CHILDREN'S CAUSAL ATTRIBUTIONS IN SUCCESS AND
FAILURE SITUATIONS AND ACADEMIC PERFORMANCE

THESIS

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By

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Abstract

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To determine correlates of better academic performance, a scale was devised for this study to measure children's attributions to ability and effort in academic success and failure situations. These measures as well as measures of locus of control and perceived contingency of teacher rewards and punishments were related to achievement test scores, grades, and a teacher's ratings of the helplessness or competence of classroom behaviors. Subjects were 137 sixth-graders (66 girls and 71 boys). Intercorrelations of the variables show consistent relationships between attributions to lack of effort in failure situations and to ability in success situations and better academic performance. Locus of control was only weakly related to academic achievement measures. The contingency measures, also devised for this study, were disappointingly unreliable.
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The belief that reinforcement is due to one's own actions, as opposed to being beyond personal control, is an idea central to the construct of internal-external locus of reinforcement control (Rotter, 1966). A belief in internal locus of control is one in which one's own behaviors are perceived as being effective in producing reinforcement. A belief in external locus of control is one in which forces outside of the individual, such as luck, fate, or powerful others, are perceived as producing reinforcement. This construct, theories built upon the construct, and similar theories have been the focus of much research.

A questionnaire has been devised by Crandall, Katkovsky, and Preston (1962) to determine locus of control in children. The Intellectual Achievement Responsibility Questionnaire (IAR) measures the belief that the student, rather than others, is responsible for success and failure in academic situations. Achievement test scores, grades, and internality, as measured by this scale, were found to be positively and significantly related. In further research using the IAR, Crandall, Katkovsky, and Crandall (1965) again found a positive and significant relationship between internality and achievement performance, with the greatest predictability
being to report card grades. Messer (1972) also found that internals tend to have higher achievement test scores and grades than do externals.

Following the suggestion by Rotter (1966) that the consistency and predictability of parental discipline may be influential in determining the direction of locus of control orientation, Yates, Kennelly, and Cox (1975) devised a questionnaire to measure the perception of parental reward and punishment contingencies and related these measures to loci of control in a college population. Perceived contingency of punishment was found to be significantly related to an internal locus of control but perceived contingency of reward was not.

In a study of perceived contingency of teacher-administered reward and punishment, Kennelly and Kinley (1975) found that sixth-grade boys who perceive their teacher as contingently punishing perform better academically and have an internal orientation. Internality was also found to be positively and significantly related to achievement. In contrast, while Mount (1975) found internal locus of control related to academic achievement, as did Kennelly and Kinley, perceived contingency of teacher-administered reward rather than perceived contingency of teacher-administered punishment was found to be significantly related to achievement and locus of control in this study of sixth-grade boys and girls. Internals and externals differed in their perceptions of
teacher reward, with internals believing that teachers behave in a more contingently rewarding manner and externals perceiving teachers as being noncontingently rewarding.

Seligman, Maier, and Solomon (1972) note that if there is a different probability of reinforcement in the presence of a response than in the absence of that response, reinforcement is controllable by the response. If however, the probability of reinforcement is equal whether a response is made or not made, reinforcement is uncontrollable by that response. Seligman and Maier (1967) suggest that the incentive to actively respond is the expectancy that responding will increase the probability of reinforcement. "Learned helplessness" is the label they have applied to describe an interference in subsequent instrumental responding when an organism has been exposed to uncontrollable and inescapable aversive events. They attribute this "helplessness" to the organism's development of a general expectancy that responding and reinforcement are independent (i.e., reinforcement is uncontrollable). The similarity between the locus of control construct and learned helplessness has been noted (Seligman & Maier, 1967; Seligman, Maier, & Geer, 1968; Miller & Seligman, 1971) and is supported by Hiroto's (1974) results.

Research in the area of learned helplessness suggests than an organism which has experienced aversive events that are not controllable develops an expectancy of lack of
control over such events. This cognitive set influences behavior so that, when control is possible, the likelihood of a controlling response is lowered. Animals which have become helpless will passively accept shock after experience with uncontrollable shock, when escape or avoidance is possible. If some successful instrumental responses are produced, the animals seem to have no awareness of the response/relief contingency since such responses do not consistently continue. The availability of previous control, not the aversive event itself, determines the pattern of responding. The perception of a contingent relationship between a response and an outcome seems to be a determining factor in learning to exert control. It has been found that many sessions of forcible exposure to contingent relief are often necessary to alleviate helplessness (Seligman et al., 1968).

Children who act in a helpless manner in the classroom tend to give up after experience with failure. Dweck and Reppucci (1973) suggest that these children may not perceive the relationship between their actions and the outcome of these actions. Using the IAR as a measure of locus of control, they have found that helpless children not only tend to take less responsibility for success and failure (externally oriented) but also do not attribute failure to lack of effort but rather to lack of ability. Those who act in the most helpless manner think that effort is of little
consequence. Dweck (1975) suggests that "... since they tend to attribute failure to lack of ability, they would be less likely to respond to failure with increased effort or perseverance" (p. 675). Lack of ability is perceived as a fixed and hence uncontrollable factor.

Working in the area of achievement motivation, conceptualized within a cognitive framework, Weiner (1973) suggests that locus of control has not only an internal-external dimension but also includes stable-unstable variables. Influenced by research in the area of locus of control, and by Heider's (1958) "naive analysis of action," in which both "can" and "try" are specified as factors determining the outcome of an event, Weiner has proposed a scheme for perceived determinants of academic behavior. The factors in this scheme include ability (a stable, internal factor), task difficulty (a stable, external factor), effort (an unstable, internal factor), and luck (an unstable, external factor).

Success or failure may be attributed to any of these variables and the perceived "cause" of the success or failure will affect future academic behavior. For example, the attribution of failure to low ability (a stable factor) would tend to foster an expectancy of future failure in similar situations, but an attribution to insufficient effort (an unstable factor) would not. The internal dimension includes both ability and effort factors, but attribution
to the ability factor would not call for the same conclusions as to the probability of future success as attribution to the effort factor. Having interpreted past failure as being due to low ability which is a relatively uncontrollable, stable factor, an expectancy of success would be unlikely and achievement behavior would tend to be depressed. The individual would tend to avoid such activities if possible, or would give up easily, as do the helpless children.

Individuals are predicted to exhibit a differential response that varies with mediating causal attributions. Kukla (1972) has found that high achievers attribute the outcome of their actions to ability and effort, whereas low achievers believe that only ability is important for success or failure. Weiner, Heckhausen, Meyer, and Cook (1972) have subjected high school students to continued failure at a digit-symbol substitution task and have asked them to state their perceptions as to the cause of this failure and the probability of success on future trials. Subjects who expected little future success at the task attributed their failure to low ability or a hard task (both stable elements). Stronger expectations of future success were reported by those subjects attributing failure to lack of effort or bad luck (both unstable variables).

Similarity between Seligman's learned-helplessness theory and Weiner's attribution theory has been suggested (Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971).
Both theories predict the conditions that will lead to a lack of active responding. Seligman proposes that the perception of independence between a response and an outcome produces helplessness. Weiner suggests that an attribution to lack of ability when failures occur has the same effect. Both conditions have the element of uncontrollability. Both Seligman's and Weiner's theories are cognitive. While expectancies are inferred from the behavior of helpless animals, stated expectancies are elicited from subjects involved in attribution theory research. A realistic appraisal of the situation is lacking for both the helpless animal and the child who gives up after failure. Escape or avoidance of an aversive event is possible for the helpless animal in the experimental test phase, and Dweck (1975) notes that an attribution to lack of ability is not an indication of the true ability of the child. Human subjects who exhibit helplessness have been shown to be more externally oriented than are those who do not (Hiroto, 1974), as are those individuals who give up after failure and attribute the failure to lack of ability (Dweck & Reppucci, 1973).

The experimental procedures employed in the study of learned helplessness and attribution theory also show similarities. Both have employed manipulated failure, with studies of the learned helplessness phenomenon emphasizing uncontrollable aversive events and attribution theory stressing failure in cognitive or academic-related tasks.
Both have measured behavior in subsequent tasks as the dependent variable.

Some dissimilarities are also noteworthy. Attribution theorists have relied heavily on reported cognitive perceptions following manipulated failure (see Weiner et al., 1972; Luginbuhl, Crowe, & Kahan, 1975; Dweck & Bush, 1976) and have included many studies that ask subjects to respond to hypothetical or simulated situations (see Weiner & Kukla, 1970; Kukla, 1972). Working with animals, helplessness researchers have been constrained to rely on behavioral indices. While Weiner stresses cognitive mediating factors, Seligman sees the environmental history and the cognitive mediating factors which produce helplessness in similar terms.

The present research is designed to assess the relationships among measures of (a) academic achievement, (b) locus of control, (c) differential attribution to effort or ability, (d) perceived contingencies of teacher-administered rewards and punishments, and (e) helpless/competent classroom behavior. Dweck (1975), working with children who were particularly helpless with regard to arithmetic, devised a brief scale to differentiate attributions to effort or ability in an arithmetic failure situation. Since persistent children have been found to attribute failure to lack of effort, whereas helpless children characteristically attribute failure to lack of ability (e.g., Dweck & Reppucci, 1973), of prime importance is the differentiation of attributions to ability and to effort.
While the IAR does contain ability and effort items, the scale does not offer a choice between the two internal attributions, effort or ability--instead, each item offers a choice between an external attribution and one of the internal attributions, ability or effort. I have thus devised the Efficacy of Effort (EE) scale to measure attribution to effort or ability in academic success and failure situations. The need for such a scale was brought to my attention while reviewing research done with helpless children by Dweck (1975). The scale is similar to that devised by Crandall et al. (1962). Stem statements describe situations that are academically oriented and both success and failure items are included. The student is similarly given a choice between two responses but subjects are offered a response choice between an attribution to ability or to effort in the success and failure conditions rather than an internal or external choice. A copy of the scale is included as Appendix A.

Another purpose of the present study is to devise measures of the child's perception of the contingency of rewards and punishments as administered by teachers. Conflicting results of Kennelly and Kinley (1975) and Mount (1975) may be due to the scales used for assessment of perceived contingency of reinforcement. In the Kennelly and Kinley study, the contingency scale is aimed at the child's perception of a specific teacher, the current teacher, rather than teachers in general. Mount's scale, on the
other hand, is focused on the child's perceptions of teachers in general rather than perceptions of the current teacher. Results of the Kennelly and Kinley study are consistent with the assumption that locus of control and learned helplessness are the same construct, in that perceived contingency of punishment is significantly related to an internal locus of control and high achievement. The more global measure of teacher behaviors used by Mount suggests that perceived contingency of reward is related to academic success, locus of control, and teacher ratings of competency, a finding consistent with Seligman's helplessness theory and the assumption that locus of control and learned helplessness are overlapping if not identical constructs. Mount, however, did not find significant relationships between perceived contingency of teacher-administered punishments and locus of control, a finding not consistent with Seligman's theory and the assumed relationship between locus of control and learned helplessness.

In order to assess these apparently conflicting results, I have devised two measures of perceived contingent and non-contingent punishment and reward, one focusing on a specific teacher and one focusing on teachers in general. The scales, the Specific Contingency (SC) scale and the General Contingency (GC) scale are identical except for the wording "My teacher" and "Teachers" introducing each item, and are similar in content to those used by Kennelly and Kinley (1975)
and Mount (1975). As the three scales devised for use in this study have not been used previously, a test for internal consistency will be applied to determine reliability.

As a further measure of helplessness, the teacher whose classes have been used in this study has rated the students along the continuum of the trait "helpless... competent," using a rating sheet to assess these classroom behaviors. This measure is similar in content to one of those used by Mount (1975), but the descriptions of possible helpless and competent behaviors are included in the instructions and are not separately rated by the teacher.

Previous research has found that internality is related to academic achievement. Intercorrelations of the variables used in this study are expected to replicate these results. It is proposed that internality, attributions to lack of effort in failure situations, perceived contingent punishment (a specific teacher), and competent classroom behavior will be related to high academic achievement.

The relationship between perceived contingency of rewards and punishments of a particular teacher and between that of all teachers, and how these perceptions are related to locus of control and achievement, is of some importance in resolving apparent conflicts in previous research results. Whether the contingency of reward or punishment is the major determinant of internality and academic achievement has
important implications for the behaviors and decisions of teachers, parents, and others in authority.

Of greatest interest, though, is to note to what extent an attribution to effort or ability is related to competent classroom behavior, and how these variables are in turn related to locus of control, perceived contingency of teacher reinforcement, and achievement measures. A training procedure has been devised by Dweck (1975) to encourage helpless children to reattribute failure to lack of effort rather than to lack of ability. Results of this training indicate that these children are able to handle later failure more adaptively (they no longer are as likely to give up and become helpless when failure occurs). The identification of helpless children who would attribute failure to lack of ability is of some significance in light of these results.

Method

Subjects

Subjects were 137 sixth-graders, 66 females, and 71 males, enrolled in a public elementary school in a small city. This grade level has been departmentalized, and so five classes, taught by one teacher, served as the subjects in the present study. The students of this school are primarily middle class, white children who live in the vicinity, although there is a small percentage of minority children who come from other areas of town to attend the school.
Instruments

1. Academic achievement measures were comprised of report card grades and reading, math, and composite subtest scores from the Iowa Test of Basic Skills. Averages of the latest report card grades were used after being converted to numerical values ($A = 4$, $B = 3$, $C = 2$, $D = 1$, $F = 0$). The most recent available scores of the achievement test were used.

2. Locus of control was assessed by the Intellectual Achievement Responsibility Questionnaire (IAR). The 34 forced-choice items measure perceptions of self (internal) or external responsibility for academic successes and failures. The scale is scored in the internal direction, i.e., high scores represent perceptions of internality. Subscores are also derived for achievement responsibility in success (I+) and failure (I-) situations.

3. The Efficacy of Effort (EE) scale is a forced-choice questionnaire that includes 7 success and 13 failure items. Each item offers a response choice between an attribution to effort (or lack of effort) and ability (or lack of ability). Typical success and failure items are, respectively:

   The good grades I get are because
   
   a. I work hard in that class, or
   
   b. I'm smart in that subject.

   There are some stories that I read that I don't
understand very well because

a. I'm not a very good reader, or

b. I haven't read them very carefully.

Success and failure items were randomly assigned positions in the scale, as were the effort and ability alternatives within each item. The scale is scored in the direction of effort (E), i.e., high scores represent attributions to effort; also, the success situation items make up one subscale (E+), and the failure situation items make up another subscale (E-).

4. The Specific Contingency (SC) and the General Contingency (GC) scales are each comprised of 12 statements concerning possible teacher behaviors. The SC scale addresses itself to the student's perception of his present teacher, while the GC scale does so to the student's perceptions of teachers in general. Half of the items are descriptive of reward and half are of punishment situations. Half of the items ask for the child's perception of the teacher's (SC) or teachers' (GC) reactions when that particular student-behavior occurs, and half of the items ask for the child's perception of the teacher's (SC) or teachers' (GC) reactions when that particular student-behavior does not occur. These two types of items are paired. The child is asked to answer these paired items separately after considering them together. For example, a reward item, "Teachers (My teacher) give(s) a good grade when a student answers a question right" has paired with it the statement, "Teachers (My teacher) give(s) a good
grade even when a student does not answer a question right."

Reward and punishment items describe similar situations.

Subjects were to respond to each statement by marking one of five alternate answers ranging from always to never, depending on the perceived frequency of the behavior. The values assigned to the responses are: always = 5, often = 4, sometimes = 3, not often = 2, and never = 1. The first item of the pair has a positive value and the second a negative value. Contingency was assessed by algebraically summing the values of the paired statements. The range of possible scores was thus from -4 (very noncontingent) to +4 (very contingent) for each pair of statements, with a total range for reward and punishment subscales of -12 to +12 each.

5. A seven-point scale was used by the teacher to rate her students along the helpless/competent continuum. The intervals range between the two extremes, with the other values moderating toward a neutral middle. A score of "1" represents extreme helplessness, while a score of "7" is descriptive of extreme competency. Instructions for the rating procedure are fairly typical and include the admonition to base judgment on observed behaviors. Possible helpless and competent behaviors are in part taken from a list compiled by Cattell (1957), with the remaining descriptive behaviors identical to those used in the study by Mount (1975). These behaviors were suggested to the teacher but she was not constrained to limit her judgments to this index.
The four questionnaires (IAR, EE, SC, and GC) were administered to the students as a group in their classroom with the teacher absent from the room. A copy of the questionnaire being administered was given to each subject so that he/she might mark responses as the experimenter read the items aloud. Two questionnaires were administered at each session and the order of administration was counterbalanced.

Results and Discussion

The means and standard deviations of the locus of control, Efficacy of Effort, and contingency scales, as well as all dependent measures are presented in Table 1 according to sex. Internal consistency reliability coefficients for the scales devised for this study were computed by means of the coefficient alpha formula and are as follows for each subscale by sex: Specific Contingency Reward (girls) = .39, Specific Contingency Reward (boys) = .60; Specific Contingency Punishment (girls) = .16, Specific Contingency Punishment (boys) = .42; General Contingency Reward (girls) = .25, General Contingency Reward (boys) = .47; General Contingency Punishment (girls) = .08, General Contingency Punishment (boys) = .31; Efficacy of Effort Success (girls) = .42,
<table>
<thead>
<tr>
<th>Variable</th>
<th>Girls</th>
<th></th>
<th>Boys</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Means</td>
<td>SD</td>
<td>Means</td>
<td>SD</td>
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<tr>
<td>Locus of Control</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>I+</td>
<td>12.16</td>
<td>2.55</td>
<td>12.11</td>
<td>2.18</td>
</tr>
<tr>
<td>I-</td>
<td>9.85</td>
<td>3.19</td>
<td>10.14</td>
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<tr>
<td>I Total</td>
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<td>22.25</td>
<td>4.26</td>
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<td>Efficacy of Effort</td>
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<td>E+</td>
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</tr>
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<tr>
<td>E Total</td>
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<td>14.60</td>
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<td>Specific Contingency</td>
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<tr>
<td>Reward</td>
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<tr>
<td>Punishment</td>
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<td>2.54</td>
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<td>3.44</td>
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</tr>
<tr>
<td>Reward</td>
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<td>5.65</td>
<td>2.78</td>
</tr>
<tr>
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<td>4.30</td>
<td>2.37</td>
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<td>Reading</td>
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<td>47.79</td>
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<tr>
<td>Math</td>
<td>54.84</td>
<td>32.61</td>
<td>40.56</td>
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<tr>
<td>Composite</td>
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<td>29.14</td>
<td>45.58</td>
<td>30.03</td>
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<tr>
<td>Grades</td>
<td>3.42</td>
<td>0.57</td>
<td>2.95</td>
<td>0.74</td>
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<tr>
<td>Teacher Rating</td>
<td>5.20</td>
<td>1.68</td>
<td>4.10</td>
<td>1.94</td>
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</table>
Efficacy of Effort Success (boys) = .61; Efficacy of Effort Failure (girls) = .59, Efficacy of Effort Failure (boys) = .48.

Intercorrelation of the contingency scales with the dependent measures (achievement test scores, grades, and teacher rating of competency) are reported in Table 2 by sex. The internal consistency reliabilities for four of the scales, Specific Contingency Punishment (girls), General Contingency

Table 2
Correlations Between Reported Contingency Measure Scores and Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reading</th>
<th>Math</th>
<th>Composite</th>
<th>Grades</th>
<th>Teacher Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
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<td></td>
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</tr>
<tr>
<td>SCR</td>
<td>-.06</td>
<td>-.07</td>
<td>-.04</td>
<td>.04</td>
<td>-.02</td>
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<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCR</td>
<td>.16</td>
<td>.04</td>
<td>.12</td>
<td>.35**</td>
<td>.27*</td>
</tr>
<tr>
<td>SCP</td>
<td>-.06</td>
<td>-.13</td>
<td>-.07</td>
<td>.02</td>
<td>.03</td>
</tr>
<tr>
<td>GCR</td>
<td>-.07</td>
<td>-.25*</td>
<td>-.16</td>
<td>.12</td>
<td>.04</td>
</tr>
</tbody>
</table>

*p<.05, two-tailed test.

**p<.01, two-tailed test.

Reward (girls), General Contingency Punishment (girls), and General Contingency Punishment (boys), were so low that they were not considered adequate scales for the purpose of this study. Consideration of the data from these scales would
not be meaningful due to their lack of reliability and hence, these data are not presented.

Only three correlations of the remaining contingency scales with the dependent variables are significant, and these are found only for boys. Perceiving his present teacher as contingently rewarding is related to better grades (p<.01) and to the teacher's rating of competency (p<.05). Seeing teachers in general as noncontingently rewarding is related to higher arithmetic test scores (p<.05) for boys. The generally low reliability of the scales does not allow for much confidence to be placed in these results. It is of interest, though, to note that no significant relationships are found between the one punishment scale considered adequate for inclusion and dependent measures. While Mount (1975) reports that the perception of teachers in general as contingently rewarding is related to internality and academic achievement, the present study finds that only the perception of the current teacher, but not teachers in general, as contingently rewarding is related to higher grades and a rating of competency.

Verbal reports from previous researchers using contingency scales have suggested that subjects have found the items difficult to respond to when each item contained statements describing the probability of reinforcement (reward or punishment) when behaviors occurred and the probability of reinforcement when the same behaviors did not occur. Such
items required the subjects to consider more or less at one time what the teacher's reaction was when a behavior occurred and what the teacher's reaction was when the behavior did not occur as a basis for their response. Such items obviously require complex judgment to be responded to appropriately. However, since such scales have proven to be much more reliable than the present scales which have separate items for the occurrence and for the nonoccurrence of behaviors, the present attempt to simplify the task for the children must be considered a failure. Perhaps items that are made easy to answer, as subjects reported these items to be, do not elicit a "thoughtful" response. Also, the present scales sample more limited content areas (making noise or being quiet, finishing homework, answering questions in class) and contain fewer items than the former "more difficult" scales.

An attempt was made to get the child to respond in terms of all his teachers (and thus to his general impression of teachers) and in terms of his present teacher. Items in both the Specific Contingency and General Contingency scales, though, were not written in such a way that the subject was asked to respond from his or her own experience exclusively, but from perceptions of experiences of "a student" or "students." It may be advantageous to narrow the focus in this respect and ask the student to respond from his or her own perceived and remembered personal experiences. Recent evidence has suggested that a child's perception of the
contingency or lack of contingency of an adult's approval may not be an accurate reflection of the actual contingency (Perry & Garrow, 1975), but logic suggests that the child's perception of the contingency will dictate the child's response to a teacher's behaviors. Further research will need to be done, however, to clarify these issues as no direct information is forthcoming from the present study to explain the inadequacy of the current contingency scales.

Intercorrelations among measures of the locus of control scale (IAR) and the dependent measures are shown in Table 3.

Table 3
Correlations between Locus of Control Measure Scores and Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reading</th>
<th>Math</th>
<th>Composite</th>
<th>Grades</th>
<th>Teacher Rating</th>
</tr>
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<tbody>
<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I+</td>
<td>.21</td>
<td>.17</td>
<td>.19</td>
<td>.08</td>
<td>.18</td>
</tr>
<tr>
<td>I-</td>
<td>.24</td>
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<td>.16</td>
<td>.22</td>
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<tr>
<td>I Total</td>
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<td>.17</td>
<td>.22</td>
<td>.20</td>
<td>.23</td>
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<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I+</td>
<td>.25*</td>
<td>.21</td>
<td>.18</td>
<td>.37**</td>
<td>.28*</td>
</tr>
<tr>
<td>I-</td>
<td>.25*</td>
<td>.15</td>
<td>.18</td>
<td>.20</td>
<td>.10</td>
</tr>
<tr>
<td>I Total</td>
<td>.30*</td>
<td>.20</td>
<td>.22</td>
<td>.33**</td>
<td>.21</td>
</tr>
</tbody>
</table>

*p<.05, two-tailed test.

**p<.01, two-tailed test.

by sex. These relationships are found to be in the predicted direction and correlations found to be significant are so noted. The relationship for girls between total I scores and
the reading subtest scores (p<.05) is significant. For the
girls, internality is not found to be significantly related
to any other achievement test measure, to grades, or to
teacher ratings of competency, although the correlations
are in the expected direction.

For boys, however, taking responsibility for success is
significantly predictive of high grades (p<.01) and a teacher
rating of competency (p<.05). Grades are also significantly
and positively related to total I scores (p<.01). The only
achievement test score that shows a significant relationship
with internality is reading, but this subtest is related to
all such measures, I+, I-, and I total (all ps<.05).

Rotter (1966) notes that the perception of an outcome as
being dependent on one's own actions is related to greater
achievement motivation. In general, it is expected that
individuals with an internal orientation will tend to strive
more for achievement than externally oriented individuals,
since they believe that they have more control over rein-
forcement in these experiences. A study by Rotter and
Mulry (1965) supports this prediction by reporting that
subjects classed as internal spent more time on a task under
skill conditions than externals did but a shorter time under
chance conditions than did the externals. This suggests
that internals not only were more involved in the skill
condition but also value the reinforcement in skill condi-
tions more than in chance conditions.
Gurin, Gurin, Lao, and Beattie (1969) and Lao (1970) report that higher achievement test scores and grades are related to a belief in personal control. Internality, as indicated by a high score on measures such as the IAR, will thus be expected to predict higher academic performance. A positive relationship has been found by many investigators between a belief in internal control and achievement in children, but differences in the predictability of achievement test scores and of grades for males and females have often been noted.

Crandall, Katkovsky, and Preston (1962) have indicated that boys who obtain higher achievement test scores tend to feel more self-responsibility for these outcomes whereas girls do not. A negative relationship between achievement test scores and self-responsibility was found for girls, although the relationship was nonsignificant. Of the two subtests of the California Achievement Tests used in this study, high reading scores proved to be significantly related to internality for boys. The relationship between high arithmetic scores and internality did not reach significance. These results are similar to those found in the present study, although the subject population differs in age, the Crandall et al. study focusing on boys and girls in the first three grades, while the present study is restricted to sixth-graders.
Other studies have shown sex differences in the prediction of achievement test scores. Messer (1972) has found that I+ scores of the IAR are correlated to a significant degree with reading, math, and language subtests for males, and that I- scores are similarly related for females, but for the reading achievement subtest only. Using the Children's Nowicki-Strickland Locus of Control Scale, Mount (1975) notes that internality and achievement scores are related for boys but not for girls. McGhee and Crandall (1968) report that both self-responsibility for success and for failure are related to high achievement for girls in grades 3, 4, and 5, but that only self-responsibility for failure is related for boys in these same grade levels. They found that achievement test scores and internality show no consistent relationship for subjects in the sixth, eighth, and twelfth grades.

Messer (1972) points to the IAR as being a better predictor of grades than of achievement test scores, with I+ scores for boys and I- scores for girls being the most consistently related. McGhee and Crandall (1968) suggest that teachers include the subjective evaluation of a student's motivation (effort) in assigning a grade, whereas achievement test scores reflect motivation only indirectly through skills learned through the use of effort. Since the IAR includes effort items, this explanation may have some validity. They report that both I+ and I- scores are found to be comparably predictive of better grades (Study 1). In another comparison,
males with high I- and I total scores are found to have significantly better grade averages, but no such relationship between internality and grades for females is found (Study 2).

Mount (1975) reports that internality is related to better grades for both boys and girls. Kennelly and Kinley (1975) have found that high scores on the IAR predict better grades and high achievement test scores in their all-male, sixth-grade sample, with I- and I total scores the most predictive. Results from the present study and previous studies suggest that the IAR is a generally more sensitive measure for boys than for girls as far as predicting better achievement test performance.

Intercorrelations between the Efficacy of Effort scale and the dependent measures are shown in Table 4 by sex.

Table 4
Correlations between Attribution Measure Scores and Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reading</th>
<th>Math</th>
<th>Composite</th>
<th>Grades</th>
<th>Teacher Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E+</td>
<td>-.23</td>
<td>-.12</td>
<td>-.20</td>
<td>-.03</td>
<td>-.05</td>
</tr>
<tr>
<td>E-</td>
<td>.59***</td>
<td>.54***</td>
<td>.57***</td>
<td>.44***</td>
<td>.41**</td>
</tr>
<tr>
<td>E Total</td>
<td>.36**</td>
<td>.38**</td>
<td>.36**</td>
<td>.34**</td>
<td>.31*</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E+</td>
<td>-.21</td>
<td>-.19</td>
<td>-.26*</td>
<td>.04</td>
<td>-.01</td>
</tr>
<tr>
<td>E-</td>
<td>.22</td>
<td>.22</td>
<td>.21</td>
<td>.47***</td>
<td>.49***</td>
</tr>
<tr>
<td>E Total</td>
<td>.02</td>
<td>.03</td>
<td>-.02</td>
<td>.34**</td>
<td>.32*</td>
</tr>
</tbody>
</table>

*p<.05, two-tailed test.

**p<.01, two-tailed test.

***p<.001, two-tailed test.
In contrast to the poor predictions of the IAR for the girls' achievement in this study, the E- subscale of the Efficacy of Effort scale is found to be a reliable and consistent predictor of all dependent measures for this group. For girls, the attribution to lack of effort in failure situations is found to be highly and significantly correlated with achievement test measures (all $p < .001$), with better grades ($p < .001$), and with the teacher's rating of competency ($p < .01$).

For the male sample in this study, attribution to lack of effort in failure conditions is found to be highly and significantly related to better grades ($p < .001$), and to a teacher rating of competency ($p < .001$), but not to any of the achievement test scores. The correlations are in expected direction but are not significant.

For boys, the E+ and E- subscales are found to be positively correlated ($r = +.27$), but are correlated with achievement measures by opposite signs (positively for E- and negatively for E+). This suggests that E+ and E- are acting as suppressor variables for each other with regard to their relationships to the achievement measures. A tendency to generalize from the success to the failure items, and from the failure to the success items, apparently is present for boys. When the variance due to E+ in the E- scale, and E- in the E+ scale is partialled out, significant
correlations with the achievement measures are obtained. Partial correlations with the dependent measures are included in Table 5.

Table 5

Partial Correlations between Attribution Measure Scores and Dependent Variables for Males

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reading</th>
<th>Math</th>
<th>Composite Grades</th>
<th>Teacher Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>E+ (E- partialled out)</td>
<td>-.29*</td>
<td>-.27*</td>
<td>-.34**</td>
<td>-.11</td>
</tr>
<tr>
<td>E- (E+ partialled out)</td>
<td>.29*</td>
<td>.29*</td>
<td>.30**</td>
<td>.48***</td>
</tr>
</tbody>
</table>

*p<.05, two-tailed test.

**p<.01, two-tailed test.

***p<.001, two-tailed test.

Dweck and Reppucci (1973) and Nicholls (1975) report that the girls in their studies have a greater tendency than boys to attribute failure to lack of ability rather than to lack of effort. Results from the present study do not replicate those of the previous studies, in that no significant difference is found between means of the E- scores for boys and for girls, indicating that no significant difference in attribution to lack of effort in failure situations is obtained, t(131) = 1.66, p>.05.
In a recent study of sex differences in evaluative conditions, Dweck and Bush (1976) report that females show this same attributional tendency (lack of ability with failure outcomes) when the feedback comes from adult females but not when peers are evaluators. Boys experience this same tendency with feedback from males near their own age but do not tend to attribute failure to lack of ability when evaluation comes from adults. Both the Dweck and Reppucci (1973) and Nicholls (1975) studies employed adult female experimenters. While the subjects' teacher and the present researcher are also females, this same tendency to attribute failure to lack of ability was not found. This may be due to a difference between a report of attribution in answer to a questionnaire, and to reported attributions following manipulated experimental failure, as in the Dweck and Reppucci as well as Nicholls studies, or to regional differences in socialization practices.

For both boys and girls, attributions to effort in success situations are negatively related to all achievement test measures and to the teacher's ratings of competency. For girls, attributions to effort in success situations are also negatively related to grades (see Tables 4 and 5). Successful students attribute success to ability and failure to lack of effort. Since this is a forced-choice questionnaire, this implies that attributions to effort in success situations and attributions to lack of ability in failure
situations is negatively predictive of academic success. Although significant relationships are found less consistently for the E+ subscale with dependent measure scores than for the E- subscale with dependent measure scores, implying that less information is gained from this shorter subtest, these two attributional tendencies (ability in success and lack of effort in failure situations) may be a better predictor of academic performance when considered jointly than considering only attributions to lack of effort in failure situations.

Weiner (1973) notes that expectancies arise from the stable/unstable dimension. The successful student sees failure as transient and temporary since failure is attributed to the unstable factor of (lack of) effort. Success is seen as usual and expected since success is attributed to the stable factor of ability. The unsuccessful student though sees failure as usual since failure is attributed to the stable factor of (lack of) ability. Success is seen only as temporary and due to the presence of unusual effort.

Nicholls (1975) asked subjects to respond in terms of their satisfaction with an experimental test success and in terms of their anxiety about a forthcoming experimental test. Attributions of success to ability produced greatest reports of pleasure while attributions to effort were associated with greater anxiety and less positive anticipation of the test. Nicholls suggests that an attribution to a stable element, such as ability, may inform a student that success
is relatively assured. Theoretically, this is a sound presumption since expectancies are shown to be formed from the stable/unstable dimension (Weiner, 1973). The expectation of a consistent success outcome would follow from the attribution to the stable factor, ability. The expectation of a consistent success outcome would not follow though from attribution to the unstable factor, effort.

As the locus of control, contingency, and Efficacy of Effort scales may be considered to measure cognitive representations of the previous experience of a child, intercorrelations of these independent measures are included in Table 6.

Table 6
Intercorrelations of All Reported Independent Measures

<table>
<thead>
<tr>
<th>Variable</th>
<th>Locus of Control</th>
<th>Efficacy of Effort</th>
<th>Contingency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I+</td>
<td>I-</td>
<td>I Total</td>
</tr>
<tr>
<td>I+</td>
<td>.27*</td>
<td>.74***</td>
<td>.53***</td>
</tr>
<tr>
<td>I-</td>
<td>.38***</td>
<td>.85***</td>
<td>.23</td>
</tr>
<tr>
<td>I Total</td>
<td>.77***</td>
<td>.88***</td>
<td>.46***</td>
</tr>
<tr>
<td>E+</td>
<td>.35**</td>
<td>.42***</td>
<td>.46***</td>
</tr>
<tr>
<td>E-</td>
<td>.25*</td>
<td>.22*</td>
<td>.28*</td>
</tr>
<tr>
<td>E Total</td>
<td>.37***</td>
<td>.39***</td>
<td>.45***</td>
</tr>
<tr>
<td>SCR</td>
<td>.18</td>
<td>.06</td>
<td>.14</td>
</tr>
<tr>
<td>SCP</td>
<td>.06</td>
<td>.06</td>
<td>.07</td>
</tr>
<tr>
<td>GCR</td>
<td>.13</td>
<td>.13</td>
<td>.15</td>
</tr>
</tbody>
</table>

Note: Girls' data above the diagonal and boys' data below the diagonal.

*p<.05, two-tailed test.

**p<.01, two-tailed test.

***p<.001, two-tailed test.
to assess relationships among these measures. The data for female subjects are included above the diagonal and for male subjects below the diagonal. Only those scales with moderately high internal consistency reliabilities are included. For females, an internal attribution in success situations (I+) is highly and significantly related to an attribution to effort in success situations (E+), (p<.001). Internal attribution in failure situations (I-) does not show that same relationship with an attribution to lack of effort in failure outcomes (E-). As the E- subscale has proven to be highly predictive of better achievement for females, whereas the locus of control scale has not, the fairly low correlation between the locus of control measure and the E- subscale suggests that some important information is being obtained from the Efficacy of Effort scale that is not available from the IAR. The contingency scale is not shown to be related to either the locus of control or Efficacy of Effort scales.

For males, internal attributions of success (I+) are related to effort attributions of success (E+), (p<.01). Internal attributions for failure (I-) though are highly and significantly related to attributions to effort in success situations (E+), (p<.001). It may be that some attitude concerning their responsibility for failure is being tapped when assigning attributions of success to effort. Since the IAR contains ability and effort internal items, some correlation would be expected between this scale and the Efficacy
of Effort scale. It would be more expected though between success/success and failure/failure items than between failure and success items. The Specific Contingency Reward scale is shown to be significantly and positively related to the E- subscale (p<.01) and to the total Efficacy of Effort score (p<.01).

To assess the interrelationships of the dependent measures among themselves, these intercorrelations are presented in Table 7, with the data for females again presented above the diagonal and that for males below the diagonal.

For subjects in the present study, both females and males, all relationships are found to be highly and significantly

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reading</th>
<th>Math</th>
<th>Composite</th>
<th>Grades</th>
<th>Teacher Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>.85***</td>
<td>.95***</td>
<td>.65***</td>
<td>.70***</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td></td>
<td>.83***</td>
<td>.94***</td>
<td>.71***</td>
<td>.64***</td>
</tr>
<tr>
<td>Composite</td>
<td>.94***</td>
<td>.94***</td>
<td></td>
<td>.70***</td>
<td>.68***</td>
</tr>
<tr>
<td>Grades</td>
<td>.66***</td>
<td>.60***</td>
<td>.65***</td>
<td></td>
<td>.68***</td>
</tr>
<tr>
<td>Teacher Rating</td>
<td>.62***</td>
<td>.62***</td>
<td>.65***</td>
<td>.70***</td>
<td></td>
</tr>
</tbody>
</table>

Note: Girls' data above the diagonal and boys' data below the diagonal.

***p<.001, two-tailed test.
correlated (all ps<.001). This suggests that being competent in one area predicts competency in other academic areas.

In summary, the relationship between an internal locus of control orientation and academic performance in the present study reflects the findings of previous researchers, in that sex differences are noted in the relationships between internality and measures of academic performance. An internal locus of control is found to predict reading achievement, grades, and a teacher's ratings of competency for boys, with internality in success situations (I+) being the strongest measure. An internal orientation is predictive of reading achievement for girls, but that only from the total I score.

Of prime importance is the strong and consistent relationship that is found between an attribution to lack of effort in failure outcomes and better academic performance, with the strongest relationship for females. Since training procedures designed to bring about reattributions to lack of effort in failure situations have been shown to facilitate future performance (Dweck, 1975), a scale such as the Efficacy of Effort scale utilized in the present study, may be used quite simply by teachers and/or school psychologists to identify those "helpless" children in need of reattribution training.

Helpless classroom behavior, the tendency to give up, may be alleviated by identifying those students who may benefit from such reattribution training and applying the
training procedure. In addition, a teacher may be given useful information when it is found that a student is underachieving due to a faulty attribution to lack of ability. A formal retraining procedure may not be needed if encouragement in the classroom to reattribute failure to lack of effort can be instituted.

Results from this study also suggest that it may be beneficial to the student to facilitate an attribution to ability in success outcomes, along with that of lack of effort in failure situations. This may serve to increase and broaden the potency of the reattribution training procedure.

Further research needs to be done to refine the Efficacy of Effort scale and demonstrate its generality with other populations. Since it has been demonstrated as being easily and quickly answered, additional items should be considered with the goal of making the scale more reliable. It will be of special interest to note if the differences are maintained between the sexes with regard to the relationships between the E+ and E- scales. Additional research is also needed to assess the generality of the relationships of attributions to ability in success situations and attributions to lack of effort in failure situations to good academic achievement.
Appendix A

EE Scale

Below are some questions for you to answer about your work in school. Please pick the answer that best describes your feelings about the statement and put a checkmark beside that answer. There are no right or wrong answers. Just mark what you think is more true for you. No one at your school will know how you respond.

1. If I don't do well on a test
   a. I know I should study more next time, or (F)
   b. I know it is useless to study for the next one.

2. If my teacher gives me a bad grade in a subject
   a. I think it was because I never could understand that subject, or
   b. I'm pretty sure it was because I didn't work hard enough. (F)

3. If I miss a lot of problems on my arithmetic test it is because
   a. I was careless, or (F)
   b. I'm not good in arithmetic.

4. When I answer a question right in class
   a. it's usually because I studied, or (S)
   b. it's because I'm good at talking.

5. When I don't get my homework done
   a. it's usually because I didn't take time to do it, or (F)
   b. it's probably because I didn't know how the teacher wanted it done.

6. My handwriting could be better if
   a. I practiced more, or (F)
   b. I had more handwriting ability.

7. The good grades I get are because
   a. I work hard in that class, or (S)
   b. I'm smart in that subject.
8. Sometimes I don't understand what the teacher says because
   a. I usually don't understand teachers, or
   b. I'm not paying attention. (F)

9. When I pass to the next grade it will be because
   a. I did the work that I was supposed to do, or (S)
   b. it was easy for me.

10. If someone says I'm not as smart as someone else
     a. I feel like they're right, or
     b. it makes me feel like showing them they're wrong. (F)

11. My parents mainly would like for me to
     a. be smarter, or
     b. work harder in school. (F)

12. Spelling is sometimes hard for me because
     a. I haven't learned all the words, or (F)
     b. I can't sound out words well.

13. I get right answers on my arithmetic problems because
     a. I work hard at them, or (S)
     b. I know how to do the problems.

14. If my teachers think I'll do a good job it's because
     a. they think I am able to, or
     b. they know I'll try hard. (S)

15. If a test is pretty easy for me it's because
     a. I'm good at taking tests, or
     b. I work at listening to what my teacher says. (S)

16. The pictures I draw that I like are ones that
     a. I know how to draw well, or
     b. I've spent a lot of time on. (S)

17. There are some stories that I read that I don't understand very well because
     a. I'm not a very good reader, or
     b. I haven't read them very carefully. (F)

18. If I think a test is going to be hard
     a. I try to think what the teacher might ask, or (F)
     b. I think I'll do bad on it.
19. If I don't know an answer when my teacher calls on me
   a. I try to guess what it might be, or (F)
   b. I know I'll be wrong so I don't say anything.

20. If a paper I turn in to my teacher looks messy
   a. it's the best I can do, or
   b. I try to do better next time. (F)

NOTE: Items are scored in the direction of effort. Effort responses are denoted by an (F) or an (S) following the item, indicating a "Failure" situation (E-) or a "Success" situation (E+).
References


