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The Effects of Task-Specific Divergent-Thinking Training

ABSTRACT Although there is a growing body of evidence indicating that divergent-thinking skills may be very task specific, there has been no research testing how narrowly divergent-thinking training can be targeted. Seventy-nine seventh-grade students received training in poetry-relevant divergent-thinking skills. These subjects and a matched control group later wrote poems and stories, the creativity of which was judged by experts. There was a significantly greater impact on poetry-writing creativity. Implications for creativity theory and training programs are discussed.

Numerous research reports (Baer, 1991, 1992, 1993, 1994a, 1994b, in press-a; Runco, 1987, 1989) have shown that the skills underlying creative performance may be quite task specific, and this suggests possible limitations on the potential benefits of divergent-thinking training. One response to this task-specific understanding of divergent thinking has been to design divergent-thinking training programs that include practice in a wide range of task-specific divergent-thinking skills. This approach has been shown to have a general effect of enhancing creativity in diverse domains (Baer, 1988, 1992, 1993). An alternate approach would be to target training to specific kinds of creativity; however, there has been no research investigating just how narrowly such divergent-thinking training can be targeted.

The present investigation was designed to test what effect divergent-thinking training focusing on a single task would have on creative performance on that task and on a different, but closely related, task. The larger goals were (a) to help creativity researchers better understand the nature of divergent think-

ing as it impacts creative performance and (b) to be of practical value in helping educators design training programs better suited to specific training objectives.

Seventh-grade students were trained in divergent- thinking skills hypothesized to be related to poetry — writing creativity. Following this training, trained subjects and a matched sample of untrained subjects wrote both poems and stories in their regular English classes. Poems and stories were judged for creativity by experts who did not know the subjects. It was predicted that training in poetry-relevant divergent thinking would result in a greater increase in creativity on a poetry-writing task than on a story-writing task.

METHODS

Subjects and Groups

A total of 157 seventh-grade students — the entire seventh-grade of one New Jersey junior high school — served as the subjects. The assignment of students to these two teachers' classes had been done randomly at the beginning of the school year. One of the two Language Arts teachers' classes became the experimental group (n = 79) for the study, with the other teacher's students forming the control group (n = 78).

Training

The creativity training was provided by the experimenter, who worked with each of the experimental group Language Arts classes every Monday and Friday for four weeks. In all cases the training involved divergent thinking exercises using poetry-relevant content. The control group received no special training and simply had regular Language Arts classes.

The content of the divergent-thinking training exercises included:

- finding words that sound like a given word (rhyme and assonance)
- inding words that have the same sound as a given word (alliteration)
- finding words that could stand for or in some way represent a given thing or idea (metaphor)
- inventing words or descriptions of things that are richly suggestive of other things (images)

These exercises were aimed at first increasing fluency, followed by practice to improve flexibility, originality, and elaborative skill. The activities included both individual and small group work. The activities varied somewhat from class to class depending on student response. For example, some classes responded much better to small group work, while others

did better working individually and then reporting back to the full group.

Tasks

Following training, both teachers had students write a story and a poem (in different class periods) as ungraded writing exercises. In both classes students were accustomed to such activities; both teachers assigned ungraded writing exercises frequently (although these assignments were typically to write such things as a description of something or somebody, an essay, or a story, and rarely if ever a poem). Students were told that they must write both the story and the poem and that the teacher would look forward to reading the stories and poems, but that no evaluation would be made. (At the conclusion of the study, subjects were told that judges who did not know the students would in fact read and evaluate their poems, but that their names would not be connected to the poems the judges evaluated.)

Experts judges, all of whom were accustomed to reading the work of middle school students, rated the poems independently on a 1.0-5.0 scale. The sole criterion was creativity. All the judges were published writers in the field they were judging, two were editors of literary magazines, and two had recently served as judges for a high school poetry contest. To avoid systematic effects of the order of reading, each judge was given the poems or stories in a different order.

Both the poetry-writing and story-writing tasks have been used successfully in a wealth of creativity research (Amabile, 1982, 1983; Baer, 1991, 1992, 1993, 1994a, 1994b, 1994c, in press-b; Hennessey & Amabile, 1988). Inter-rater reliabilities were acceptable, with coefficient alphas of .85 for the poems and .79 for the stories.

RESULTS

A 2 x 2 ANOVA was performed, with one between-S variable (group) and one within-S variable (task). The primary hypothesis was that the training would have a greater impact on poetry-writing creativity than story-writing creativity; that is, it was predicted that the group x task interaction would be significant. This prediction was confirmed [$F(1, 310) = 4.698$. $p < .05$]. The overall difference between the groups was also significant [$F(1, 310) = 25.178$, $p < .001$]. Task was not a significant variable [$F(1, 310) = 0.673$. $p > .20$].

The mean creativity ratings of the poems written by the experimental group was higher than those written by the control group. The mean creativity rating of the experimental group's poems was 3.003; the mean for the control group

was 2.207. This difference was statistically significant ($p<.001$, using a two-tailed test).

The mean creativity rating of the experimental group's stories was 2.853; the mean for the control group was 2.538. This difference did not (quite) reach statistical significance ($p=.054$).

DISCUSSION

The divergent-thinking training in the present investigation used poetry-relevant tasks as its content. This training appears to have had a significant impact on the creative performance of the seventh-grade subjects of this study, and the impact was greater for the targeted task—poetry-writing—than for a different task in the same linguistic domain (story-writing). Although it is also possible that the training had an impact on story-writing creativity (one that was not statistically significant, however), the impact was much greater on the targeted task.

It is a basic assumption of most divergent-thinking training programs that the specific content used in the training exercises is irrelevant—any content will work equally well. But all divergent-thinking exercises must have *some* specific content; one cannot train general, content-neutral divergent-thinking skills (which probably don't exist; see Baer, 1991, 1992, 1993, 1994a, 1994b). The primary implication of this study for creativity training is that the choice of what kind(s) of content to use in divergent-thinking training depends on the goals of the training. There are two general directions such training might take:

1) If the goal is to improve creative performance on a particular task, divergent-thinking training should focus on skills related to that task.

2) If the goal is improve creative performance on a wide variety of tasks, divergent-thinking training should *not* be concentrated on one particular content or task, but should instead use a wide range of content in a variety of divergent-thinking exercises (Baer, 1992, 1993, 1994a).

On a more theoretical level, the present investigation reinforces previous research (Baer, 1991, 1992, 1993, 1994a, 1994b; Runco, 1987, 1989) suggesting that the cognitive mechanisms underlying creativity and divergent thinking are task specific. It also supports Baer's (1993) argument that the generally positive and seemingly domain-transcending effects of divergent- thinking training programs are due to the

fact that such training typically uses a wide variety of content in training exercises — *not* to an increase in a general, domain-transcending divergent-thinking skill.

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