

## Affect as a Determinant of Egotism: Residual Excitation and Performance Attributions

Peter M. Gollwitzer and Walter B. Earle  
University of Texas at Austin

Walter G. Stephan  
New Mexico State University

An experiment was conducted to investigate the influence of outcome-related affect on subsequent causal attributions. After working on a social skills test, college students engaged in a physical exercise task. The students were given success or failure feedback on the social skills test either 1, 5, or 9 minutes after the exercise. Excitation transfer theory suggests that the residual arousal from the exercise in the 5-minute condition may elevate the positive and negative affective states elicited by the success and failure feedback. Thus, increased attributional egotism in the 5-minute condition was predicted. The principal findings are as follows: (a) Subjects preferred internal factors to explain success, whereas external factors were blamed for failure, and (b) ego-defensive attributions following failure and ego-enhancing attributions following success were more pronounced in the 5-minute condition than in the 1-minute and 9-minute conditions. The results support the idea that outcome-related affect mediates egotistical performance attributions.

A firmly established finding in the recent social psychology literature is the phenomenon of asymmetrical attributions after success and failure. People tend to attribute success to their efforts, abilities, or other dispositions, whereas they attribute failure to bad luck, task difficulty, or other external variables. The earliest results hinting at this pattern stem from studies that analyzed attributions for performance outcomes involving teaching tasks (Beckman, 1970; Johnson, Feigenbaum, & Weiby, 1964). Since then, numerous other studies have replicated this finding using a variety of different paradigms (Miller, 1976; Snyder, Stephan, & Rosen-

field, 1976; Streufert & Streufert, 1969; for a review, see Bradley, 1978). Whenever researchers have failed to obtain this asymmetrical attributional pattern following success and failure (Beckman, 1973; Feather & Simon, 1971; Wortman, Costanzo, & Witt, 1973), self-presentational cues inherent in the particular paradigms could have accounted for the "counterdefensive" attributions observed.

Several explanations have been suggested for the phenomenon of asymmetrical performance attributions. The self-presentational explanation points to distortions in the assignment of potential causes in the service of protecting a public image (Schneider, 1969; Weary & Arkin, 1981). Riess, Rosenfeld, Melburg, and Tedeschi (1981) argue that this explanation is not a full account of the phenomenon because individuals' *private* perceptions of causes show the same bias. Other explanations of this bias have been advanced in terms of (a) information-processing notions (Miller & Ross, 1975) and (b) a motive to protect and enhance self-esteem (Arkin, Gleason, & Johnston, 1976; Davis & Stephan, 1980; Federoff & Harvey, 1976; Miller, 1976).

---

We would like to thank John Draper and Joan Saltz for serving ably as experimenters. Frederick Gibbons, Heinz Heckhausen, Melvin Snyder, Steve West, and Dolf Zillmann provided helpful comments on an earlier version of this article. Portions of this article were presented at the annual meeting of the American Psychological Association, Montreal, Quebec, Canada, September 1980. This research was funded by National Science Foundation Grant BNS 7913828 to Melvin Snyder and Robert Wicklund.

Requests for reprints should be sent to Peter M. Gollwitzer, who is now at the Psychologisches Institut, Ruhr-Universität Bochum, D-463 Bochum 1, Federal Republic of Germany.

Bradley (1978), in a review of studies on the asymmetrical attributional pattern, concludes that the evidence favors an explanation in terms of motives to protect and enhance self-esteem. The idea that the asymmetrical attributional pattern serves self-esteem motives has a long history. Hoppe (1930, reprinted in de Rivera, 1976), while studying shifts of aspiration after success and failure, observed that when his subjects regarded their performance on a certain task as an expression of self-worth, they attempted to push the responsibility for failure away from themselves. Hoppe concluded that this kind of withdrawal from the fact of failure serves to maintain subjects' self-esteem. Recent research by Miller (1976) and Rosenfield and Stephan (1978) supports Hoppe's observation that ego-involvement is a crucial determinant of the asymmetrical attributional pattern. Hoppe's theoretical conclusion has recently been recast in terms of attributional egotism, an idea advanced by Snyder, Stephan, and Rosenfield (1978), which suggests that the asymmetrical attributional pattern after success and failure stems from a motive to maintain or enhance self-worth.

Weary (1980) proposed that outcome-related affect mediates attributional egotism. According to Weary, self-enhancing internal attributions are set in motion by the positive affective state (i.e., joy, pleasure) elicited by success, and ego-defensive, external attributions are mediated by the negative affective state (i.e., anxiety, displeasure) elicited by failure. Internal attributions for success connect the positive feelings associated with success to valued personal qualities (e.g., ability) and thus allow individuals a measure of satisfaction with their achievements. People who experience strong negative affect after failure may perceive that an important aspect of the self is threatened. External attributions for failure enable individuals to dissociate themselves from this threat and terminate the accompanying negative feelings quickly.

Stephan and Gollwitzer (1981) have proposed that there are two stages to this process. First, on the basis of past experience, achievement outcomes elicit general positive or negative affective responses (Stage 1). Second, these affective states result in attributions

that serve to enhance or protect self-esteem (Stage 2). If an individual experiences a low level of affect following performance feedback, the individual is presumed to regard the task (as well as the ability measured) as unimportant—that is, perceived ego-involvement is low. Accordingly, there should be a diminished tendency to make egotistical attributions. The reverse should obtain in the case of intense outcome-related affect.

Stephan and Gollwitzer (1981) designed a false arousal feedback study to test this two-stage hypothesis. Subjects were given either low- or high-arousal feedback by means of a bogus galvanic skin response (GSR) monitor after being informed of a negative or positive outcome on a perceptual matching task. The differences in perceived arousal after performance feedback were reflected in subjects' performance attributions: High-arousal feedback led to more egotistical attributions than low-arousal feedback. In a second study, ambiguity was created concerning the source of the affect experienced after subjects had received performance feedback on a logical thinking task. Half of the subjects were provided with an explanation for their affective responses in the form of a placebo pill. If egotistical attributions after failure dissociate the individual from negative outcome-related affect, less egotism would be expected in this condition because the placebo already achieves such dissociation. If egotistical attributions after success link positive outcome-related affect to internal attributes, less egotism should be observed with the placebo, which leads the individual to question whether the affect is outcome related. The results of the study confirmed these predictions.

In these studies, perception of the source or the intensity of outcome-related affect was manipulated. These manipulations may have been differentially effective for success and failure conditions, and thus the role of affect may have been underestimated. For instance, subjects may attempt to deny that they are experiencing a strong affective response to failure because strong affect would signal that failure on a task was relevant to an important aspect of the self—an inference subjects would probably like to avoid. Accordingly, the manipulation of perceived

arousal is more likely to be accepted by subjects after success than after failure. Not surprisingly, Stephan and Gollwitzer (1981, Study 1) found that high arousal feedback was considered more accurate after success than after failure. A parallel argument can be advanced for the manipulation of the perceived source of arousal (Study 2). Here the success condition is the critical one; that is, subjects should be relatively unwilling to accept an alternative explanation for the source of the experienced positive affect because this hinders self-enhancing attributions.

In the present study, a technique was selected that permits outcome-related affect to be manipulated directly, thus avoiding any shortcomings associated with the manipulation of the perceived intensity or source of experienced affect. The technique is based on excitation transfer theory (Zillmann, *in press*). Zillmann's theory relies on the assumption that the excitatory activity of emotions that have sympathetic dominance in the autonomic nervous system ("active emotions," cf. Leventhal, 1979) is largely nonspecific and redundant; even positive and negative emotions such as pleasure and distress can be shown to create comparable changes in the sympathetic nervous system (e.g., Levi, 1965; Pátkai, 1971). There is a tendency to ascribe the excitatory reaction in toto to one specific inducing condition that defines the quality of the affective state. However, because excitatory activity does not terminate abruptly but dissipates rather slowly, decaying sympathetic excitation may be transferred to subsequent, potentially independent emotional experiences. The nonspecificity and redundancy of excitatory activity reduce the individual's ability to partition or isolate excitation from reactions to different inducing conditions.

Accordingly, residues of excitation from arousing tasks (e.g., physical exercise) can intensify subsequent, potentially independent affective states such as feelings of anger (Zillmann & Bryant, 1974; Zillmann, Katcher, & Milavsky, 1972) or sexual excitement (Cantor, Zillmann, & Bryant, 1975). The boundary conditions for the phenomenon are as follows: (a) The individual is responding to the emotion-inducing stimulus and assessing the response; (b) the levels of

sympathetic excitation from the initial arousing task are still elevated; and (c) the individual is not provided with obtrusive interoceptive and/or exteroceptive cues (e.g., being out of breath) that link the excitatory state to prior stimulation.

We reasoned that if we could arrange for performance feedback to be given under conditions in which residues of excitation from prior stimulation combine with the excitatory reaction to performance feedback, outcome-related affect should be intensified, and attributional egotism should be elevated above base level. To achieve such a condition, the outcome feedback must be an affectively significant event. In the present study, we attempted to create these conditions by having subjects work on a task that requires identification of real suicide notes embedded in a series of fictitious suicide notes (cf. Ross, Lepper, & Hubbard, 1975). The task was described as a well-established test of social sensitivity, measuring a skill that can be important in the real world.

To obtain the excitation transfer effect, the outcome feedback must be given at a point in time when residual excitation from a prior arousing task is still present, but no cues remain that might link the excitatory state to the prior task. Cantor, Zillmann, and Bryant (1975) established a procedure that effectively creates the critical conditions for excitation transfer. Their subjects were asked to engage in a short exercise task. During recovery, perceived and actual excitation measures were taken. Cantor et al. found that (a) actual and perceived residual excitation was high after 1 minute of recovery, (b) moderate but underestimated residual arousal was present after 5 minutes of recovery, and (c) no residual excitation remained after 9 minutes. Cantor et al. reasoned that no transfer of excitatory residues to a second, independent emotion should occur after 9 minutes of recovery because excitatory residues have dissipated. In addition, no transfer would be expected after 1 minute of recovery. At that point, the linkage of the experienced excitation to the exercise should still be undeniable because obtrusive feedback cues from the excitatory activity (sensations of tenseness, trembling hands, heavy breathing, heart pounding, etc.) would still be present.

After 5 minutes, these obtrusive feedback cues would have vanished, and thus the 5-minute postexercise condition should favor the occurrence of excitation transfer.

## Method

### Overview

A procedure similar to that used by Cantor et al. (1975) was employed in a pretest for the present study, and analogous results were obtained. In the main experiment, subjects worked on the suicide-notes test prior to engaging in an exercise task. Success or failure feedback on this test was then given 1, 5, or 9 minutes after subjects completed pedaling an exercise bicycle. Subjects in the 5-minute condition were expected to experience elevated positive or negative affect as a result of the transfer of residual excitation created by the exercise. No elevation of outcome-related affect was expected in the 1-minute and 9-minute conditions. Shortly after subjects were given success or failure feedback, they were asked to attribute their performance outcome to internal (ability, effort) or external (task difficulty, luck) factors. If affect is a mediator of attributional egotism, more pronounced ego-enhancing attributions after success and more pronounced ego-defensive attributions after failure should occur in the 5-minute condition compared to the 1-minute and 9-minute conditions.

### Subjects

Seventy-three male undergraduates from an introductory psychology course served as subjects in the experiment. The data of 7 subjects were excluded from the final analyses because they indicated that they were suspicious about the performance feedback.

### Procedure

The experimental sessions were conducted by two experimenters, one male (E1) and one female (E2). Subjects were greeted by E1, who explained that the session involved two separate experiments. The first experiment was introduced as a social sensitivity test designed to measure the subject's ability to perceive the feelings of others. Specifically, subjects were told that they were to differentiate fake expressions of suicidal intentions from genuine ones. The second experiment was said to be an exercise task. Its purpose was described as a study of the effects of physical arousal on a person's liking for various objects in the natural environment.

Following this introduction, E1 proceeded with the social sensitivity test. He stated at the outset that the test had proven to be a reliable, valid indicator of individuals' social sensitivity. Scoring norms for the test were also presented. The subject was told that college students averaged 12 correct answers out of a possible 17. A score below 12 constituted failure on the test; a score above 12 indicated success. The test required subjects to read pairs of suicide notes (taken from Shneidman & Farberow, 1957) on .13 m × .18 m cards. Each subject had to decide which one of the two notes was fake and which one was genuine. At the end of the allotted time for

reading each pair, the subject was instructed to indicate which was the genuine note on the answer sheet and to go on to the next trial.

After the subject had completed the test, E1 dismissed himself on the pretext that he was going to score the results. At this point, E2 entered the room and asked the subject to participate in the second experiment while he waited for his test result. She explained that this study would measure the effects of physical arousal on a person's perception of the natural environment. E2 asked each subject to complete a short physical fitness questionnaire, which inquired about the subject's degree of physiological fitness (on a 9-point scale) and the amount in hours of his weekly physical exercise. Next, each subject was seated on the exercise bicycle and a base-level systolic blood pressure reading (using a Labtronix LAB4001 sphygmomanometer) was taken. At this point, the experimenter started the slide projector, which was set up to display a series of nature slides. The slides were changed automatically, and the viewing time for each slide was 15 sec. All subjects spent 10 minutes sitting on the bicycle and viewing the slides. As each slide was presented, the subjects informed E2 how much they liked the depicted scenery by calling out a number from 1 to 10.

*Manipulation of residual arousal.* Subjects in all conditions were asked to pedal the bicycle for 1 minute as fast as they could. Subjects in the 1-minute condition (who were informed of their test results 1 minute after they finished pedaling) were asked to start pedaling after 9 minutes of slide viewing. Subjects in the 5-minute condition began pedaling after 5 minutes. Subjects in the 9-minute condition started the exercise after 1 minute of slide viewing. One minute after the end of the slide show, E2 obtained a systolic blood pressure reading and a self-report of the subject's arousal level (on a 100-point scale), and then signaled E1 to reenter the room and give the outcome feedback. E1 remained blind to the subject's recovery condition.

*Manipulation of perceived outcome.* The performance feedback took the form of a handwritten note attached to each subject's corrected answer sheet. In the failure condition, the subject was informed that he had not performed very well on the social sensitivity test. Only six of the subject's answers had been correct; 78% of the college students had obtained higher scores. In the success condition, the subject was told that he had performed very well. Thirteen of his answers had been correct; only 12% of the college student population had scored better than that. All subjects were instructed to study the feedback and the corrected answer sheet. When subjects had done so, they were asked to complete a final questionnaire.

*Attribution measures.* In all conditions, the last phase of the experiment began with the administration of an attribution questionnaire. Subjects were asked to indicate the degree to which ability, effort, task difficulty, and luck had influenced their outcome on the social sensitivity test. Each causal factor was accompanied by an 11-point scale ranging from "hindered greatly" through "had no effect" to "helped greatly" (Snyder, Stephan, & Rosenfield, 1976). After subjects had completed the attribution questionnaire, they were asked to rate their performance on the test in terms of the percentage of people who had done better than themselves.

Table 1  
*Mean Perceived and Adjusted Actual Arousal  
 Prior to Performance Feedback*

Arousal measure	Postexercise recovery condition		
	1 minute	5 minutes	9 minutes
Self-report (0-100)	73 <sub>a</sub>	43 <sub>b</sub>	34 <sub>b</sub>
Systolic blood pressure adjusted for base levels (millimeters of mercury)	161 <sub>a</sub>	142 <sub>b</sub>	122 <sub>c</sub>

Note. For each measure, means having no subscripts in common differ significantly at  $p < .01$ . Success and failure conditions are collapsed, thus  $n = 22$  for each recovery condition.

## Results

### *Equivalence of Groups*

Subjects' self-ratings of their physical fitness and amount of weekly exercise were subjected to a  $2 \times 3$  (Outcome  $\times$  Recovery Condition) analysis of variance (ANOVA). There were no significant effects for either of these two analyses (all  $F$ s  $< 1.0$ ).

### *Effectiveness of Manipulations*

An analysis of covariance on subjects' systolic blood pressure scores, using base-level scores as a covariate, revealed a significant effect for recovery condition,  $F(2, 59) = 37.5$ ,  $p < .01$ . In the 1-minute recovery condition, adjusted blood pressure scores (Kerlinger & Pedhazur, 1973, p. 267) were significantly higher than in the 5-minute condition,  $t(59) = 4.4$ ,  $p < .001$ . The same was true for the 5-minute condition compared to the 9-minute condition,  $t(59) = 4.5$ ,  $p < .001$  (see Table 1).

The ANOVA on subjects' reported arousal scores showed a significant main effect for recovery condition,  $F(2, 60) = 37.4$ ,  $p < .01$ , that was based primarily on the difference between the 1-minute and 5-minute conditions,  $t(42) = 6.8$ ,  $p < .001$ . The difference between the 5-minute and 9-minute conditions was much smaller and did not reach significance,  $t(42) = 1.68$ ,  $p = .10$  (see Table 1). The pattern of data obtained for actual and perceived arousal parallels the results reported by Cantor et al. (1975), as discussed

above. It affirms that the necessary conditions for excitation transfer were established in the 5-minute recovery condition of the present experiment.

The manipulation check on subjects' perceived test outcome ("What percent of the people who took this test did better than you did?") shows a clear main effect for the outcome manipulation,  $F(1, 58) = 627.4$ ,  $p < .001$ . That is, subjects who received success feedback indicated a smaller percentage of people ( $M = 21.2$ ) than subjects given failure feedback ( $M = 77.1$ ). The outcome manipulation was equally effective for the different recovery conditions; there were no significant main effects or interactions associated with the recovery variable.

*Attribution factors.* The attribution factors were scored so that the higher the score, the more the factor was perceived to have contributed to the performance outcome. Thus, attributions to ability, effort, task difficulty, and luck were scored from +5 (helped greatly) to -5 (hindered greatly) for subjects in the success condition; this scoring was reversed for subjects in the failure condition (Bernstein, Stephan, & Davis, 1979).

An attributional composite was created by adding the attributions to the external factors (task difficulty, luck) and subtracting them from the sum of the attributions to the internal factors (ability, effort). The attributional composite thus reflects subjects' emphasis on internal factors compared to external ones. Our predictions were that the preference for internal factors following success and the preference for external factors following failure would be more pronounced in the 5-minute recovery condition than in the 1-minute and 9-minute recovery conditions. Accordingly, the highest mean attributional composite score should be observed in the 5-minute success condition, whereas the lowest mean attributional composite score should be observed in the 5-minute failure condition.

The attributional composite was subjected to a  $2(\text{outcome}) \times 3(\text{recovery condition})$  ANOVA. As expected, this two-way ANOVA yielded a significant Outcome  $\times$  Recovery interaction,  $F(2, 60) = 5.4$ ,  $p < .01$ . In addition, a significant outcome main effect was found,  $F(1, 60) = 20.7$ ,  $p < .001$ , indicating that internal factors were preferred over ex-

ternal factors when success as opposed to failure was being explained (see Table 2).

Our reasoning implies that the significant Outcome  $\times$  Recovery interaction should be based on extreme attribution scores in the 5-minute recovery condition. Only in this condition should excitation transfer occur, causing an increase in internal attributions after success and an increase in external attributions after failure. Accordingly, follow-up analyses comparing the 5-minute condition with the 9-minute condition were run to test for a significant interaction term. A parallel analysis compared the 5-minute condition to the 1-minute condition. The  $2 \times 2$  ANOVA for the 5-minute versus the 9-minute conditions yielded the predicted significant Outcome  $\times$  Recovery interaction,  $F(1, 40) = 10.2, p < .004$ . In addition, a significant outcome main effect was found,  $F(1, 40) = 24.1, p < .001$ , again indicating the common asymmetrical attributional pattern. The  $2 \times 2$  ANOVA for the 1-minute versus the 5-minute conditions also showed the expected significant interaction term,  $F(1, 40) = 7.1, p < .02$ , and the main effect for outcome,  $F(1, 40) = 21.8, p < .001$ .

### Discussion

The results of the present study show that egotistical attributions are enhanced under conditions permitting the transfer of excitation from an irrelevant source. When subjects were highly aroused but could easily link their arousal to the physical exercise in which they had engaged shortly before (1-minute condition), they were less ego-defensive than when residual arousal could be transferred to outcome-related affect (5-minute condition). By the time the arousal produced by the physical exertion had dissipated (9-minute condition), little ego-defensiveness remained. The pattern of results for success paralleled the one obtained for failure. Subjects in the 5-minute condition were more ego-enhancing in their attributions than subjects in the 1-minute or 9-minute conditions.

The elevated asymmetrical pattern in the 5-minute condition could be accounted for without referring to outcome-related affect by arguing that arousal from the exercise (irrelevant drive) combined with arousal from the task feedback (relevant drive) to

Table 2  
*Mean Attribution Scores (Internal-External Composite) Following Success and Failure*

Outcome feedback	Postexercise recovery condition		
	1 minute	5 minutes	9 minutes
Success	3.7	5.3	1.7
Failure	1.4	-3.4	-1

Note. The higher the attribution score, the greater the subjects' preference for internal attributions. For all 6 conditions  $n = 11$ .

produce one overall drive state. The accumulative force of this state could be seen as the energizer of internal attributions after success and external attributions after failure, a behavior that is prepotent in the habit structure related to success and failure experiences on ego-involving tasks. Although this Hullian (Hull, 1943, 1952) argument can account for elevated egotism in the 5-minute condition and reductions in egotism in the 9-minute condition, difficulties arise when the results of the 1-minute condition have to be explained by the same logic. A straightforward Hullian position would lead to a prediction of stronger asymmetrical attributions here than in the 5-minute condition because the irrelevant drive level is higher in the 1-minute condition. Also, relevant drive has not changed, and the stimulus conditions controlling habit appear to be the same—that is, subjects are still failing or succeeding on the same ego-involving task. Finally, asymmetrical attributions should still be prepotent in the habit structure. Accordingly, the Hullian argument fails to explain the low levels of attributional egotism that were observed in the 1-minute condition of the present study.

The Hullian argument as outlined ignores the possibility that cognitive processes can circumvent the energization of relevant drive by irrelevant drive (e.g., Zillmann, in press-a). It is likely, however, that subjects in the 1-minute condition attributed the bulk of their arousal to the exercise, and consequently this arousal did not energize attributional egotism. The attribution of arousal to the exercise deprived the positive and negative outcome-related affect of emotional intensity and, as a result, the urgency for ego-defensive attributions was reduced and

ego-enhancing attributions became less attractive.<sup>1</sup> A similar process occurred in the second study reported by Stephan and Gollwitzer (1981). In this study, subjects who could attribute outcome-related affect to a placebo also displayed lowered levels of attributional egotism.

The findings of the present study are difficult to explain in terms of information-processing approaches to asymmetrical attributions for success and failure (Miller & Ross, 1975). Miller and Ross suggest that asymmetrical attributions after success and failure are due to habitual information-processing strategies. For example, people tend to expect their behaviors to produce success based on their knowledge of their abilities and of their willingness to exert sufficient effort to succeed. Thus, actual success tends to be attributed to the factors that constitute the basis for expecting success, whereas failure is attributed to other (external) factors. The findings of the present study suggest that subjects' asymmetrical attributions after success and failure vary with the intensity of the affective states associated with the performance outcome. Outcome expectancies should not have been affected by the arousal manipulation and, therefore, cannot account for the present findings.

Attribution theorists and researchers in the area of achievement motivation (Nicholls, 1975; Riemer, 1975; Weiner, 1972) have proposed that causal attributions for positive and negative outcomes determine subsequent affective responses. This approach considers affect a consequence of attributions, whereas our proposal that affect mediates egotism conceives of outcome-related affect as an antecedent of performance attributions. Stephan and Gollwitzer (1981) have reconciled Weiner's work on attribution and affect (Weiner, Russell, & Lerman, 1978, 1979) with the notion that outcome-related affect mediates attributional egotism by suggesting that attributions are used to translate outcome-related affect into specific emotions through a cognitive labeling process. For example, the negative affect produced by failure is likely to be labeled "shame" or "regret" when internal attributions are made, but when external attributions are made this negative affect is more likely to be labeled "hopelessness" or "surprise."

We believe the relationship between outcome, affect, attributions, and emotions can be conceptualized as a three-stage process. In Stage 1, outcome elicits affect; in Stage 2, the quality (positive or negative) and intensity of the affect determine the attributions that are made for the outcome; and in Stage 3, the quality of the affect and the attributions that are made jointly determine the emotional labels that are selected. Thus, in the present model cognitive and motivational factors both play a major role. Motivational factors predominate in the achievement attribution stage to the degree that important aspects of the self are implicated, whereas cognitive processes predominate in the emotional labeling stage.

<sup>1</sup> In the 1-minute condition the subjects attributed success more to internal factors than failure, but there was a slight tendency to attribute even failure to internal factors. The most likely explanation for the latter finding is that the negative affective state produced by their recent exertion offered the subjects an opportunity to attribute whatever negative affect was generated by failure to the exercise task, thereby eliminating any need to make ego-defensive attributions. The fact that the subjects in the 9-minute failure condition did not engage in any self-blame supports this suggestion. They could not reasonably attribute any of their arousal to the exercise and thus their attributions tended to be more external than those of the subjects in the 1-minute failure condition.

## References

- Arkin, R. M., Gleason, J. H., & Johnston, S. Effects of perceived choice, expected outcome, and observed outcome of an actor on the causal attributions of actors. *Journal of Experimental Social Psychology*, 1976, 12, 151-158.
- Beckman, L. Effects of students' performance on teachers' and observers' attributions of causality. *Journal of Educational Psychology*, 1970, 61, 76-82.
- Beckman, L. Teachers' and observers' perceptions of causality for a child's performance. *Journal of Educational Psychology*, 1973, 65, 198-204.
- Bernstein, W. M., Stephan, W. G., & Davis, M. H. Determinants of performance attributions: A path analytic approach. *Journal of Personality and Social Psychology*, 1979, 37, 1810-1821.
- Bradley, G. W. Self-serving biases in the attribution process: A re-examination of the fact or fiction question. *Journal of Personality and Social Psychology*, 1978, 36, 56-71.
- Cantor, J. R., Zillmann, D., & Bryant, J. Enhancement of experienced sexual arousal in response to erotic stimuli through misattribution of unrelated residual excitation. *Journal of Personality and Social Psychology*, 1975, 32, 69-75.
- Davis, M. H., & Stephan, W. G. Attributions for exam performance. *Journal of Applied Social Psychology*, 1980, 10, 235-248.

- de Rivera, J. *Field theory as human-science: Contributions of Lewin's Berlin group*. New York: Gardner Press, 1976.
- Feather, N. T., & Simon, J. G. Causal attributions for success and failure in relation to expectations of success based upon selective or manipulative control. *Journal of Personality*, 1971, 39, 527-541.
- Federoff, N. A., & Harvey, J. H. Focus of attention, self-esteem, and attribution of causality. *Journal of Research in Personality*, 1976, 10, 336-345.
- Hoppe, F. Erfolg und Misserfolg. *Psychologische Forschung*, 1930, 14, 1-63.
- Hull, C. L. *Principles of behavior: An introduction to behavior theory*. New York: Appleton-Century-Crofts, 1943.
- Hull, C. L. *A behavior system: An introduction to behavior theory concerning the individual organism*. New York: Wiley, 1952.
- Johnson, T. J., Feigenbaum, R. J., & Weiby, M. Some determinants and consequents of the teacher's perception of causation. *Journal of Educational Psychology*, 1964, 55, 237-246.
- Kerlinger, F. N., & Pedhazur, E. J. *Multiple regression in behavioral research*. New York: Holt, Rinehart & Winston, 1973.
- Leventhal, H. A perceptual-motor processing model of emotion. In P. Pliner, K. R. Blankenstein, & I. M. Spigel (Eds.), *Advances in the study of communication and affect: Vol. 5. Perception of emotion in self and others*. New York: Plenum Press, 1979.
- Levi, L. The urinary output of adrenalin and noradrenalin during pleasant and unpleasant emotional states. *Psychosomatic Medicine*, 1965, 27, 80-85.
- Miller, D. T. Ego involvement and attributions for success and failure. *Journal of Personality and Social Psychology*, 1976, 34, 901-906.
- Miller, D. T., & Ross, M. Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin*, 1975, 82, 213-225.
- Nicholls, J. G. Causal attribution and other achievement-related cognitions: Effects of task outcome, attainment value and sex. *Journal of Personality and Social Psychology*, 1975, 31, 379-399.
- Pátkai, P. Catecholamine excretion in pleasant and unpleasant situations. *Acta Psychologica*, 1971, 35, 352-363.
- Riemer, B. S. Influence of causal beliefs on affect and expectancy. *Journal of Personality and Social Psychology*, 1975, 31, 1163-1167.
- Riess, M., Rosenfeld, P., Melburg, V., & Tedeschi, J. T. Self-serving attributions: Biased private perceptions and distorted public descriptions. *Journal of Personality and Social Psychology*, 1981, 41, 224-231.
- Rosenfeld, D., & Stephan, W. G. Sex differences in attributions for sex-typed tasks. *Journal of Personality*, 1978, 46, 244-250.
- Ross, L., Lepper, M. R., & Hubbard, M. Perseverance in self-perception and social perception: Biased attributional processes in the debriefing paradigm. *Journal of Personality and Social Psychology*, 1975, 32, 880-892.
- Schneider, D. J. Tactical self-presentation after success and failure. *Journal of Personality and Social Psychology*, 1969, 13, 262-268.
- Shneidman, E. S., & Farberow, N. L. *Clues to suicide*. New York: McGraw-Hill, 1957.
- Snyder, M. L., Stephan, W. G., & Rosenfeld, D. Egotism and attribution. *Journal of Personality and Social Psychology*, 1976, 33, 435-441.
- Snyder, M. L., Stephan, W. G., & Rosenfeld, D. Attributional egotism. In J. Harvey, W. Ickes, & R. Kidd (Eds.), *New directions in attribution research* (Vol. 2). Hillsdale, N.J.: Erlbaum, 1978.
- Stephan, W. G., & Gollwitzer, P. M. Affect as a mediator of attributional egotism. *Journal of Experimental Social Psychology*, 1981, 17, 443-458.
- Streufert, S., & Streufert, S. C. Effects of conceptual structure, failure, and success on attribution of causality and interpersonal attitudes. *Journal of Personality and Social Psychology*, 1969, 11, 138-147.
- Weary, G. An examination of affect and egotism as mediators of bias in causal attribution. *Journal of Personality and Social Psychology*, 1980, 38, 348-351.
- Weary, G., & Arkin, R. M. Attributional self-preservation. In J. Harvey, W. Ickes, & R. Kidd (Eds.), *New directions in attribution research* (Vol. 3). Hillsdale, N.J.: Erlbaum, 1981.
- Weiner, B. *Theories of motivation: From mechanism to cognition*. Chicago: Markham, 1972.
- Weiner, B., Russell, D., & Lerman, D. Affective consequences of causal ascriptions. In J. H. Harvey, W. Ickes, & R. E. Kidd (Eds.), *New directions in attribution research* (Vol. 2). Hillsdale, N. J.: Erlbaum, 1978.
- Weiner, B., Russell, D., & Lerman, P. The cognition-emotion process in achievement-related contexts. *Journal of Personality and Social Psychology*, 1979, 37, 1211-1220.
- Wortman, C. B., Costanzo, P. R., & Witt, T. R. Effect of anticipated performance on the attributions of causality to self and others. *Journal of Personality and Social Psychology*, 1973, 27, 372-381.
- Zillmann, D. Arousal and aggression. In R. G. Geen & E. Donnerstein (Eds.), *Aggression: Theoretical and empirical reviews*. New York: Academic Press, in press. (a)
- Zillmann, D. Transfer of excitation in emotional behavior. In J. T. Cacioppo & R. E. Petty (Eds.), *Social psychophysiology*. New York: Guilford Press, in press. (b)
- Zillmann, D., & Bryant, J. The effect of residual excitation on the emotional response to provocation and delayed aggressive behavior. *Journal of Personality and Social Psychology*, 1974, 30, 782-791.
- Zillmann, D., Johnson, R. C., & Day, K. D. Attribution of apparent arousal and proficiency of recovery from sympathetic activation affecting excitation transfer to aggressive behavior. *Journal of Experimental Social Psychology*, 1974, 10, 503-515.
- Zillmann, D., Katcher, A. H., & Milavsky, B. Excitation transfer from physical exercise to subsequent aggressive behavior. *Journal of Experimental Social Psychology*, 1972, 8, 247-259.

Received July 6, 1981

Revision received March 3, 1982 ■