

AN ATTRIBUTIONAL ANALYSIS OF ACHIEVEMENT MOTIVATION¹

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Six experiments are reported which relate achievement motivation to causal ascription. The first three experiments revealed that the evaluation of achievement-related outcomes is positively related to the amount of expended effort, but inversely related to level of ability. Evaluative differences between social classes (Experiment II), and disparities between self- and other-judgments (Experiment III) also were examined. In Experiments IV and V individual differences in locus of causality were related to level of achievement needs. The results of these investigations indicate that individuals high in resultant achievement motivation are more likely to take personal responsibility for success than individuals low in achievement motivation. Clear differences in perceived responsibility for failure were not exhibited between the two motive groups. Finally, in Experiment VI risk-preference behavior and Atkinson's theory of achievement motivation were construed in attribution theory language. It was contended that cognitions about causality mediate between level of achievement needs and performance.

The relationship between causal ascription and achievement motivation is examined in this study. The reported experiments were guided by two distinguishable, albeit overlapping, approaches to the study of psychological causation. One approach, based primarily on the writings of social psychologists such as Heider (1958), Jones and Davis (1965), and Kelley (1967), emphasizes the environmental factors or stimulus conditions which affect the formation of attributions. Frequently, these psychologists have been concerned with the processes which influence interpersonal perception; that is, attributions about others gen-

erally are dependent variables. The second approach, which is exemplified in the work of Crandall and her colleagues (Crandall, Katkovsky, & Crandall, 1965; Crandall, Katkovsky, & Preston, 1962) and Rotter (1966), focuses upon the relationship between individual differences in perceived personal causation, or "internal versus external" control of events, and a variety of behavioral consequences. That is, attribution or self-perception is considered to be an independent variable. Both the social psychological and individual difference attempts to study attribution, or the use of causal ascription as a dependent or independent variable, are employed here to provide insights concerning the determinants of achievement-related strivings.

STRUCTURE OF ATTRIBUTIONS AND ACHIEVEMENT EVALUATION

In his "naive analysis of action," Heider (1958) specified two factors which in part determine the outcome of an event. One variable he labeled "power"; included under this heading are personal characteristics such as ability, intelligence, etc., which indicate whether a goal "can" be attained. The second determinant of action identified by Heider was motivation, or "trying." Heider postulated that both "can" and "try" are necessary to reach a desired goal.

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The intuitively reasonable dichotomy between ability (can) and motivation (try) has proven useful in the analysis of many aspects of behavior. For example, Schmitt (1964) demonstrated that the invocation of moral obligation is contingent upon a deficiency in the try rather than can behavioral determinant. Schmitt's study revealed that subjects rarely invoke moral obligations when, for example, a hypothetical individual does not repay a debt because he is unable yet willing to do so. Yet moral codes frequently were designated as broken when the debt was not repaid when the lendee was monetarily able, but unwilling, to return the money. Correspondingly, a recent survey (Tietze & Lewit, 1969) has revealed that abortions sought when a child is merely not wanted are less likely to be condoned than those undertaken because the family also is financially incapable of support. (See Maselli & Altrocchi, 1969, for a more detailed discussion of the relationship between perceived causality and moral judgment.)

A similar elemental analysis into can and try components of achievement-related behavior is undertaken in the initial three investigations reported in this article. Success at an achievement goal may be attributed to unusual effort and/or special ability, while failure might indicate a lack of motivation and/or ability. The experiments examine whether these disparate patterns of perceived causality affect subsequent evaluations (rewards or punishments, and pride or shame) of achievement activities.

EXPERIMENT I

Method

Twenty paid male students enrolled at the University of California, Los Angeles, participated in a "simulated teaching" experiment. The subjects were told, in part:

Assume for a moment that you are a teacher in a grade-school classroom. You have given an exam and now must convey some feedback to the pupils. You know each student's ability [Yes or No], and the effort which each has expended [Yes or No]. And you know the outcome of their exams [Excellent, Fair, Borderline, Moderate Failure, or Clear Failure]. The feedback which you dispense is in the form of stars: gold stars are a reward, and red stars a punishment. You can give 1-5 gold stars, 1-5 red stars, or neither gold nor red stars. A student never receives both gold and red stars.

Each subject then evaluated all 20 (2 Ability \times 2 Effort \times 5 Outcome) experimental conditions. Four different randomized orders of experimental conditions were used.

Results

Figure 1 shows the mean reward and punishment administered in the five outcome conditions to the four hypothetical pupil groups—ability and motivation (AM); ability and no motivation (A - M); no ability and motivation (-AM); and neither ability nor motivation (-A - M). The figure indicates that the amount of reward and punishment was directly related to the exam outcome (O; $F = 108.22$, $df = 4/76$, $p < .001$). Further, Figure 1 reveals that the two groups motivated to perform were rewarded more, and punished less, than the two groups which did not expend effort ($F = 25.43$, $df = 1/19$, $p < .001$). In addition, students with *less* ability received more positive and less negative feedback than the high ability students ($F = 24.10$, $df = 1/19$, $p < .001$). Additional inspection of the figure indicates that among the motivated (M) groups, low ability (-A) pupils were evaluated more favorably than high ability (A) pupils ($t = 5.55$, $df = 19$, $p < .001$). Similarly, among the nonmotivated (-M) groups, -A pupils again received more favorable evaluations than the A pupils ($t = 2.71$, $df = 19$, $p < .02$). Correspondingly, within both the A and -A groups, evaluation of the M group exceeded that of the -M group (respectively, $t = 4.36$, $df = 19$, $p < .001$; $t = 4.79$, $df = 19$, $p < .001$). Further data analysis also indicates that there was a O \times A \times M interaction ($F = 3.36$, $df = 4/76$, $p < .05$). That is, among the M groups, the difference in reward for success between the A and -A groups was greater than the difference in punishment for failure. Conversely, among the -M groups, the disparity in punishment for failure between the A and -A groups was greater than the inequality in reward.

One further finding is that over all conditions there was a tendency toward greater reward than punishment; 18 of the 20 subjects dispensed more gold than red stars ($p < .001$).

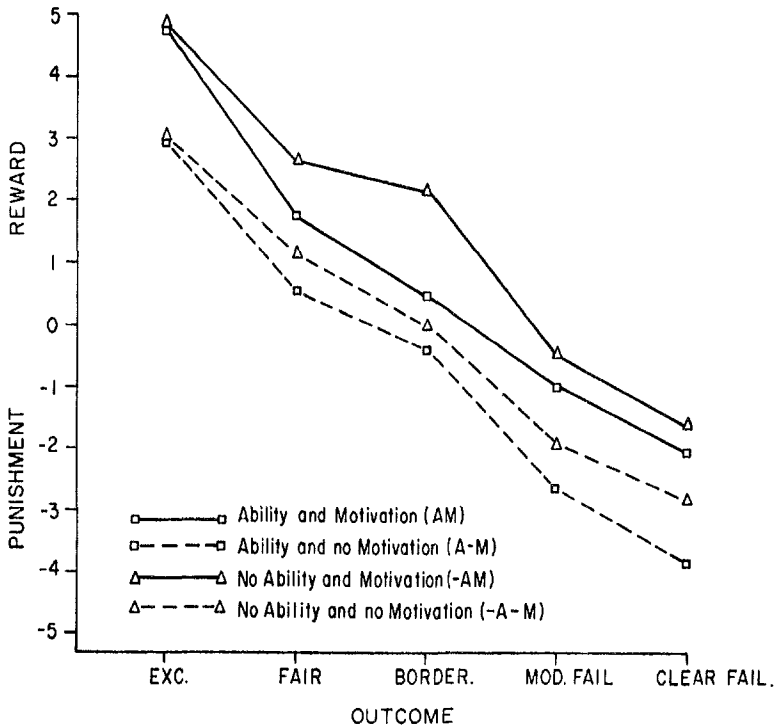


FIG. 1. Evaluation (reward and punishment) as a function of pupil ability, motivation, and examination outcome (relatively upper-class college sample).

Discussion

The results revealed that within this simulation setting, both motivation and ability influence the appraisal of achievement behavior. Yet the try and can behavioral determinants acted in a diverse manner: *high* motivation and *low* ability both resulted in augmented performance evaluation. The complex interactions within the data suggest the cognitions which might be mediating these cultural biases, or achievement value systems. One prevalent cultural belief is that the individual who is able to overcome personal handicaps and avoid failure is especially worthy of praise. This would account for the results indicating that $-AM$ pupils particularly received more positive feedback for success or borderline performance than the AM pupils. Another frequently expressed belief is that the individual who fails because he does not attempt to realize his potential is to be reproached, as though it were immoral not to utilize one's capacities. Hence,

the $A-M$ group would be expected to receive more negative feedback for failure than the $-A-M$ group. (Perhaps the reader will be disconcerted with the knowledge that there are adverse consequences of possessing ability. However, high ability people are more likely to meet with success, and can capitalize on the outcome source of rewards.)

There are numerous interpretations of the additional finding that there is a tendency to distribute more reward than punishment. The subjects in this study might intuitively have understood what psychologists also have contended—that rewards are a more effective and efficient method of behavioral control than punishments (see Ring & Kelley, 1963). On the other hand, the greater use of reward might reflect a generalized defensive operation elicited in the valuation of failure. This interpretation will be discussed again later.

Teacher expectancy and performance. A recent study which has generated much interest and speculation (Rosenthal & Jacobson,

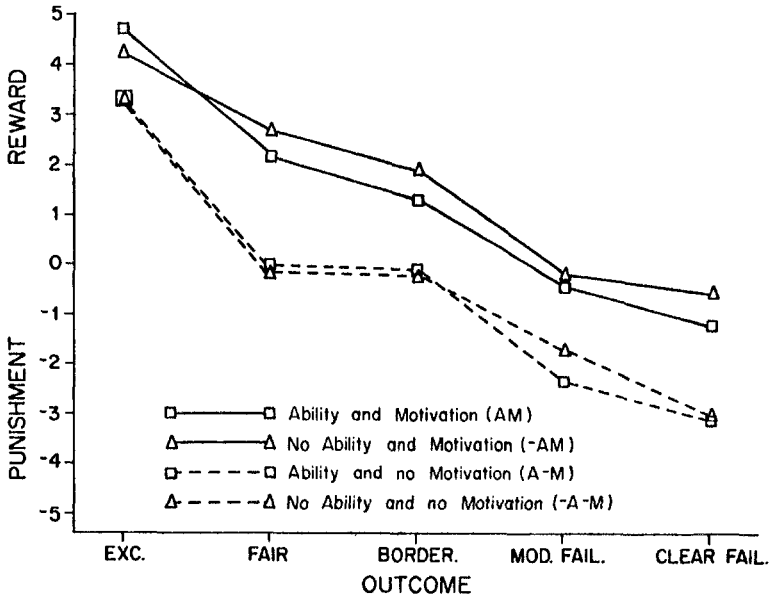


FIG. 2. Evaluation (reward and punishment) as a function of pupil ability, motivation, and examination outcome (relative lower-class high school sample).

1968) involved the arousal of false teacher expectations concerning the abilities of certain students. Teachers were told that a selected subset of students, who actually had been chosen randomly, would exhibit unusual intellectual growth. Subsequent testing of these students allegedly revealed that they did display greater intellectual development than control students not paired with the fraudulent expectancies.

The teacher behaviors which gave rise to these stated intellectual gains is yet unknown. Heider's analysis, considered in conjunction with the present study, does provide some plausible explanations. The false information given to the teachers conveyed that the selected students had special abilities. Therefore, poor scholastic performance among this group could reasonably be attributed to a lack of motivation.

Attributing failure to motivational deficits has a number of consequents. The data presented here demonstrate that the high ability children would be castigated more for any failures. Perhaps differential punishment indirectly led to enhanced intellectual growth. Alternately, it is possible that attributing failure to motivation, rather than to a lack

of ability, facilitates subsequent achievement strivings. Attributing failure to a lack of ability implies that success is not possible in the future, while attributions to insufficient effort intimate that instrumental action can be undertaken which will lead to goal attainment. (Of course, such an explanation assumes that the children introject the ascriptions of their teachers.) In sum, the intent of these interpretations is to convey that false ability expectancies have implications for teacher attributions concerning the causes of success and failure, and these attributions conceivably can influence subsequent performance.

EXPERIMENT II

Method

Experiment II repeated the procedure outlined in the initial study. Subjects were 18 male high school students from a lower-lower- and lower-middle-class community. Hence, the experiment examined the generality of the value systems expressed by the relatively middle- and upper-class college students participating in Experiment I.

Results

Figure 2 shows that there again were significant evaluative main effects attributable

to outcome and motivation (respectively, $F = 92.42$, $df = 4/68$, $p < .001$; $F = 35.25$, $df = 1/17$, $p < .001$); the main effect of ability did not approach significance ($F < 1$). Further analysis reveals that within both the A and -A groups the M pupils received higher evaluations than the -M pupils (respectively, $t = 4.40$, $df = 17$, $p < .001$, $t = 6.84$, $df = 17$, $p < .001$). The $O \times A \times M$ interaction displayed in the initial experiment was not exhibited ($F < 1$). However, again the majority of the subjects (12 of the 18) dispensed more reward than punishment.

Discussion

The pattern of results revealed that the lower-class sample in this experiment placed as great a value on outcome, and a relatively greater positive appraisal for motivation, than did the comparatively upper-class sample in the initial study. In addition, motivation had a much greater influence on evaluation than did ability (see Jones & deCharms, 1957). Perhaps it is rational to be influenced differentially by the try and can determinants of behavior. Ability is a dispositional or invariant property of the individual; it remains relatively constant over time. On the other hand, effort presumably can be altered, and therefore may be influenced by contingent rewards and punishments. If this lower-class group is sensitized to, or persuaded by, the "deficient motivation" attribution which often is used to characterize them, then they might be likely to attend to the try determinant when evaluating the behavior of others. However, clearly more data are needed before the evaluative differences displayed by the two samples can be reasonably discussed.

EXPERIMENT III

Method

Experiment III introduced two additional variables for study. First, the subjects were female student teachers, rather than the college and high school male students used in Experiments I and II. The change in subject population provided an opportunity to examine again the generality of the functions observed in the prior two studies. Further, this subject population is more likely to reveal information about behaviors which might be exhibited in actual classroom situations. Secondly, a new experi-

mental condition was introduced. One group of subjects ($n = 47$) received the same general instructions as the subjects in the prior two experiments, although they were allowed to give 1-10 gold or red stars as reward or punishment. A second group ($n = 41$) was instructed to estimate how much pride or shame they personally would experience in the various experimental conditions. A 10-point scale also was used to represent positive and negative affect.

Results and Discussion

The pattern of results in the evaluation condition is consistent with that obtained in the prior two experiments, and will merely be summarized here. There again are significant main effects due to outcome and motivation (respectively, $F = 309.21$, $df = 4/184$, $p < .001$; $F = 101.92$, $df = 1/46$, $p < .001$). While ability once more had a significant effect ($F = 17.42$, $df = 1/46$, $p < .001$), as in Experiment I, its magnitude was not as great as that of motivation. Again within both the A and -A groups, M pupils were evaluated more highly than the -M pupils (respectively, $t = 8.76$, $df = 46$, $p < .001$; $t = 9.57$, $df = 46$, $p < .001$). Similarly, within the M and -M groups there was greater evaluation of the -A than A hypothetical students (respectively, $t = 6.61$, $df = 46$, $p < .001$; $t = 2.02$, $df = 46$, $p < .05$). The $O \times A \times M$ interaction did not approach significance ($F < 1$). In addition, the vast majority of the student-teachers (39 of 47, $p < .001$) allocated more rewards than punishments.

In sum, across three subject groups there were significant main effects of outcome and motivation, and a trend toward a main effect of ability which was of lesser magnitude than that of motivation. The relative strength and consistency of these findings suggest that intense and widely held beliefs within this culture are being expressed in this simulation experiment.

Analysis of the introspective reports concerning pride and shame tell a similar story, yet yield additional information (see Figure 3). As in the prior analysis, there were significant main effects due to outcome, motivation, and ability (respectively, $F = 180.32$, $df = 4/160$, $p < .001$; $F = 42.52$, $df = 1/40$, $p < .001$; $F = 87.31$, $df = 1/40$, $p < .001$). There were also highly significant differences

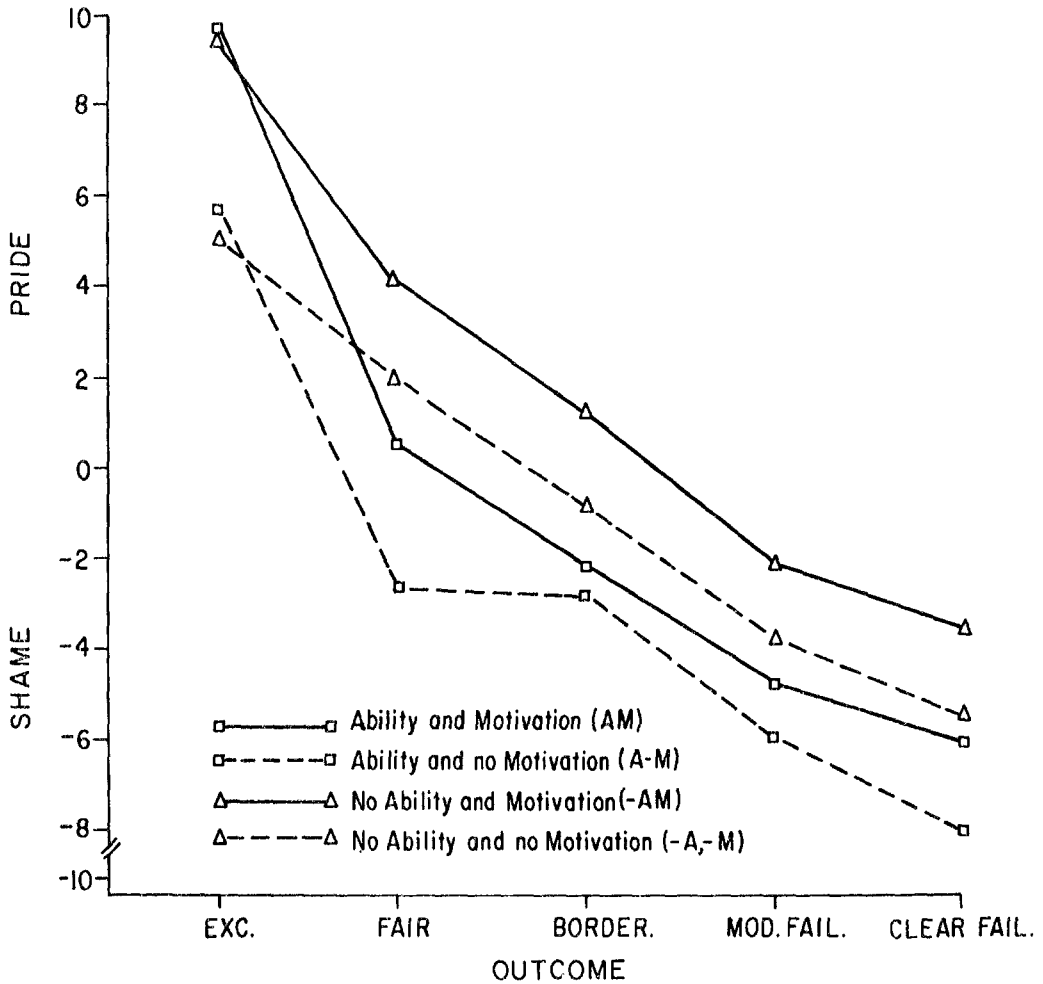


FIG. 3. Pride and shame as a function of ability, motivation, and examination outcome.

($t < .001$) between the various ability and motivational groups. However, in contrast with the evaluate-other data, the introspective reports concerning self-punishment (shame) indicate that shame primarily is experienced when failure occurs given ability ($t = 5.92$, $df = 46$, $p < .001$), while effort has a secondary, although quite significant, influence on punishment ($t = 3.43$, $df = 46$, $p < .001$).

Thus far the evaluate-others and self-affect conditions have been examined independently, and some similar and contrasting inferences drawn from these data. But the individual reward and punishment functions of the four hypothetical pupil groups have not been compared between the affect and evaluation con-

ditions. Direct comparisons between these two experimental conditions are vulnerable because one must impose rather questionable assumptions concerning the comparability of the scales and the underlying dimensions. However, the individual comparisons (see Figure 4) do provide food for thought, and actually may reflect the true state of affairs.

Figure 4 shows the magnitude of the reward-punishment and pride-shame ratings in the four ability-motivation groupings. The figure indicates that the amount of reported pride associated with extreme success is identical with the magnitude of external reward in all four comparisons. That this is not merely a ceiling effect is shown in the nonmotivated

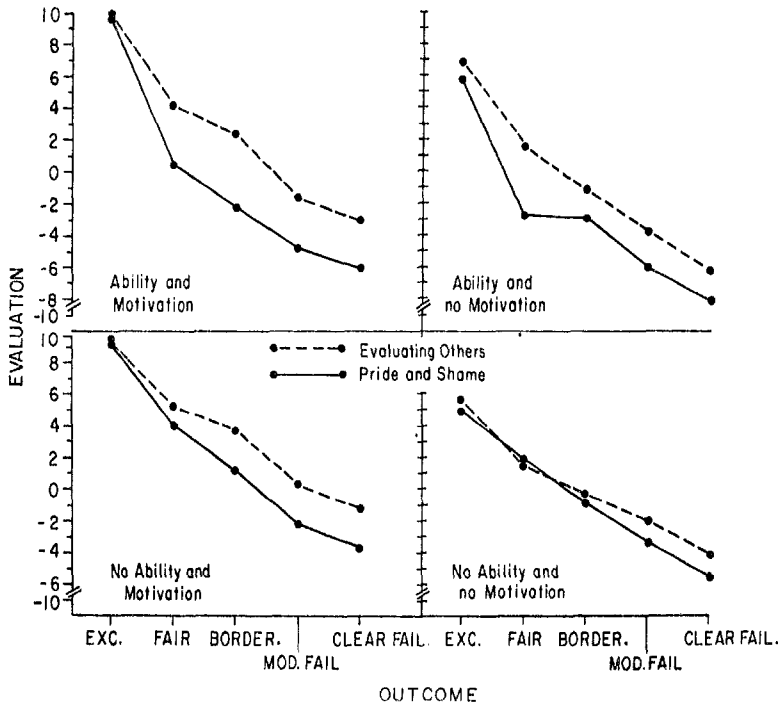


FIG. 4. Comparisons of self-and other-evaluation within the four hypothetical ability and motivation groups.

group comparisons. But the degree of pride for moderate success, and the degree of shame given any failure, consistently are less favorable than the magnitude of the external evaluation. If these comparisons are appropriate, then the negative affect given unfavorable outcomes is more severe than others may think it ought to be. Indeed, the superego appears to be a harsh master. Further, the possibility exists that external punishment for failure really has little negative reinforcement value in achievement-related contexts, for one's internalized self-punishment system is probably more salient, more efficient, and more cruel. It is of interest to note that 69 of 85 subjects (81%) in the three experiments dispensed more reward than punishment over all conditions, while only 16 of 41 subjects (39%) reported that they felt more overall pride than shame ($z_{diff} = 4.65, p < .001$).

Further implications for the study of achievement motivation. The results concerning the differential determinants of pride and shame have important implications for current

conceptions of achievement motivation. Atkinson (1964) has contended that the achievement motive represents a capacity to experience pride in the attainment of achievement-related goals. Yet the present data indicate that pride in successful accomplishment primarily is a function of perceived effort. Further, effort is an internal causal attribute. Therefore, an individual high in achievement motivation might be conceptualized as one who has the capacity to attribute success to internal determinants. That is, the achievement motive could be considered a complex cognitive system in which self-attributions for success play a vital role (see Heckhausen, 1967).

INDIVIDUAL DIFFERENCES IN THE PERCEPTION OF CAUSATION

The following study pursues the suggestion outlined previously that individuals high in achievement motivation are likely to attribute success to internal determinants. Unfortu-

nately, there already exists a literature which has shown that attempts to find significant relationships between individual differences in need for achievement and perceived locus of control have not been very successful (Crandall et al., 1962; Feather, 1967; Lichtman & Julian, 1964; Odell, 1959). The intuitively reasonable hypotheses that high achievement motivation is associated with a faith in internal control, and low need for achievement with a belief in external causality, have received only suggestive support.³ It may indeed be that these individual difference variables are, at best, weakly related. On the other hand, perhaps methodological and theoretical shortcomings have resulted in a failure to uncover the magnitude and character of the association between need for achievement and attribution of responsibility.

One specific factor which could be masking the relationship between the two variables under consideration has been the method of assessing locus of control. In the vast majority of studies with adult subjects, a variant of an instrument first developed by Phares (1955) and James (1957) has been employed to determine perceived responsibility. This is a two-choice, self-report measure which offers "alternatives between internal- and external-control interpretations of events [Lefcourt, 1966, p. 211]." The contents of the test items generally are unrelated to achievement motivation; many of the questions pertain to social power and social influence, leadership, etc. Yet the achievement motive theoretically has directional properties; it influences thoughts and behaviors which are associated with achievement-oriented goals. Hence, it might be unsound to expect a general measure of locus of control, rather than a more specific measure of control in achievement-related situations, to relate to need for achievement. (This argument parallels discussion and empirical support for the contention that test-taking anxiety is a better predictor of academic-type achievement behavior

than general or nonspecific anxiety; see Raphelson, 1957.)

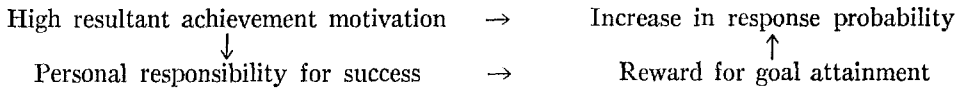
A meaningful relationship between locus of control and achievement needs also might have been relatively concealed in prior studies because the control measure includes items with both positive and negative outcomes (e.g., *Becoming a success . . .*; *Capable people who fail . . .*; etc.). The ascription of responsibility may be contingent upon the actual or expected consequence of the event in question, that is, "effects often play the role of data through which we learn to know about origins [Heider, 1944, p. 356]." For example, Hoppe (1931) has demonstrated that there is a defensive tendency to attribute failure to external rather than internal sources. Further, Crandall et al. (1965) found that correlations between beliefs about the causation of successful and failed events varied between .11 and .43 for seven age groups, with only three of the seven correlations reaching statistical significance. If defenses are operative following failure, or if the outcome of an achievement act interacts with need for achievement to determine locus of control, then the current measurement procedure would attenuate or might completely mask the true relationship between locus of control and need for achievement.

The following study was guided by the preceding discussion and by the anticipation of interactions between locus of control, level of achievement-related needs (need for achievement and anxiety about failure), and successful and failed actions. Specifically, it is hypothesized that individuals high in resultant achievement motivation (need for achievement minus anxiety about failure) are more likely to attribute success in achievement-oriented situations to themselves than individuals classified as low in resultant achievement motivation. The perception of responsibility influences the affect associated with goal attainment, and the reward value of the goal (Rotter, 1966). Therefore, success in achievement-oriented situations is expected to be more rewarding to high than low achievement-oriented individuals. The disparate reward values subsequently would result in differential tendencies to undertake achievement-related activities. The hypothesis, there-

³ In this article "achievement motivation," "need for achievement," and "achievement needs" are used synonymously and denote approach tendencies. "Resultant achievement motivation," "achievement-related needs," and "achievement orientation" include both approach and avoidance (fear of failure) tendencies.

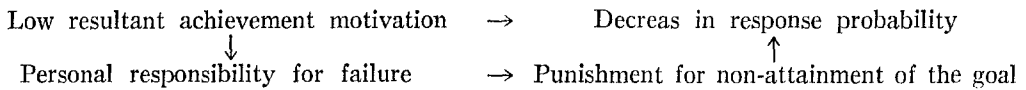
fore, specifies the cognitive links mediating between the level of resultant achievement

needs and the undertaking of achievement actions⁴:



A second hypothesis concerning the ascription of responsibility for failed activities is stated more tentatively because of the evidence concerning defensive reactions following failure. It is suggested that a person low in resultant achievement motivation "has been socialized to impose failure upon himself [Katz, 1967, p. 164]." That is, individuals low in resultant achievement motivation are expected to attribute failure to themselves, and suffer the associate affect of shame, more

than individuals high in resultant achievement motivation. Hence, failure is more punishing to low than high achievement-oriented individuals. This would result in differential decrements in the subsequent probability of undertaking achievement-related tasks. The hypothesis, therefore, specifies the cognitive links mediating between the level of resultant achievement needs and the avoidance of achievement actions:



In summary, an interaction is expected between locus of control, success and failure, and resultant achievement motivation. The prototypic high achievement-oriented individual is conceptualized as one who assumes the responsibility for success, but relatively denies his liability for failure. On the other hand, the individual low in resultant achievement concerns is believed to assume the blame for failure, while denying himself the luxury of personal praise for success. The proposed interaction therefore specifies the mediating cognitions responsible for the differential approach and avoidance tendencies which the two motive groups display in achievement-related contexts.

EXPERIMENT IV

Method

Subjects. The number of subjects included in the final data analysis, classified according to grade level and sex, is presented in Table 1. The grammar and high school students were from predominantly middle-class family backgrounds, living in a suburb of Los Angeles. The entire third through sixth grades of a grammar school were tested; there was a greater proportion of third and fourth graders in the sample because the school was relatively new. The high school subjects were male volunteers, excused from class for their participation. In the grammar school 10 subjects had to be eliminated from the analysis

for failing to follow directions, while 16 high school students were not included because of involuntary or deliberate failure to comply with the task requirements.

Materials: Grammar school. The elementary school students were administered the children's Intellectual Achievement Responsibility (IAR) scale (Crandall, et al., 1965), and a measure of resultant achievement motivation. The IAR consists of 34 forced-choice items with external and internal alternative responses. Half of the items contain stems with positive outcomes, while half portray aversive situations. Examples of the items are:

- If a teacher passes you to the next grade, would it probably be
 - a. because she liked you, or
 - b. because of the work you did?
- Suppose you don't do as well as usual in a subject at school. Would this happen
 - a. because you weren't as careful as usual, or
 - b. because somebody bothered you and kept you from working?

(The entire scale, plus information concerning reliability and validity, is reported in Crandall et al., 1965.) The test was read to the third- and fourth-grade students in groups ranging from three to five; for the fifth and sixth graders the measure was administered to the entire class in written form.

⁴ It also is likely that both reward for goal attainment and personal responsibility for success influences the growth of achievement motivation. The direction of the arrows in the diagram does not exclude other causal relationships.

TABLE 1
DISTRIBUTION OF SUBJECTS ACCORDING TO
SEX AND GRADE

Grade	Sex	
	Male	Female
3	42 ^a	34
4	45	44
5	33	21
6	26	28
10	112	

^a Refers to number of subjects included in the final analysis.

The measure of resultant achievement was a forced-choice inventory consisting of 20 items derived from Atkinson's (1957) theory of resultant achievement motivation, and from empirical findings which have been shown to differentiate high from low resultant achievement subgroups. The items tap, in part, the kind of affect (hope or fear), the direction of behavior (approach or avoidance), and the preference for risk (intermediate versus easy or difficult) expressed in achievement situations. Typical items are:

- I prefer jobs
 a. that I might not be able to do.
 b. that I am sure I can do.
 When I play a game I
 a. hate to lose.
 b. love to win.

This scale, labeled the Children's Achievement Scale (CAS), had not been used in prior research. A new measure was employed because there is not any clearly validated instrument which assesses achievement concerns in younger children.

Materials: High school. Subjects were given the group administration of a Thematic Apperception Test (TAT), Picture Series 2, 8, 4, and 48 (Atkinson, 1958). Interrater reliability of the scorer with a trained expert was $\rho = .87$ ($n = 20$). The Mandler-Sarason Test Anxiety Questionnaire (TAQ) also was administered. A measure of resultant achievement motivation was derived by subtracting the z score on the TAQ from the z score on the TAT. This combined measure has been used exten-

TABLE 2
ATTRIBUTION CORRELATIONS BETWEEN ITEMS WITH
POSITIVE (I+) AND NEGATIVE (I-) OUTCOMES
ON THE INTELLECTUAL ACHIEVEMENT
RESPONSIBILITY (IAR) SCALE

Sex	Grade			
	3 + 4	5	6	10
Male	.15	.17	.03	.24*
Female	-.08	.15	-.13	

* $p < .05$.

sively in prior studies of achievement motivation (Atkinson, 1964). In addition, an objective test of resultant achievement motivation developed by Mehrabian (1968) was given. This measure, which guided the construction of the CAS, also consists of items primarily derived from Atkinson's (1957) conception of resultant achievement motivation. It contains 34 single statements, with alternative responses ranging from +3 (very strong agreement) to -3 (very strong disagreement). Exemplary items are:

- a. I worry more about getting a good grade than I worry about getting a bad grade.
 b. I more often attempt difficult tasks that I am not sure I can do, than easier tasks that I believe I can do.

(The complete scale, labeled here the Mehrabian Achievement Risk-Preference Scale, or MARPS, along with reliability and validity information, is presented in Mehrabian, 1968.) The high school students also were administered the IAR.

Results

Table 2 presents the attribution correlations between the items with positive (I+) and negative (I-) outcomes on the IAR. Among the male subjects all the correlations were positive but manifestly low, replicating the findings of Crandall et al. (1965). Across the seven age and sex groups only the male correlation for the high school sample reached statistical significance ($p < .05$). (The data for the third and fourth grades have been combined in all analyses because of their similarity and general lack of significance.)

Table 3 contains the mean number of internal attributions on the I+ and I- items for subjects classified as high or low (above or below the median) in resultant achievement motivation. For the high school sample the results are given for both the TAT-TAQ and MARPS measures of resultant achievement motivation. The correlation between these two indexes was $r = .25$ ($p < .01$). A third comparison also was made between subjects scoring high on both indexes of resultant achievement motivation ($n = 33$), and subjects scoring low on both measures ($n = 30$). An analysis of variance of the ascription data (using the more validated TAT-TAQ motive index for the high school subjects) revealed that subjects high in resultant achievement motivation had higher I+ scores than subjects low in resultant achievement motivation

TABLE 3
MEAN INTERNAL ATTRIBUTION SCORES FOR ITEMS WITH POSITIVE AND NEGATIVE OUTCOMES ON THE INTELLECTUAL ACHIEVEMENT RESPONSIBILITY (IAR) SCALE, ACCORDING TO AGE, SEX, AND ACHIEVEMENT MOTIVATION OF THE RESPONDENTS

Achievement motivation	Sex	Grade level											
		3 + 4		5		6		High school (10)					
		I+	I-	I+	I-	I+	I-	MARPS		TAT-TAQ		Joint classification	
								I+	I-	I+	I-	I+	I-
High ^a	Male	11.76	8.81	12.00	9.29	13.83	9.75	13.13	11.42	12.77	11.30	13.60	11.22
Low	Male	11.58	9.39	10.10	10.22	10.71	9.92	11.77	11.06	12.10	11.19	12.10	11.38
		<1	<1	2.02*	2.11*	2.60*	<1	2.78**	<1	1.41	<1	2.67**	<1
High	Female	12.48	9.54	13.95	9.83	13.14	9.57						
Low	Female	12.45	9.03	12.55	11.89	12.79	9.21						
		<1	<1	1.30	1.79	<1	<1						

^a Subjects are classified above or below the median. See Table 1 and text for the number of subjects in the total population, and in the motive groups.
* $p < .05$, (two-tailed test).
** $p < .01$ (two-tailed test).

($F = 3.97$, $df = 1/384$, $p < .05$). However, the two motive groups did not differ significantly in their tendencies to attribute failure internally ($F < 1$).

Inspection of these data within sexes (see Table 3) indicates that the internal attribution for success was greater for the high than low resultant achievement-oriented males in all of the four grade levels ($t = 2.53$, $df = 256$, $p < .02$). The mean attribution differences reached significance in the fifth- and sixth-grade samples and with two of the three resultant achievement indexes in the high school group. On the other hand, inspection of the I- data reveals that male grade school children low in resultant achievement motivation more frequently ascribed failure to themselves than students high in resultant achievement motivation. This difference, however, did not approach significance ($t < 1$).

Plotting the male attribution results (now employing the more differentiating joint index for the high school males) reveals other aspects of the data (see Figure 5). First, across both motive groups there was a positive, although nonsignificant, relationship between grade level and internal attribution ($F = 1.45$, $df = 3/194$, $p < .20$; see also Bialer, 1961). However, among the low resultant achievement motivation subgroup there was only a slight tendency toward greater internal attribution on the I+ than I- items, while

for the group high in resultant achievement motivation the probability of an internal attribution was visibly dependent on the consequence of the event. This disparity in the degree of internal attribution as a function of item outcome was evident among all the age groups tested.

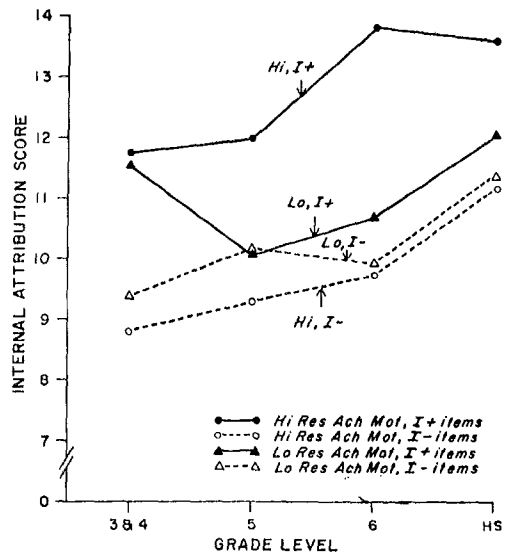


FIG. 5. Mean internal attribution scores for positive (I+) and negative (I-) outcome items on the Internal Achievement Responsibility scale, with subjects classified according to resultant achievement motivation and grade level.

Inspection of the data for the female subjects shown in Table 3 reveals that none of the individual comparisons reached statistical significance. Over all age levels neither the I+ nor I- comparisons between the two motive groups approached significance ($t < 1$). The hypothesized interaction between individual differences and attribution was only evident in the fifth-grade population. Among all other age groups there was a trend toward more internal attribution for the high- than low-achievement-oriented subjects on both the I+ and I- items.

Discussion

The most evident conclusion from these data is that individuals classified as high in resultant achievement motivation tend to attribute success in achievement-oriented situations to themselves more than individuals low in resultant achievement motivation. Mean differences in all of the seven independent male and female comparisons were in the predicted direction, although the findings were most convincing for males past the fourth grade level. The relative weakness of the findings among the female subjects was not entirely unexpected. Prior studies of achievement behavior (see Atkinson, 1964) and locus of control (see Crandall et al., 1962) often have yielded inconsistent results with females. Hence, relating achievement concerns and locus of control in a female population is especially hazardous.

The interpretation of the I- data is more puzzling than that of the I+ findings. The results do not confirm the hypothesis that individuals low in achievement needs are significantly more internal with respect to failure than the high-motive groups. On the other hand, the findings also do not support prior hypotheses of Feather (1967) and Rotter (1966) that there is a general tendency for the high-motive group to be more internal than the low-motive group. In Experiment V the relationship between achievement needs and perceived causality in situations of failure is examined further.

Developmental and measurement considerations. The data in Table 3 also revealed that none of the hypothesized relationships between attribution and achievement motiva-

tion were supported among the students in the third and fourth grades. Perhaps stabilized attributions for success and failure have not yet formed for these age groups. (Evidence suggests that achievement concerns are developed well before this time; see Heckhausen, 1967.) Alternately, it might merely signify that the CAS was not a suitable measure for this population. However, the success of the CAS in the fifth and sixth grades renders the latter interpretation somewhat questionable. It was encouraging to find that the CAS had some predictive validity for the fifth- and sixth-grade samples; perhaps this will be a useful measure to employ in the study of achievement motivation in children.

The lack of consistency in the female data also might be due to measurement or developmental factors. Perhaps the effects of the socialization of achievement, which result in the discouragement of striving for at least a subpopulation of females (French & Lesser, 1964), begin to be evident between the fifth- and sixth-grade levels. This period does mark the onset of secondary sexual characteristics among females. On the other hand, studies of achievement motivation traditionally have been hampered because instruments adequate for males have proven inadequate for females. Only further work can resolve these difficult developmental versus assessment issues.

The success of the MARPS in this study is heartening, for it is a more efficient instrument than the combined TAT-TAQ index, and has reliability properties which the TAT measure does not possess (see Mehrabian, 1968). In a prior study (Weiner, Johnson, & Mehrabian, 1968) a positive relationship also was found ($r = .30$, $N = 82$) between the two indexes of resultant achievement motivation. Although the magnitude of the correlations in the Weiner et al. study and in this investigation were small, in both instances approximately 70% of the subjects were identically classified into high- or low-motive groups. Further, in both investigations the largest mean differences in the dependent variables were found when subjects were jointly classified on the two indexes. The promise of a reliable and valid objective instrument to assess resultant achievement motivation, which might supplant or supple-

ment the generally used TAT-TAQ index, could act as an important catalyst for studies of achievement motivation.

EXPERIMENT V

The experiments reported thus far have not included any direct behavioral measures in support of their conclusions. Experiments I-III involved role-playing situations, while Experiment IV related data of various self-report assessment instruments. In Experiment V behavioral evidence gathered in a "real" situation is finally presented.

Experiment V was guided by the prior results indicating that individuals high in achievement motivation tend to attribute success to themselves, rather than to external sources. An alternate statement of this relationship is that individuals high in achievement motivation perceive successful outcomes as determined by skill or effort, rather than luck. On the other hand, individuals low in achievement motivation relatively tend to attribute success to external factors. That is, the data intimate that they are inclined to perceive positive outcomes as determined by chance or fate. In Experiment V these relations were examined by employing an ambiguous task in which performance might be perceived as determined by either luck or skill. Task perception was then related to achievement outcome and level of achievement-related needs. The study also allowed further investigation of the yet undetermined association between causal ascription and achievement motivation given an unsuccessful outcome.

Procedure

Subjects were 71 males enrolled in introductory psychology and required to participate in psychological experiments. The study was conducted on nine occasions with groups varying in size from 7 to 10.

The subjects were first given a modified version of the self-report measure of resultant achievement motivation described in Experiment IV (Mehrabian, 1969). They were then read the following task instructions:

I have in front of me a list of 50 numbers, either 0 or 1, in an order which is unknown to you. Your task is to guess whether the next number on my list is either 0 or 1. You will write down your guess on the answer sheet which I have passed out, and then I will tell you what the

number actually was. If your guess is correct, place a check on the line next to it. You will then be asked to make your next guess, and so on until all 50 guesses have been completed.

Now this is a test of your *synthetic* as opposed to your *analytic* ability. By this we mean that there is no one definite pattern, like 010101, that you could easily detect and get all the answers correct from then on. But the list also is not random. Instead there are certain general trends and tendencies in the list—perhaps a greater frequency of one kind of pattern over another. To the extent that you can become sensitive to those tendencies, you can make your score come out consistently above chance. Of course, your score also will be heavily influenced by luck. Even if you learn just exactly as much about the patterns as we expect, you could get a much higher total score just by being lucky in your guessing. Similarly, your score could be much lower just because of bad luck. To get a really accurate idea of just where you stood, you would have to take the test a number of times so that the good and bad luck would average out.

The list of 0s and 1s read to the subjects was randomly constructed, so that the outcome was determined solely by chance. However, the instructions created an ambiguous situation which allowed performance to be perceived as either attributable to skill and effort or chance (also see Jenkins & Ward, 1965). Subjects were allowed 15 seconds to make each guess, with the correct answer read after each trial.

Upon completion of the task, subjects added up their total number of correct responses. They were then instructed to estimate how many points of that total were due to "skill rather than lucky guessing." In addition, they were asked to estimate "what score [they] would expect to obtain if [they] performed the task again, using a new set of 0s and 1s, but with the same general trends and tendencies." Finally, the subjects also were instructed to judge "how hard [they] had tried to succeed at the task," and to indicate their answer on a 10-point scale anchored at the extremes ("I did not try at all" and "I tried as hard as I possibly could"). Thus, the dependent measures included estimation of task skill, future performance expectation, and perceived expended effort.

Composition of the subgroups. The 71 subjects were divided at the median into high-(H) and low-(L) achievement-oriented groups. They were further placed into success (Su), failure (Fa), and intermediate (In) conditions on the basis of their performance. The Su condition was defined as a score in the upper one-third of the total distribution of scores obtained on the guessing task, while the Fa condition comprised subjects falling in the lower one-third of the outcome distribution. This resulted in scores of 27 or more included within the Su condition, and scores of 24 or less included within the Fa condition. Within each of the three conditions

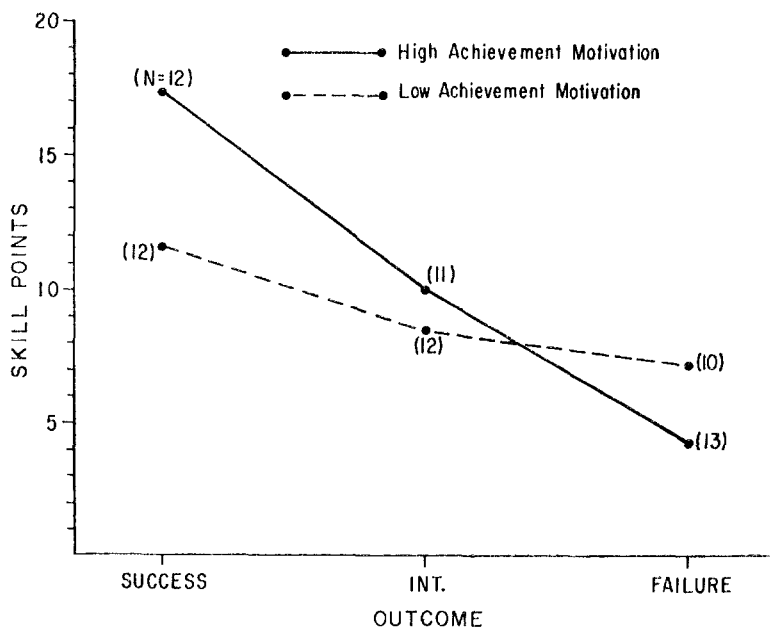


FIG. 6. Number of skill points ascribed as a function of motive classification and task performance.

there were no significant differences between the scores obtained by the H and L groups.

Results

Skill points. The mean number of points ascribed to skill in the six experimental groups is shown in Figure 6. The figure indicates that the number of skill points increased directly with total score ($F = 16.28$, $df = 2/65$, $p < .001$; see Jenkins & Ward, 1965). Of greater importance in the present context was the visible interaction between task outcome and level of achievement needs ($F = 3.92$, $df = 2/65$, $p < .05$). The H subjects in the Su

condition attributed more skill points to themselves than the L subjects ($t = 2.12$, $df = 21$, $p < .05$). On the other hand, in the Fa condition L subjects assigned themselves more skill points than the H subjects ($t = 1.82$, $df = 21$, $p < .10$), although this difference failed to reach an acceptable significance level. Further comparisons of the data within the motive groups and between conditions indicate that H subjects clearly differentiated the number of skill points which they took credit for in the Su and Fa conditions ($t = 5.88$, $df = 23$, $p < .001$). However, among the L subjects the difference in perceived skill between the two experimental conditions, while approaching significance ($t = 1.90$, $df = 21$, $p < .10$), was not as marked.

Expected retest score. The expected retest performance increased directly with the level of original performance ($F = 2.43$, $df = 2/65$, $p < .10$; see Table 4). However, neither the level of achievement motivation, nor the Motivation \times Outcome interaction, significantly predicted task expectancy (respectively, $F = 1.70$, $df = 1/65$, $p < .20$; $F < 1$).

While in the Su condition mean expected retest scores of the H and L subjects were not significantly different with a parametric

TABLE 4

MEAN EXPECTED RETEST SCORE AND EFFORT RATINGS IN THE SUCCESS, INTERMEDIATE, AND FAILURE CONDITIONS AMONG SUBJECTS CLASSIFIED AS HIGH OR LOW IN RESULTANT ACHIEVEMENT MOTIVATION

Experimental condition	Retest score		Perceived effort	
	High achievement	Low achievement	High achievement	Low achievement
Success	30.33	28.39	8.25	7.69
Intermediate	29.50	28.09	7.42	6.73
Failure	27.08	27.60	5.31	7.10

analysis ($t = 1.52$, $df = 23$, $p < .20$), non-parametric analysis of these data showed that 9 of the 12 H subjects expected to improve on the subsequent trials, while only 2 of the 13 L subjects believed that they would attain a better score on the next series ($p < .01$, Fisher exact test). Differences in retest expectation did not approach significance within the Fa ($t < 1$) or In ($t = 1.18$, $df = 21$, $p < .20$) conditions.

Effort. Ratings of effort systematically varied as a function of the outcome of the task ($F = 5.58$, $df = 2/65$, $p < .01$; see Table 4). Subjects tended to believe that they tried harder after having experienced success than failure. The reader should note that this Effort \times Outcome association appeared even though performance objectively was determined only by chance. There was again no main effect due to level of achievement-related needs ($F < 1$). There was, however, a significant interaction between level of achievement motivation and task outcome ($F = 3.42$, $df = 2/65$, $p < .05$). Although H subjects did not state that they tried significantly harder than the L subjects in the Su or In conditions ($t < 1$), they did rate their effort significantly lower than the L subjects within the Fa condition ($t = 2.53$, $df = 21$, $p < .05$). Further analysis of these data revealed that L subjects perceived little difference between their effort in the two extreme conditions ($t < 1$), whereas H subjects believed that they tried significantly harder in the Su than in the Fa condition ($t = 4.44$, $df = 23$, $p < .001$).

Discussion

The data again support the hypothesis that individuals high in achievement motivation are more internal with respect to success, that is, perceive they have more ability and expend more effort, than subjects low in achievement motivation. The positive recency effect which is exhibited by subjects high in level of achievement needs, or their expected increment in performance following success, and the negative recency effect which characterizes subjects low in achievement motivation, or their expected decrements in performance after success, support the notion that the motive groups relatively attribute positive

achievement results to different sources. The data indicate that the high-achievement group perceives the task outcome as primarily determined by skill, and hence is likely to believe that success in this situation is internally controlled. The negative recency effect displayed by subjects in the L group reveals that they perceived success to be strongly influenced by good luck, or externally controlled.

Although significant differences between the motive groups were not observed in the Fa condition, the general pattern of results do lend themselves to a plausible interpretation. It can be contended that the fewer skill points which the H subjects attributed to themselves after failure suggests that they were prone to perceive the failed task as determined primarily by fate rather than by skill. On the other hand, the greater skill points allocated by the L than H group given failure suggests that the L subjects may have been more likely to hold themselves responsible for the poor level of performance, inasmuch as the outcome was internally controlled. In sum, the data in the Su and Fa conditions may be interpreted as supporting the interaction hypothesis proposed earlier.

However, the results are amenable to alternative interpretations. As indicated previously, Rotter (1966) and Feather (1967) suggested that individuals high in achievement motivation take responsibility for whatever outcome befalls them, while individuals low in achievement motivation regard achievement performance as relatively independent of their ability and effort. The data in Experiment V also can be interpreted as supporting this position. Subjects high in achievement motivation perceived that they possessed relatively great skill when they succeeded, and a lack of skill when they failed. Similarly, they stated that their performance varied with the amount of expended effort, and would improve further after an initial success. Thus, they apparently were internal with respect to both success and failure. Conversely, subjects low in achievement motivation did not unequivocally differentiate between the amount of skill they possessed in the Su and Fa conditions, did not believe that their performance varied with the amount of expended effort, and expected that they would do worse after an ini-

tial success. These data may be interpreted as indicating that subjects low in achievement motivation construct external attributions following either success or failure.

Neither the interaction hypothesis, nor the consistency hypothesis of Rotter and Feather, are wholly supported by the findings concerning failure reported in Experiments IV and V. (Note both positions predict that the group high in achievement motivation will be more internal than the low group given a positive outcome.) An alternative explanation of these experiments is to adopt the hypotheses that the motive groups differ only in their internal versus external attributions given a successful outcome. However, in situations of failure it may be speculated that the groups do not differ in their *overall* level of internal attribution, although they maintain disparate patterns of causality. For example, perhaps when failure is attributed internally the subjects high in achievement motivation ascribe the outcome to insufficient effort, while those low in achievement motivation ascribe the outcome to a lack of ability. This attributional pattern could account for the greater persistence which the high-achievement-oriented individuals exhibit in failure situations (see Weiner, 1970), inasmuch as effort attributions may be more likely to result in continued instrumental activity (see the prior discussion of the Rosenthal & Jacobson investigation). There is some additional data supporting this third position. Inspection of the internal response stems on the IAR used in Experiment IV reveals that the majority of stems can be partitioned into one of the two causal categories stressed earlier: ability ("because what you did really wasn't very smart"), and motivation ("because you didn't try very hard to remember"). Analysis of the I-data in Experiment IV indicates that in all five independent male and female samples beyond the fourth-grade level students low in resultant achievement motivation were more likely to attribute failure to a lack of ability than the high-achievement group. This tendency reached statistical significance among the fifth-grade females and sixth-grade males ($p < .05$, Fisher exact test). There were no systematic differences between the motive groups in their disposition to attribute failure

internally on the items containing motivational stems. In three of the five samples under consideration the high-achievement group actually attributed failure to personal motivation more frequently than the low-achievement-oriented students. This result also was displayed in Experiment V. The opposing ability and effort results account for the lack of significant overall attributional differences given failure in Experiment IV. The writers presently favor this third hypothesis; needless to say, further data are needed to support this position.⁵

A THEORY OF ACHIEVEMENT MOTIVATION

An approach-avoidance conflict model for achievement-oriented behavior formulated by Atkinson (1957, 1964) includes three determinants of approach behavior: the motive for success (M_s), probability of success (P_s), and the incentive value of success (I_s). In a similar manner, the achievement avoidance tendency in Atkinson's model also is comprised of three components: the motive to avoid failure (M_{AF}), probability of failure (P_f), and the incentive value of failure ($-I_f$). Experiments IV and V provided evidence that the cognitive mediator of M_s is an internal attribution for success. Experiment VI attempts to demonstrate that the four environmental components of the approach and avoidance tendencies, P_s and I_s , and P_f and $-I_f$, also can be conceptualized with the language of attribution theory.

Within Atkinson's (1957) model of the determinants of achievement-related behavior, the incentive value of success and probability of success are inversely related. That is, pride in accomplishment is believed to be limited when the task is perceived as easy, and relatively intense when the task is perceived as difficult. Similarly, the incentive value of failure and probability of failure are conceived to be inversely related. The degree of shame experienced following nonattainment of an achievement-related goal is believed to be minimal when the task is perceived as difficult, and great when the task is easy. The relationship between affect and probability

⁵ Since the writing of this paper a great amount of data has been collected which supports this contention.

also can be accounted for by attributional processes. According to Kelley (1967), the allocation of causality is guided by an examination of "variations in effect [p. 194]." Given an easy task, the majority of individuals undertaking that task succeed. Correspondingly, most of the individuals attempting an objectively difficult task fail. Hence, the modal success and failure performance outcomes may primarily be attributed to external factors (the task), rather than to internal sources (the individuals). It can therefore be contended that little pride is experienced in successful performance of an easy task, or little shame in unsuccessful performance at a different task, because the ascription of causality tends to be external rather than internal. On the other hand, perhaps success at a difficult task, or failure at an easy task, primarily will be ascribed to the individuals undertaking the task. This would result in relatively great pride or shame, given respective success or failure outcomes.

The above analysis leads to the hypothesis that P_s and internal attribution will be linearly related within success and failure outcome conditions. Experiment VI investigated whether individuals can utilize task difficulty information to make inferences about causality, and examined the function relating probability to attribution in success and failure situations.

EXPERIMENT VI

Method

The experiment was administered in group form to two psychology classes. Thirty male and 46 female students participated as subjects. The following instructions were read to the classes:

You will be given some information about a series of individuals in various situations, and asked to make judgments about certain aspects of their performance. The first column on the paper which you have tells the percentage of a group that has succeeded at a certain task. The second column tells whether the particular person under consideration has succeeded or failed at that task. In the last column you are asked to judge to what extent the person's success or failure was or was not due to his own effort or ability.

Each subject then rated the locus of causality for nine success and nine failure conditions. The to-be-judged situations indicated, for example, that Individual A succeeded at a task which 90% of the

group solved, failed a task which 5% of the group solved, etc. Judgments were made on a Likert-type scale anchored at both ends with the following descriptions: "Performance due to ability or effort of the person" versus "Performance not due to ability or effort of the person." The stated group success (P_s) norms for both the success and failure outcomes were .99, .95, .90, .70, .50, .30, .10, .05, and .01. There were four P_s and outcome orders. The positions of the internal-external anchors were randomized over the 18 judgments (9 P_s levels \times 2 outcomes). For scoring purposes the scale was subdivided into 17 equal $\frac{1}{4}$ -inch line segments, and assigned the corresponding scores of 1-17.

Results

Figure 7 shows the internal attribution scores in the success and failure conditions. For both success and failure outcomes the relationship between P_s and attribution was clearly linear ($p < .0001$). The internal attribution for success increased as the task became more difficult, while the internal attribution for failure increased as the task became easier. There also was greater internal attribution for success than for failure ($F = 6.67$, $df = 1/148$, $p < .05$; see inverted failure function in Figure 7).

Discussion

The results demonstrate that within the range of task difficulty encountered in most situations, judged self-attribution for success is inversely related to P_s , while personal ascription for failure is positively related to P_s . It was suggested previously that the degree of self-attribution for success and failure influences the positive and negative incentive values of the goal. It is therefore contended that one experiences more pride (I_s) given success at a difficult task because there is greater self-attribution for success at low P_s tasks. Similarly, it is suggested that more shame ($-I_f$) is experienced given failure at an easy task because there is greater self-attribution for failure at high P_s tasks. It also is interesting to note, as Hoppe (1931) previously demonstrated, that there is a tendency to react defensively to failure by ascribing the cause as external to the individual. This occurred despite the lack of personal participation on the part of the rater.

The present experimental demonstration may have been somewhat contrived in that it

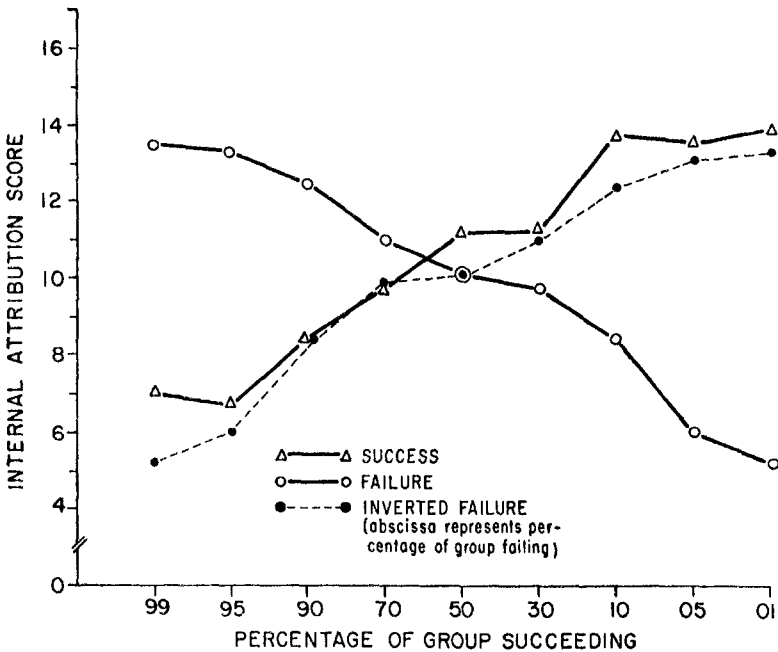


FIG. 7. Mean internal attribution scores for success and failure outcome conditions as a function of task difficulty.

“forced” attributions to be related to task outcome and P_s level. Yet very similar information is conveyed in many investigations of achievement motivation. Often experimental studies manipulating success and failure employ false norms to establish an initial P_s level. The experimenter states, for example, that “___% of the other students are able to solve this problem” (see Feather, 1961; Weiner, 1970). It is suggested that in these experiments the subjects covertly make attributional inferences on the bases of the normative data and their performance outcomes. It is further contended that these cognitions systematically influence subsequent (predicted) performance.

Attributional conflict. The data presented in this article indicate that the assignment of responsibility is an extremely complex behavioral act. Task difficulty, results of the action, individual differences, perceptions of motivation and ability, and undoubtedly many other factors contribute to the final attribution. It is likely that at times an underlying individual difference in attributional tendency will be at variance with the allocation of responsibility which is generated by the

stimulus situation (Watson & Baumeister, 1967). For example, consider a situation in which an individual high in resultant achievement motivation succeeds (internal attribution) at an easy task (external attribution situation). Perhaps notions of balance might be helpful in explaining the resolution of such attributional conflicts (e.g., the task is then perceived as more difficult than it really is). The development of a model which specifies how opposing attributions are integrated remains a difficult and important problem.

Risk preference. Perhaps the most well-documented finding emerging from Atkinson's conception of achievement motivation is that individuals high in achievement needs prefer tasks of intermediate difficulty, while the low-motive group tends to select tasks which are relatively easy or relatively difficult (see Atkinson, 1964; Weiner, 1970). A task of intermediate difficulty connotes that approximately one-half of the individuals undertaking the activity succeed, while the other half fail. Hence, individual success or failure primarily yields information about the capabilities of the person performing the task. On the other hand, success at an easy task, or

failure at a difficult task (which are the modal experiences at such activities), primarily gives rise to information concerning the characteristics of the task, rather than to knowledge about the person attempting the task (see Experiment VI). It is therefore suggested that individuals high in achievement motivation select tasks of intermediate difficulty because such tasks have the greatest informational (rather than hedonic or consummatory) value. On the other hand, individuals low in achievement motivation prefer to avoid information concerning their relative abilities, and select activities which result in task attributions. This argument finds support in data indicating that high-achievement-oriented individuals prefer occupations which can be evaluated and which provide informational feedback (see McClelland, 1961).

In sum, an attributional analysis of achievement motivation leads to the following suppositions:

1. Individuals high in achievement motivation are more likely to approach achievement-related activities than those low in this motivational disposition because they tend to ascribe success to themselves, and hence experience greater reward for goal attainment.

2. Individuals high in achievement motivation persist longer given failure than those low in this motivational tendency because they are more likely to ascribe the failure to a lack of effort, and less likely to attribute failure to a deficiency in ability. This pattern of attribution is hypothesized to result in continued goal activity.

3. Individuals high in achievement motivation choose tasks of intermediate difficulty with greater frequency than individuals low in achievement motivation because performance at those tasks is more likely to yield information about one's capabilities than selection of tasks which are very easy or extremely difficult.

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