

Attributions for Exam Performance

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The expectancy confirmation and egotism approaches to attributions in achievement settings are contrasted in this study. It was found that students in two psychology classes expected to do well on their exams and that these expectations were based on internal factors (ability, effort). Post-test attributions were determined almost entirely by the simple valence of the outcome (success-failure). High outcomes were associated with internal attributions and low outcomes were associated with external attributions. It appears that students who perform poorly avoid the blame for failure by making ego-defensive external attributions and that these attributions enable them to make unreasonably high predictions for future performance. Some limited support was found for the notion that attribution may be affected by the degree to which outcomes confirm or disconfirm expectations.

In achievement situations people tend to attribute success internally and failure externally (Bradley, 1978; Fitch, 1970; Miller, 1976; Simon & Feather, 1973; Snyder, Stephan & Rosenfield, 1976). Two kinds of explanations have been offered for this phenomenon. The first of these is that people employ ego-defensive and ego-enhancing attribution strategies in achievement situations, taking credit for success while denying blame for failure. Snyder, Stephan and Rosenfield (1978) argue that this phenomenon occurs if (1) the outcome is attributable to the individual and (2) the outcome is important to him or her. Evidence for this view comes from a study by Snyder et al. (1976) in which it was found that actors take more credit for success and blame themselves less for failure than do observers. This pattern of results, which has been labelled

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attributional egotism, is probably due to the fact that the actors were more ego-involved than the observers in the outcome of the task. Studies in which ego-involvement was actually measured or manipulated have likewise found that when ego-involvement is high, actors tend to attribute their success to internal factors and failure to external factors (Miller, 1976; Rosenfield & Stephan, 1978). Stephan, Rosenfield, and Stephan (1976) and Rosenfield and Stephan (1978) have further shown that this egotistical pattern of attributions is relatively unaffected by the attributor's expectations.

The second general type of explanation offered for the attributional patterns found in achievement settings concerns the extent to which the outcome confirms or disconfirms the attributor's expectations. One series of studies by Feather and Simon has indicated that unexpected outcomes are attributed largely to unstable external factors, while outcomes that confirm expectations tend to be attributed to stable internal factors (Feather, 1969; Feather & Simon, 1971; Simon & Feather, 1973). Feather has explained these results in terms of Heider's (1958) common sense theory of action, which holds that people have specific expectations of success or failure. When their outcomes confirm expectancies, they are attributed to the factors which constituted the basis of the expectancies. When expectations are disconfirmed, however, the beliefs on which they were based become subject to change and these factors will tend to be de-emphasized in the attribution process. Thus, if people base their expectations on internal factors (Simon & Feather, 1973) and if, as Miller and Ross (1975) have suggested, they expect to do well, then they will attribute success to internal factors such as ability and failure to other factors.

Researchers employing Weiner's attributional framework (Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971) have argued more generally that expectancy disconfirmation usually increases attributions to unstable factors (Frieze & Weiner, 1971; McMahon, 1973). It is their contention that estimates of ability and task difficulty are relatively stable beliefs and that disconfirmation of one's expectancies will not ordinarily lead to changes in these beliefs, but rather to greater reliance on unstable attributional factors such as effort or luck. In support of this suggestion, McMahon (1973) found that expectancy disconfirmation led to higher attributions to effort and luck and lower attributions to ability. Attributions to task difficulty, however, were not affected by the unexpected outcomes. Based on these results, McMahon suggests that attributions to the unstable factors of effort and luck are a positive function of the absolute discrepancy between expected and actual outcomes, while attributions to ability are a negative function of absolute discrepancies.

It can be seen that the explanations described above make conflicting predictions as to the determinants of causal attributions in achievement settings. The egotism interpretation holds that the valence of the actual outcome—success or failure—is the primary determinant of post-performance attributions. The

more successful the outcome, the greater will be the perceived beneficial effect of internal factors (ability, effort); the less successful the outcome, the more the deleterious effects of external factors (task difficulty, luck) will be implicated. The expectancy confirmation approach, on the other hand, predicts that the degree to which the actual outcome confirms the expectancy will be the chief determinant of attributions. In one expectancy formulation, the larger the discrepancy between anticipated and actual outcomes, the greater will be the reliance on unstable factors (effort, luck); the smaller the discrepancy, the greater the allocation of causality to the stable factor of ability. The other expectancy position holds that disconfirmation will lead to a de-emphasis of the specific factor(s) on which the expectation was based.

One reason for studying causal attributions in achievement settings is their potential for influencing subsequent behavior. Identifying the causal factor(s) responsible for one's failures, for instance, is the first step in understanding that outcome, and may influence reactions to similar subsequent situations (Abramson, Seligman, & Teasdale, 1978). One implication of the expectancy-confirmation viewpoint is that people tend to be rational in their use of attributions. McMahon suggests that people utilize knowledge of their outcomes to make causal attributions, and then incorporate these attributions into subsequent expectations and decision-making (McMahon, 1973).

Conversely, the egotism position implies a discontinuity between attribution and subsequent achievement-related expectations and behavior. According to this position, attributions are determined, in large part, by the desire to protect the self from unpleasant association with negative outcomes. Attributions following a relative "failure," then, should be to factors which are outside the self, and outside of one's control. In many situations, this pattern of attributions may well *prevent* people from realistically assessing their shortcomings (such as lack of ability or effort) and so prevent them from changing their future expectations of success, or modifying their behavior in order to increase their chances for subsequent success.

In the present study an attempt is made to disentangle the web of attributional variables by analyzing, within the context of university examinations, the relationship among students' expectations, outcomes, and attributions. In addition to offering high external validity, university examinations have two advantages over the laboratory settings used in most previous studies. First, because the outcomes of the exams are important to students, ego-involvement is assured. A second advantage is that the nature of the testing situation makes it possible to obtain continuous, rather than dichotomous, measures of expectancies, outcomes, and discrepancies from expectations.

METHOD

Subjects

Subjects were 127 undergraduate students from The University of Texas at

Austin. Of these, 89 were enrolled in an introductory social psychology course (Sample 1) and 38 were in an environmental psychology course (Sample 2). Both courses utilized multiple-choice tests. The performance tasks reported in this study consist of one of these examinations administered in each class.

In effect, two studies were conducted (one in each class). The procedures employed were the same in both classes. Because the pattern of results is much the same in the two samples, the data will be reported concurrently, rather than sequentially.

Pre-performance Questionnaire

During the last class meeting before the examination, a short questionnaire was administered to the students. Subjects were asked to estimate their performance in terms of percentage correct on the upcoming test. Following that, they were asked four questions designed to assess the basis for these expectations. The questions concerned the four attribution factors (ability, effort, test difficulty, and luck) outlined by Weiner et al. (1971). The response format consisted of an 11-point scale running from "will hinder my performance" (-5) through "will have no effect on my performance" (0) to "will help my performance" (+5).

Post-performance Questionnaire

During the class session immediately following the examination, a second questionnaire was administered to the students. This questionnaire contained (1) student's actual score on the test (which s/he had not seen previously), (2) student's predicted score, (3) four questions identical to the four basis of expectation items on the first questionnaire (for example, the ability item had as endpoints on an 11-point scale, "My lack of ability hindered my performance" and "My ability helped my performance greatly"), and (4) a request that students estimate their score on the *next* examination. Students' predicted scores were included in the post-test questionnaire in order to make salient any discrepancy existing between predicted and actual scores. Since it is possible that students may have forgotten their prediction by the time that attributions were elicited, it was thought that a stronger test of the expectancy predictions would be possible by reminding students of their earlier expectations.

RESULTS

Bases of Expectation

In order to determine the extent to which students were basing their pretest expectations on the four attributional factors, a standard multiple regression

TABLE 1

BETA WEIGHTS OF THE ANTICIPATED EFFECTS OF ABILITY,
EFFORT, TEST DIFFICULTY, AND LUCK ON EXPECTED SCORES

	Ability	Effort	Test difficulty	Luck
Sample 1	.16*	.25***	.03	.01
Sample 2	.61***	.00	-.14	-.19

* $p < .15$.

** $p < .05$.

analysis³ was conducted, in which predicted score on the test served as the criterion variable and the four pretest attributions (ability, effort, test difficulty, and luck) served as predictor variables. For this analysis, the pretest bases of expectation data were recoded from their original format. Instead of an 11-point scale running from "hinder" (-5), through "no effect" (0), to "help" (+5), the absolute values of these data were used, producing a scale in which lower numbers indicated less anticipated influence of a given factor, regardless of anticipated directionality. This analysis therefore reveals simply the degree to which subjects expected each of the four factors to influence their expected score.

The results for Sample 1, shown in Table 1, indicate that the greatest contribution to one's expected score was anticipated effort ($\beta = .25$), with anticipated ability ($\beta = .16$) only marginally significant. Thus, the students did base their expectations primarily on internal factors (especially effort), although in absolute terms the size of the relationship was not overwhelming, accounting for approximately 11% of the variance in predicted score.

The results for Sample 2 (also in Table 1) are somewhat different. The strongest basis of expectancy for these students is clearly the anticipated effect of their own ability ($\beta = .61$). This internal factor, accounting for approximately 25%

³This analysis, and the other regression analyses reported herein, are standard regression analyses from the SPSS regression package. This program assesses the independent contribution of each of the predictor variables, controlling for the influence of the other predictors. As a consequence, these results indicate the *sole* contribution of each predictor, removing the shared, or common, influence which might result from correlated predictor variables.

of the variance in pretest expectations, is also the only one of the four factors to be significantly related to the expectancy. Therefore, in neither sample was an external factor significantly related to pretest expectation (as Miller and Ross, 1975, would expect). In one sample there is a strong, clear basis of expectancy (ability); for the other sample, a weaker basis (effort) can be identified, with ability only marginally related.

Test of the Confirmation Models

Two hypotheses can be derived from the confirmation models of performance attributions. First, Heider's (1958) common sense theory of action would predict that confirmation of expectations would lead to greater reliance on the causal factor which had constituted the basis of the expectation. Disconfirmation, on the other hand, should lead to a de-emphasis on this factor. Second, other researchers (Frieze & Weiner, 1971; McMahon, 1973) would predict simply that disconfirmation should lead to greater attributions to unstable causal factors (effort, luck), while confirmation should produce reliance on the stable factor of ability.

To test these hypotheses, a series of standard multiple regression analyses were conducted on the data from each sample. The absolute values of the four post-test attributions were used as criterion variables; the predictor variable was a discrepancy score consisting of the absolute difference between one's predicted and actual score on the test. Because many students in both samples tended to overestimate their performance, there was a high negative correlation between this discrepancy score and actual score on the test (i.e., those students who did perform well were the ones who matched their expectations; thus, high scores are associated with low discrepancy scores). Because of this high correlation (Sample 1, $r = -.85$; Sample 2, $r = -.76$), actual score was controlled for in the regression analyses shown in Table 2.

Attributions to the causal factor most strongly related to expected score for Sample 1—effort—were not significantly related to discrepancy scores for that test; in fact, the direction of the relationship (greater discrepancy-greater effort attributions) is opposite to what would be predicted from Heider's theory. Likewise, the strongest expectancy basis for Sample 2—ability—was essentially unrelated to the confirmation/disconfirmation of prior expectancy. Taken together, the results of these two samples argue against Heider's "common sense" predictions.

The predictions concerning the effect of expectancy confirmation on attributions to stable and unstable causal factors receive only slightly more support. Luck attributions in Sample 1 are significantly and positively related to discrepancy scores, supporting the notion that unstable attributions are a positive function of disconfirmation. No other relationships with the factors in this

TABLE 2
BETA WEIGHTS OF DISCREPANCY SCORE IN PREDICTING
POST-TEST ATTRIBUTIONS (unsigned), CONTROLLING
FOR ACTUAL SCORE

	Sample 1	Sample 2
	Discrepancy score	Discrepancy score
Ability	.33	.06
Effort	.22	-.11
Test difficulty	-.02	.21
Luck	.40*	.12

* $p < .05$.

sample are significant. Sample 2, moreover, provides no support for the confirmation viewpoint; all four causal factors are unrelated to the degree of expectancy confirmation.

Test of the Egotism Model

A slightly different form of analysis must be utilized to test the egotism model's predictions. Standard multiple regression analyses were again conducted, using actual score on the exam as the predictor variable. Discrepancy scores, which were correlated with actual scores, were controlled for in these analyses. The dependent variables were again post-test attributions, but the original 11-point format for these variables (from "hinder," -5, to "help," +5) was used, rather than the absolute values. This form of analysis is appropriate because the egotism explanation is based on valence—both of the outcome and of the attributional factors—and for this reason the analysis included the valence of the attributions (their perceived help or hindrance to the student).

The results of these analyses (Table 3) indicate that one's outcomes are significantly and positively related to the attributions one offers for the outcomes. For Sample 1, effort and test difficulty attributions are both significantly related to outcome in the predicted direction, and ability marginally so. For Sample 2, ability, effort and test difficulty are all significantly related, with luck only marginally related. For these results to be interpreted as support for egotism, however, the significant positive relationships between actual score and the internal factors would have to be due to the fact that higher scores were associated with the beneficial effects of these factors, while for external factors lower scores would have to be associated with greater attributions to the negative effects of the external factors.

TABLE 3

BETA WEIGHTS OF ACTUAL SCORE IN PREDICTING
POST-TEST ATTRIBUTIONS (signed), CONTROLLING
FOR DISCREPANCY SCORE

	Sample 1	Sample 2
	Actual score	Actual score
Ability	.32	.61 **
Effort	.64 **	.62 **
Test difficulty	.43 *	.79 **
Luck	.17	.43

* $p < .05$.

** $p < .01$.

The mean values of these attributions (Table 4) indicate the predominant use to which they were put. Specifically, these mean values indicate whether a factor was seen as a helping or hindering force in the production of the individual's outcome. The internal factors of ability and effort, for instance, were typically seen as beneficial to the students' outcomes, as evidenced by the positive value for these factors in both samples. Test difficulty, on the other hand, was seen as a negative, hindering force. Luck was viewed as being less influential, in either direction, than the other three factors. Thus, it becomes apparent from the pattern of mean attribution values in Table 4 that high scores *were* associated primarily with an increased attribution to the beneficial contribution of internal factors, and that low scores were associated with greater attributions to the hindering effects of test difficulty.

TABLE 4

MEAN VALUES OF POST-TEST ATTRIBUTIONS (signed)

	Ability	Effort	Difficulty	Luck
Sample 1	2.29 ^A	.69 ^B	-.75 ^C	.03 ^B
Sample 2	2.08 ^A	1.81 ^A	-.50 ^B	.30 ^C

Note: Attribution values not sharing the same subscript differ significantly from one another ($p < .05$). All comparisons were made within each sample; no comparisons were used between Samples 1 and 2.

Effects of Outcomes on Future Expectations

One implication of attributional egotism is that in some cases the ego-defensive and ego-enhancing attributions people offer may be counter-productive, leading to unrealistic expectations of future success. For instance, in a classroom setting such as the present study, external attributions for low scores could prevent the student from realistically assessing his or her abilities or motivation. Thus it might be predicted that there would be no lowering of expectancies following failure, due to the ego-defensive nature of students' causal attribution processes. To test this, the data from both samples were examined. In Sample 1 it was found that the mean expected score on the test was 89%, but that the mean score actually attained was only 78%. When asked to predict their score on the next test, these students showed virtually no change, predicting a mean score of 89%. A one-way within-subjects analysis of variance performed on these percentages indicates that the actual scores were significantly lower than the expected scores and future predictions, $F(2, 154) = 72.37, p < .001$. The results for Sample 2 exhibited a similar pattern, with these subjects expecting a mean score of 87% on the exam while actually attaining a mean score of 82%. Again, predictions for the subsequent test reflected no change in expectations, as the students estimated a mean score of 87% and again these differences are statistically significant, $F(2, 70) = 9.07, p < .001$.

In order to further examine the relationships between expectations, outcomes and future predictions, a one-between, one-within analysis of variance was run on these data. The distribution of the actual scores was split at the median and the expectations and future predictions of students scoring above and below the median were compared (Table 5). The results indicated that in Sample 1 there was a main effect for the median split factor, $F(1, 77) = 12.66$,

TABLE 5
EXPECTED OUTCOMES AND PREDICTIONS FOR FUTURE
OUTCOMES

Actual score	Expected outcomes	Future predictions
Below the median	87.5% (85.1%)	86.9% (84.4%)
Above the median	90.8% (88%)	90.2% (90%)

Note: The numbers in the parentheses are from Sample 2.

$p < .01$. Students who scored above the median had higher expectations and future predictions than students scoring below the median. The main effect comparing expectations and future predictions and the interaction were non-significant ($F_s < 1$). The absence of an interaction indicates that students scoring below the median did not revise their predictions downward as a consequence of their relatively poor performances. The data from Sample 2 revealed a similar pattern. The median split main effect was significant, $F(1,37) = 9.38, p < .01$, while the interaction and the other main effect were not significant ($F_s < 1$). Thus, in both samples there is little evidence that the students' low outcomes led to a lowering of estimates of future performance.

DISCUSSION

The results of this study provide information on the attributions made for the outcomes of examination performance and on the processes which underlie these attributions. In two samples it was found that students generally expect to perform at high levels on their exams. Their actual performance falls below their expectations, but these modest performances are not associated with correspondingly modest predictions of future success. Instead, future expectancies are as high as the disconfirmed previous expectancies. In order to understand the reasons for this seemingly paradoxical behavior, it is necessary to examine the nature of the attributional processes employed by students to explain their performances.

Students' high expectations are based primarily on their perceptions that they possess the requisite abilities and will exert sufficient effort to perform well. When their actual performances are consistent with these high expectancies, the students emphasize ability and effort in explaining their successes. When actual performance is low, ability and effort are de-emphasized as causes and the low outcomes tend to be attributed to the difficulty of the test. Thus, success is attributed more to internal factors while failure is attributed more to external factors. These findings are consistent with the predictions derived from the egotism approach to attributions in achievement settings (Snyder et al., 1978). Clearly, outcomes on exams are potentially attributable to the students themselves and the outcomes are sufficiently important so that failure would constitute a potential threat to the self.

The defensive attributions which were made by the students who performed poorly have the advantage of allowing them to maintain a positive self-image, but they have the disadvantage of leading them to make possibly unrealistic predictions concerning their future performance. If poor performances are attributed to the difficulty of the test and not to insufficient effort or lack of ability, then students can hope that future tests will be easier and that their performances will improve. Since they do not blame themselves for failure, they

are unlikely to undertake any of the changes, such as studying harder, which would actually lead to improvement in performance. Thus, while the students' defensiveness on the present exam leads them to hope for a high performance on the next, it may have the actual effect of decreasing the likelihood that their performances will improve.

This hypothesized sequence of events is not restricted to the classroom. Any situation in which individuals can receive positive or negative outcomes is an arena within which defensive attributions can influence subsequent expectations and behavior. The adoption of "management by objectives" programs by many businesses sets up expectancies and opportunities for evaluation that parallel in many respects the achievement situation examined in the present study (Chacko, Stone, & Brief, 1979). Another example would be government officials who must occasionally respond to the news that their policies have not had the expected effects. Attributions to factors beyond their control (such as "short term market fluctuations" or "unforeseen increases in oil prices") can disassociate decision makers to some degree from negative outcomes; moreover, little fundamental change in policy is likely to occur so long as attributions to external factors prevent policy makers from recognizing their own shortcomings. By the same token, any decision maker may delay a needed reassessment as long as the motivation to defend the self from failure dominates the attributions made for outcomes.

The predictions based on the hypothesized relationships between expectancy confirmation and attributions received little support in the present study. Neither the general confirmation-stability predictions (Frieze & Weiner, 1971; McMahon, 1973) nor the more specific basis of expectancy prediction (Heider, 1958; Simon & Feather, 1973) were borne out by the data. In neither sample was there a significant relationship between degree of expectancy disconfirmation and attributions to the most potent basis of expectancy. Similarly, in only one sample was there any support for the more general notion that disconfirming outcomes should be attributed to unstable causal factors. This evidence consisted of a significant positive relationship between disconfirmation and luck attributions.

The theory which most adequately explains the results of the present study is motivational rather than cognitive. This relative lack of emphasis on purely rational information processing is probably a function of two factors: (1) the importance of the outcomes and (2) the close temporal relationship between the outcome feedback and the request for explanations of these outcomes. The outcomes of exams are important to students because they have significant effects on their futures. In addition, they provide the students with social comparison information which can affect their self-images. Therefore, ego-involvement tends to be very high for most students. This is exactly the type of situation in which Snyder et al. (1976; 1978) and Miller (1976) suggest

that motivational factors will be emphasized. The earlier evidence supporting the expectancy confirmation approach comes primarily from experiments in which ego-involvement is probably considerably lower than in the present study.

The idea that the temporal lag between outcome feedback and the measurement of attributions may influence the nature of the attributions is based on a consideration of another study of exam performance. The results of the present study conflict with those obtained by Simon and Feather (1973). Although the students in their study made egotistical attributions for their outcomes, they also attributed outcomes which confirmed their expectancies to a stable internal factor and outcomes which disconfirmed their expectancies to an unstable external factor. There are a number of differences between the present study and the Simon and Feather study which may account for the discrepancies in the results. One important difference is that Simon and Feather's subjects explained their outcomes on a final exam in an introductory course 2 weeks after they had taken the exam. Egotism may be accentuated when an individual's immediate reaction to success and failure is measured, since it provides the individual with an opportunity to bask in the glory of his or her achievements or necessitates a defense against the potentially negative implications of failure. With the passage of time, the individual may engage in a more sober analysis of his or her outcome, relatively uninfluenced by the positive or negative affect evoked by performance feedback. This may lead to a balanced mixture of motivational and cognitive processes which enables the individual to defend and enhance his or her self-image without doing violation to the dictates of logic.

A final caveat is in order concerning the apparent lack of support for the specific bases of expectancy prediction. Some evidence has been found in another classroom setting (Bernstein, Stephan, & Davis, 1979) which supports the notion that a strong basis of expectancy *can* influence attributions in a rational fashion. It must be noted, though, that support for the expectancy predictions in the Bernstein et al. study was only found for an exam late in the course, after students had become thoroughly familiar with the achievement task in question. Moreover, the confirmation effect was found in addition to, and not instead of, egotism effects, which were strong throughout the semester.

SUMMARY

The results of the present study indicate that students expect to perform well on exams and when they do not, they tend to avoid blaming themselves for their poor performances. As a consequence of not attributing failure to internal factors, future expectations tend to be unreasonably high. The relative dominance of motivational over cognitive attributional processes in attributions

for exam performance is apparently a function of two factors: high levels of ego-involvement and the elicitation of attributions immediately following performance feedback. The results of the present study suggest the value of examining the operation of these factors in other performance settings, particularly business settings where objectives are clearly established.

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