

## Attribution–Affect Relationships following Classroom Performance

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Two studies that examine distinct affect–attribution linkages in the context of an actual examination are reported. The results provide partial support for Weiner's model but also suggest that attributions are related to positive affect when the attributions are associated with the potential of satisfactory performance. That is, attributions generate positive affect to the extent that such attributions help ensure good performance.

Weiner (1980) has recently suggested that specific affective reactions accompany unique causal attributions to performance outcomes. Furthermore, he postulates that the resultant affect may act as motivators of actions and cues guiding self-perception. His work has clear implications in achievement contexts. If it can be demonstrated that students' feelings of success or failure following test performance generate distinct affects depending on the causal attributions they use to explain their performance, then educators can use this knowledge to enhance their understanding of student behavior. The experiments reported in this article investigate Weiner's model in the context of actual classroom examinations.

The initial studies of the relationship of affect to attributions found that internal attributions (effort, ability) generated more intense affective reactions than external attributions (task difficulty, luck) (Reimer, 1975; Weiner, 1974; Weiner & Kukla, 1970; Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1981) and that pride for success and shame for failure was greatest for internal attributions. These studies used the same type of research paradigm. Subjects projected the feelings of others after reading a short paragraph in which a single causal attribution was manipulated. Research done in more real-lifelike settings has partially replicated these initial studies. Bailey, Helm, and Gladstone (1975); Frieze, Snyder, and Fontaine (Note 1); Arkin and Maruyama (1979) assessed attributions and affect of college students after the students had taken an actual examination and found outcome (success or failure) was the primary determinant of affect. Bailey *et al.* found that task ease resulted in as much positive affect

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as internal attributions. Frieze *et al.* found outcome to be more important than locus of causality, but within internal causes, ability generated more positive affect than effort. Nicholls (1976) asked college students to indicate conditions related to affect in their academic performance. He found effort most important for courses with no long-term consequences and ability valued most for courses related to long-term goals. Using a procedure similar to Nicholls, Sohn (1977) found happiness equally influenced by ability and effort, whereas pride–shame was affected most by effort ascriptions. Covington and Omelich (1979) examined affects for failure students and found greatest shame for external reasons, contrary to Weiner's model. Finally, McMillan and Spratt (Note 2) and Forsyth and McMillan (1981) found internal causal attributions related to positive affect in college courses, but only after outcome (success and failure) accounted for most of the variance.

Most of the research that has been done in actual classrooms suggests that the relationship between attributions and affect is weak once outcome is taken into consideration. While there is some evidence that locus of causality is theoretically important as an attributional dimension, the contribution of causal beliefs in generating affect remains unclear. Weiner (1980) agrees that such outcome-dependent affects are "the most intensely experienced emotions" (p. 5) and represent "broad positive or negative reactions to success and failure" (p. 4). Weiner contends further, however, that in addition to these outcome-dependent affects, there are distinct emotions that are related to particular attributions. Research reported by Russell (Note 3), Weiner, Russell, and Lermann (1978), and Weiner (1980) shows that such specific linkages may exist. Table 1 summarizes the results of Weiner's research by listing the affects experienced by different attributions. However, these results are limited because of the contrived nature of the research. The subjects projected the feelings of others or themselves, and the now-familiar scenario approach in which single attributions were manipulated was used. Yet, the studies in which

TABLE 1  
WEINER'S MODEL OF THE RELATIONSHIP BETWEEN CAUSAL ATTRIBUTIONS AND FEELINGS<sup>a</sup>

Attribution	Outcome	
	Success	Failure
Ability	Confidence Competence	Incompetence
Effort	Relaxation	Guilt (shame)
Others	Gratitude	Anger
Luck	Surprise	Surprise

<sup>a</sup> Taken from Weiner (1980, p. 5).

students are asked to indicate causes without cues are consistent in showing that students attribute performance to a combination of causes, not a single cause (e.g., Darom & Bar-Tal, 1981; Cooper & Burger, 1980) and it is unclear whether Weiner's theoretically postulated relationships exist with several attributions acting together.

The research reported in this article was designed to address limitations of previous studies by examining distinct affect—attribution relationships in the context of actual course examination performance. The approach was to assess student affects included in the Weiner model and to investigate the relationship between causal attributions, performance, and the affects. Thus, multiple affects and attributions were measured at the same time, rather than manipulating single attributions. In measuring the affects, perceived value of the performance is also assessed. Although not an emotion, value is an important evaluative component of attitudes separate from affect (McMillan, 1980), and is theoretically important from an expectancy/value model of behavior (e.g., Atkinson, 1964; Rotter, 1954). Based on previous research conducted with students taking actual classroom tests, it was hypothesized that success or failure conditions will show large differences in affect, but that attribution conditions will show small differences in affect.

## EXPERIMENT 1

### *Method*

*Subjects.* The subjects were 26 male and 83 female students enrolled in two sections of an undergraduate educational psychology course at the University of Iowa.

*Procedure.* The students took a midterm examination about the sixth week of the semester and were asked the following class period to participate anonymously as subjects in a research project investigating "attitudes toward testing." All students agreed to participate. The test results were returned to the students, discussed, and a distribution of grades presented. Students were then asked to respond to a few questions concerning their performance on the test. The initial set of questions assessed student affective responses to their performance. The seven affects measured are listed in Table 2. A 9-point scale was used, with affect opposites as anchors (e.g., immense pride—immense shame). The affects included those Weiner *et al.* (1978) found as particularly salient for success or failure outcomes and those that were discriminating for the four common causal ascriptions (effort, ability, task difficulty, and luck). The last "affect," value, was included as exploratory. Value is not technically an affect but is part of a broader attitude toward performance. The second section of the questionnaire asked students to indicate the extent to which they considered their performance a "success" or "failure" by checking the appropriate area on a 9-point scale anchored by extreme failure and extreme success. Finally, students were asked to indicate to what extent 12 causal factors contributed to their performance by marking one of five spaces anchored with "contributed very little" and "contributed very much." The 12 attributions were high effort, low ability, test ease, instruction, textbook, good luck, material difficulty, low effort, bad luck, high ability, material ease, and test unfairness. The students returned the questionnaires to the experimenter and were debriefed about the study.

TABLE 2  
MEANS FOR OUTCOME × ATTRIBUTION (2 × 3) GROUPS<sup>a,b,c</sup>  
EXPERIMENT 1

	High effort					Test ease					Instruction					Textbook		
	Success ( <i>n</i> = 19)	Failure ( <i>n</i> = 19)	High ( <i>n</i> = 39)	Med ( <i>n</i> = 35)	Low ( <i>n</i> = 27)	High ( <i>n</i> = 18)	Med ( <i>n</i> = 27)	Low ( <i>n</i> = 56)	High ( <i>n</i> = 41)	Med ( <i>n</i> = 41)	Low ( <i>n</i> = 19)	High ( <i>n</i> = 41)	Med ( <i>n</i> = 41)	Low ( <i>n</i> = 19)	High ( <i>n</i> = 29)	Med ( <i>n</i> = 40)	Low ( <i>n</i> = 32)	
Affects	6.00	3.77	5.67	4.37	4.25	5.33	4.89	4.66	5.02	5.02	4.05	5.79	4.65	4.21				
Pride	6.35	3.48	5.89	4.00	4.52	5.56	5.00	4.59	5.37	4.47	4.05	6.07	4.65	4.06				
Contentment	6.41	3.60	5.82	4.35	4.50	5.00	5.19	4.70	5.55	4.88	3.87	6.00	5.05	3.90**				
Pleasantly surprised	6.84	6.10	7.13	6.04	5.96***	5.16	5.37	4.70	7.29	6.19	5.21*	6.74	6.81	5.76***				
Value	6.53	3.84*	6.00	4.60	4.61	6.19	6.89	6.33	5.40	5.30	4.24	6.19	5.09	4.27***				
Competence	6.17	3.74*	5.38	4.50	4.79	6.04	5.38	4.34***	5.26	4.88	4.28	6.24	4.69	4.01*				
Relaxation	6.34	3.35*	5.78	4.07	4.33	5.24	5.00	4.57	5.23	4.85	3.77	6.06	4.56	3.96**				
General affect																		

<sup>a</sup> The significant differences reported are univariate *F* ratios calculated after a significant multivariate difference was observed using Wilks' criterion,  $p < .10$ . Only attributions that included significant differences are included. No interactions were significant.

<sup>b</sup> High values indicate more positive affect.

<sup>c</sup> Pride and contentment were measured by one item each; pleasantly surprised value and competence by 2 items each, averaged; relaxation by 3 items; and general affect by 7 items, including feelings such as good-bad, pleasant-unpleasant, and pleased-displeased.

\*  $p < .001$ .

\*\*  $p < .01$ .

\*\*\*  $p < .05$ .

## Results

Three groups were formed for each attribution by using the median score as an estimation of medium contribution, scores above the median as high contribution, and scores below the median as low contribution. Success and failure groups were formed by using a median split on the item assessing subject perception of success/failure. Sex by outcome by attribution MANOVAs indicated no sex differences. Outcome by attribution ( $2 \times 3$ ) MANOVAs using an unweighted means analysis were then calculated using the seven affects as dependent variables. The significant differences are summarized in Table 2. There were large differences between success and failure groups for each affect. Only four attributions showed differences. Students who reported a high contribution to effort and instruction indicated greater value than those who reported a medium or low contribution to effort or instruction. A high contribution to test ease was related to greater relaxation than low contributions of test ease; and a high contribution attributed to textbook resulted in greater pleasant surprise, value, competence, relaxation, and general affect as compared to a low contribution of textbook.

## EXPERIMENT 2

### Method

*Subjects.* The subjects were 26 male and 46 female undergraduate college students enrolled in two sections of introductory psychology. Both sections were taught by the same instructor at Virginia Commonwealth University.

*Procedure.* The procedures were similar to those used in the first experiment. The only procedural difference was that the subjects were asked 1 week following the session in which their tests were returned to again complete the part of the questionnaire that assessed the affects. Students were debriefed after this second administration. The assessment of affects was also changed in the second experiment by adding four affects to the list used in the first experiment: hostility, guilt, gratefulness, and resignation.

The assessment of causal attributions in the first experiment provided a direction in the stem of each item (e.g., high or low effort) and asked subjects to indicate the amount that factor contributed. In the second experiment subjects indicated both the direction of the factor and the amount that factor contributed to the performance. For example, ability was assessed by asking, "Indicate the extent to which each of the following factors contributed to (caused) your performance: 1. Because of general ability in the subject area; A. very high ability—very low ability on a 5-point scale; B. This ability contributed to the outcome: Not at all—very much (on a 5-point scale). This format was used for 11 causal factors: immediate effort, ability, test difficulty, instruction, luck, material difficulty, unfairness of test, mood, consistent effort, concentration, and other students. The score on the second part, degree of contribution, was used in analyzing the results.

### Results

Median splits were employed with the scores on perceived success or failure and each of the 11 causal factors to create "success" and "failure"

groups and "high" and "low" groups for the contribution of each attribution. The relationship of sex to the dependent variables was assessed and found to be nonsignificant. An unweighted means analysis of outcome by attribution ( $2 \times 2$ ) MANOVA was computed for each causal factor, using the 11 affects as dependent variables. The significant differences that resulted from these analyses are summarized in Table 3. The multivariate test for outcome was highly significant for all affects, indicating a strong outcome-dependent reaction. Only four multivariate tests for causal attributions were significant. Subjects who indicated a high contribution to material difficulty felt less positive general affect, relaxation, surprise, competence, and contentment than subjects who reported a low contribution to material difficulty. Subjects who indicated a high contribution of luck and other students reported more surprise than subjects who rated the contribution of luck and other students low. A high contribution of

TABLE 3  
MEANS FOR OUTCOME BY ATTRIBUTION GROUPS<sup>a,b,c,d</sup>  
EXPERIMENT 2

Affect	Outcome		Material difficulty		Luck	
	Success ( <i>n</i> = 19)	Failure ( <i>n</i> = 41)	High ( <i>n</i> = 19)	Low ( <i>n</i> = 53)	High ( <i>n</i> = 36)	Low ( <i>n</i> = 36)
General positive affect	7.03	4.11*	4.92	5.53*	5.92	4.81
Relaxation	6.80	4.65*	4.82	5.84*	5.79	5.36
Pleasantly surprised	7.12	4.29*	4.84	5.75*	6.40	4.63*
Competent	7.10	4.85*	5.42	5.96**	6.14	5.50
Pride	6.80	4.35*	5.42	5.96	5.75	5.02
Contentment	6.81	4.20*	4.84	5.49**	5.83	4.81
Hostility	1.00	2.46*	1.74	1.87	1.67	2.00
Guilt	1.35	3.80*	2.26	2.92	2.58	2.91
Gratefulness	6.81	4.49*	5.16	5.60	5.97	5.00
Resignation	2.52	4.10*	3.26	3.47	3.50	3.33
Value	6.87	5.56*	6.17	5.86	6.83	5.92

<sup>a</sup> The significant differences reported are univariate *F* ratios calculated after a significant multivariate difference was observed using Wilks' criterion,  $p < .10$ . Only attributions that included significant differences are included. No interactions were significant.

<sup>b</sup> High values indicate greater affect.

<sup>c</sup> Pride and contentment were measured by one item each; pleasantly surprised value and competence, by 2 items each, averaged; relaxation by 3 items; and general affect by 7 items, including feelings such as good-bad, pleasant-unpleasant, and pleased-displeased.

<sup>d</sup> The unequal *n*'s for median split groups resulted from skewed distributions which made equal cell size impossible.

\*  $p < .001$ .

\*\*  $p < .01$ .

\*\*\*  $p < .05$ .

immediate effort was related to more positive general affect and less hostility than a low contribution of immediate effort, although the difference on hostility is accounted for by the significant interaction between outcome and immediate effort which shows that the failure/low contribution of the immediate effort group is significantly more hostile than the other three groups.

To examine student feelings 1 week after they received the results of their test, outcome by attribution ( $2 \times 2$ ) unweighted means analysis MANOVAs were computed on the difference between affect scores reported the same day the results were known and scores 1 week later. None of the attribution main effects nor interaction multivariate tests was significant. The multivariate tests of the main effect of outcome were significant, and the significant univariate tests are reported in Table 4.

### DISCUSSION

The intent of these experiments was to investigate Weiner's model of attribution— affect linkages in the context of actual classroom performance. Since the studies are correlational, it is not possible to test each postulated linkage, but to only assess whether, in these situations, such linkages exist. Thus, despite the fact that several classes were used in two universities, the results should be viewed as situation specific.

Evidence was presented which suggests that attribution— affect linkages exist that are distinct from outcome— affect relationships. A summary of these relationships is indicated in Table 5. In the first experiment three external, stable attributions (test ease, instruction, and textbook) showed a positive relationship between affect and the contribution of each factor. Students felt more relaxed, pleasantly surprised, competent, positive general affect, and greater value if the contribution of these factors

TABLE 4  
SIGNIFICANT MEAN DIFFERENCES BETWEEN AFFECT SCORES REPORTED 1 WEEK APART  
FOR SUCCESS AND FAILURE STUDENTS<sup>a</sup>

Affect	Success ( <i>n</i> = 23)	Failure ( <i>n</i> = 29)
General affect	.32**	-.27*
Surprise	.83**	-.02**
Competent	.35**	-.38*
Pride	.65**	-.07*
Value	.91**	-.62**

<sup>a</sup> The mean difference reported is the immediate score minus the score indicated 1 week later.

\*  $p < .05$ .

\*\*  $p < .01$ .

TABLE 5  
DIFFERENCES IN AFFECT REPORTED BY STUDENTS DEPENDING ON ATTRIBUTION,  
INDEPENDENT OF PERFORMANCE

Experiment	Attribution	Affect
1	Effort	Value <sup>a</sup>
	Test ease	Relaxation <sup>a</sup>
	Instruction	Value <sup>a</sup>
	Textbook	Pleasantly surprised <sup>a</sup>
		Value <sup>a</sup>
		Competence <sup>a</sup>
		Relaxation <sup>a</sup>
	General affect <sup>a</sup>	
2	Luck	Pleasantly surprised <sup>a</sup>
	Material	
	difficulty	General affect <sup>b</sup>
		Relaxation <sup>b</sup>
		Pleasantly surprised <sup>b</sup>
	Competent <sup>b</sup>	
	Content <sup>b</sup>	

<sup>a</sup> Indicates a positive relationship between degree of contribution and affect.

<sup>b</sup> Indicates a negative relationship between degree of contribution of the attribution and affect.

was high. These results partially replicate findings reported by Russell (Note 3), and generally correspond to Weiner's model. That is, as long as students believe that stable factors have contributed to their performance, and these factors are things they can control (such as reading the textbook), or are positive though uncontrollable (test ease and good instruction), then affective reactions are positive. The fact that these attributions are external suggests that locus of control is not as important as controllability or stability in generating affect independent of outcome. This conclusion is strengthened by the finding that effort, an unstable, internal, and controllable attribution, is related to value, but not the other affects. In other words, there was no evidence to suggest a strong relationship between locus of control and affect, but stability was related to affect.

In the second experiment the theoretically proposed relationship between luck and surprise is supported. In addition, several affects were negatively related to the contribution of material difficulty. This finding is more consistent with Weiner's model. Material difficulty is stable, external, and uncontrollable. Thus, as long as the contribution of this factor is low, student feelings are more positive, but if material difficulty contributes highly, then personal control and chances for improved scores are mitigated. However, there was no evidence of the additional affect-attribution relationships that have been found in previous research.

An interesting finding was that outcome-dependent affects tend to

moderate after 1 week (although this result may also be caused to some extent by other factors such as unreliable measures and memory deficits). This attenuation seems reasonable since an initial reaction is probably mediated by various factors. Failure students may rationalize their performance so it does not seem so bad, and success students may lessen positive affect with the realization that this is only one test of many.

The contribution of this research is that it investigates Weiner's model by examining the cumulative effect of different attributions on distinct affects. It is not a test of the model, but explanations are needed since many of the model's proposed relationships between affects and attributions were not found, and different results were attained in each of the experiments. One plausible explanation is that the hypothesized relationships did not exist in these situations, or that the measurement of the attributions and affect was not sensitive enough to pick up the relationships. However, the fact that some attributions were clearly related to affect suggests that the linkages were real. How are these relationships explained? It appears that causal beliefs may be related to affect if in the particular situation such attributions support students' feelings that they have an opportunity to do well in the class. This speculative explanation is similar to Covington and Beery's self-worth theory (1976). Because of the high value placed on positive performance, it is psychologically pleasant to interpret success or failure by focusing on those causal factors which hold the best potential for improving poor performance or maintaining good performance. The student rationalizes outcome causes to enhance future performance. Thus, it is not surprising to find more positive student affect related to test ease, regardless of outcome. For success students, the prospect of continued easy tests assures good performance, and for failure students easy tests suggest the possibility of improving performance. Thus, the relationships are dependent on the circumstances of the situation, and relationships in theoretical models such as Weiner's may be present in some situations but also may not be evident. For example, in a class where students felt an unfair test contributed most to the outcome, the attribution— affect relationships (e.g., between effort or ability and affects) may not be important. It also seems plausible that in situations where many attributions are combined to form causal beliefs individual attribution— affect linkages are so weak that the impact of a single attribution is negligible. It may be that researchers need to examine situational characteristics that may be related to the affect-generating potential of attributions rather than studying affect— attribution linkages without regard to the circumstances of the situation.

#### REFERENCES

- ARKIN, R. M., & MARUYAMA, G. M. Attribution, affect, and college exam performance. *Journal of Educational Psychology*, 1979, 71, 85–93.
- ATKINSON, J. W. *An introduction to motivation*. Princeton, N.J.: Van Nostrand, 1964.

- BAILEY, R. C., HELM, B., & GLADSTONE, R. The effects of success and failure in a real-life setting: Performance, attribution, affect, and expectancy. *Journal of Psychology* 1975, **89**, 137–147.
- COOPER, H. M., & BURGER, J. M. How teachers explain students' academic performance: A categorization of free response academic attributions. *American Educational Research Journal*, Spring, 1980, **17**, 95–109.
- COVINGTON, M. V., & BEERY, R. *Self-worth and school learning*. New York: Holt, Rinehart & Winston, 1976.
- COVINGTON, M. V., & OMELICH, C. L. Are causal attributions causal? A path analysis of the cognitive model of achievement motivation. *Journal of Personality and Social Psychology*, 1979, **37**, 1487–1504.
- DAROM, E., & BAR-TAL, D. Causal perception of pupil's success or failures by teachers and pupils: A comparison. *Journal of Educational Research*, March/April, 1981, **74**, 233–239.
- FORSYTH, D. R., & McMILLAN, J. H. Attributions, affect, and expectations: A test of Weiner's three-dimensional model. *Journal of Educational Psychology*, 1981, **73**, 393–403.
- McMILLAN, J. Attitude development and measurement. In J. McMillan (Ed.), *The social psychology of school learning*. New York: Academic Press, 1980.
- NICHOLLS, J. G. Effort is virtuous, but it's better to have ability: Evaluative responses to perceptions of effort and ability. *Journal of Research in Personality*, 1976, **10**, 306–315.
- REIMER, B. S. Influence of causal beliefs on affect and expectancy. *Journal of Personality and Social Psychology*, 1975, **31**, 1163–1167.
- ROTTER, J. B. *Social learning and clinical psychology*. Englewood Cliffs, N.J.: Prentice-Hall, 1954.
- SOHN, D. Affect-generated powers of effort and ability self attributions of academic success and failure. *Journal of Educational Psychology*, 1977, **69**, 500–505.
- WEINER, B. Achievement motivation as conceptualized by an attribution theorist. In B. Weiner (Ed.), *Achievement motivation and attribution theory*. Morristown, N.J.: General Learning Press, 1974.
- WEINER, B. The role of affect in rationale (attributional) approaches to human motivation. *Educational Researcher*, July–August, 1980, **9**, 4–11.
- WEINER, B., & KUKLA, A. An attributional analysis of achievement motivation. *Journal of Personality and Social Psychology*, 1970, **15**, 1–20.
- WEINER, B., FRIEZE, I. H., KUKLA, A., REED, L., REST, S., & ROSENBAUM, R. M. *Perceiving the causes of success and failure*. Morristown, N.J.: General Learning Press, 1981.
- WEINER, B., RUSSELL, D., & LERMAN, D. Affective consequences of causal ascription. In J. H. Harvey, W. J. Ickes, & R. F. Kidd (Eds.), *New directions in attribution research*. Hillsdale, N.J.: Erlbaum, 1978. Vol. 2.

## REFERENCE NOTES

1. FRIEZE, I. H., SNYDER, H. N., & FONTAINE, C. M. *Student attributions and the attribution model during an actual examination*. Paper presented at the Annual Meeting of the American Psychological Association, San Francisco, Calif., 1977.
2. McMILLAN, J. H., & SPRATT, K. F. *Causal attributions and affect in a real-life testing situation*. Paper presented at the Annual Convention of the American Educational Research Association, Boston, 1980.
3. RUSSELL, D. *Causal attributions and emotional experience: Towards a cognitive model of emotion in achievement settings*. Paper presented at the annual conference of the American Psychological Association, Montreal, Canada, September 1980.