
Gender Differences in the Effects of Anticipated Evaluation on Creativity

John Baer
Rider University

ABSTRACT: *Gender differences in the effects of anticipated evaluation on creative performance were investigated. Participants (66 eighth-grade girls and 62 eighth-grade boys) wrote original poems and stories under conditions favoring both intrinsic and extrinsic motivation. These poems and stories were later judged for creativity by experts. There was a significant Gender \times Motivational Condition interaction ($p = .01$). Girls' creativity decreased markedly under extrinsic constraints, but boys' did not. Implications for both teaching and research are discussed.*

The deleterious effects of extrinsic motivation on creativity have been well-documented (Amabile, 1983; Hennessey & Amabile, 1988). This creativity-focused school of research is rooted in the *overjustification hypothesis* (Bem, 1972; deCharms, 1968; Kelly, 1967, 1973), which states that, under certain conditions, extrinsic constraints may lead to a decrease in intrinsic motivation. This hypothesis has successfully predicted numerous research results (e.g., Calder & Staw, 1975; Deci, 1971; Lepper & Greene, 1975; Ross, 1975), many of them counterintuitive (e.g., Lepper, Greene & Nisbett, 1973). The effects demonstrated in these studies have sometimes been termed the “hidden cost of reward” (Lepper & Greene, 1978) because they demonstrate a negative effect—in the form of a decrease in intrinsic motivation—as an unintended result of reinforcing a desired behavior.

Extrinsic motivation of many kinds decreases creative performance. Amabile (1983) showed that all of the following conditions typically lead to a decrease in creative performance: being told that one's work will be evaluated, doing work to receive a reward, and having been evaluated for past work in a similar situation (presumably because this increases the expectation that one's current work will be evaluated, even if this has not been stated). The key element appears to be

one's understanding of the reason one is doing a particular task: Receiving an unexpected reward is quite different from engaging in a task for the purpose of earning a reward and can have exactly the opposite effect on creativity (Amabile, Hennessey, & Grossman, 1986). To the extent that extrinsic constraints are salient, however, one's motivation tends to become more extrinsic and less intrinsic, and to that extent creative performance is decreased. There are of course exceptions to this general rule; for example, extrinsic motivation may keep one working on a difficult task that may otherwise have been abandoned. However, extrinsic motivation in the form of anticipating receiving either an evaluation or a reward for one's work has generally resulted in a decrease in creative performance in a wide variety of studies (e.g., Amabile, 1983, 1985; Amabile et al., 1986; Amabile, Goldfarb, & Brackfield, 1990; Berglas, Amabile, & Handel, 1981; Hennessey & Amabile, 1988).

This impact is especially significant in educational settings, where rewards are frequently employed and evaluating students' work to give them constructive feedback is often necessary. Hennessey and Zbikowski (1993) showed that it is sometimes possible to “immunize” children against some of the negative effects of reward, and these techniques may also limit the adverse impact of evaluation. Because of the ubiquity of extrinsic constraints in educational (and other) settings, and because creativity is so fragile in the presence of such

This research was supported, in part, by a research grant from Rider University.

Manuscript received February 8, 1995; revisions received September 10, 1995 and November 15, 1995; accepted November 29, 1996.

Correspondence and requests for reprints should be sent to John Baer, Memorial 102-P, Rider University, Lawrenceville, NJ 08648-3099.

constraints, learning how to prevent or lessen the impact of those constraints must be an important goal of creativity research. Another important goal is to understand how extrinsic constraints may operate differently in different contexts and with different groups of students.

Previous investigations of the effects of anticipated evaluation on creativity have not examined gender differences in this regard, and have employed either mixed groups of female and male participants or groups of female participants only (Amabile, 1983, Amabile et al., 1990; Berglas et al., 1981). In fact, no reported study has looked exclusively at the effects of extrinsic versus intrinsic motivation (including, but not limited to, the effects of anticipated evaluation) on the creative performance of males, nor have female-male comparisons been reported in regard to any differences in the effects of extrinsic versus intrinsic motivation on creativity. Could it be that this effect has been limited to female participants? If so, the effect on female participants must be of sufficient strength to overcome the fact that in studies employing equal numbers of male and female participants, only half the group—the female participants—actually demonstrate a different level of creative performance depending on the motivational constraints under which they work.

The purpose of this investigation was to test for differences in the effects of anticipated evaluation on the creativity of junior high school girls and boys. The results of several pilot studies using students ranging in age from 5 to 13 suggested a possible developmental trend in such differences. Although the sample sizes in these studies were quite small, the older girls' creativity appeared to suffer more when they anticipated evaluation than did the creativity of boys of the same age and under the same conditions. Because of this age-related evidence from the pilot studies and because the period of early adolescence is a very gender-conscious period of development (Gilligan, Lyons, & Hanmer, 1990), eighth-grade (13- to 14-year-old) students were used as participants in this investigation. Poetry- and story-writing were used as the indices of creativity, with the poems and stories evaluated for creativity by experts using Amabile's (1982, 1983) consensual assessment technique. Each of the 66 female and 62 male participants wrote an original poem and an original story under conditions conducive to intrinsic motivation, and each participant later wrote one poem and one story under conditions that made extrinsic motivation highly salient. The primary hypothesis of this study was that

eighth-grade girls would show a larger decrement in creative performance than eighth-grade boys when the experimental situation was changed from one that encouraged intrinsic motivation to one that emphasized extrinsic motivation.

Method

Participants

The participants were 128 eighth-grade students, 66 girls and 62 boys. These participants represented almost the entire eighth-grade class of a racially mixed junior high school in southern New Jersey. The total eighth-grade class included 147 students; 5 students did not participate because they were not assigned to mainstream Language Arts classes, and 11 students were absent during one or more of the testing sessions and were therefore excluded from the study.

Tasks

Poetry-writing and story-writing tasks were used. Students were given prompts: They were assigned a topic for the poems (either "The Wind" or "The Four Seasons"), and for the stories they were given a line drawing with two characters (either a boy and a girl at a picnic or two men at a street corner) who were to be included in some way in their stories. All students wrote two poems and two stories, one of each under conditions that were conducive to intrinsic motivation and one of each under conditions that emphasized extrinsic motivation. The assignment of poem and story topics was counterbalanced, with half the students receiving each poem topic and each visual story prompt in each of the two conditions.

An earlier study (Baer, 1991) in which neither intrinsic nor extrinsic constraints were deliberately manipulated found little difference between female and male eighth-grade students' creativity using the same measures of creativity as were employed in this study. The female participants' poems and stories were both rated slightly higher for creativity than the male participants' poems and stories in that study, but the differences were slight and did not approach statistical significance.

Each of the 128 participants created two poems and two stories for a total of 516 samples of writing (256

poems and 256 stories). All were read independently by experts who did not know the students, their gender, or under which condition a given poem or story had been written. There were three judges for the poems and three judges for the stories. The three poetry experts were all published poets, two were editors of poetry journals, and all three were college professors accustomed to reading works by students, including younger students, that vary considerably in quality. Two had recently served as judges for a junior–senior high school poetry contest, which was one reason they were recruited for this study. The three short story experts were also all college professors. All were either currently teaching or had previously taught creative writing courses, and all were published writers. These experts were paid for their work as judges in this study.

The students' poems and stories were typed and spelling errors were corrected, but no other changes were made. Judges evaluated each poem or story only for its creativity. They were given the following instructions:

There is only one criterion in rating these tests: creativity. I realize that creativity doesn't exist in a vacuum, and to some extent creativity probably overlaps other criteria one may apply—aesthetic appeal, organization, richness of imagery, sophistication of expression, novelty of word choice, appropriateness of word choice, and possibly even correctness of grammar, for example—but I ask you to evaluate the poems [stories] solely on the basis of your thoughtful-but-subjective opinions of their creativity. The point is, you are the expert, and you needn't defend your choices or articulate a definition of creativity. What creativity means to you can remain a mystery—what I want you to do is use that mysterious expert sense to evaluate the poems [stories] for creativity.

A 1.0 (*low creativity*) to 5.0 (*high creativity*) rating scale was used, and judges were encouraged to use the full scale; that is, they were encouraged not to concentrate their ratings around a single score point. There were no specific limitations about the numbers of papers that were to fall in each scoring range, however.

Each poem and story received three ratings, one from each judge in that category. Four coefficient alpha interrater reliabilities were computed, one for each set

of poems written about the same topic or each set of stories written in response to the same visual prompt. Nunnally's (1978) formula for coefficient alpha (which is, in fact, a specialized version of the Spearman–Brown prophecy formula) was used. For the two sets of poems, the coefficient alphas were .78 and .81; for the two sets of stories, the coefficient alphas were .77 and .79. These interrater reliability coefficients are in the same range as those in previous studies involving verbal creativity (Amabile, 1983; Baer, 1993).

Procedure

The first set of poems and stories were written under conditions that emphasized intrinsic motivation. Because having one's earlier work evaluated results in an expectation of evaluation of one's later work (Amabile, 1983), it was not feasible to counterbalance the order of the conditions. Poems and stories were written in students' regular Language Arts classes under the direction of their regular classroom teachers. The students had one-half of a 50-min class period to write their poems, and the same amount of time, on a different day, to write their stories. Students were given the poem title or visual story prompt and asked to write a poem or story as an ungraded writing exercise. Teachers emphasized that the poems or stories must be written, but these poems and stories would not be evaluated in any way, nor would the poems or stories be read aloud, posted on a bulletin board, or exchanged with other students for feedback. Students were encouraged to write the most interesting stories and poems that they could and to enjoy the exercise. Their teachers told them that although they would in no way evaluate the stories and poems, they very much looked forward to reading them. It should be noted that asking students to do writing that would be collected but not evaluated was not an uncommon practice in the classes of any of the three teachers who participated in the study, and the students therefore were not suspicious about these assignments.

The condition just described is labeled, for the purposes of this investigation, the *intrinsic* condition, in contrast to the *extrinsic* condition described later. It could be argued that no assigned piece of writing can possibly be, in the strictest sense, intrinsically motivated, regardless of how much the teachers' directions may have tried to encourage intrinsic motivation or to

make it more salient. Intrinsic and extrinsic motivation are being used here not as dichotomous terms, but rather as relative ones. Following Amabile (1983), it is assumed that to the extent one kind of motivation is made more salient, the other becomes correspondingly less important.

The poem and story written under conditions that emphasized intrinsic motivation were completed several days before the extrinsic condition stories and poems were written. For these latter stories and poems, the experimenter came to each class and was introduced as a language arts specialist from the New Jersey State Department of Education. The experimenter then explained that the State Department of Education had started a new program, under which samples of each students' writing were to be collected and evaluated by experts. Not only would these unnamed experts evaluate the students' stories and poems, but photocopies would also be sent to the students' current teachers and to their ninth-grade teachers (testing was done in the spring of eighth grade), together with expert evaluations of their writing based on these samples. The original poems and stories would be kept on file at the State Department's office in Trenton. It was emphasized that students should do their very best work, as the overall quality of their writing would be judged on the basis of these two samples. Students were encouraged to write the most interesting story and poem that they could. As was the case with the intrinsic-condition stories and poems, the extrinsic-condition stories and poems were written in students' regular Language Arts classes. Students were given one full 50-min class period to complete both the story and the poem and were allowed to write them in either order. They turned both in together at the end of the class period.¹

Results

A 2 × 2 × 2 analysis of variance (ANOVA) was performed, with one between-subjects variable (Gen-

¹In a debriefing session following the completion of all poems and stories, the experimenter explained that the students' work would actually be evaluated by several persons, but that they would not know the identity of the students. This explanation was given in the context of a 1-hr presentation showing students how the anticipation of evaluation can influence intrinsic motivation and how they could minimize such effects by reminding themselves of the ways they enjoy or find interesting the activity in question.

der) and two within-subject variables (Motivational Condition and Task). Based on past research (Amabile, 1983), it was predicted that there would be a difference in the creativity of work produced under the two motivational conditions (extrinsic and intrinsic). This prediction was confirmed, $F(1, 378) = 5.91, p = .02$.

The primary hypothesis of this study was that there would be a Gender × Motivational condition interaction. This prediction was also confirmed, $F(1, 378) = 7.00, p = .01$. Full results of the ANOVA are reported in Table 1. One other comparison—Motivational Condition × Task—also yielded a statistically significant result, $F(1, 378) = 4.07, p = .04$; however, this was not a predicted difference and no attempt will be made here to interpret it.

Group means for all statistically significant comparisons are reported in Table 2. Of particular interest are the Gender × Motivational Condition means. For the boys, there was hardly any difference between the mean creativity ratings under conditions favoring either intrinsic ($M = 2.64, SD = 0.96$) or extrinsic ($M = 2.66, SD = 1.03$) motivation. For the girls, in contrast, the differences were considerable. Under conditions favoring intrinsic motivation the mean creativity rating was 3.01 ($SD = 1.05$), but under conditions favoring extrinsic

Table 1. Analysis of Variance

Source	df	F	p
Gender	1,126	2.001	.16
Condition	1,378	5.907	.02
Gender × Condition	1,378	6.999	.01
Task	1,378	0.013	.91
Gender × Task	1,378	0.148	.70
Condition × Task	1,378	4.074	.04
Gender × Condition × Task	1,378	1.513	.22

Table 2. Comparisons of Significantly Different Means

Comparison	Group	M	SD
Condition	Extrinsic	2.64	1.00
	Intrinsic	2.82	1.02
Gender × Condition	Female, Extrinsic	2.62	0.97
	Female, Intrinsic	3.01	1.05
	Male, Extrinsic	2.66	1.03
	Male, Intrinsic	2.64	0.97
Condition × Task	Extrinsic, Story	2.57	0.99
	Extrinsic, Poem	2.71	1.00
	Intrinsic, Story	2.91	1.03
	Intrinsic, Poem	2.74	1.02

motivation the mean creativity rating was only 2.62 ($SD = 0.97$).

Discussion

There is a wealth of research demonstrating the effects of evaluation and other extrinsic constraints—especially rewards—on creativity and intrinsic motivation (e.g., Amabile, 1983, 1985; Amabile et al., 1986; Amabile et al., 1990; Berglas et al., 1981; Hennessey & Amabile, 1988; Lepper & Greene, 1978). This study dealt only with anticipated evaluation and its effects on creativity. Although similar gender differences may be found in future research dealing with reward or other forms of extrinsic task constraints, the discussion here will be restricted to interpreting the effects of anticipated evaluation on creativity.

Looking only at Motivational Condition without regard to gender, the difference was statistically significant ($p = .02$), which is in line with previous research of this type. There was also a highly significant Gender \times Motivational Condition effect, however, which indicated that this effect was concentrated in female subjects. Of course one cannot assume that gender differences of this magnitude—or any gender differences of any kind—would be found among subjects of different ages. Early adolescence was chosen because it is a highly gender-conscious period of development. Therefore, it is to be expected that any gender differences that may exist would be more pronounced among this group than among either younger or older participants. Future research—or reanalysis of data from previous investigations to consider possible gender differences—will be required to understand more fully the developmental trajectory of differences in ways anticipated evaluation affects the creative performance of girls and boys.

Given that these differences may (or may not) be limited to early adolescent girls and boys, how are they to be understood? There are at least three possible interpretations of the observed Gender \times Motivational Condition difference that could explain that difference equally well. First, early adolescent girls may be *more attentive* than boys to cues from their social environment regarding anticipated evaluation and how this should determine the appropriate motivational set for a task. In consequence, the effects of task constraints favoring intrinsic and extrinsic motivation would have greater impact on their creative performance.

Second, early adolescent girls may simply *respond more* to differences in their own motivational set than boys. As a result, even when both girls and boys experience the same levels of intrinsic and extrinsic motivation, these different kinds of motivation would have greater impact on girls than boys. Under this interpretation, girls and boys would be equally receptive to cues from their social environment regarding the appropriate type of motivation; however, the difference between intrinsic and extrinsic sources of motivation would be more significant for girls than boys in terms of their effects on creative performance.

Third, early adolescent girls and boys may *respond differently* to cues from their social environment regarding the appropriate type of motivation. For example, although both girls and boys may be equally attentive to cues about anticipated evaluation, such anticipation may lead to a decrease in intrinsic motivation for girls but an increase for boys.

The results of this study do not help us choose among these interpretations. The first interpretation is consistent with research suggesting that girls at this age are typically more attentive to interpersonal communications and the expectations of others (Gilligan et al., 1990; Pool, 1994). Even if this difference in attentiveness does result in different levels of intrinsic or extrinsic motivation for girls and boys, however, it is still possible that girls and boys may respond differently to the cues to which they do attend. The three interpretations are not mutually exclusive; two or even all three may be involved. In this study, unfortunately, no measurements of levels of intrinsic motivation were made. In future investigations, assessing changes in these levels may help evaluate the significance of each of the three proposed interpretations.

Conclusions and Recommendations

The negative effects of extrinsic motivation, in the form of anticipated evaluation, include both undermining creative performance and lessening intrinsic motivation (Amabile, 1983). These are serious negative consequences, and they are the product of situations that are very common in the lives of children, especially in school settings. This study suggests that these effects are much stronger with eighth-grade girls than with eighth-grade boys. Teachers and others who routinely evaluate the work of girls of this age need to bear in mind that such evaluation may have a significant impact on the creative performance of girls and, quite probably,

on their level of intrinsic motivation. Previous research highlighted this problem (without reference to possible gender differences), and recommendations have been made of ways to deal with it in the classroom (Baer, 1997; Hennessey & Zbikowski, 1993). This investigation suggests that the problem may be limited to girls, at least at this age, and that the magnitude of the effect among girls may be even greater than previously believed.

The expectation of evaluation was the specific extrinsic constraint employed in this study. However, the effects of a wide variety of types of extrinsic motivation have been similar in their impact on creative performance (e.g., Amabile, 1983, 1985; Amabile et al., 1986; Amabile et al., 1990; Berglas et al., 1981; Hennessey & Amabile, 1988). It is therefore possible that other kinds of extrinsic constraints—especially doing something to receive some kind of reward—may also affect girls and boys differently.

There is, in fact, some evidence suggesting this may be the case. Kohn (1993) argued that the available evidence points to fairly consistent gender differences in how males and females respond to praise. In terms of the impact of rewards on intrinsic motivation, he claimed that “in general, praise is more likely to have undesirable consequences for females than for males” (Kohn, 1993, p. 106). Deci, Cascio, and Krusell (1975) presented evidence about the differential effects of rewards on boys and girls that, if it could be applied to the expectation of evaluation as well to the receiving of rewards, would support the third interpretation stated earlier (i.e., that early adolescent girls and boys may respond differently to cues from their social environment regarding the appropriate type of motivation). They claimed that “positive feedback increases the intrinsic motivation of males, whereas it decreases the intrinsic motivation of females” (p. 84). In two investigations of the effects of praise involving college students (Koestner, Zuckerman, & Koestner, 1987) and upper elementary school students (Koestner, Zuckerman, & Koestner, 1989), females’ and males’ levels of intrinsic and extrinsic motivation responded differently to praise, and they also responded differently to different kinds of praise (ability- versus effort-based). In both of the Koestner et al. studies, praise had a more negative impact on the females, and it sometimes had a positive effect on the males.

Quite apart from any gender differences in the impact of extrinsic constraints, there has recently been a

lively debate about the proper use of rewards in education (e.g., Kohn, 1991a, 1991b, 1993; Slavin, 1991a, 1991b). This study suggests that this debate should consider not only the potential positive and negative effects of rewards in general, but should also focus on how extrinsic constraints of all kinds should be used with different groups of students. Hennessey and Zbikowski’s (1993) attempt to find ways to immunize children against the negative effects of rewards by teaching them how to increase and maintain their own intrinsic motivation is both very timely and of special interest in terms of finding ways that teachers may fairly treat boys and girls differently in this regard.

The issue of how these differences develop is left to future research. Investigations designed to document whatever developmental trends there may be in the differences between boys and girls in response to motivational constraints—including both younger and older students—are needed before such theorizing can have a solid empirical basis. Ideally, these investigations would include studies employing (a) the same tasks as in this study; (b) different tasks, such as the well-research collage-making task (Amabile, 1983; Baer, 1993, 1994); (c) measures of changes in levels of intrinsic and extrinsic motivation; and (d) other forms of extrinsic constraints, including rewards and surveillance while working.

References

- Amabile, T. M. (1982). Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology, 43*, 997–1013.
- Amabile, T. M. (1983). *The social psychology of creativity*. New York: Springer-Verlag.
- Amabile, T. M. (1985). Motivation and creativity: Effects of motivational orientation on creative writing. *Journal of Personality and Social Psychology, 48*, 393–399.
- Amabile, T. M., Goldfarb, N., & Brackfield, S. C. (1990). Social influences on creativity: Evaluation, coercion, and surveillance. *Creativity Research Journal, 3*, 6–21.
- Amabile, T. M., Hennessey, B. A., & Grossman, B. S. (1986). Social influences on creativity: The effects of contracted-for reward. *Journal of Personality and Social Psychology, 50*, 14–23.
- Baer, J. (1991). Generality of creativity across performance domains. *Creativity Research Journal, 4*, 23–39.
- Baer, J. (1993). *Creativity and Divergent thinking: A task-specific approach*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Baer, J. (1994). Divergent thinking is not a general trait: A multi-domain training experiment. *Creativity Research Journal, 7*, 35–46.
- Baer, J. (1997). *Creative teachers, creative students*. Boston: Allyn & Bacon.

- Bem, D. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–62). New York: Academic.
- Berglas, S., Amabile, T. M., & Handel, M. (1981). *Effects of evaluation on children's artistic creativity*. Unpublished manuscript, Brandeis University, Waltham, MA.
- Calder, B., & Staw, B. (1975). Self-perception of intrinsic and extrinsic motivation. *Journal of Personality and Social Psychology*, 31, 599–605.
- deCharms, R. (1968). *Personal causation*. New York: Academic.
- Deci, E. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105–115.
- Deci, E., Cascio, W. F., & Krusell, J. (1975). Cognitive evaluation theory of some comments on the Calder and Staw critique. *Journal of Personality and Social Psychology*, 31, 81–85.
- Gilligan, C., Lyons, N. P., & Hanmer, T. J. (Eds.). (1990). *Making connections: The relational world of adolescent girls at Emma Willard School*. Cambridge, MA: Harvard University Press.
- Hennessey, B. A., & Amabile, T. M. (1988). Conditions of creativity. In R. J. Sternberg (Ed.), *The nature of creativity* (pp. 11–38). New York: Cambridge University Press.
- Hennessey, B. A., & Zbikowski, S. M. (1993). Immunizing children against the negative effects of reward: A further examination of intrinsic motivation training techniques. *Creativity Research Journal*, 6, 297–307.
- Kelly, H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska symposium on motivation* (Vol. 15, pp. 192–238). Lincoln: University of Nebraska Press.
- Kelly, H. (1973). The processes of casual attribution. *American Psychologist*, 28, 107–128.
- Koestner, R., Zuckerman, M., & Koestner, J. (1987). Praise, involvement, and intrinsic motivation. *Journal of Personality and Social Psychology*, 53, 383–390.
- Koestner, R., Zuckerman, M., & Koestner, J. (1989). Attributional focus of praise and children's intrinsic motivation. *Personality and Social Psychology Bulletin*, 15, 61–72.
- Kohn, A. (1991a). Cooperative grade grubbing versus cooperative learning. *Educational Leadership*, 48(5), 83–87.
- Kohn, A. (1991b). Don't spoil the promise of cooperative learning. *Educational Leadership*, 48(5), 93–94.
- Kohn, A. (1993). *Punished by rewards*. Boston: Houghton Mifflin.
- Lepper, M., & Greene, D. (1975). Turning work into play: Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. *Journal of Personality and Social Psychology*, 31, 479–486.
- Lepper, M., & Greene, D. (1978). *The hidden costs of reward*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Lepper, M., Greene, D., & Nisbett, R. (1973). Undermining children's intrinsic interest with extrinsic rewards: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology*, 28, 129–137.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Pool, R. (1994). *Eve's rib: Searching for the biological roots of sex differences*. New York: Crown.
- Ross, M. (1975). Salience of reward and intrinsic motivation. *Journal of Personality and Social Psychology*, 32, 245–254.
- Slavin, R. E. (1991a). Group rewards make groupwork work. *Educational Leadership*, 48(5), 89–91.
- Slavin, R. E. (1991b). Synthesis of research on cooperative learning. *Educational Leadership*, 48(5), 71–82.

