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RESEARCH NOTE

Evidence to Support the Componential Model of Creativity: Secondary Analyses of Three Studies

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ABSTRACT: Amabile's (1983a, 1983b, 1988) componential model of creativity predicts that three major components contribute to creativity: skills specific to the task domain, general (cross-domain) creativity-relevant skills, and task motivation. If all three components actually do contribute to creative performance, multiple measures of creativity taken from the same persons should show positive correlations. These correlations should be relatively low across different performance domains, higher within a performance domain, and even higher within a performance domain in situations where task motivation is likely to remain constant (as when measures are taken within the same experimental session). Because three creativity studies with overlapping participant populations were carried out in our laboratory during the same semester, we had the opportunity to test these hypotheses. Short stories were used as dependent measures in two of these studies; a third study involved engaging in various art activities. Correlations among these measures of creativity follow the predicted pattern and thus provide support for Amabile's model.

Amabile's (1983a, 1983b) componential framework of creativity includes three major components, each of which is considered essential for the production of creative work. *Domain-relevant skills* are the basic skills that lead to competent performance in a given domain, such as writing or drawing. This component includes factual knowledge, special skills, and talents. *Creativity-relevant skills* are those skills that contribute to creative performance across domains and include cognitive style, working style, and divergent thinking abilities. *Task motivation* includes motivational variables that determine an individual's approach to a given task (see Figure 1).

Most research generated by the model has focused on the task motivation component and the ways in which it can be influenced by the social context (e.g., Amabile, 1979; Amabile & Gitomer, 1984; Amabile, Goldfarb, & Brackfield, 1990). Recently, however, two studies have found evidence that all three components contribute to performance on a single task (Hill, 1991; Hill, Amabile, Coon, & Whitney, 1994). In addition to predicting that each of the components will be related positively to creativity, the model leads to predictions about how different creativity measures taken from the same person will be correlated with one another. In contrast to recent proposals by Baer (1991,

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1	2	3
Domain Relevant Skills	Creativity Relevant Skills	Task Motivation
Includes: • Knowledge about the domain. • Technical skill required • Special domain relevant *talent* Depends on: • Innate cognitive abilities • Innate perceptual and motor skills • Formal and informal education.	Includes: • Appropriate cognitive style • Implicit or explicit heuristics for generating *novel ideas* • Conducive work style Depends on: • Training • Experience in idea generation • Personality characteristics	Includes: • Attitudes toward the task • Perceptions of own motivation for undertaking task Depends on: • Initial level of intrinsic motivation toward the task. • Presence or absence of salient extrinsic constraints in the social environment • Individual ability to cognitively minimize extrinsic constraints

Figure 1. *Amabile's (1983a, 1983b) model of creativity.*

1993, 1994), the componential model predicts that because there are cross-task skills that contribute to creativity, creativity measures will be positively correlated across different tasks and situations. Further, the model predicts that strong correlations will depend on whether the measures are taken from the same domain and in the same experimental context. The analyses reported here test these predictions.

Three creativity studies were carried out in our laboratory during the same semester. The creativity of short stories was used as the dependent measure in two of these studies, and the third involved participants engaging in various art activities. Because all of these studies depended on the Introductory Psychology class for research participants, many students participated in more than one study. Given this fortuitous circumstance, we had the opportunity to explore the relations between creativity measures collected from the same students across different tasks, domains, and contexts.

Amabile's (1983a, 1983b, 1988) model suggests that correlations between creativity measures should be strongest among those measures taken during the same experimental session and within the same domain. In this case, all three components should remain relatively stable. Task motivation would be expected to remain fairly constant during each 1-hr experimental session, and domain-relevant skills and creativity-relevant skills should contribute equally to each of the experimental tasks. Correlations should be less strong across studies and across domains. Task motivation likely would differ in different experimental contexts, because measures were taken on different days and in different situations.[1] Across domains, domain-relevant skills should vary. Thus, we predicted that correlations would be strongest within the same performance domain and experimental context.

Method

Participants

Data from 90 young adults enrolled in an Introductory Psychology course at a small, private northeastern university were used for this project. Students participated in at least one study in our laboratory during the Spring semester of 1991. A total of 82 students (30 men, 52 women) participated in Study 1 (Tighe, 1992); 87

[1] In two of the studies (Conti, Amabile, & Pollak, in press; Tighe, 1992), an attempt was made to alter motivational state with an experimental manipulation. In neither study did these manipulations show main effects on self-reports of motivation. More important, because the manipulations were both between-participants—even if the manipulations did have some effect—each participant was *still* in a constant situational (motivational) context for each 1-hr experimental session in which he or she participated.

students (30 men, 57 women) participated in Study 2 (Collins & Amabile, 1992); and 75 students (19 men, 56 women) participated in Study 3 (Conti, Amabile, & Pollak, in press). Participation in the studies partially fulfilled a course requirement.

Measures

The data for this project were collected as part of three separate studies, two of which involved writing short stories (three stories in one study, one in the other) and one of which involved doing three art activities.

In Study 1 (Tighe, 1992), each participant wrote three short stories in response to three different pictures. The first picture, from the Thematic Apperception Test, was a drawing of a wooded area with what appeared to be an abandoned boat at the center. The second was a drawing of a writer's desk. The third was a blank page. These stories were subsequently rated for creativity by five experienced writers according to Amabile's (1982) Consensual Assessment Technique (CAT). Because these ratings showed good reliability (Cronbach's coefficient $\alpha = .84$ for the boat picture, .84 for the desk picture, .72 for the blank page), the five judges' ratings were averaged to form a summary creativity score for each story.

In Study 2 (Collins & Amabile, 1992), participants engaged in each of three art activities in different random orders. One activity involved participants making a collage using precut paper shapes. Another consisted of making a drawing with colored pencils using only straight lines. The third activity involved using sponges of different shapes to paint a picture. Using the CAT, these artworks were rated by eight judges who had some experience in studio art. Once again, the reliability of these ratings was adequate ($\alpha = .78$ for collages, .76 for drawings, .77 for paintings), and so they were averaged to form a summary creativity score for each artwork.

In Study 3 (Conti et al., in press), participants were asked to write a short story involving two of the characters they had previously read about in a learning passage. These stories were rated for creativity by four psychology instructors, also using the CAT. Because the reliability of these ratings was quite high ($\alpha = .75$), they were averaged to form a summary creativity score for each participant.

Results

Table 1 presents the correlations between the nine measures of creativity taken in the three studies. For Study 1, the creativity of the story of each picture is considered along with the mean creativity for this study, which is simply the mean of the scores the participant received for each of the three stories. For Study 2, creativity on each art activity is listed along with the mean of the creativity scores for each participant on the three art activities. For Study 3, the creativity of the essay students wrote is considered.

The correlations between the verbal creativity measures taken as part of Study 1 (top left corner of Table 1) are positive and statistically significant. These correlations support the prediction made from Amabile's (1983a, 1983b) model that creativity measures taken within the same context and domain should be strongly positively related.

The artistic creativity intercorrelations from Study 2 (Collins & Amabile, 1992) also are positive (lower middle quadrant of Table 1). Here the tasks were substantially different, stretching the definition of "domain" somewhat. Nonetheless, drawing and collage creativity are highly correlated, and painting and collage creativity are moderately correlated. Only the correlation between painting and drawing creativity is nonsignificant. These findings provide some additional support for our prediction that, within domain and context, creativity measures will be substantially correlated.

The top right corner of Table 1 contains correlations of creativity measures across studies, but within the same domain ($n = 26$). Measures of verbal creativity from Study 1 are correlated with the measure of verbal creativity from Study 3. As predicted, creativity measures within the same domain are substantially intercorrelated, although not as strongly as those taken within the same experimental context.

In the lower half of the same column, measures of artistic creativity from Study 2 are correlated with a measure of verbal creativity from Study 3 ($n = 31$). Although we expected to see low positive correlations between creativity measures across domains and contexts, here we do not find that pattern of results. These correlations show no consistent pattern.

Finally, the upper middle area of Table 1 contains the correlations between the measures of verbal creativity taken in Study 1 and the measures of artistic creativity taken in Study 2 ($n = 28$). There is a general pattern of low positive correlations between measures of creativity in different domains taken in different contexts. The exception to this pattern is in the correla-

Table 1. *Correlations Among Measures of Verbal and Artistic Creativity From Three Studies*

	Study 1[a]				Study 2[b]				Study 3[c]
	1 Boat Picture	2 Desk Picture	3 Blank Box	4 Story Mean[d]	5 Collage	6 Drawing	7 Painting	8 Art Mean[e]	9 (Psych Story)
1		.64**	.43**	.86**	.36^{M}	.33^{M}	−.07	.27	.47*
2			.50**	.87**	.19	.31^{M}	−.22	.13	.46*
3				.75**	.35^{M}	.31^{M}	−.13	.23	.21
4					.35^{M}	.36^{M}	−.16	.25	.43*
5						.43**	.27*	.77**	.12
6							.15	.73**	−.22
7								.66**	.09
8									.00

[a](N = 82). [b](N = 87). [c](N = 75). [d]Mean of the creativity scores for the three stories from Study 1. [e]Mean of the creativity scores for the three art activities in Study 2.
$^{M}p < .10$ (marginally significant). *$p < .05$. **$p < .001$.

tions with painting creativity. Interestingly, this measure also did not correlate highly with other measures of artistic creativity.

Discussion

Despite the diversity of creativity tasks and contexts used for this study, a fairly consistent pattern emerges that fits well with the predictions made by Amabile's (1983a, 1983b, 1988) model of creativity. Creativity measures taken within the same context and in the same domain were, for the most part, highly and significantly intercorrelated. Measures taken in different contexts, but from the same domain, showed moderate and mostly significant correlations. Measures taken from different domains in different contexts showed low, but mostly positive (and in many cases marginally significant) correlations. Thus, we have compelling evidence of general creativity skills across different tasks within a domain, and some suggestive evidence of general creativity skills across quite different domains.

This evidence is especially interesting in light of Baer's (1991, 1993, 1994) claims that there are no general skills that contribute to creativity across tasks. Baer (1993) even went so far as to reject Runco's (1989) suggestion—which is consistent with the componential model of creativity (Amabile, 1983a, 1983b, 1988)—that there may be domain-specific skills that contribute to creativity. On the basis of nonsignificant correlations between creativity measures found in several of his studies, Baer (1991, 1993, 1994) concluded that skills that contribute to creativity are necessarily task-specific. In reaching this conclusion, he ignored the possibility that low power, measurement error, and other sources of variation may have contributed to the correlations he reports.

The findings reported here support the more popular view that there are, indeed, general skills that contribute to creativity. Thus, this report should be reassuring both to those developing comprehensive theories of creativity that include cross-task skills (e.g., Amabile, 1983a, 1983b; Lubart, 1990; Sternberg & Lubart, 1991) and to those taking a domain-specific approach (e.g., Csikszentmihalyi, 1990; Gardner, 1988; Gruber & Davis, 1988)—not to mention those attempting to develop practical techniques for teaching and assessing creativity skills (e.g., Isaksen & Parnes, 1985; Parnes, 1977; Torrance, 1990; Yager, 1989).

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