance across both more and less skilled individuals (Wang et al., 2019). Apart from stress, a negative correlation between creative self-

efficacy and creative anxiety has been observed (Xiang et al., 2025), while positive emotions are consistently linked to higher creative self-efficacy (He & Wong, 2022; Li et al., 2017). Creative confidence also contributes to greater enjoyment of divergent thinking tasks (Puente-Diaz & Arroyo, 2020) and enjoyment is the strongest motive for engaging in creative leisure activities (Benedek et al., 2020). Thus, both negative and positive affective states are closely tied to how we perceive our own creativity. Overall, existing research highlights the essential role of all these sources – mastery experience, social persuasion, vicarious experience, and physiological states – in the construction of creative self-concept.

Noteworthy, the support for the Bandura's sources within the field of creativity remains, as we have seen, fragmented. We see multiple studies addressing each of the determinants separately. To this day we are aware of only one, very recent, study that explored what sources of information shape creative self-concept within Bandura's framework. In this study, researchers asked participants to judge their creativity compared to others and then justify their assessment by recalling experiences that led them to believe how creative they are (Benedek et al., 2025). The responses were then categorized in terms of the outlined four sources. The results indicate that people justify their self-concept mostly by their hands-on experiences with various creative activities (71% of justifications). Importantly, people with higher creative self-concept were mostly recalling positive experiences and more often referred to mastery experiences justifications (r = .13, p = .010), whereas people with lower CSC more often justified their judgement with vicarious experiences (r = -.16, p = .002). Other sources were not significantly correlated with CSC (p > .05), suggesting that mastery experience and vicarious experience were the most prominent in shaping creative self-perception, or at least most vividly remembered.

The previously proposed method offers a deep insight into people's creative self-perception yet comes with several limitations. Notably, the mixed-method approach encounters

challenges inherent to open-ended questions. Some responses do not fit well within any category and oftentimes participants mix different sources together in their statements, making classification difficult. An unstructured procedure is further prone to cognitive biases such as selective recall: It might be more feasible to remember information supportive of one's current convictions (e.g., Roberts, 1984). What is more, people tend to recollect "Aha" moments more easily than unsurprising or less successful solutions (Du et al., 2017). In fact, most of the recalled experiences in the previous study were positive. A questionnaire, in which participants would be guided to consider different standardized forms of experiences both positive and negative ones, might be less sensitive to such distortions. Further, the original method was time- and resource-intensive as it required trained judges to categorize responses, limiting its accessibility. Therefore, in the present study, we explore a more structured approach to measuring the sources of creative self-concept using a questionnaire.

Present Study

This study presents a novel approach to measuring sources of creative self-concept, by adapting a questionnaire on the sources of self-efficacy in mathematics (Usher & Pajares, 2009) to the creativity domain. The proposed Sources of Creative Self-Concept Scale (SoCSC) promises broad applicability and enhanced standardization, while still capturing all the sources outlined by Bandura (1977, 1997). Specifically, we aim to determine the relevance and relative contributions of these sources – mastery experience, vicarious experience, social persuasion, and physiological states – in shaping creative self-concept.

Methods

All accompanying materials, data, and analysis scripts are publicly accessible in an Open Science Framework (OSF) repository: https://osf.io/e7xbd/?view_only=7ce185b798974c3da71d643cb2a68c51.

Participants

Participants were recruited in the context of a psychology course via University mail channels and the social environment of the course participants. 604 participants completed the survey. We excluded data from minors (< 18 years; n = 9), and from people who showed inattentive behavior by either failing the attention checks (n = 17) or spending less than 12 min on the survey (n = 9), or any combination of these exclusion criteria. The final sample included 558 German-speaking adults. The mean age in the sample was 26.34 years (SD = 10.29, range = 18 – 73). The majority was represented by women (76.9%), followed by men (20.3%), with the remaining 2.9% indicating diverse gender identity. Regarding academic background, 20.4% were psychology students, 43.0% were students from other disciplines, and 36.6% comprised a non-student group. All participants provided informed consent upon the start of the survey. As an incentive, participants could win one of ten 20€ shopping vouchers which were randomly raffled at the end of the study. Psychology students additionally received partial course credits.

Measures

Data presented in this manuscript are part of the larger research project. Here we list variables relevant to the present study. A comprehensive list of measures included in the survey can be found in the online repository.

Creative Self-Concept. CSC was measured in two ways: First, participants completed a global single item measurement of creative self-concept ("How creative do you think you are compared to others?") with a percentile response range (0 – 100, where a score of 75 would mean that one considers themselves to be more creative than 75% of other people). This item was presented three times throughout the study and an average served as a global CSC score (showing excellent internal consistency α =.97, ω = .97, H = .97). This measure was previously found to offer great reliability and validity (Benedek et al., 2025).

Second, we utilized a German version of the Short Scale of Creative Self (SSCS; Karwowski et al., 2018; Zielińska et al., 2022). This measure consists of 11 statements accompanied by a

5-point Likert scale (1 – definitely not; 5 – definitely yes). The scale comprises two subscales – creative centrality (also known as creative personal identity e.g., "Being a creative person is important to me"; internal consistency α = .91, ω = .92, *H* = .94) and creative confidence (often referred to as creative self-efficacy, e.g., "I am sure I can deal with problems requiring creative thinking."; internal consistency α =.81, ω = .82, *H* = .83). The overall score was computed as the mean of individual responses. Together, the two subscales represent an individual's CSC (α = .90, ω = .91, *H* = .94).

Sources of Creative Self-Concept Scale (SoCSC). In order to measure the sources of creative self-concept, a central focus of this study, we adapted an existing scale that assesses the sources of mathematical self-efficacy in school students with six items per source (Usher & Pajares, 2009). Our adaptation procedure included embedding the items in the domain of creativity and reframing items to everyday contexts (i.e., avoiding a school focus); for instance, "I make excellent grades on math tests" turned into "I have already accomplished very creative achievements". As another amendment we ensured a more balanced use of reverse-coded statements: While the original scale included one reverse-coded item for mastery experience, none for vicarious experiences and social persuasion, and all six items of physiological states referred to negative effects of stress, the adapted scale included one reverse-coded item for each of the first three sources, and for physiological states, we decided to have half of the items focusing on positive and negative affect. The final scale assesses the four sources of creative self-concept with six items per subscale and response options ranging from "does not apply" (1) to "fully applies" (5). A complete list of original items and its adapted version is available on the OSF. Exemplary items are: "I have already accomplished very creative achievements" (mastery experiences), "When I see a creative person solving a problem, I can imagine handling it in a similar way" (vicarious experience), "My friends have told me that I have many creative

ideas" (social persuasion), "I enjoy creative activities" (physiological states). See Table 1 for the complete item list and Table 2 for all reliability estimates.

Sources of Creative Self-Concept - Valence (SoCSC-V). We also administered a brief measure designed to assess the relative frequency of positive vs. negative experiences across the four key sources of creative self-concept: mastery experience, vicarious experience, social persuasion, and physiological states. Each source was represented by two items—one assessing positive experiences and the other assessing negative ones. For example, mastery experiences included items such as: "How often have you successfully accomplished creative tasks?", "How often have creative tasks not gone well for you?". Response options ranged from 1 (almost never) to 5 (very often). For the valence score negative items were subtracted from positive ones across subscales. Consequently, a higher score reflects a greater dominance of positive experiences in an individual's past, whereas values below zero indicate that negative experiences outweighed positive ones. The obtained reliabilities ranged from low to high (mastery experiences, $\alpha = .52$, $\omega = .55$; vicarious experience, $\alpha = .59$, $\omega = .61$; social persuasion, $\alpha = .44$, $\omega = .51$; physiological states, $\alpha = .82$, $\omega = .83$). Low internal consistency is to be expected for the 2-item subscales with reverse-coded options on top of that (see also: Sorokowska et al., 2014). Nonetheless, this appears still acceptable considering the more descriptive purpose of this scale combined with a time-efficient approach. The full scale is available in Appendix.

Data Analyses

All statistical analyses were conducted using R 4.4.2 (R Core Team, 2024). In line with recommended practices for scale development and validation, both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were employed in this study (Worthington & Whittaker, 2006). The use of EFA allowed for an empirical exploration of the underlying factor structure without imposing a priori constraints, which is advisable when

adapting existing theoretical framework (Farbigar et al., 1999). Following this, CFA was conducted to test whether the factor structure identified via EFA would be supported under a more constrained, theory-driven model.

Accordingly, to assess the factorial validity of the SoCSC subscales, we first conducted an EFA. The sample selection adequacy measurement and the Bartlett's test of sphericity indicated good fit of the data to EFA [overall Kaiser-Meyer-Olkin factor adequacy (KMO) = .96; χ^2 (276) = 7,851.97, $p < .001$]. We used the maximum likelihood method of the R package *psych* (Revelle & Revelle, 2015) with polychoric correlations and continuity correction. We applied a promax rotation because the occurring factors were assumed to be correlated. The criterion for factor extraction was based on the results of the parallel analysis (Horn, 1965; Garrido et al., 2013).

CFA was conducted using the R package *lavaan* (Rosseel, 2012). The model fit was assessed with the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Squared Residual (SRMR). For the item analysis, the item statistics (*M*, *SD*) and the intercorrelations of the items were determined. To estimate the internal consistency, we calculated Cronbach's α (Cronbach, 1951), McDonald's Ω (McDonald, 2013), and Hancock's H (Hancock, 2001) for each scale.

Next, we proceeded with multiple regression analyses for both CSC measures respectively (global CSC and SSCS measure) to establish to what extent each source predicts CSC. All sources were entered as predictors simultaneously. Analyses were conducted using R package *stats*. Regression coefficients (b), standardized coefficients (β), standard errors (SE), *t*-values, squared semi-partial correlation (sr^2) and significance levels are reported. The overall model fit is assessed using R^2, *F*-statistic,

Finally, we implemented Structural Equation Modeling (SEM), using again R package *lavaan* (Rosseel, 2012), with each of the sources modeled as latent variables predicting creative

self-concept. We ran both unidimensional and bifactor models. The unidimensional approach introduced the possibility of a suppression effect (MacKinnon et al., 2000; Cheung & Lau, 2008), which may have distorted the individual contributions of separate sources, as indicated by unexpected or counterintuitive path coefficients in preliminary analyses. Thus, in the present text we focus on the bifactor approach (with a unidimensional model available in the online repository): correlations between sources constrained to zero (i.e., each specific factor thus represents variance unique to that source after controlling for the general factor), an additional general factor capturing shared variance across items with loadings for the first item of each subscale fixed to 1 (Reise, 2012). We performed these analyses for global CSC (observed variable) and SSCS total score (modeled as latent), respectively. The SSCS score was modeled as a latent construct to account for the multiple heterogeneous indicator items, the theoretical complexity of the construct, and its inherently abstract nature (see Bollen, 1989). At the same time global CSC was treated as a manifest variable given that it consisted of a single item repeated three times across the survey (lack of independent indicators). To assess fit of the models we used the model chi-square (Zheng & Bentler, 2025), CFI (Bentler, 1990), TLI (Tucker & Lewis, 1973) and RMSEA (Browne & Cudeck, 1993) estimates. Whenever the selected indicators were inconsistent, we relied more on model fit indices given that model chi-square results tend to be distorted in larger sample sizes typical for social sciences (Zheng & Bentler, 2025).

Results

Factorial Validity and Scale Internal Consistency

The eigenvalue criterion indicated three factors, whereas the parallel analysis suggested a four-factor solution. We conducted an EFA with four factors (see online repository for details on the factor loadings) since overfactoring is a less severe problem than underfactoring (Fabrigar et al., 1999). The tested model via CFA indicated acceptable fit, with RMSEA = .063

[90% CI (.058–.068)] and SRMR = .049 [$\chi^2(246) = 794.00$, $p < .001$ ($\chi^2/df = 3.23$)]. Factor loadings of the CFA are presented in Table 1.

Table 1

Sources of Creative Self-Concept Scale Descriptive Statistics and Factor Loadings of the Confirmatory Factor Analysis

Item	*M*	*SD*	ME	VE	SP	PH
1. I have already accomplished very creative achievements.	3.73	0.99	.771			
2. I have often been very successful with creative endeavors.	3.64	0.89	.823			
3. In the past, I often found it difficult to be creative, even when I tried very hard.*	3.51	1.07	.603			
4. My last creative activity turned out very well.	3.92	0.90	.645			
5. I have often successfully implemented creative ideas.	3.81	0.90	.798			
6. I have always managed to handle even very challenging creative tasks well so far.	3.46	0.91	.748			
7. When I see others succeeding in creative activities, it motivates me to become more creative.	3.68	1.08		.547		
8. When I see a creative person solving a problem, I can imagine handling it in a similar way.	3.56	0.95		.565		
9. When I see others being better at creative activities than I am, it motivates me to further develop my creativity.	3.35	1.18		.525		
10. When I observe friends solving creative tasks, I often feel that I couldn't do it as well.*	3.02	1.16		.679		

11. I often imagine myself successfully mastering difficult creative challenges.	3.28	1.16	.564		
12. Others often find tasks requiring creativity harder than I do.	3.26	0.99	.714		
13. Creative people have told me that they like my ideas.	3.64	0.95		.735	
14. Other people have told me that I have little talent for creativity.*	4.36	0.85		.596	
15. Family members have told me that I am very creative.	3.87	1.17		.807	
16. I have often been praised for my creativity.	3.74	1.07		.880	
17. My friends have told me that I have many creative ideas.	3.62	1.09		.816	
18. Others enjoy working with me on creative projects because they think I am good at it.	3.49	1.00		.765	
19. Creative tasks stress me out.*	3.58	1.12			.697
20. I enjoy creative activities.	4.08	0.96			.855
21. I can relax during creative activities.	3.86	1.03			.767
22. Creative activities bring me joy.	4.16	0.93			.865
23. I feel discouraged when I think about engaging in creative activities.*	3.53	1.26			.380
24. I feel uncomfortable with creative activities.*	4.10	1.00			.751

Notes. Items marked with an asterisk represent reverse-coded items. Mean and standard deviation were calculated for already reversed items.
ME = Mastery Experience. VE = Vicarious Experience. SP = Social Persuasion. PH = Physiological States

Regarding factor 1, mastery experience, loadings ranged from .603 (Item 3 (*), “In the past, I often found it difficult to be creative, even when I tried very hard”) to .823 (Item 2, “I have often been very successful with creative endeavors”). For factor 2, vicarious experience, loadings ranged from .540 (Item 7, “When I see others succeeding in creative activities, it

motivates me to become more creative) to .712 (Item 12, "Others often find tasks requiring creativity harder than I do"). The social persuasion factor had loadings ranging from .593 (Item 14 (*), "Other people have told me that I have little talent for creativity") to .879 (Item 16, "I have often been praised for my creativity"). Lastly, the loadings for physiological states factor ranged from .379 (Item 23 (*), "I feel discouraged when I think about engaging in creative activities") to .862 (Item 22, "Creative activities bring me joy").

Reliability estimates reached acceptable levels (i.e., .70 or above) for all subscales (see Table 2). Descriptive statistics and Pearson correlations of the Sources of Creative Self-Concept Scale subscales are presented in Table 3.

Table 2

Internal-Consistency Reliability Indices of the Sources of Creative Self-Concept Scale Subscales

	α^a	ω^a	H^b
Mastery Experience	$.868_{[.847, .887]}$	$.870_{[.849, .887]}$	$.889_{[.872, .906]}$
Vicarious Experience	$.779_{[.750, .806]}$	$.781_{[.748, .807]}$	$.788_{[.764, .820]}$
Social Persuasion	$.894_{[.878, .908]}$	$.902_{[.886, .915]}$	$.916_{[.903, .928]}$
Physiological State	$.856_{[.832, .874]}$	$.855_{[.832, .874]}$	$.904_{[.887, .920]}$

[a] BCa Bootstrap 95% CIs (based on 1,000 bootstrap samples) reported in brackets.

[b] Bootstrap 95% CIs (based on 1,000 bootstrap samples) reported in brackets.

Descriptive Statistics and Correlations

The two measures of CSC (global CSC and SSCS) were highly correlated ($r = .74$, $p < .001$), further supporting their convergent validity. Both CSC measures showed significant positive and strong correlations with all four sources of self-concept (see Table 3). Notably, the global CSC tended to exhibit slightly stronger associations with each source compared to the SSCS scores, but both exhibited similar patterns. The strongest relationship was observed

between creative self-concept and social persuasion ($r = .79$, $p < .001$ for global CSC and $r = .73$, $p < .001$ for SSCS), followed closely by mastery experience ($r = .77$, $p < .001$ for global CSC; $r = .68$, $p < .001$ for SSCS). CSC was also positively and strongly associated with vicarious experience, though to a slightly lesser extent ($r = .67$, $p < .001$ for global CSC; $r = .66$, $p < .001$ for SSCS). Among the four sources, physiological states showed the weakest – though still very substantial – relationship with CSC ($r = .64$, $p < .001$ for global CSC; $r = .62$, $p < .001$ for SSCS).

The sources' subscales showed positive intercorrelations, ranging from $r = .64$, $p < .001$ (vicarious experience and physiological states) to $r = .82$, $p < .001$ (mastery experience and social persuasion). Within the SSCS subscales, CPI demonstrated more robust correlations with the sources as well as global CSC than did CSE. Frequency of positive experiences (SoCSC-V) was moderately to highly correlated with the SoCSC scores in the analogical sources, supporting convergent validity of the measures. Importantly, subscales referring to the same sources were more strongly correlated than with other sources (ranging from .59 to .83; e.g., the mastery experiences score from the SoCSC was most strongly linked to the frequency of positive mastery experiences), emphasizing convergent validity at the level of subscales. Mean scores on the SoCSC-V were generally positive, indicating that people mainly refer to positive experiences from the past. Although the score for vicarious experience valence was positive, it was visibly low ($M = 0.10$, $SD = 1.74$), suggesting a roughly equal balance of positive and negative experiences from this source. In contrast, social persuasion yielded the highest positive valence ($M = 2.27$, $SD = 1.50$), suggesting that participants predominantly encountered encouraging feedback rather than critique. The remaining sources - mastery experience ($M = 1.45$, $SD = 1.52$) and physiological states ($M = 1.98$, $SD = 1.90$) also showed that positive experiences were more frequent than negative ones.

Table 3

Descriptive Statistics and Correlations of Key Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Global CSC	63.43	18.04											
2. SSCS	2.70	0.71	.74*										
3. SSCS CSE	2.70	0.66	.60*	.89*									
4. SSCS CPI	2.71	0.94	.73*	.92*	.64*								
5. SoCSC ME	3.68	0.73	.77*	.68*	.57*	.65*							
6. SoCSC VE	3.36	0.75	.67*	.66*	.56*	.64*	.70*						
7. SoCSC SP	3.79	0.83	.79*	.73*	.56*	.75*	.82*	.66*					
8. SoCSC PH	3.89	0.81	.64*	.62*	.48*	.63*	.70*	.64*	.65*				
9. SoCSC-V ME	1.45	1.52	.61*	.50*	.45*	.46*	.71*	.58*	.63*	.58*			
10. SoCSC-V VE	0.10	1.74	.58*	.51*	.45*	.47*	.58*	.59*	.56*	.46*	.51*		
11. SoCSC-V SP	2.27	1.50	.66*	.60*	.46*	.62*	.71*	.56*	.80*	.59*	.64*	.50*	
12. SoCSC-V PH	1.98	1.90	.51*	.51*	.39*	.52*	.62*	.57*	.54*	.83*	.57*	.44*	.55*

Note. * all correlations were significant at the $p < .001$ level
Global CSC = Global Creative self-concept score (percentile type measure), SSCS = The Short Scale of Creative Self total score, CSE = Creative self-efficacy, CPI = Creative personal identity, SoCSC = Sources of Creative Self-Concept Scale, ME = Mastery experience, VE = Vicarious experience, SP = Social persuasion, PH = Physiological states, SoCSC-V = Sources of Creative Self-Concept-Valence.

Determinants of Creative Self-Concept

A multiple regression was conducted to examine whether mastery experience, vicarious experience, social persuasion, and physiological states predict creative self-concept. In the first step, we analyzed the predictors of global CSC (see Table 4). The overall model was significant, $F(4, 553) = 308.30$, $p < .001$, and explained 69% of the variance in creative self-concept. All sources significantly contributed to explaining variance in creative self-concept. Social persuasion was the strongest predictor of creative self-concept, $\beta = .41$, $p < .001$, accounting for 5% of unique variance ($sr^2 = .05$). Mastery experience was second in strength,

β = .26, $p < .001$, $sr^2 = .02$, while vicarious experience and physiological states contributed only modestly. The majority of the explained variance was shared among the predictors.

Table 4

Multiple Regression Results Using Global Creative Self-Concept as the Criterion

Predictor	*b*	SE	*p*	*t*	β	sr^2
Mastery Experience	6.48	1.13	<.001	5.71	.26	.02
Vicarious Experience	3.71	0.85	<.001	4.38	.16	.01
Social Persuasion	8.86	0.92	<.001	9.64	.41	.05
Physiological States	2.17	0.78	<.01	2.77	.10	.00

We proceeded with an analogous regression analysis for the second measure of creative self-concept implemented in this study – SSCS total score (Table 5). The regression was again significant, $F(4, 553) = 212.42$, $p < .001$, and explained a large amount of variance ($R^2 = .61$), but findings differed slightly from the regression on global CSC measure. Social persuasion once again showed to be the most influential in shaping creative self-concept (β = .44), followed by vicarious experiences (β = .25) and physiological states (β = .15), whereas mastery experience explained no additional unique variance.

Table 5

Multiple Regression Results Using Creative Self-Concept Measured with the SSCS as the Criterion

Predictor	*b*	SE	*p*	*t*	β	sr^2
Mastery Experience	0.03	0.05	.51	0.67	.04	.00
Vicarious Experience	0.24	0.04	<.001	6.39	.25	.03
Social Persuasion	0.38	0.04	<.001	9.26	.44	.06

Physiological States	0.13	0.04	<.001	3.69	.15	.01

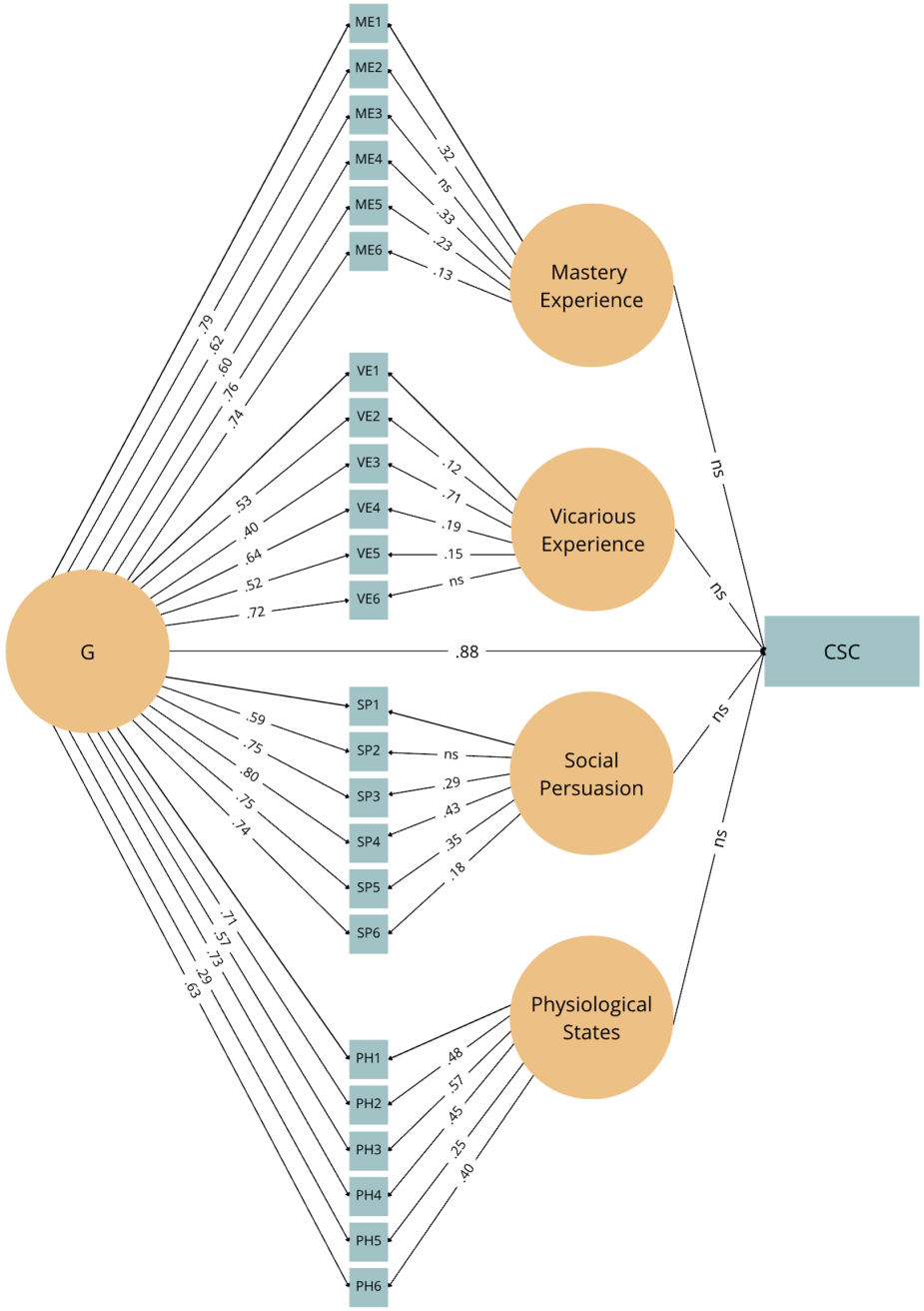
In order to further explore the relevance of different sources in determining CSC we performed SEM with each of the sources modeled as latent variables predicting observed global CSC (see Figure 1). This way we account for measurement error and model data more precisely. Wary of the suppression effect[1] (MacKinnon et al., 2000; Cheung & Lau, 2008), we estimated a bifactor model (see Figure 1), in which correlations between sources were constrained to zero, and an additional general factor captured shared variance across items with loadings for the first item of each subscale fixed to 1 (Reise, 2012). This model demonstrated excellent fit ($\chi^2(247) = 567.45$, $p < .001$, CFI = 0.96, TLI = 0.95, RMSEA = .05), and the general factor of CSC sources predicted global CSC with a standardized estimate of .88, whereas none of the individual sources were significant additional predictors of global CSC in this scenario[2]. Items usually loaded more strongly on the general factor than on their respective subscales. This further suggests that creative self-concept does not rely on any one of the sources in isolation. Rather, all experiences, observations, interactions and feelings result in a psychological experience predictive of creative self-concept. This general factor might be recognized as positive experiences with creative behavior.

[1] We ran a unidimensional model as well - the obtained model indicated optimal fit to the data ($\chi^2(266) = 840.54$, $p < .001$, CFI = 0.93, TLI = 0.92, RMSEA = 0.06). However, given the high intercorrelations between sources and the substantial amount of shared variance, this model was susceptible to a suppression effect — which is what we observed. When controlling for measurement error and the shared variance among latent predictors, the unique contribution of mastery experience was limited. See the online repository for a full analysis.

[2] We ran analogical analysis with exclusion of one item poorly loading on the physiological states subscale. The conclusions remained the same - see analyses in the online repository.

Figure 1

Structural Equation Bifactor Model for the Prediction of Creative Self-Concept



Note. Factor loadings for the first item of each subscale were fixed to 1 for model identification. CSC = Creative Self-Concept.

Further analysis included SEM with sources as latent predictors and SSCS as a latent criterion.

However, this model did not offer acceptable fit to the data ($\chi^2(531) = 2035.63$, $p < .001$, CFI

= .88, TLI =.87, RMSEA = 0.07).[3] Thus, we do not explore it any further here (full analysis is available on the OSF).

Discussion

Creative self-concept is crucial for unlocking creative potential (Karwowski & Beghetto, 2019). Bandura (1977, 1997) theorized that self-perception is shaped by four different sources of information - mastery experience, vicarious experience, social persuasion and physiological states. Relevance of these sources was supported in different domains (Usher & Pajares, 2009; Zelenak, 2015; Menon, 2020). Each source also received some attention in the creativity field, showcasing the existing relationship of creative self-concept with hands-on creative experiences (Haase et al., 2018), influence of others opinions (Beghetto, 2006; Karwowski et al., 2015; Pugsley & Acar, 2020; Puente-Diaz & Arroyo, 2017; Tao et al., 2024) and behaviors (Karwowski, 2015; Grosser et al., 2017), as well as individual emotional states (He & Wong, 2022; Li et al., 2017; Moreno & Jurado, 2023). Importantly, throughout life, people gather various creativity-related experiences, feedback, observations and feelings. Some of them might be contradictory, more vividly remembered or leaving a stronger impact. But how do all those impressions come together to form a certain creative self-concept? A recent study explored how people justify their CSC with respect to all four sources using a mixed-methods approach (Benedek et al., 2025). This study follows up that work using a more structured and time-efficient approach by assessing sources of CSC with the Sources of Creative Self-Concept Scale.

The SoCSC demonstrated good psychometric properties, with evidence for convergent and factorial validity as well as reliability. Specifically, the proposed subscales were highly

[3] We again run this analysis with exclusion of one item poorly loading on the physiological states subscale. The conclusions remained the same - see analyses in the online repository.

correlated with corresponding subscales of a different measure assessing the relative valence of experiences with those very sources of creative self-concept. An EFA revealed four factors, and the CFA supported the hypothesized factor structure of the questionnaire. The fit indices indicated a good model fit, suggesting that the items load appropriately onto their respective latent constructs. To further evaluate the factorial validity of the Sources of Creative Self-Concept Scale, we compared the four-factor model to a single-factor alternative. The four-factor model provided a significantly better fit to the data, $\chi^2(246) = 794.00$, compared to the one-factor model, $\chi^2(252) = 1{,}456.20$. A chi-square difference test confirmed this difference was statistically significant, $\Delta\chi^2(6) = 662.23$, $p < .001$. The four-factor model had substantially better fit indices (AIC = 31,418; BIC = 31,651; CFI = .93; TLI = .92; RMSEA = .06) than the one-factor model (AIC = 32,068; BIC = 32,276; CFI = .84; TLI = .83; RMSEA = .09), supporting the 4-factorial structure of the scale. Together these findings suggest that the theoretical dimensions underlying the instrument are substantially related, yet empirically distinguishable and coherent. Furthermore, the SoCSC subscales exhibited high internal consistency supporting reliability. Notably, we also observed strong intercorrelations among subscales. Substantial correlations between sources are consistent with the structure of the original instrument (Usher & Pajares, 2009) and may point to important interdependencies and strong self-reinforcing dynamics.

One of the main objectives of the present study was to examine the relative contribution of each source to creative self-concept. Correlations indicated that all four sources were positively and substantially associated with CSC; social persuasion had the highest relationship with CSC, closely followed by the other sources. This finding contrasts with a previous study in the domain of creativity (Benedek et al., 2025) which found the strongest positive association of CSC with the frequency of mastery experiences whereas the frequencies of social persuasion experiences or physiological states were unrelated, and vicarious experience even showed a

weak, negative correlation. Although the correlation between vicarious experience and CSC was positive in the present study, it also stood out as the source with the highest proportion of negative experiences compared to the other sources (see Table 3). Specifically, 34% of participants reported having more frequent negative than positive experiences when comparing themselves to others. In the domain of creativity, several strong biases persist (see Benedek et al. 2021) rendering vicarious experience potentially harmful to CSC. Namely, individuals often overlook the importance of effort and persistence in creativity (Lucas & Nordgren, 2015), viewing creative ability as a fixed trait (Karwowski, 2014). These beliefs may lead to particular interpretations of others' successes – fostering the impression that one lacks inherent creative ability and cannot improve it. Differences in strength and direction of associations between the present findings and that of the previous study are likely due to the differences in methodology. While Benedek and colleagues (2025) assessed the frequency of freely recalled experiences per source, this study assessed to what extent different experiences applied. Hence, while mastery experiences may more easily come to mind when asked to justify one's typically positive CSC (i.e., showing an above average effect; Benedek et al., 2025), all four sources seem to substantially inform CSC and social persuasion such as feedback by others may even have a slightly stronger effect than other sources.

The regression analyses seem to further corroborate this conclusion. On the one hand, social persuasion emerges as the strongest predictor of CSC across two different measures (SSCS total score and Global CSC). Relatedly, social persuasion was found to play an especially important role in shaping self-concept among novices (Menon, 2020). Our sample consisted of the general population rather than creative professionals – people with potentially not well-grounded creative experience – which might be the reason behind this finding. Besides, creativity tends to be more ambiguous with rather blurred criteria of success (Sidi et al., 2020), therefore feedback from others might play an important role in validating a creator's

work. Mathematics, in contrast, offers clearer performance evaluation, which is probably why people rely most on the mastery experience while gauging their mathematics ability (as shown in Usher & Pajares, 2009). In the present study, participants very rarely received negative feedback on their creative efforts, (social persuasion obtained the highest mean score in terms of valence) and were frequently complimented on their creativity – 62% reported being praised often or very often. Past studies illustrated that positive feedback could increase creative performance (Hon et al., 2013; Oettingen et al., 2012, but see Kim & Kim, 2019 for null results and discussion) which suggests additional reinforcing mechanisms – i.e., people receiving positive feedback perform better and utilize these doubled sources to form their self-perception. Thus, feedback may play a crucial role in shaping creative self-perception. It might serve to reassure creators about the quality of their work, reduce the uncertainty inherent in the creative process, and foster motivation for future creative efforts. On the other hand, in the present study, sources together explained up to 69% of variance in CSC, yet each source separately accounts for very limited unique variance explained (max 5%). Thus, the majority of the explained variance was shared among the predictors.

The relevance of shared variance between sources was supported by the SEM approach using a bifactor model. Here, a general factor strongly predicted CSC, whereas separate sources became non-significant. The strong latent prediction of CSC by the general sources factor (β = .88) indicates that CSC can be nearly entirely explained by positive experiences with creative behavior across the four sources. Experiences with mastery, vicarious learning, feedback, and physiological states thus almost fully account for how creative people judge themselves. Of course, causality cannot be inferred from this correlational data, and it seems possible that higher CSC could positively bias how people judge their experiences, but the strong relationship also suggests that no important sources or experiences were missing. We further argue that this finding does not mean that the sources are not theoretically distinguishable

categories of experiences, but all – mastery experience, vicarious experience, social persuasion, physiological states – are interdependent over the course of an individual's life. For instance, hands-on mastery experience often could imply positive feedback, which in turn might increase enjoyment and relieve stress. Further, any positive experience increases the chance of engagement (e.g. Rhodes et al., 2009; Ye et al., 2024) and eventually making more positive experiences (see the reciprocal effects model Marsh & Craven, 2006). Therefore, each of the sources might play a reinforcing role leading to more positive experiences from other sources and thereby together shaping an increased creative self-concept.

Limitations and Future Studies

The present study offers a new tool to measure sources of creative self-concept. Importantly, the conclusions should be read in light of potential limitations. First, the SoCSC provides an averaged measure of the self-assessed experiences. Importantly, global judgments about a given source may not fully capture the complexity of individuals' experiences with that source over time, especially when such experiences are multiple, diverse or even contradictory. Moreover, the interactions among different sources—and the ways they may reinforce or offset one another—are not easily reflected in a single-point assessment. This direction calls for some fine grained, longitudinal work that could make for a natural continuation of this line of studies. For instance, the newly developed scale could be used to investigate how the relevance of different sources evolves over time, such as during adolescence.

Second, the structural equation results were mainly relevant to the global CSC – a short overall measure of creative self-concept, whereas the SSCS scale did not allow for a latent model to converge properly. Latent variable modeling, while theoretically and statistically justified for SSCS (see Bollen, 1989), can increase model complexity. A larger number of estimated parameters also increases the required sample size, suggesting that the present study

may have been underpowered to fit the latent SSCS model (see Kline, 2016). This disparity between the CSC models might limit the generalizability of our findings.

Lastly, in our investigation we surveyed a general sample. Some of the observed effects might not apply to creative professionals. Those at the Pro-c level tend to have a more extensive base of previous experiences as they regularly and intensively engage in creative action (Kaufman & Beghetto, 2009). It is worth noting that particular domains might influence the way people shape their creative self-concept. Here, we utilized an integrative approach within a general sample that might have obscured nuances of specific creative domains. Some creative domains rely more strongly on dynamic creator-audience interaction (e.g. singers), which could have led to greater influence of feedback. What is more, some forms of creation rely on the individual, whereas others tend to involve group effort (which might mean greater dependency on others' feedback or behavior modelling). Also, domains differ in their representativeness of creativity in the eyes of individuals (Kaufman & Baer, 2004; Boldt et al., 2024), which might affect how creative self-concept is built. These considerations of Pro-c levels and specific domains could enrich the understanding of CSC formation, yielding different patterns than reported here.

The present study offers initial yet strong empirical support for the validity and reliability of the Sources of Creative Self-Concept Scale (SoCSC). All four proposed sources – mastery experience, vicarious experience, social persuasion, and physiological states – were substantially related to creative self-concept, with social persuasion emerging as the strongest individual predictor and a mainly positive source of information. Structural equation modeling further suggested that these sources are best understood as components of a broader, interrelated construct, which could be summarized as positive experiences with creative behavior. This higher-order factor likely reflects the dynamic and mutually reinforcing interplay of experience, feedback, model learning and psychophysiological states that together

shape creative self-concept over time. The SoCSC provides practical means to assess and track the development of creative self-concept, supporting future work on creative self-perception. Ultimately, this study advances understanding of the mechanisms underlying creative self-beliefs and opens pathways for interventions designed to foster creative agency.

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Appendix

Sources of Creative Self-Concept-Valence (SoCSC-V) items and instruction.

Instruction: There are various sources of information from which people acquire knowledge about themselves and their abilities. Please indicate how often you have had positive and negative experiences with these in the context of creativity:

[Mastery Experience] Handling Creative Tasks:

How often have you successfully mastered creative tasks?

How often have you failed at creative tasks?

[Vicarious Experience] Observing Others in Creative Tasks:

How often, when observing others, did you feel that you could have handled the task as creatively or even more creatively?

How often, when observing others, did you feel that you could not handle the task as creatively as others?

[Social Persuasion] Feedback on Your Own Creativity:

How often have you been praised in your environment for your creativity?

How often have you been criticized in your environment for your lack of creativity?

[Physiological States] Feelings During Creative Activities:

How often do you feel comfortable (joy or relaxation) during creative activities?

How often do you feel uncomfortable (stress or boredom) during creative activities?

Response options ranged from 1 (almost never) to 5 (very often)