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Evaluation of Self-Perceptions of Creativity: Is it a Useful Criterion?

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Abstract

Self-evaluations or self-perceptions of creativity have been used in the past both as predictors of creative performance and as a criterion. Four measures utilizing self-perceptions of creativity were assessed for their usefulness as criterion measures of creativity. Analyses provided evidence of domain specificity of self-perceptions. The scales correlated with self-report measures of creativity, but not with objective measures. Self-perceptions of creativity had strong to moderate relationships with personality and creative self-efficacy. These results suggest that while self-perceptions of creativity may provide some information about creativity, researchers should be cautious when using this measure as a criterion.

Evaluation of Self-Perceptions of Creativity: Is it a Useful Criterion?

Early work on creativity focused on the creative person and creative personality (Barron, 1969). Much of this early work sought to identify creative people and identify what characterizes those individuals. Creative people were identified by reputation, peer nomination and the like. However, research soon shifted to the study of creativity in the larger population.

Much of that research used a laboratory experimental design and has focused on the evaluation of the creative product. Amabile's (1982; 1996) Consensual Assessment Technique has been used frequently to evaluate products varying from solutions to everyday problems (Reiter-Palmon, Mumford, & Threlfall, 1998) to stories (Baer, 1994; Kaufman, Baer, & Cole, 2009) to collages (Amabile, 1982). Other tasks that have been used include dramatic performance (Myford, 1989), music compositions (Brinkman, 1999; Hickey, 2001), poetry (Kaufman, Baer, Cole, & Sexton, 2008), scientific questions (Kaufman, Evans, & Baer, 2010), and writing mathematical problems (Baer, 1994). Typical evaluations include using experts to evaluate either overall creativity or the components of creativity, namely quality and originality (e.g., Eisenberger & Rhoades, 2001; Mumford, Supinski, Baughman, Costanza, & Threlfall, 1997). The raters compare products to each other instead of an absolute ideal. Experts agree at a strikingly high rate (e.g., Amabile, 1996; Baer, 1993, 1998; Baer, Kaufman, & Gentile, 2004; Runco, 1989).

Field research also utilized the product approach such as looking at number of patents. However, in many cases, information that allows evaluation of products is not readily available or not appropriate. Therefore, supervisory evaluations of employee creativity have been used (e.g., Baer & Oldham, 2006; George & Zhou, 2001; Madjar, Oldham & Pratt, 2002; Zhou 2003). Typical studies using this approach have requested supervisors to evaluate employee creativity

by evaluating a subordinate's ability to generate creative ideas or ability to come up with novel solutions.

Some research used self-evaluation or self-perceptions of creativity as a measure of creativity (Shalley, Gilson, & Blum, 2009; Zhou, Shin, & Cannella, 2008). In some cases, researchers used similar scale items and labeled the scale as creative involvement or motivation to be creative, using involvement or motivation as an outcome variable (Carmeli & Schaubroeck, 2007). The difficulties in using self-reports of creativity are similar to those of using any other self-report measure of performance. The use of self-report measures is based on two assumptions (Bing, LeBreton, Davison, Migetz, & James, 2007). One is that participants are aware of what is being asked (personality trait, values, or creativity). The second is that participants are willing to report them accurately. Specifically, concerns about score distortion due to honesty and social desirability have been raised with many approaches that use self perceptions (Heidemeier & Moser, 2009).

Past research in the area of creativity used self-report of achievement or interest in creative activities as indicators of creativity with some success (Hocevar, 1981; Runco, Noble, & Luptak, 1990). These measures ask individuals to report interest or actual creative achievements and seem less susceptible to inflation and social desirability (Carson, Peterson, & Higgins, 2005). In addition, these self-report measures tend to correlate highly with each other (e.g., Fleenor & Taylor, 1994; Goldsmith & Matherly, 1988; Kaufman & Baer, 2004). There are some studies that show that self-assessed creativity relates to some measures of creativity. Furnham and his colleagues (Furnham, 1999; Furnham, Zhang, & Chamorro-Premuzic, 2006) asked students to assess their own creativity and administered the Barron Welsh Art Scale and a Five Factor personality test. They found that self-assessed creativity was significantly related to

creativity as measured by the Barron Welsh Art Scale. They also found that self-assessed creativity was correlated with Conscientiousness (although the correlation with Openness to Experience missed significance). Park, Lee, and Hahn (2002) found self-reported creativity to significantly correlate with all scores on the Torrance Tests of Creative Thinking (TTCT) except for fluency. Further, Phillips (1973) found that self-assessments differed between high-scorers on the TTCT and low-scorers, with high-scorers rating themselves as more creative. Furnham, Batey, Anand, and Manfield (2008) found self-assessed creativity to have significant but low correlations with divergent thinking tasks. They also found significant correlations with self-reported creative activities, although Eisenman and Grove (1972), in a similar comparison, found no such relationship.

There is other research, however, that indicates that self-assessed creativity does not necessarily correspond to measures less reliant on paper and pencil (or computer keyboard). Lee, Day, Meara, and Maxwell (2002) used three measures of creativity (verbal, pictorial, and self-report) and found little relationship among the three measures. Priest (2006) found that students' self-assessment of the creativity of their musical compositions did not predict expert ratings of these same compositions. Kaufman et al. (2010) tested fourth graders in four domains of creativity (math, science, art, and writing) with a self-assessment and a rated creative product. The two scores were not related in *any* of the four domains.

Additional concerns stem from work suggesting that perception of self as creative seems to reflect lay theories of creativity and does not reflect actual differences in creativity (Silvia, Kaufman, & Pretz, 2009). This research also suggests that the perception of self as a creative individual is not domain specific but rather generalizes across domains (Plucker, 2004). Similarly, research on personality characteristics of creative individuals finds that one consistent

characteristic that emerges is that of seeing one-self as creative in a general sense (Barron & Harrington, 1981).

Kaufman, Cole, and Baer (2009) analyzed self-reported creativity across 56 different domains. They successfully confirmed a proposed seven-factor model (Artistic-Verbal, Artistic-Visual, Entrepreneur, Interpersonal, Math/Science, Performance, and Problem-Solving) derived from past self-assessment studies (Ivcevic & Mayer, 2009; Kaufman & Baer, 2004; Rawlings & Locarnini, 2007). Kaufman et al. (2009) found that the seven factor model was best interpreted as being a reflection of a hierarchical second-order factor of creativity. This finding lends support to the idea that there are some initial requirements common to all creative activity (e.g., motivation, intelligence, or environment). It is consistent to find a basic general creativity factor, followed by specific domains (Baer & Kaufman, 2005; Kaufman & Baer, 2006).

Kaufman et al.'s (2009) findings supported the domain-specificity found in evaluating creative products. Baer (1991, 1992, 1994) tested students in several studies ranging from second graders to college students. Students produced creative work through writing poetry, writing short stories, telling stories out loud, creating mathematical equations, creating mathematical word problems, and making a collage. Baer consistently found low and usually non-significant correlations between creative ability in these different areas. In other words, a student who wrote a creative poem was *not* more likely to also tell a creative story or write a creative mathematical equation (e.g., a creative algebraic equation might use numbers in a playful or unusual way). Several other studies (e.g., Han, 2003; Runco, 1989) have found similar results. If variations due to IQ are removed, the small correlations get even smaller.

The forgoing discussion suggests that using self-perceptions in creativity research may be of limited value as a criterion measure. However, it is important to understand the validity and

usefulness of the information provided by these self-reports. One critical issue we examine in this study is whether self-reports of creativity are one-dimensional (i.e., reflecting a general construct of self-evaluation of creativity), or whether people have different perceptions depending on the domain. Research suggested that creativity has aspects that are domain general and some that are domain specific. This research will contribute to this long standing debate by investigating whether self-perceptions or self-evaluations reflect a more domain general view (I am creative in general) or a more domain specific view (I am creative in my work but not at school).

A second issue this study addresses is to what extent self-perceptions reflect actual creative performance. If we are using self-perception as a criterion measure, replacing more objective measures such as evaluation of a product, supervisory evaluations, and the like. If self-evaluations correlate highly with more independent evaluations of creativity, then self-evaluations can be viewed as a useful criterion measure in the study of creativity. If however, self-evaluations are not highly associated with more independent measures of creativity, then we must conclude that self-evaluations reflect a different construct, and their use as a criterion should be limited. Further, conclusions regarding creativity based on self-perceptions should be evaluated with caution, as these results may not replicate with more objective or independent measures of creativity.

Third, this research examined the relationship between self-perceptions of creativity and personality as well creative self-efficacy. These variables have been found to be related to creativity and creative performance. This latter relationship will be investigated because self-reported creativity may reflect a perception of one-self as creative based on stereotypical personality or creative self-efficacy.

Method

Participants

Students were recruited from two universities: California State University, San Bernardino (CSUSB) and University of Nebraska at Omaha (UNO). A total of 344 students (62.8%) from CSUSB and 204 students (37.2%) from UNO participated in the study. The age of the participants ranged from 18 to 58, with a mean age of 22.94 years old ($SD = 6.05$). Among the 548 participants, 447 were female (81.6%), 100 were male (18.3%), and 1 participant did not report gender (.1%).

The sample was racially diverse, with 43 (7.9%) identifying as African American, 41 (7.5%) as Asian American (7.5%), 264 (48.2%) as Caucasian, 149 (27.2%) as Hispanic, 5 (0.9%) as Native American, 44 participants reported another race (8.0%), and 2 participants did not report a race (.3%). Finally, 118 reported being freshmen (21.5%), 69 reported being sophomores (12.6%), 165 reported being juniors (30.1%), 183 reported being seniors (33.4%), 2 reported being graduate students (.4%), and 11 reported other as their class status (2%).

Procedure

At both universities, participants were recruited using an online system provided by the psychology department. Details of the study were displayed on the website, recruiting students to participate in exchange for extra credit in one of their psychology courses. Upon signing up for the study, students were given a link to the web-based questionnaire. Upon completion of the questionnaire, students were given extra credit to apply to one of their psychology courses.

Measures

Self-perceptions of creativity. To assess the potential for different perceptions of creative ability depending on the domain, four scales were developed by a team of researchers.

First, items from the literature that were designed to assess supervisory evaluation of creativity were examined. Specifically, 13 items from George and Zhou's (2001) supervisory evaluation of creativity items along with two items from Zhou and George (2001) were used as a starting point. Second, items were rephrased as self-perceptions as opposed to supervisory evaluation (e.g., *The employee is a good source of creative ideas* was changed to *I am a good source of creative ideas*). Finally, the items were edited in order to measure self-perceptions of creativity at work, at school, in a hobby, and in general. The item stems were the same across the domains, but the ending of each item denoted a specific domain (e.g., *I am a good source of creative ideas at work*). While most research on domain specificity has focused on differences between art, writing and math for example, we believe that it is valuable to evaluate life domains as well. Therefore in this study we focused on three domains within a person's life in which they can exhibit creativity, namely, work, school, and hobby.

Each domain scale was presented to the participants on a separate page in the web-based survey. Participants first responded to the 15-item questionnaire assessing self-perceptions of creativity in general, followed by self-perceptions of creativity at work, self-perceptions of creativity at school, and self-perceptions of creativity in a hobby. All questions were presented using a five-point Likert-type scale ranging from *Strongly Disagree* to *Strongly Agree*.

Scale reliabilities were assessed using Cronbach's alpha. Internal consistency for the self-perceptions of creativity in general scale was .91. In addition, Cronbach's alpha for the self-perceptions of creativity at work scale was .94, the self-perceptions of creativity in a hobby was .95, and the Cronbach's alpha for self-perceptions of creativity at school as .94.

Creative self-efficacy. Creative self-efficacy was measured using three items from Tierney and Farmer (2002)'s Creative Self-Efficacy Scale (i.e., *I feel that I am good at generating novel ideas*). Internal consistency for this scale was .79.

Creative personality. Creative personality was measured using a combination of 20 items selected by Kaufman and Baer (2004) from the International Personality Item Pool (Goldberg, 1999). Items that reflected a creative personality were selected from the item domains of imagination, unconventionality, creativity, and variety seeking (e.g., *I have a vivid imagination*). Internal consistency for the creative personality items was .84.

Creative achievements. Creative achievements were measured utilizing the Creative Achievement Questionnaire (CAQ) by Carson et al. (2005). The questionnaire assessed the number of creative achievements the participants have accomplished in ten domains: Visual arts, music, dance, architectural design, creative writing, humor, inventions, scientific discovery, theatre and film, and culinary arts. The CAQ emphasized concrete public accomplishments, and has a unique scoring approach. For each item in each domain (e.g., creative writing), individuals use a yes/no response for six different items that increase in level of accomplishment. The first is no training or recognized talent, indicating no creativity in this domain. If the individual responded with "no training or talent" he/she is asked to skip to the next question. The rest increase in demand from "I have written an original short work" to "My work as been reviewed in local publications". Each response receives more points based on the increased demand (1 for the lowest to 6 for the highest). A final, seventh question, asks about national recognition, and asks the participants also to indicate the number of times this has occurred. The score for this item is then multiplied by the number of times this has occurred. This is a quasi-Guttman approach (Silvia et al., 2009), and has been used in creativity research to measure creative

accomplishments successfully (Carson, Peterson, & Higgins, 2005; Mar, DeYoung, Higgins, & Peterson, 2006; Silvia & Kimbrel, 2010). As we were not interested in performance within specific domains, a total score across all domains was used.

Creative activities. The number of creative activities participants engaged in was measured using the 45-item Leisure Activities questionnaire (Runco & Okuda, 1988; Runco et al., 1990). Items measured the frequency in which participants engaged in creative activities in the areas of math, science, writing, arts, crafts, and music. Items include both engagement in as well as accomplishment in these various domains (e.g., *How often have you received an award for artistic accomplishment?*). A total score across all items was used and internal consistency for the Leisure Activities questionnaire was .93.

Creative problem solving. Participants were also asked to generate the most creative solution to a real-world, complex, and ill-defined problem. Solutions were rated by three trained raters for quality and originality. In addition to quality and originality ratings, one rater counted the number of ideas in the problem to arrive at measure of fluency.

Analyses

Descriptive statistics for all measures are displayed in Table 1. The first issue addressed was whether the raters reached suitable levels of agreement. Coefficient alphas were calculated for the three trained raters. Inter-rater agreement for the quality ratings was sufficient ($r_{wg} = .90$; $\alpha = .88$). Agreement was also sufficient for the originality ratings ($r_{wg} = .83$; $\alpha = .88$).

The next issue addressed was whether self-perceptions of creativity are domain specific or whether they are based on a general self perception. To evaluate this, two analyses were conducted. First, a confirmatory factor analysis was conducted comparing a four factor model with each scale independent to a one factor model with all scales loading on the same factor. In

addition, a comparison to a nested model, with the three domain specific factors (school, work, hobby) nested within general was also evaluated and compared to the four and one factor models. A confirmatory factor analysis was modeled in M Plus (Muthén & Muthén, 2006). Before conducting the confirmatory factor analysis the number of items was reduced to five for each scale. This approach was chosen because after loading five items onto a single factor, additional items are largely adding error to the factor (Kline, 2005). To allow for direct comparisons across the scales, the same five items were used for all four scales. Items were selected based on high item total correlations for each scale. Each of the items selected was in the top eight items for each of the scales, and most represented the top four items. As the items were similarly worded (except for specifying the domain), the same items were allowed to correlate across the factors, regardless of the model tested. For example, Item 1 for school was allowed to correlate with Item 1 for general, work, and hobby. Finally, to evaluate the relationships between other criteria, as well as personality measures, correlations were examined between the four scales and the various other measures.

Results

Three models were tested; a four factor model with a separate factor for general, work, school and hobby, a one factor model with all of the variables loaded onto a single factor and a nested model with the work, school and hobby factors modeled regressed onto the general factor. Table 2 presents the results for the three different models. Specifically, the four factor model (see Figure 1) provided a better fit for the data than either the one factor model or the nested model (see Figure 2). The four factor model, in which items of self-perceptions of creativity were grouped based on domain, showed significant improvement over the one factor model. While the nested model and four factor model were similar in terms of the CFI, TLI, and RMSEA, results

for the SRMR were better for the four factor model. Further, the chi square difference between the four factor model and the nested model was significant, indicating that the four factor model was a better fit for the data ($\Delta\chi^2_{(4)} = 43.78, p < .05$). These results suggest that the four factor model, which included items related to each domain separately, was a better fit than one factor of a general evaluation of oneself as creative, or a nested model in which the different domains load onto a general perception as one self as creative.

Additionally, correlations between the four scales were examined to determine validity and are presented in Table 3. Correlations between the four scales were moderate among the three domain specific scales ($r = .37$ to $.41$) providing further evidence that self-perceptions of creativity in one domain may not generalize to another domain. The correlations with “creative in general” scale were somewhat higher ($r = .45$ to $.63$) as expected, but these values are lower than one would expect from scales that measure the same construct and using the same methodology. Providing additional support for the relative independence of self-perceptions across domains.

The relationship between self-perceptions of creativity and other accepted measures of creative performance was also evaluated. These correlations are presented in Table 4. Specifically, we have looked at the relationship between self-perceptions of creativity on the one hand and self-report and more objective measures of creativity on the other. Self-report measures included a measure of creative achievement and a measure of participation in creative activities. In addition, creativity measures included solution quality, originality, and fluency. None of the correlations between the four scales of self-perceptions of creativity and the three measures of creative problem solving were significant.

The correlations with the self-report measures of creative achievements and participation in creative activities were significant. Stronger correlations were observed between participation in creative activities and self-perceptions compared to creative achievements (see Table 4). The correlations between the four scales of self-perceptions and creative achievements were low but still significant. As might be expected, the correlations of creative achievements and participation in creative activities with the general self-perceptions scale and hobby scale were stronger than with those targeting self-perceptions in the domains of school or work.

Table 4 also presents the correlations between the four scales of self-perceptions of creativity and creative self-efficacy and creative personality. It is important to note that the relationships between self-perceptions of creativity and these variables were moderate to strong. In fact, the correlations were just as strong as the relationships among the four different self-perceptions scales. The relationships were particularly strong between self-perceptions of creativity and creative self-efficacy. The strongest correlations were between the scale measuring self-perceptions of creativity in general and the measures of personality and creative self-efficacy.

Discussion

Results support the notion that self-perceptions of creativity are domain specific. Support was provided from both confirmatory factor analysis and scale correlations. This is in contrast to the recent findings by Silvia et al. (2009) which suggested that self-perceptions of creativity are not domain specific. However, the debate regarding whether creativity is domain specific or generalizes across domains has been going on for quite some time with evidence supporting both sides (see essays in Kaufman & Baer, 2005).

In terms of the validity of self-perceptions of creativity as a possible criterion measure of creativity or creative performance, the results are less encouraging. Self-perceptions of creativity did not correlate (even with the large sample size) with various measures of creative problem solving. Correlations with other self-report measures of creativity were significant but low. More importantly, the correlations with the more objective measures of creative accomplishments were lower than those of the interest based self-report measure. Overall, these results indicate that as the measure of creativity is more objective, the relationship with self-perceptions is weaker. These results suggest that caution is necessary when using self-perceptions of creativity as a criterion measure.

Even more problematic were the findings that the correlations between self-perceptions of creativity across the domains and the measures of creative personality and creative self-efficacy were high. In fact, the magnitude of the correlations with creative self-efficacy was similar to the relationships between the scales across the different domains. The reason for this finding may be that self-perceptions of creativity are directly tied to creative self-efficacy. Individuals who see themselves as creative are more likely to answer as such, and also are more likely to report more confidence in their ability to be creative.

There are limitations of the study that may be addressed in future work. The domains used (work, school, and leisure) are still not entirely domain specific. A further breakdown of self-assessment by content-based domain (i.e., art and science) may yield higher correlations between self-perceptions and performance (i.e., the correlation between self-rating in the specific domain of art and actual creative performance at a drawing task may be higher than the correlations with self-rating of creativity in work, leisure, or school). In addition, only a limited number of performance measures were used. Future research may want to add other measures of

performance, and match those to the domains evaluated. For example, perceptions of creativity at work may be matched with supervisory evaluations of creativity.

The results of this study suggest that researchers using self-perceptions of creativity must proceed with care. First, based on this study, self-perceptions can be domain specific. Therefore, researchers should ensure that the measure used reflects the domain of interest. Second, self-perceptions of creativity seem to be more closely aligned with creative self-efficacy and creative personality and less related to typical measures of creative performance. This pattern of correlations indicates that researchers using self-perceptions of creativity must proceed with caution. Carmeli and his colleagues (Carmeli & Schaubroeck, 2007; Kark & Carmeli, 2009) have used self-perceptions of creativity but labeled the evaluations as measures of willingness to engage in creative behaviors. Such an approach views the self-perceptions as a motivational variable, which precedes performance. Given the pattern of results obtained in this study, this interpretation seems appropriate. However, while motivation to engage in creative behaviors is important and seems necessary for creativity, it does not guarantee creative performance.

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Table 1

Descriptive Statistics for All Measures

	<i>M</i>	<i>SD</i>
Self-Perceptions of Creativity in General	3.76	.51
Self-Perceptions of Creativity at Work	3.66	.60
Self-Perceptions of Creativity At School	3.55	.65
Self-Perceptions of Creativity in a Hobby	3.93	.61
Creative Self-Efficacy	4.96	1.00
Creative Personality	3.44	.48
Creative Achievements	8.95	8.67
Creative Activities	1.70	.50
Fluency of Ideas	2.43	1.35
Quality of Ideas	2.49	.71
Originality of Ideas	2.77	.96

Table 2

Fit Indices for the Confirmatory Factor Analysis

	Model fit		CFI	TLI	RMSEA	SRMR	Difference from the Four Factor Model	
	χ^2	<i>df</i>					$\Delta\chi^2$	<i>df</i>
Four Factor Model	373.69	134	.966	.952	.057	.034		
One Factor Model	3089.98	140	.581	.431	.194	.127	2716.29*	6
Nested Model	417.47	138	.960	.945	.060	.063	97.78*	4

*Chi square difference is significant

Table 3

Correlations Among Four Self-Perceptions of Creativity Scales

	In General	At Work	In a Hobby	At School
In General	1	.63*	.45*	.62*
At Work		1	.39*	.41*
In a Hobby			1	.37*
At School				1

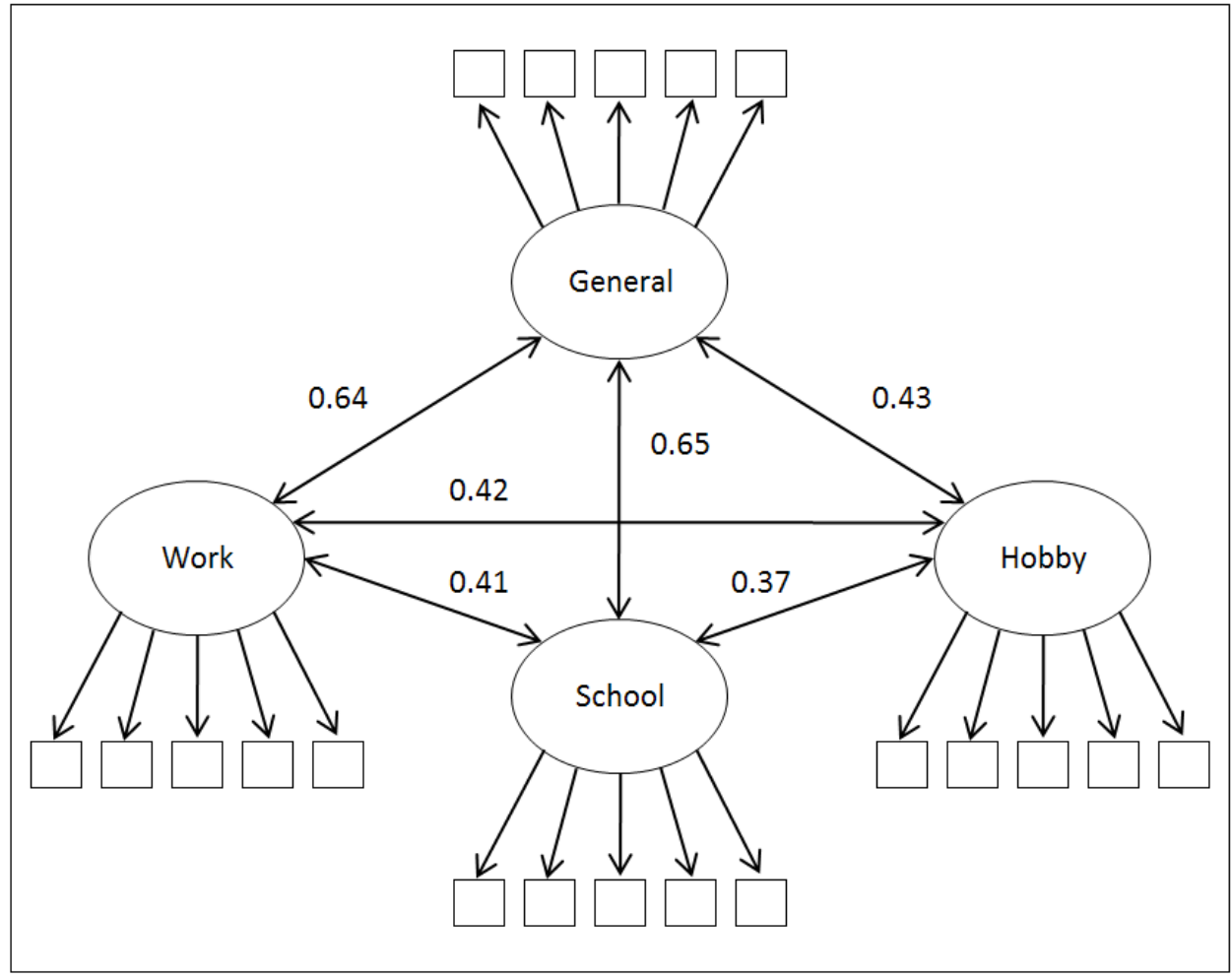
*p < .05

Table 4

Correlations Between Self-Perceptions of Creativity Scales and Other Key Variables

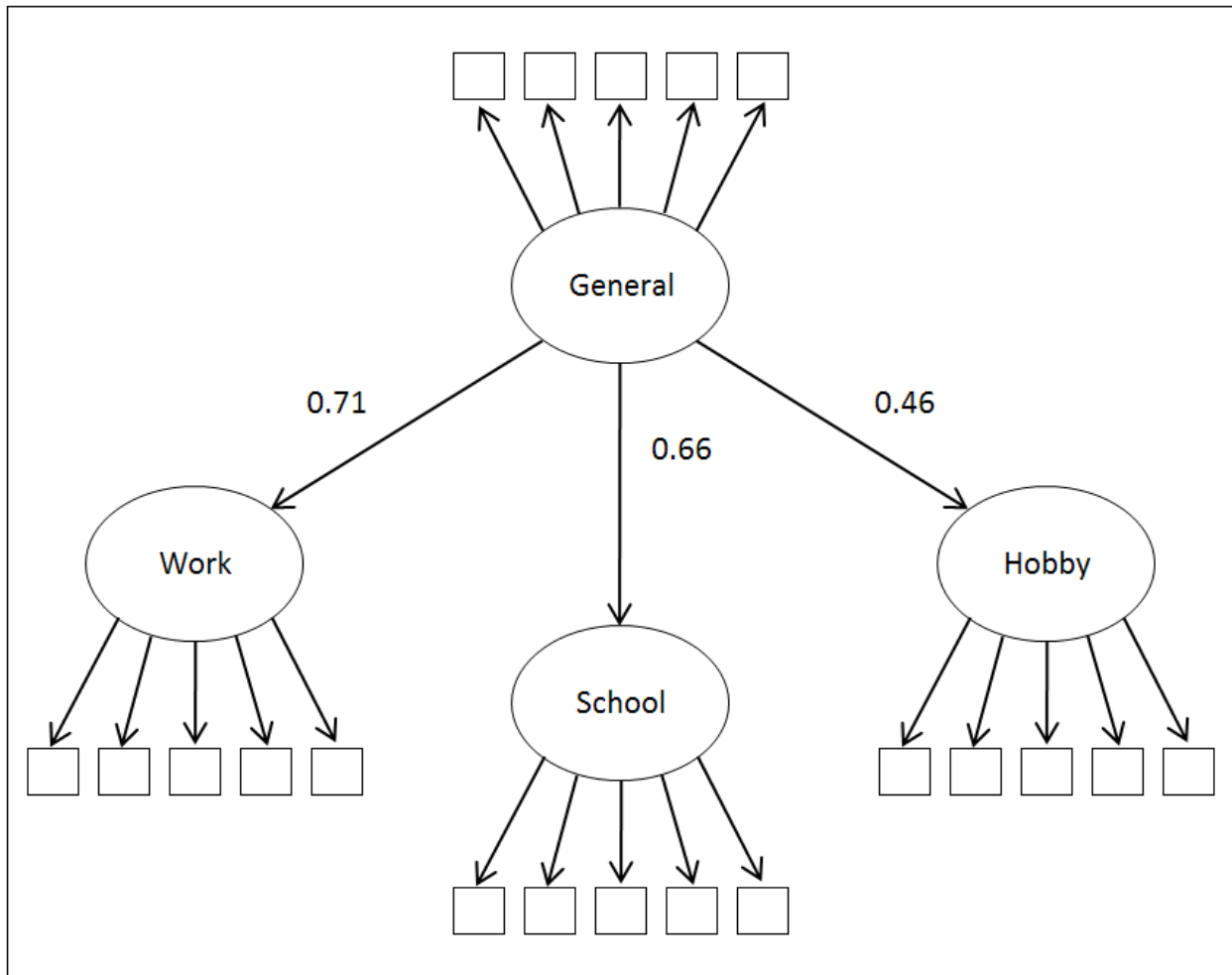
	Creative Self-Perceptions			
	In General	At Work	At School	In a Hobby
Creative Self-Efficacy	.61*	.44*	.39*	.35*
Creative Personality	.49*	.24*	.30*	.31*
Creative Achievements	.15*	.11*	.08*	.18*
Creative Activities	.29*	.17*	.26*	.21*
Fluency of Ideas	.05	.01	.03	-.01
Quality of Ideas	.03	-.01	.03	-.03
Originality of Ideas	.08	-.01	.02	.03

Figure 1. Four Factor Model



$\chi^2_{(134)} = 373.69, p < .05; CFI = .966, RMSEA = .057, SRMR = .034$

Figure 2. Nested Model



$\chi^2_{(138)} = 417.47, p < .05; CFI = .960, RMSEA = .060, SRMR = .063$