1980

Locus of control modification as a function of siituational control and performance feedback : a replication and extension

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LOCUS OF CONTROL MODIFICATION

AS A FUNCTION OF

SITUATIONAL CONTROL AND PERFORMANCE FEEDBACK:

A REPLICATION AND EXTENSION

Thesis submitted to the Psychology Department,
University of Richmond,
in partial fulfillment of the requirements
for the M. A. Degree

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ABSTRACT

Fifty-four middle school age (sixth to eighth grade) children took part in a study designed to examine the effects of situational control and performance feedback on locus of control orientation. The subjects took part in a task situation in which they were asked to read three fictitious experiments and decide from a list of ten results which ones were actually found in the experiment and which were not. Pre and post-task measures were obtained on two locus of control scales. The Locus of Control Scale For Success - Failure (Epstein and Komorita, 1971) was answered in direct relation to the task situation and provided a task specific measure of control orientation. The pre-task measure on this scale was obtained by giving the subjects a sample of the task to examine prior to the experimental manipulations. The Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, et. al., 1965) was used to obtain the subjects' control orientation for the academic achievement situation. The pre-testing was done in large groups and took place at least two weeks prior to the individual task situation and post-testing. Subjects were randomly assigned to one of three instruction groups: skill (personal control) oriented, chance (no personal control) oriented, or no control orientation. Subjects were also randomly assigned to one of three feedback (falsified) groups: success, failure, or no feedback. This design yielded nine treatment groups with six subjects in each group. The hypotheses tested were (a) The experience of personal control (skill instructions)

would lead to greater internal control orientation, while the experience of no personal control (chance instructions) would result in greater external control orientation. (b) Success feedback would bring about a shift toward a more internal control orientation and failure feedback would result in a greater external control orientation. The no control orientation instructions and the no feedback factors were used as controls on type of instructions and type of feedback, respectively, and were not expected to lead to any differential shifting in control orientation. No interaction effects were predicted. The test data were analyzed in a 3 X 3 X 2, mixed effects analysis of variance, with repeated measures on the pre and post-task locus of control score factor. Separate analyses were performed on the Locus of Control Scale for Success-Failure and on the I^+ subscale, I^- subscale, and total I score of the IAR. The results did not support the first hypothesis. Personal control versus no personal control, as manipulated by skill-chance instructions had no significant effects on locus of control scores. The results supported the second hypothesis fairly clearly with the Locus of Control Scale for Success-Failure but not at all with the IAR. A significant trials X feedback interreaction with the Locus of Control Scale for Success - Failure scores was broken down and indicated that: (a) The failure and success groups changed differentially. (b) The failure and no feedback groups changed differentially. (c) The failure group changed significantly in a more external direction. (d) The failure group was significantly more

external than the success group on the post-test, while there were no significant differences among the three feedback groups on the pre-test. The only significant finding with the IAR was an overall shift towards greater internality on the I^- subscale and the total I score. Results were discussed in terms of the generalization and multidimensionality of the locus of control concept.

A. INTRODUCTION

The locus of control construct grew out of Rotter's (1954) social learning theory. This theory stresses the interaction of four classes of variables: behaviors, expectancies, reinforcements, and psychological situations. The basic formula for behavior according to Rotter (1975) is that "the potential for a behavior to occur in any specific psychological situation is a function of the expectancy that the behavior will lead to a particular reinforcement in that situation and the value of that reinforcement (p. 57)." Locus of control refers specifically to the expectancy aspect of this formula and consists of a continuum dimension from internal to external control orientation. The difference between these two orientations is in terms of the degree to which an individual perceives a reinforcement as being contingent upon his own behavior or his own relatively permanent characteristics (internal control) and the degree to which an individual perceives reinforcements as being contingent upon luck, fate, powerful others, or as being unpredictable because of the complexity of the forces surrounding him (external control) (Rotter, 1966). Rotter and his students subsequently developed scales designed to measure the generalized control expectancies which individuals develop through their unique history of reinforcements in specific situations (Phares, 1955; James, 1957; Rotter, 1966).

The concept of locus of control as a generalized expectancy raises questions as to what factors are involved in the development of an individual's locus of control orientation and what factors contribute to the modification of this orientation once

it has stabilized. There has been a wide variety of research dealing with locus of control since Rotter's initial formulation of this concept. Several bibliographies have been published (Throop and MacDonald, 1971; Prociuk and Lussier, 1975; Thornhill, Thornhill, and Youngman, 1975) which reflect the growth of this research area. A number of reviews of the locus of control literature have also appeared (Minton, 1967; Lefcourt, 1966, 1972; Rotter, 1966, 1975; Joe, 1971, and Phares, 1978), including two books dealing exclusively with this topic (Lefcourt, 1976; Phares, 1976). In light of this volume of research dealing with locus of control, there is a surprising paucity of well controlled experimental investigations designed to examine the factors involved in the development and modification of locus of control. Although the evidence is largely correlational or inferential in nature, two factors have emerged as salient in the development and modification of locus of control: personal control versus no personal control and success versus failure. The purpose of the present investigation is to examine the effects of these factors in a controlled setting.

Several investigators have studied the relationship between parental factors such as attitudes, child rearing practices, and styles of interacting with their children, with their children's locus of control scores (Chance, 1965; Katkovsky, Crandall, and Good, 1967; Tolor and Talowiec, 1968; Davis and Phares, 1969; Crandall, 1973). Taken together these studies point to warmth, nurturance, support, encouragement, flexibility, consistency, and pushing towards independence as being important parental factors involved in developing an internal orientation in the

child. These parents allow their children to experience their own influence over the environment and provide success experiences for the child's efforts through warmth and approval. Parental factors that have been found to relate to externality in the child such as hostility, rejection, punitiveness, and domination indicate that children with these types of parents are likely to be controlled by their parents and experience little success in terms of being rewarded with parental praise.

Studies comparing locus of control scores of samples of differing culture, race, and social class also point to the importance of these two factors in the development of locus of control orientation. Hsieh, Shybut, and Lotsof (1969) investigated differences in Rotter's I-E scale scores between samples of Chinese, Chinese-American, and Anglo-American subjects. They hypothesized that the American culture with its emphasis on uniqueness, independence, and self-reliance would produce individuals with a more internal orientation than the Chinese culture where kinship and status quo are stressed, and luck, chance, and fate are taken for granted in life. Their analysis of the data produced a mean of 8.58 for the Anglo-American group, 9.79 for the American born Chinese, and 12.07 for a group of Hong Kong born Chinese. Both the Anglo-American and the Chinese-American groups were significantly more internal than the native Chinese group. Battle and Rotter (1963) found that the lower class Black children in their study were significantly more external than both middle class Blacks and White subjects. Additionally, the middle class children in general were

significantly more internal than the lower class children. The more disadvantaged children in this study were also the ones that scored in a more external direction on locus of control. Battle and Rotter conclude that the perception of opportunity to obtain the material rewards in a culture seems to be an important part in developing an internal control orientation. Similar results were found by Lefcourt and Ladwig (1965) in a population of reformatory inmates. Blacks again scored significantly more external than White subjects. Lefcourt and Ladwig pointed to the role of segregation and discrimination in denying Blacks reinforcement despite their individual achievement efforts. This contention seems to be strengthened by Kiehlbauch's (1968) failure to find significant differences between Blacks and Whites on the Rotter I-E scale in a population of reformatory inmates. Lefcourt (1976) maintains that since the major difference between these two studies is that the data were obtained approximately six years apart, the differing results may represent a real change brought about by the Civil Rights movement.

Jessor, Graves, Hanson, and Jessor (1968) conducted an extensive field study in a tri-ethnic (Anglo, Indian, and Spanish-American) Southwestern rural community. The purpose of their study was to apply Rotter's social learning theory in a sociological investigation of deviant behavior. The opportunity subjects had to obtain culturally valued goals was studied through the use of an objective access to opportunity index which consisted of a series of eight measurements: age, marital status, language spoken in the home, occupation,

education, religion, generation mobility, and social participation. In their community survey study of 221 persons it was found that Anglo's ($\bar{X}$ = 6.0) had a significantly greater access to opportunity than both Indians ($\bar{X}$ = 3.8) and Spanish-Americans ($\bar{X}$ = 3.4). This same order appeared for the three groups on a modified form of Rotter's I-E scale, with both Anglos ($\bar{X}$ = 6.0) and Indians ($\bar{X}$ = 7.0) significantly more internal than the Spanish-Americans ($\bar{X}$ = 10.1). Of more importance though, was the finding that objective access and locus of control were correlated ($r = .50$, $p<.001$) indicating that the more ability to attain valued goals and successfully influence one's environment that an individual has, the more personal control he perceives himself to have.

A wide variety of therapy and training studies have demonstrated pre to post-treatment shifts in locus of control toward a more internal orientation. Although the factors bringing about change in these studies are nebulous, the results suggest that as a person experiences some success at more effective ways of dealing with his life situation through therapy or training, it is reflected in a shift towards greater internality on locus of control measures. Smith (1970), assuming that patients seeking crisis intervention would be experiencing an overwhelming degree of pressure from external forces in their lives, predicted and found a significant shift in the internal direction after a six week crisis intervention treatment program. Non-crisis patients did not evidence a similar shift. Dua (1970) used subjects who expressed a concern about their ability to

interact and relate in interpersonal situations in a study which employed an eight week program of either behaviorally oriented action treatment or psychotherapy re-education. Although both groups showed a significant shift in an internal direction as compared to a control group, the behaviorally oriented action program resulted in a significantly greater shift than the psychotherapy re-education program. The action program procedures were designed to create new behaviors for dealing with situations where interpersonal anxiety is aroused, thus giving these subjects more effective methods of attaining personal control over their problems through their own actions. A study by Gillis and Jessor (1970) goes one step further and suggests that a shift towards a more internal locus of control may be a necessary condition for improvement in therapy to occur. After ten weeks of therapy, the therapy group shifted slightly towards a more internal orientation and the no-therapy group slightly towards a more external orientation, neither change being significant. However, when the subjects rated as improved by their therapists were analysed separately, this group showed a significant change in the internal direction.

Pierce, Schauble, and Farkas (1970) found that they could successfully teach internalization behavior to clients within one therapy session. During the middle twenty minutes of a sixty minute session the therapist made the client directly aware of when he was internalizing or externalizing and gave positive verbal reinforcement for internalizing behavior. Recorded excerpts were taken from the first and last twenty

minutes of the session during which time the therapist primarily engaged the client with interchangeable reflections. A comparison of the judges ratings of these excerpts revealed a significant shift towards internalization behavior from first to the last twenty minutes of the therapy session. Lesyk (1969) predicted that persons placed in a highly responsive milieu would increase in their belief in personal control of reinforcement. Lesyk tested the effect of a token economy, operant conditioning ward on the behavior of a group of female schizophrenic patients. The results indicated a significant shift toward a more internal orientation as measured by the Bialer-Cromwell Locus of Control Scale (Bialer, 1961) between the two time samples studied (weeks 2 to 5 and weeks 12 to 15). Other therapy studies which have demonstrated a shift towards greater internal control include Diamond and Shapiro (1973) with encounter groups, Foulds (1971) with personal growth groups, Logan, et. al. (1977) with a values clarification program, Remainis (1974) with behavior modification for early graders and special counseling efforts to strengthen verbalization of internality for college students, and Felton and Biggs (1972) with Gestalt style group psychotherapy for collegiate low achievers.

Studies employing training programs or structured experiences have demonstrated shifts in locus of control orientation similar to the therapy studies. DeCharms (1972) has studied a concept which he terms Origin-Pawn that is very similar to the internal-external dimension of locus of control. Origin behavior refers to the initiation of intentional behavior by the person

and Pawn behavior refers to that which is impelled from forces outside the person. Thus the locus of causality for Origin behavior is within the person and the person is intrinsically motivated, while an outside source is the locus of causality for Pawn behavior and the person is extrinsically motivated. DeCharms developed a program which emphasized setting realistic goals, concrete goal directed behavior, evaluation of progress, and awareness of one's strengths and weaknesses. The Origin-Pawn variable was measured by a content analysis of thought samples. In the elementary school classes studied, DeCharms found that the experimental groups which received the special training increased significantly in Origin behavior while the control group did not.

Several other studies have demonstrated similar shifts using locus of control measures as the dependent variable. Wicker and Tyler (1975) devised instructional games and exercises to help children understand the consequences of inappropriate social behavior. The subjects were educable mentally retarded children. After the twelve week study period the experimental group was significantly more internal than the control group on both the Children's Locus of Control Scale (Bialer, 1961) and the Intellectual Achievement Questionnaire (Crandall, et. al., 1965). The groups did not differ significantly on the pre-tests. Felton (1973) found a significant shift in the internal direction for a group of middle level mental health workers after an 11 month training program. The subjects had participated in intensive group counselling sessions which emphasized internalization and actuation of

responsible behavior.

An important study by Nowicki and Barnes (1973) investigated the effects of a structured camp experience on the locus of control orientation of deprived inner-city adolescent campers. Seven groups of campers were tested prior to and at the conclusion of the week long camping session on the Nowicki-Strickland Locus of Control Scale (Nowicki and Strickland, 1973). In addition, a selected group of campers were asked to return for an additional week and again tested at the conclusion of this week. The camp experience emphasized helping the campers to feel more in control of events and to better understand the contingency between their behavior and reinforcements. An overall comparison of the groups revealed a shift toward a more internal orientation. In addition, the group that returned for an extra week continued to shift toward a more internal direction. The importance of the Nowicki and Barnes study lies in the fact that a personal experience of control over reinforcements evidently led to an increase in internality as measured by a generalized locus of control scale.

An interesting proposal for a method of modifying locus of control orientation has been proposed by Chandler (1975). Chandler's strategy involves a peer teaching peer, where an externally oriented, low achieving child would function as the tutor. Chandler believes that the experience and perception of personal control over another child would help to bring about a more internal orientation in the tutor. Chandler tested this idea in a pilot study which used underachieving junior high

school students who scored high on the Children's Locus of Control Scale (Bailer, 1961) as tutors to underachieving second and third graders. The analysis revealed a significant shift in the internal direction for the tutors. Although no control group was used in this study and results must be interpreted with some caution, it does add weight to the argument that personal control in a situation may be an important factor in developing an internal control orientation.

Pehazur and Wheeler (1971) demonstrated that a very simple procedure may bring about a shift in control orientation as measured by the Children's Locus of Control Scale. They had administered this measure to a group of children while studying class differences in control orientation and need achievement. Three months later the minority children were given a short paragraph to read as part of a reading exercise. The stories depicted a boy getting into trouble: for odd rows of children in the class the stories emphasized external reasons for the boy getting into trouble, while internal reasons were emphasized in the stories read by children in the even rows. Following this, the locus of control measure was again administered. The group reading the external control story did not change in control orientation, but the group reading the internal control paragraph shifted significantly toward a more internal orientation.

The effects of experience and success in occupational settings on locus of control orientation has also been documented in the literature. Harvey (1971) asked 50 upper level government

administrators to take the Rotter I-E scale. He found that internality increased significantly with number of years in the position. Harvey suggested that possible factors which may be involved in this trend could include "considerable practice in decision making and problem solving, the opportunity to observe the results of their decisions, and a general feeling of personal importance derived from an aura of respect and a belief that their tasks are of significance to others (p. 982)." Gottesfield and Dozier (1966) similarly found that experienced trainees who had been involved in a community action program for nine months were significantly more internal than a group of new recruits matched for age, sex, education and ethnic background. Martin and Shepel (1974) demonstrated that even a brief work skills training program could bring about modification in locus of control orientation. After an eighteen hour training program in counselling skills a group of 21 senior nurses shifted significantly toward a more internal locus of control.

Andrisani and Nestel (1976) provide evidence that points to successful work experience as being important to the development and stability of an internal locus of control. Using 2,972 respondents from the National Longitudinal Survey's representative sample of middle aged males, these authors made an extensive investigation of the relationship between scores on a modified Rotter I-E scale and factors involved in the world of work. Their study was both cross-sectional and longitudinal in nature. Correlational coefficients between

1969 and 1971 for scores on the I-E scale were only .55 for Whites and .35 for Blacks. The authors note that these are in marked contrast to the internal consistency reliability estimates of .75 that had been previously reported. Andrisani and Nestel further note that "the data suggest that I-E expectancies not only change over time, even for middle aged men, but that the change is in response to changing experience at the work place. In particular, there is evidence that advancement in occupational status, advancement in annual earnings, and reentry into the labor force are systematically related to increasing internal control (pp. 161-162)." These occupational studies provide support for the contention that personal control in the sense of experienced mastery of one's work environment and success are important contributors to an internal locus of control.

Several studies investigating the developmental aspects of locus of control emphasize the importance of felt mastery over the environment as being significant to the development of an internal control orientation. Bialer (1961), using both normal and mentally retarded children as subjects, found that there was a significant tendency among all subjects, regardless of the normal-mentally retarded classification, to be more internal on the Childrens' Locus of Control Scale with increasing age. In addition, Bialer found Mental Age to be a more relevant variable than chronological age. In fact, chronological age was found to carry no significant weight when the effects of mental age were partialled out. In a similar study, Penk (1969) tested five groups of children, ranging in age

from seven to eleven years old, on the Childrens' Locus of Control Scale. His findings revealed an increase in internality with increasing age. The pattern of correlations of locus of control score with chronological age and Peabody Picture Test mental ages led Penk to conclude that children employing more mature verbal abstractions also tended to be more internal. Lao (1974) gave a Personal Data Questionnaire and the Rotter I-E scale to subjects in seven age groups from fifteen to eighty-five years of age. An increasing internal locus of control orientation from fifteen to thirty-nine years of age accompanied a reported increased sense of mastery and control over the environment, while a stabilized locus of control accompanied the more stabilized life style of that period after age 39.

Three further studies, two serendipitous in nature, highlight the way personal experiences of control or no control may effect locus of control orientation. Gorman (1968) just happened to give the Rotter I-E scale to a group of college students the day after the 1968 Democratic National Convention. These students, most of whom were McCarthy supporters, scored significantly more external than previously reported means for college students. Gorman suggests that the experienced disappointment of these students may have been a factor in these findings. In a similar chance finding, McArthur (1970) administered the Rotter I-E scale to a group of Yale undergraduates on the day after the draft lottery. Students who were old enough to be effected by the lottery were significantly more external than a similar group of students tested before

the lottery ($p<.10$). When McArthur separated the external group into those who were favorably effected by the lottery and those who were not, he found that the former were significantly more external than the latter ($p<.05$), and largely accounted for the greater externality in the experimental group as compared to the control group. McArthur's concluding remarks suggest the relevance of luck in these findings. Prior to the lottery all subjects could reasonably have expected to be drafted upon graduation unless they could secure some sort of deferment. After the lottery then, only those subjects favorably effected experienced a real change in draft status. Because of their high numbers in the draft these subjects could reasonably expect not to be drafted. McArthur maintains that these subjects clearly experienced a stroke of good luck, while the lottery did not as clearly bring bad luck to those not favorably effected since their position in regard to the draft remained relatively the same. Lefcourt (1972) reports an unpublished study by Kiehlbauch (1968) which presents similar data in that personal experiences of personal control and no control appeared to significantly effect locus of control orientation. Kiehlbauch found greater externality upon admission and just prior to release as compared to the interim period of their incarceration for a group of reformatory inmates. Lefcourt suggests that this finding may relate to the uncertainty and helplessness in terms of coping experienced at the time of admission and release compared to the stability and opportunity for successful coping behavior during the intermediate period.

A series of studies dealing with changes in expectancy for future success have demonstrated that subjects respond differentially under skill and chance situations. Phares (1957) investigated subjects expectancies for future reinforcement in two task situations: matching colors and matching lengths of lines. Phares manipulated chance and skill conditions through differential instructions, half of the subjects were led to believe that skill was involved in making these discriminations, while the other half of the subjects were led to believe that the discriminations were so hard that success was largely a matter of guesswork. All subjects received an equal number of reinforcements. In spite of this, subjects under chance instructions made smaller and less frequent expectancy changes in relation to reinforcement feedback than did subjects under skill conditions. In essence, subjects given skill instructions responded more in line with environmental cues than did subjects given chance instructions. Two further studies, one using differential instructions to manipulate skill and chance situations (James and Rotter, 1958) and the other using two different tasks for the same purpose (Rotter, Liverant, and Crowne, 1961),report similar results. The major finding in these studies was that the typical partial reinforcement effect of being more resistant to extinction than 100% reinforcement was true only for subjects given chance instructions. For subjects given skill instructions, 100% reinforcement was more resistant to extinction than 50% reinforcement. In other words, perceived personal control had a strong effect upon the subject's continuing to respond after extinction was

initiated. Since task specific expectancies for control of reinforcements were evidently effected differentially by personal control as manipulated by skill and chance situations in these studies, a logical extension of this finding is the possibility that the more generalized control expectancies as measured by locus of control scales might also be similarly effected.

A number of studies have explored the effects of success and failure on post-task attributions of causality. Although the post-task measures of attribution are not locus of control measures in a strict sense, they do provide a task specific measure of control orientation. These studies then, are relevant to the effects of success versus failure in the same way the expectancy level studies were relevant to personal control (skill) versus no personal control (chance) effects. That is, if success and failure have significant differential effects on post-task attributions of causality, then it is a reasonable possibility that similar effects might be reflected in a post-task measure of locus of control.

Streufert and Streufert (1969) studied decision making with pairs of subjects. The results relevant to the present study showed that the dyads took increasingly more credit for success as success increased, but did not take more responsibility for failure as it was increased. In a similar study, Sobel (1974) examined the effects of success and failure on an anagrams task with subjects classified as either internals or externals based on Rotter's (1966) norms. The analysis revealed that success on the task resulted in attribution to

internal factors (intelligence, ability to concentrate and think quickly, skill in problem solving) while failure produced attribution to external factors (item difficulty, amount of time allotted, features of the work environment, and time of day). Sobel found the moderating variables of personality to be weak (internal versus external). Johnson, Feigenbaum, and Weiby (1964) had their subjects teach arithmetic via a microphone to two fictitious students they thought were in the next room. The subjects were then told that sudent A had done very well and student B poorly. The subjects were asked to teach an additional arithmetic lesson and student B either continued to do poorly or improved after this lesson. The subjects for whom student B continued to do poorly attributed the reasons to the student (external factors) while the subjects for whom student B improved attributed it to an improved teaching presentation on their part (internal factors).

A study by Eisenman (1972) provides evidence that personal control has a clear effect on locus of control. Eisenman directly examined the effects of personal control determined by skill and chance instructions on subjects responses to the Rotter I-E scale. The subjects in this study were 150 college students. One hundred of these subjects participated in three verbal conditioning experiments in which they had to decide which pronoun another student had used to begin each of 30 sentences. Fifty of these subjects were instructed that their "clinical sensitivity" could lead to excellent guesses as to the correct pronoun, while the other fifty were told that

correct guessing would be of a random nature. The former instructions were designed to emphasize the person's internal skills as being important in determining the results, while the latter instructions were designed to suggest that performance results were beyond the subjects control. A third group of 50 subjects, used as control, wrote stories to Thematic Apperception Test cards on three different occasions. The subjects were tested on a pre and post basis with the Rotter I-E scale. There were no significant differences among the three groups on the pre-test. On the post-test, the group taking part in the experiments emphasizing internal skills showed a significant change in the internal direction (-2.50). The group taking part in the experiments emphasizing random guessing showed a significant change in the external direction (+2.10). The control group did not change significantly (+.75). Eisenman states that "the present findings suggest that experience in situations which the subject believes reflect his own control over events can increase the likelihood of his believing that he has control over reinforcements. Likewise, repeated experience in situations where the subject feels he has no control can diminish his feelings of being able to control his environment (p. 435)".

A study by Epstein and Komorita (1971) provides clear evidence concerning the effects of success and failure on subjects' responses to locus of control measures. These investigators developed a fourteen item locus of control scale with reworded items from the Children's Locus of Control Scale and Battle and Rotter's (1963) Children's Picture Test of Internal-External Control. The subjects took part in a line

matching task and were given falsified success-failure feedback. The subjects, 120 Black children, were asked then to answer the locus of control measure in direct relation to the task situation. The results revealed a significant difference in scores on the locus of control measure between subjects experiencing success ($\bar{X}$ = 28.93) and subjects experiencing failure ($\bar{X}$ = 30.90), with success producing scores in a more internal direction. Although pre and post measures were not taken in this study, and only inferences can be made concerning the modification of locus of control, the results do clearly suggest the significance of success and failure as having effects on locus of control. Epstein and Komorita attempted to assess change in locus of control by using the same subjects in a similar task situation one week later. The subjects were again given falsified success-failure feedback producing four treatment groups (success-success, success-failure, failure-failure, and failure-success). The same locus of control measure was administered after the task situation along with several other tests. Unfortunately, during the second task and testing situation, the subjects manifested fatigue, restlessness, and loss of interest. The experimenters questioned the reliability of this data and for that reason did not report it.

Brecher and Denmark (1972), with a serendipitous finding, provide evidence that no personal control and failure feedback have an effect on locus of control orientation. These investigators had given the Rotter I-E scale to three classes, consisting of 88 female undergraduates at Hunter College, within

a one week time span. One of the classes had taken an examination and were due to receive their grades on the day of the testing. When the authors learned of this they decided to take advantage of the situation. Immediately preceeding the administration of the I-E scale the instructor of this class told these 22 subjects that she would not be returning their exam papers as promised. She then told them that it was the worst set of papers she had ever seen and that over half the class had failed, with the rest doing poorly. She further added that she was very disappointed and would not discuss the matter any further. The instructor then briefly introduced the experimenter and then left. The results indicate that these subjects scored significantly more external ($\bar{X}$ = 13.0) on the Rotter I-E scale than the subjects in the other two classes (10.41). Brecher and Denmark conclude that subjects "given negative feedback concerning examination results with no apparent recourse (opportunity to see or discuss results) appeared significantly more external than the control groups (p. 462)."

A thorough review of the literature on the development and modification of locus of control led Allin (1978) to posit personal control (skill instructions) versus no personal control (chance instructions) and success versus failure as critical factors in the modification of locus of control. He hypothesized that taking part in a skill task would result in a shift in locus of control orientation in an internal direction while participation in a chance task would result in greater externality. He also predicted that success feedback

would produce a shift in the internal direction and failure feedback a shift in the external direction. In a design unique to the locus of control literature, Allin tested these hypotheses by taking pre and post-task measurements of locus of control using a slightly modified version of the Rotter I-E scale. Allin described the personalities of three fictitious persons and informed the subjects that these persons had previously taken a word association test. The task of Allin's subjects was to try to respond to the ten word association items with the same words as the persons described. Personal control and no personal control conditions were manipulated by skill and chance instructions, respectively. The skill instructions emphasized the logical connection between the words and the importance of the subject's clinical sensitivity in making the correct responses. The chance instructions emphasized luck and the lack of control on the subject's part in determining the correct responses. The success-failure conditions were manipulated by providing falsified feedback. The design also included a no feedback condition and a control group which received ambiguous (no skill or chance bias) instructions and no feedback.

The results of Allin's analysis yielded a significant three-way interaction (task instructions X type of feedback X trials) and a significant two-way interaction under the success condition (task instructions X trials). A further breakdown of the data failed to yield any significant results. Thus no conclusions can be drawn from these results concerning the main effects of the independent variables. In concluding

Allin also states that "based on the results of this investigation it is evident that further research is necessary in order to draw conclusions about the nature of the interaction (p. 42)".

It is the contention of the present study that the ambiguity of Allin's results may have been due primarily to his use of the Rotter I-E scale as the measure of locus of control. The Rotter I-E scale has been criticized primarily with respect to the following three issues: 1. generalization across persons and reinforcement areas; 2. agents of external control; 3. types of reinforcement-positive versus negative (Crandall, et. al., 1965; Lefcourt, 1976). It is possible that the defects in the Rotter I-E scale with respect to any of these three issues could have contributed to obscuring Allin's results. For this reason each of these issues will be discussed separately.

Gurin, Gurin, Lao, and Beattie (1969) were the first to criticize the Rotter I-E scale in terms of being too general in nature. Gurin, et. al., examined the responses of a group of Southern Black college students to the Rotter I-E scale and other personal and racially oriented items. Factor analysis of these items revealed two distinct factors, one dealing with reinforcement contingencies for the particular person (personal control), and the other dealing with contingencies for the culture at large (control ideology). The personal control items on the Rotter I-E scale (see appendix A), all of which are phrased in the first person include, 13, 9, 28, and 25 in order of their loadings. The control ideology items,

only one of which is worded explicitly in the first person, include 16, 11, 6, 23, 7, 10, 26, 20, and 18 in order of their loading. Gurin, et. al., studied the relationships between three control scores (personal control, control ideology, and total score) and a variety of motivational and performance measures. From their results Gurin, et. al., concluded that only rarely do personal control and control ideology operate the same way, it usually being personal control that relates to measures of motivation and performance, i.e., high internal personal control leads to high motivation and performance. These investigators also found, however, that it was externality on the control ideology factor that related to willingness to get involved with social action and the choosing of atypical careers for Blacks. Sanger and Alker (1972) reported a similar personal control versus control ideology factor structure in a college age sample of feminists and non activist controls. Joe (1974) found that attributions of causality were related to personal control scores but showed little relationship to control ideology scores. On an ambiguous task, high personal control as compared to low personal control subjects perceived that successful outcomes were determined by skill rather than chance, exhibited a lower tendency to attribute causality to physical surroundings and experimental factors for task failures, and indicated that they tried harder on successful than on failure outcomes. It is possible that Allin's subjects changed differentially on these two factors, with the personal

control factor being more likely to reflect changes as a result of personal control versus no personal control and success-failure feedback manipulations.

Lao (1970), extending the research of Gurin, et. al. (1969), found similar results, that is, an internal belief in personal control was positively related to measures of academic competence and an external belief in control ideology was positively related to innovative behavior for Black college students. Lao concluded that, "the personal and ideological variables are not only independent in a correlational sense ($r = .124$), but they are also independent in the sense that neither effects how the other operates (p. 270)." Lao also raised questions as to the development of these two expectancies and suggested that the socialization of the two may differ in many ways.

While the preceeding studies question the reliability of the Rotter I-E scale in terms of its generality across persons (who's control is being referred to), Mirels (1970) and others have found two factors which differentiate in terms of reinforcement areas. Mirels' two factors were a belief concerning felt mastery over one's life (items 25, 11, 15, 16, 23, 18, 28, 5, 10) and a belief concerning the extent to which the individual citizen is deemed capable of exerting an impact on political institutions (items 17, 22, 12, 29). Several other investigators have found similar factors (John and Jahn, 1973; Abrahamson, Schludermann, and Schludermann, 1973; Viney, 1974; Cherlin and Bourque, 1974).

Abramowitz (1973) and O'Leary,et.al.(1975) have offered empirical support for Mirels' two factors. Abramowitz found that political commitment in a group of college students was effectively predicted by scores on the political factor, but not by scores on the nonpolitical items or by the whole scale. O'Leary found a significant shift toward internality in a group of alchoholics after treatment. When he examined these results in terms of Mirels' two factors, he found that there was a similar significant shift in the personal but not in the sociopolitical items.

Other researchers have found additional factors. Collins (et. al., 1973; 1974) separated the 23 forced choice items of the Rotter I-E scale into 46 Likert scale items and found four factors which he labeled difficulty of world, unjust world, predictability-luck, and political responsiveness. Reid and Ware(1973) originally found two factors similar to Mirels which they called fatalism and social system control. In a later study (Reid and Ware, 1974) they added items which dealt with self control of impulses, desires, and emotion and found that this added an important third factor not represented in the Rotter I-E scale.

The evidence presented in this discussion points to the importance of examining locus of control factors separately when using scores on a locus of control measure as the dependent variable, since variance on one factor could obscure variance on the other factor. Allin attempted to deal with this issue by omitting the politically oriented items from the Rotter I-E scale (3, 12, 17, 22, 29). It would have been interesting to compare changes in control orientations as assessed by these

two factors had Allin included these items. Allin's method of controlling for generality in the Rotter I-E scale can be criticized on two counts. First, omitting items may have implications in terms of the reliability of the scale, and secondly Allin's choice of items to omit did not take into consideration the other factors which have been found, most notably those of Gurin, et. al, and Collins. A more effective method of dealing with the issue of generalization might be to use a more specific locus of control measure.

The results which Allin obtained on a skill-chance rating scale employed on a pre and post-task basis in the same study clearly point in this direction. The personal control group initially rated the task as involving skill. After receiving feedback those subjects who failed changed significantly toward a more chance rating while those receiving success feedback did not change significantly in their ratings. On the other hand, subjects in the no personal control group initially rated the task as one involving chance. Of these subjects only those receiving success feedback significantly changed their ratings, this being in the direction of indicating that more skill was involved. Allin argues "that this measure of control orientation, although initially biased by task instructions does have the advantage of being more situation-specific and subjective than such a measure as the Rotter I-E scale (pp. 52-53)."

Other researchers have found success using more specific measures of locus of control. Neuman (1977), studying risk used a final decision made by the subjects as a specific locus of control measure. The results indicated that internals were

significantly more risky than externals when the specific locus of control measure was used to classify subjects. When the Rotter I-E Scale was used to classify subjects, similar trends were noted, but the results were not significant.

Bradley (1977) developed a scale to measure specific control expectancies in three achievement domains (intellectual, social, and physical). The Locus of Control Inventory for Three Achievement Domains (LOCITAD) contains 48 items to be answered yes or no, with half the items in each domain measuring control orientation for successful outcomes and half for unsuccessful outcomes. Bradley and Webb (1976) predicted an increase in perceived control from adolescence to middle adulthood followed by a decline in old age for the physical and social subscales and a relatively stable control orientation for the intellectual subscale. They believed that locus of control scores on these subscales would reflect the rise in physical and social abilities that adulthood brings, followed by the decline in physical abilities and loss of power and productivity in social situations which accompanies old age. They also maintained that the relative stability of mental functioning across the age span tested would be reflected in the stable intellectual subscale scores. Four age categories were included in the study: 13 - 18, 19 - 25, 35 - 50, and 60 - 90. In general, the results supported the hypotheses. Adults over 60 scored significantly more external than individuals from the three other age groups on the physical

subscale, adolescents and persons over 60 scored significantly more external than did the 35 - 50 age group on the social subscale, and no reliable age differences were noted on the intellectual subscale. Bradley and Gaa (1977) demonstrated that an experimental manipulation could modify control orientation in one domain while not in others. A group of students participated in five weekly goal setting conferences designed to increase internality with regard to academic achievement. The results indicated that these students were significantly more internal on the intellectual subscale of LOCITAD and the Intellectual Achievement Responsibility Questionnaire after the five conferences as compared to two control groups. No significant differences were found on the social and physical subscale of LOCITAD.

McKee (1976) has also developed a scale to differentiate specific domains of expectancy for control which he calls the Multidimensional Expectancy Control Scale. This measure contains subscales to assess locus of control in the political, academic, and interpersonal realms. Little work has been done with this scale, but McKee did find that the academic subscale scores (internal control) correlated significantly with cumulative grade point averages in a positive direction, while a similar correlation using scores on the Rotter I-E scale did not reach significance.

Kirscht (1972) compared a general locus of control measure with a measure specific to health belief in terms of their accuracy in predicting health related activities. He found

the general scale to be a better predictor of reported vulnerability and belief in the efficacy of preventive action, while the health control measure was a better predictor of action taken in health related activities. A low correlation (0.29) was found between these two scales. In a follow up study reported in the same article Kirscht found more consistency between the general and health specific scales. In this study, however, he differentiated between expectancy and motivation items, which other researchers have not done, making the results difficult to interpret.

A study by Wallston, Wallston, Kaplan, and Maides (1976) in the area of health control expectancies provides a clearer picture. They developed an 11-item Likert scale designed as a measure of control expectancy specific to health related behavior. It was predicted in this study that subjects who held an internal control expectancy and highly valued health would choose to expose themselves to more health related information than internal persons who valued health less or than externals, regardless of the value they placed on health. This prediction was confirmed with the use of the Health Locus of Control Scale but not with the Rotter I-E scale. It was also found that subjects were more satisfied with a weight reduction program that was consistent with their locus of control orientation than one that was not, i.e., internally oriented with a self directed program and externally oriented with a group program. Again these results were significant when the Health Locus of Control Scale was used but not when

the Rotter I-E scale was used. The results with regard to weight actually lost were consistent with the hypothesis, though not significant, with the Health Locus of Control Scale, but in the direction opposite to prediction when the Rotter I-E scale was used.

Lewis, Cheney, and Dawes (1977), using the Rotter I-E scale as a model, developed a 19-item forced choice scale to specifically assess the amount of control experienced in interpersonal interactions. In two studies reported by Cheney, et. al., the Locus of Control of Interpersonal Relationships Questionnaire correlated significantly with the rated job effectiveness of camp counselors, while the Rotter I-E scale did not.

In general, then, the trend in locus of control research seems to be toward the use of more specific measures rather than the more generalized scales such as the Rotter I-E. These scales have been demonstrated to be more effective than the multidimensional Rotter I-E scale, especially when examining relationships in particular situations or areas of concern.

The second major criticism of the Rotter I-E scale deals with agents of external control. The Rotter I-E scale includes a variety of sources of external control which have not been demonstrated to be synonomous with each other. Hersch and Schiebe (1967), for instance, found that on the Adjective Check List, 23 adjectives were checked significantly more often by individuals classified as internals, presenting a

fairly coherent picture (clever, efficient, egotistical, enthusiastic, independent, self-confident, ambitious, assertive, boastful, conceited, conscientious, deliberate, perservering, clear-thinking, dependable, determined, reasonable, and stubborn). Only one adjective, however, was checked significantly more often by subjects classified as externals, this being "self-pitying". Hersch and Scheibe conclude that there may be a diversity in the psychological meaning of externality with a person evidencing external control for a wide variety of reasons, including: "1. being realistically or physically weak; 2. being in a highly competitive situation where the actions of others have a significant effect on his chances for success; 3. a belief in luck or fate; 4. may develop feelings of persecution with or without reason (pp. 612-613) ".

Levenson (1973a, 1974) has developed a scale which differentiates between agents of external control. The scale consists of 24 items presented in Likert format. Three subscales of eight items each measure "internality", "control by powerful others", and "control by chance". Factor analysis revealed that the scales are conceptually independent with little overlap. In a study using normal and psychiatric subjects, Levenson (1973a) found that the scale made interesting discriminations. Patients and normal subjects did not differ on the internality scale, but the psychiatric patients were significantly more external on the powerful others and chance scales. Psychotics scored significantly more external than

neurotics on the powerful others and chance scales. For patients who were in the hospital 60 days or more, paranoids scored significantly more external on the powerful others scale than did patients diagnosed schizophrenic undifferentiated. Committed patients were significantly more external on the control by powerful others scale than voluntary patients. In a later study, Levenson (1974) found that, as predicted, only a belief in chance was differentially related to involvement and knowledge in antipollution activities. Levenson theorized that belief in control by powerful others and low expectancies for self control do not diminish activity since the potential for control is still present, while for the person with a high belief in chance there is no hope for control. Male subjects who believed less in the operation of chance factors were more likely to be involved in antipollution activities. Also, among those who were members of an antipollution group, those who were high on the chance scale were less knowledgeable about pollution. Similar results were not found among the female subjects. Levenson concludes that "although the control by powerful others scale and the chance scale were correlated with each other, they behaved very differently in their relationship to involvement and information. It appears that these orientations are tapping quite different beliefs and therefore should not be grouped together under the rubric of external control (p. 380)".

Tiffany (1967, 1973) developed a scale which differentiates four factors: 1. controlling forces such as gut level impulses experienced as coming from internal sources; 2. self controlling mechanisms one perceives himself to have

over internal forces; 3. social skills or abilities to manipulate the environment that one experiences himself as having; 4. the experience of social customs or pressures coming from environmental sources. Both Tiffany (1967) and O'Leary, et. al. (1976) have demonstrated the usefulness of this conceptualization in evaluating treatment programs.

The evidence concerning agents of external control again points to the possibility that differential responding to the various parameters of external control contained in the Rotter I-E scale may obscure results when used as a measure for the dependent variable, as in the Allin study.

The third major point of criticism of the Rotter I-E scale, the issue of types of reinforcement, is particularly relevant to Allin's study since type of feedback was one of the two independent variables. The Rotter I-E scale not only does not discriminate between control expectancies for successful and failure outcomes, but, as Sobel (1974) points out, is biased in the failure direction. Sobel found that scores on the Rotter I-E scale correlated with attribution to internal and external factors only in the failure condition. He suggested that this result may be due to the fact that of the 13 items that are explicitly oriented toward either positive or negative outcomes, ten involve negative outcomes. Sobel concludes that "if this explanation of the data is correct it should be possible to obtain the predicted correlations between locus of control and post-performance attribution over all conditions by developing a scale which balances the number

of success and failure oriented items (p. 33)".

Crandall, Katkovsky, and Crandall (1965) developed the Intellectual Achievement Responsibility Questionnaire to measure both control expectancies for positive outcomes I^+ subscale) and negative outcomes (I^- subscale) in addition to a general score for control orientation which is the sum of the two subscales. The validational study on the IAR presented evidence that supports the contention that control orientation for positive outcomes is different from control orientation for negative outcomes. Crandall, et. al., noting that the reliability coefficients for the I^- subscale were greater than those for the I^+ subscale (I^- = .74, I^+ = .66 for 47 third, fourth, and fifth grade children); (I^- = .69, I^+ = .47 for 70 ninth graders) suggested that since previous studies have found negative social reinforcement to be more effective than positive reinforcement (Crandall, 1963; Crandall, Good and Crandall, 1964), "it may possibly be that the greater impact of punishment produces a more durable effect on the internal-external responsibility beliefs surrounding these experiences (p. 101)." In support of this reasoning, McGhee and Crandall (1968) found the I^- subscale to be a consistently better predictor of academic achievement.

Crandall, et. al (1965) also found the correlations between the I^- and I^+ subscales to be generally low, which they maintained indicated the independence of the two subscales. The correlations between the subscales were especially low for children in the lower grades, which raises the possibility

that control orientations for positive outcomes may be developed independent of control orientations for negative outcomes.

Solomon, Houlihan, Busse, and Parelius (1971) observed parents helping their children in problem solving situations. They found that mothers who usually rejected or disagreed with their son's comments, had sons who scored low on the I^+ subscale of the IAR, i.e., tended to be external in control orientation for positive outcome. Boys with mothers who usually accepted and agreed with them, tended to be more external on the I^- subscale. This finding also suggests that control orientations for positive and negative outcomes may develop differentially. These authors interpret this finding by reasoning that, "if agreement/acceptance represents (or includes) positive reinforcement, it may be that boys who receive much of it come to expect that their achievement efforts will generally meet with approval and therefore assign unexpected negative reinforcements to external causes. By the same reasoning, boys who typically receive negative responses may come to believe that any positive reinforcements received must not be due to their own efforts (p. 231)."

Mischel, Zeiss, and Zeiss (1974) developed the Stanford Preschool Internal-External Scale (SPIES) which, like the IAR, also provides I^+ and I^- subscales in addition to a total I score. The SPIES consists of 14 forced choice (internal versus external) items, six describing a positive and eight a negative event, and is scored in an internal direction. Thus the maximum scores for the I^+, I^-, and total I scales are 6, 8, and 14, respectively. Normative data were presented for

211 subjects (98 male and 113 female) from the Bing Nursery School of Stanford University. As was the case with the IAR, the I^+ and I^- subscales of the SPIES were not related to each other. Correlations on the two subscales were .03, -.06, and -.02 for males, females, and the total sample respectively, none approaching significance. In three delay of gratification studies involving a positive reward, I^+ but not I^- or total I was significantly correlated with relevant instrumental activity. In two studies in which responses to negative events were studied only I^- correlated significantly with relevant instrumental activity. The authors concluded that "in spite of the small number of items within the I^+ and I^- subscales, the significant correlations of each subscale with conceptually relevant behavioral measures were in all of the cases larger than those obtained from using the total I score. Thus, any advantage that the total I scale might have because it contains twice as many items as the subscales is more than offset by mixing together positive and negative outcomes (p. 277)."

DuCuette, Wolk, and Soucar (1972) compared maladjusted and normal children with respect to their IAR scores. They found that it was "neither internality nor externality per se that is related to maladjustive behavior, but is instead the relationship between these two in regard to different kinds of events that is important (p. 294)." While scores on the two subscales were relatively homogenious for normal children, there were important differences between scores on the two subscales from the maladjusted children. The results indicated

that the White problem child and the high IQ problem child scored high on the I^- subscale and low on the I^+ subscale, i.e., they assume a great deal of credit for their failures but very little for their successes. The opposite pattern was displayed by the Black problem child and the low IQ problem child. These children scored high on the I^+ subscale and low on the I^- subscale, indicating that they tend to assume responsibility for their successes but not their failures. From this data it is evident that the use of a scale such as the Rotter I-E scale which does not discriminate between control orientation for positive and negative outcomes might mask important differences in control expectancies within the individual.

Taken together, the studies which have been discussed concerning the issue of type of reinforcement seem to indicate that control orientation for positive outcomes is relatively independent of control orientation for negative outcomes, and that the two may develop differentially. If this is true, it is reasonable to assume that control orientation for positive and negative outcomes may also undergo differential modification with respect to the independent variables in Allin's study, especially the variable of type of feedback. For instance, a subject receiving success feedback might become more internal, in line with Allin's hypothesis, but only for positive outcomes, while changing little or not at all with respect to control orientation for negative outcomes. The converse might be expected for the subject receiving failure

feedback, that is, become more external with regard to negative outcomes but change little in control orientation for positive outcomes. This data concerning type of reinforcement again points to the possibility that Allin's use of the Rotter I-E scale, which does not discriminate between control orientations for positive and negative outcomes, may have obscured the results.

To summarize, the Rotter I-E scale which was used in Allin's study, has been criticised for its multidimensionality with regard to three issues, generalization across persons and reinforcement areas, agents of external control, and types of feedback. The purpose of the present study was to provide a clearer picture of the operation of situational control and type of feedback in the modification of locus of control orientation. The Intellectual Achievement Responsibility Questionnaire was designed to improve on the Rotter I-E scale with regard to the previously mentioned three issues by it's specificity to the academic achievement situation, limitation to significant others as agents of external control, and provision of separate subscales to measure control orientations for positive and negative outcomes (Crandall et. al., 1965). For these reasons the IAR was used in the present investigation. In addition, a task specific measure of control orientation developed by Epstein and Komorita (1971) was used for comparison with the IAR, in an attempt to better understand how control expectancies in a specific situation may generalize to a larger sphere.

The following hypotheses were tested: Personal control in a skill situation will lead to an increase in internal

control while no personal control in a chance situation will lead to an increase in external control. In addition, it was predicted that success feedback would result in increased internal control and failure feedback in increased external control. No interaction effects were predicted due to the lack of sufficient previous research.

It should also be noted that the Allin study did not control for sex factors. There has been some evidence that control orientations may develop differentially in the two sexes (Crandall, et. al., 1965), with different parental factors being more important for one sex than for the other (Katkovsky, Crandall, and Good, 1967). Also, internal control generaly relates to high achievement behavior for males but not for females (Crandall, et. al., 1965; Nowicki and Roundtree, 1971; Boor, 1973). Several investigators have suggested a social desireability factor for females to explain this finding. McDonald and Tseng (1971) found a third factor, in addition to the two reported by Mirels (1970,), with a sample of women. This factor pertained to the controlability of being liked or respected. Duke and Nowicki (1974), found that internality related to high achievement for males while it was externality that related to high achievement for females on the newly developed Adult Nowicki Strickland Internal External Scale. Nowicki and Walker (1973), found that with social desireability controlled for, females scoring low on a social desireability scale and high internal on a locus of control measure, were high achievers as measured by achievement test scores. Both

of the previously cited studies suggest that some females may deny responsibility for their academic achievements because of the social undesirability of feeling themselves as in competition with men. The evidence for differential responding by males and females, however, was considered not substantial enough to indicate the use of sex as an independent variable. Post hoc analyses were planned only if it was apparent from the data that sex factors were operating.

B. METHOD

1. SUBJECTS

A total of 54 middle school (grades 6 - 8) children from two private schools in Richmond, Virginia, were employed on a voluntary basis for participation in the present study. Twenty-four of the subjects were male students from St. Christopher's School and 30 were female students from St. Catherine's School. The breakdown of subjects for grades was as follows: Eighth - 24, Seventh - 26, Sixth - 4. Two subjects who had already taken part in the second experimental session were dropped from the study when it was discovered that they did not answer all the Locus of Control Scale items. Twelve other subjects took part in the pre-testing but not in the task situation and thus were not used in the analysis.

2. APPARATUS AND MATERIALS

a. Setting

The initial phase of the study was conducted in the auditorium at St. Christopher's School and a large classroom at St. Catherine's School. This enabled the experimenter to administer the pre-tests to a large number of students at the same time. The task situation and post-testing were administered in smaller rooms at each school.

b. Locus of Control Scales

Two locus of control measures were used on a pre and post-task basis in the present investigation. The Intellectual Achievement Responsibility Questionnaire was chosen because it is specific to the academic achieve-

ment situation, limits agents of external control to significant others in the child's life, and provides separate subscales for measuring control orientations for positive and negative events in addition to a total score. MacDonald (1973) states that "the IAR is a carefully developed scale that shows acceptable reliability and evidence of divergent and convergent validity (p. 195)." Correlations with social desirability test scores have been found to be rather low. Additionally,the IAR is one of the most widely used Children's locus of control measures. Prociuk and Lussier (1975), in their bibliography for 1974-1975, report that it was the most widely used scale with children for that period, and was used in 6% of all studies dealing with locus of control. A copy of the IAR and scoring instructions appear in Appendix B.

The Locus of Control Scale for Success-Failure developed by Epstein and Komorita (1971) was also used in the present study. To this writer's knowledge this scale was only used in the previously mentioned study by Epstein and Komorita. It was used in the present study because the items are worded in such a manner that the scale can be used to provide a measure of control orientation specific to the task situation. Epstein and Komorita developed the scale by rewording 34 items obtained from Bialer's (1961) Locus of Control Scale and Battle and Rotter's (1963) Picture Test of Internal-External Control.

An item analysis of these 34 items consisted of correlations with total score (internal consistency criterion), yielding 14 items which discriminated significantly at the 5% level. These 14 items were used as the Locus of Control Scale for Success-Failure. Epstein and Komorita (1971) report that the split-half reliabilities, with the Spearman-Brown correction, were .79 and .70 under success and failure conditions respectively and conclude that the scale is moderately reliable and adequate. See Appendix D for a copy of the Locus of Control Scale for Success-Failure and scoring instructions.

c. Additional Printed Materials

Various task instruction and answer sheets, consent forms, and debriefing sheets, all of which are explained in the experimental procedures, were used.

3. PROCEDURE

A consent form which briefly described the experimental procedures, was sent home with a number of students for their parents to read over and sign. Only those students whose parents gave permission were used in the study. Also, all subjects were asked to read and sign an informed consent form (see Appendix M).

The experimenter met with the subjects in three large groups for the first of two sessions. The purpose of this session was to obtain measures of the subject's control orientation prior to taking part in the experimental task

situation. The initial instructions given to the subjects were as follows:

> Scientists do experiments to find out more about the world around us. Some experiments study people and their behavior. I am particularly interested in finding out more about what is involved in the process of succeeding or failing at coming up with new ideas or discoveries. In about two weeks I will meet with each of you individually. You will be asked to read about several experiments and decide what was discovered in those experiments. To give you a better understanding of what you will be expected to do, I'm going to give you a sample of the task now.

The task consisted of a brief description of an experiment followed by a list of ten possible results. The subjects were instructed to read the experiment carefully and then to indicate whether or not they thought the listed results were actually found in the experiment by writing true or false in front of each statement. The experiment described in the sample task and the three later used in the experimental task situation were fictitious. The subjects were unaware of this until they were debriefed. A copy of the sample task appears in Appendix H and instructions in Appendix G.

The experimenter read over the sample task instructions with the subjects and asked them to try doing the task and think about how they might do on a task like this. When all of the subjects had finished the sample task the experimenter handed out the Locus of Control Scale for Success-Failure, labeled Questionnaire 1 on the subject's copy, and gave the subjects the following instructions.

> I am not going to tell you the right answers today because you may see this same experiment or a similar one later. Pretend that you had been given a grade and think about how well or how poorly you might have done when you answer this set of questions. Read the

instructions carefully before answering the questions.

The original instructions to the Locus of Control Scale for Success-Failure as used by Epstein and Komorita (1971) were slightly altered to fit the nature of the present study. A copy of the scale, scoring instructions, and the original instructions used by Epstein and Komorita appear in Appendix D. The instructions used in the present study were as follows.

> This task was performed by other children. After they finished, some children found out they had done well and others found out they had done poorly. When these children were asked "why did you do well or poorly?" they gave the following reasons. As you read each reason think about how well or how poorly you would expect to do on this task. Then, show how much you agree or disagree with the reason by circling the number which is closest to what you believe.

The fourteen item Locus of Control Scale for Success-Failure was thus answered in direct relation to the subject's perception of the sample task, and provided a measure of the subject's control orientation to the experimental task prior to the experimental manipulations. A copy of this scale as used for the pre-test appears in Appendix E.

When all subjects had finished the Locus of Control Scale for Success-Failure, the Intellectual Achievement Responsibility Questionnaire, labeled Questionnaire 2, on the subject's copy, was administered to all subjects. This scale provided a more generalized measure of the subject's control orientation, i.e., that of the academic achievement situation. A copy of this scale as used in the present study appears in Appendix C.

Each subject was randomly assigned to one of nine treat-

ment groups, with six subjects in each group, prior to the second experimental session. Three of these groups received skill oriented (personal control) instructions, three of the groups received chance oriented (no personal control) instructions, and three groups received no specific instructions of this kind. The later three groups served as a control for the skill-chance instruction manipulation. These groups were further designated to receive a particular type of task feedback, such that one of the groups receiving each of the three modes of instruction received falsified success feedback, one of each of the instruction groups received falsified failure feedback, and one of each of the instruction groups received no feedback. The no feedback factor served as a control on the success-failure feedback manipulation. This yielded the following nine treatment combinations:

Skill (personal control) oriented instructions
- Success feedback
- Failure feedback
- No feedback

Chance (no personal control) oriented instructions
- Success feedback
- Failure feedback
- No feedback

No control oriented instructions
- Success feedback
- Failure feedback
- No feedback

Each subject was seen individually for the second phase of the experiment. This session took place at least two weeks after the first session. Upon arriving for this session each subject was asked to be seated at a large desk across from the experimenter.

Each subject was given a set of instructions and asked to read them silently while the experimenter read them aloud. Each subject received the same task instructions as were given for the sample task in the first experimental session. Additionally, each subject was instructed that they would receive three written descriptions of experiments and asked to hand each back when they were finished so that the experimenter could examine them.

The instructions from this point differed for the subjects depending on which treatment group they had been randomly assigned to. The additional instructions for the three "skill" oriented or personal control groups emphasized the logical connection between the described experiments and what was really discovered in them, and that the subject's knowledge of people would help them discover the "right" answers. These instructions were intended to give the subject the impression that personal skill or ability would be an important factor determining performance. Subjects in the three chance-oriented or no personal control groups received additional instructions which emphasized the lack of adequate information on which to base decisions and that the subject's performance would depend largely on guess-work. These instructions were intended to give the subject the impression that personal skill or ability was of little importance and that the subject would have little personal control over task performance. The subjects assigned to the remaining three groups received no additional instructions. At the bottom of each instruction sheet were three questions dealing with task motivation which were deemed necessary to determine the validity of the experimental procedures. Each

subject was asked to rate on a seven point scale how important the task was to him/her, how important it was to do well, and how well the subject thought he/she would do. A copy of each of the three different instruction sheets appears in Appendices I, J, and K, skill, chance, and no control orientation, respectively.

Upon completing the instruction sheet each subject was given the three task sheets one at a time. Each of the three task sheets contained a brief description of a fictitious experiment with ten possible results listed below. As with the sample task, the subject's task was to write TRUE in front of the results they believed were actually found in that experiment and FALSE in front of those they believed were not found in the experiment. Each subject received the three task sheets in the same order, each sheet representing one trial of the task. The experimenter examined each task sheet immediately after the subject was finished and handed it back to the subject. For those subjects in the three success condition groups the experimenter wrote 80% correct - very good, 90% correct - excellent, and 90% correct - excellent, at the bottom of the task sheet for the three respective trials of the task. For those subjects in the three failure condition groups the experimenter wrote 20% correct - poor, 10% correct - very poor, and 10% correct - very poor, at the bottom of the task sheet for the three respective trials of the task. For those subjects in the no-feedback condition groups the experimenter merely examined the answers and handed the task sheet back to the subject. A copy of each of the three

task trials appears in Appendix L.

Immediately after completion of the task each subject was again administered the Locus of Control Scale for Success-Failure and the Intellectual Achievement Responsibility Questionnaire, in that order. Each subject was instructed to answer the questions on both scales based on how they felt "right now". The instructions to the Locus of Control Scale for Success-Failure were slightly altered to be in line with the fact that the subject had completed the task situation. Thus the sentence, "As you read each reason think about how well or how poorly you would expect to do on this task", which appeared in the pre-test instructions, was changed to, "As you read each reason think about how well or how poorly you think you did on this task", on the post-test instructions. A copy of the Locus of Control Scale for Success-Failure with the altered instructions as used in the post-test appears in Appendix F.

Following all experimental procedures each subject was given a standard debriefing sheet which the experimenter read over with the subject. This sheet explained the deceptions in which the subject was involved and the true nature of the research. Each subject was given an opportunity to ask questions. All subjects were asked not to discuss the study with anyone else until completion of the data collection. All subjects were thanked for their participation in the research. A copy of the debriefing sheet appears in Appendix N.

C. RESULTS

Analysis of Locus of Control Scores

A three factor, mixed analysis of variance with repeated measures on one factor was used to test the effects of task instruction (skill vs. chance vs. no control bias) and task feedback (success vs. failure vs. no feedback) on trials of I-E score. Locus of control scores (I-E) were obtained both before and after the experimental task manipulations, and are represented by the repeated measures factor in the design. A pictorial representation of the design appears in Figure 1.

Separate analyses as depicted in Figure 1 were performed on the Locus of Control Scale for Success-Failure and the three scores yielded by the Intellectual Achievement Responsibility Questionnaire - I^+ subscale, I^- subscale, and total IAR score. Each of these four analyses will be reported separately. Cochran's test ($C= \frac{S^2 \text{ largest}}{\Sigma S^2}$) was used to test for homogeniety of variance.

1. Analysis of Locus of Control Scale for Success-Failure Scores

Means and standard deviations for scores on the Locus of Control Scale for Success-Failure are presented in Table 1, Appendix 0. The Cochran Test for homogeniety of variance revealed no significant differences in variance among the treatment groups ($C= .2007$; $C_{.95,\ 9,\ 11} = .2535$). Analysis of the data revealed a significant trials X feedback interaction ($F=6.275$; $F_{.95,\ 2,\ 45} = 2.59$; $p < .005$). A summary of this analysis appears in Table 2, Appendix 0. A graph of this interaction appears in Figure 2.

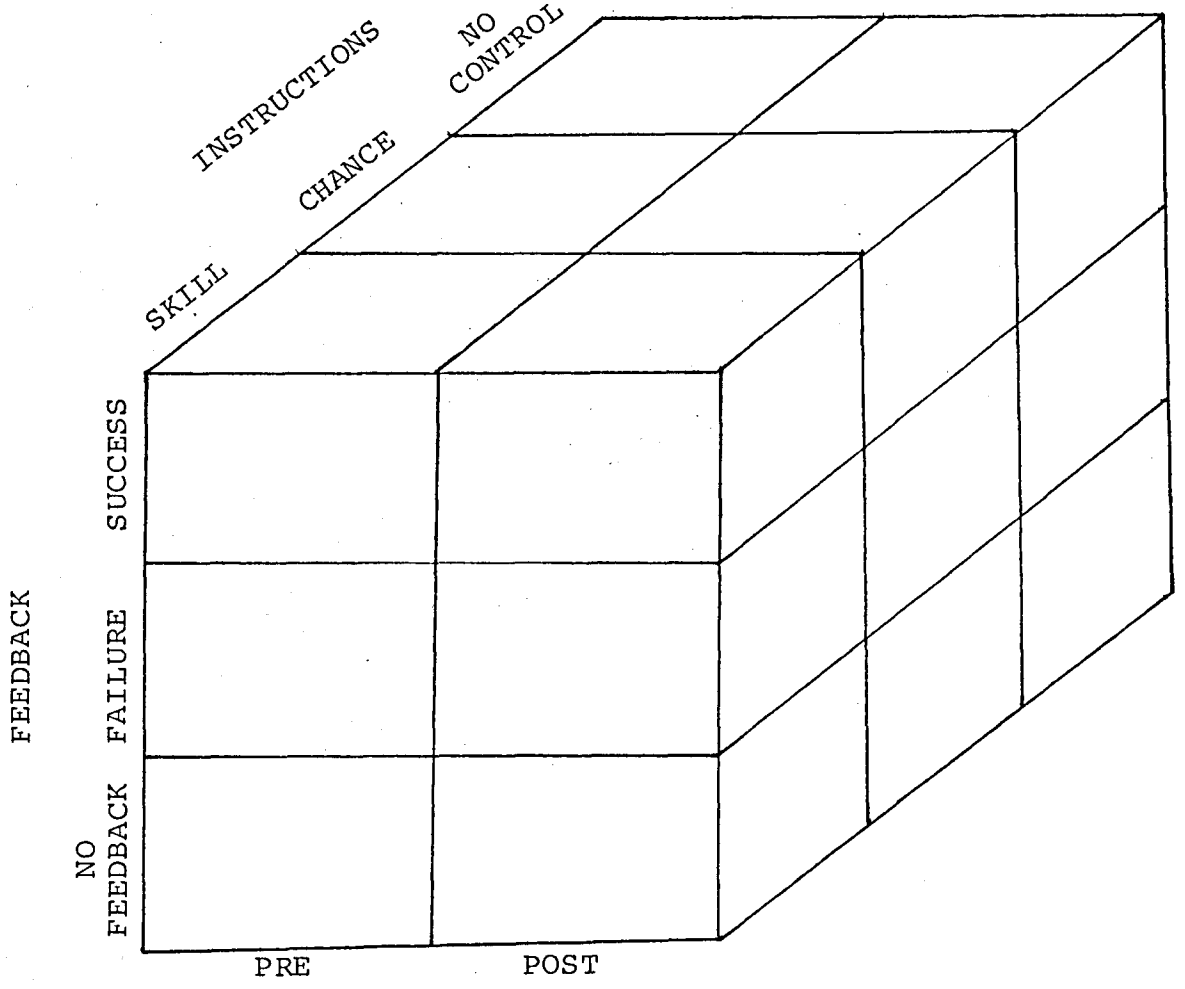

Figure 1. Design for Analysis of Locus of Control Scores.

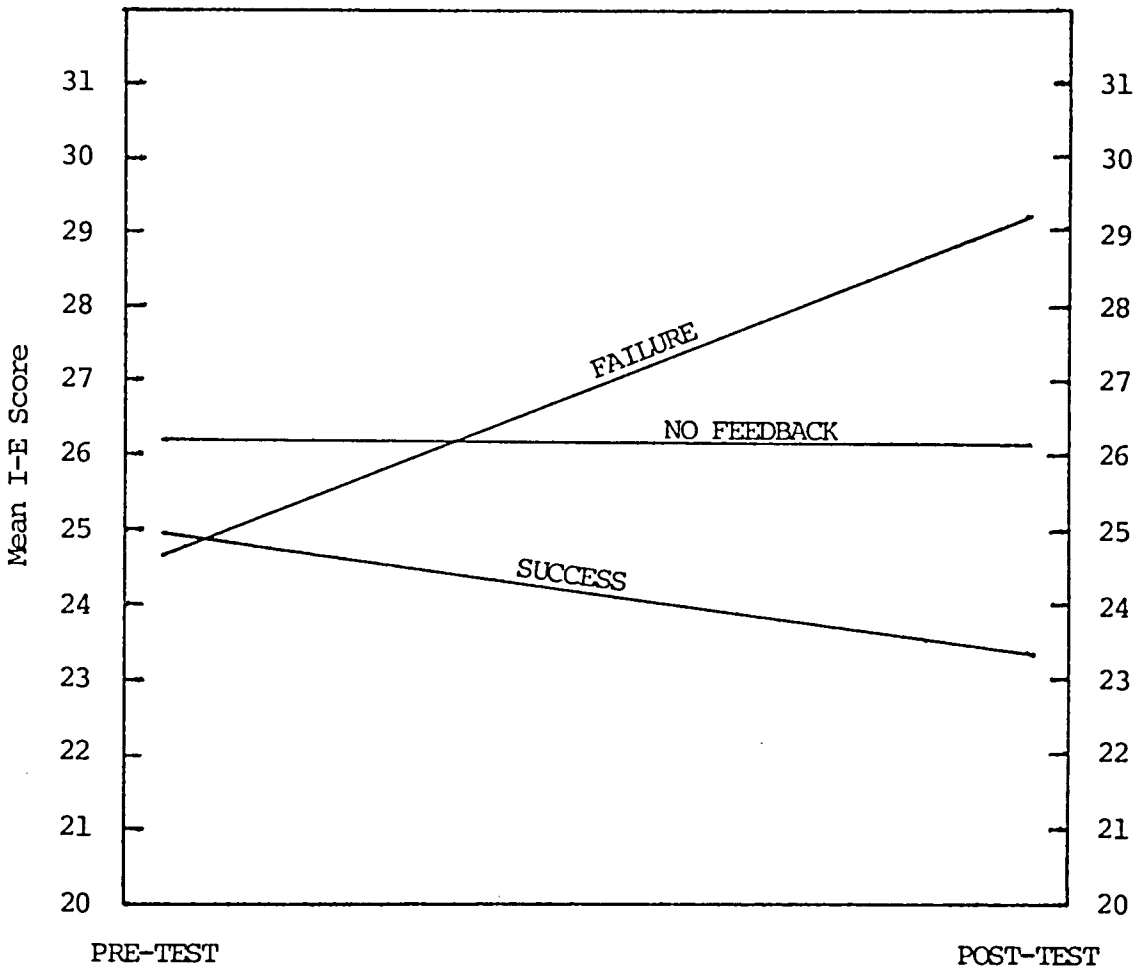

Figure 2. Trials X Feedback Interaction for Locus of Control Scale for Success-Failure Scores

F-Tests were used to examine the simple effects of the significant trials X feedback interaction, and it was explored in several ways. First, the rate of change from pre to post-testing of the three feedback groups compared two at a time was examined. These analyses yielded a significant trials by groups interaction for success versus failure feedback groups ($F = 11.59$; $F_{95, 1, 45} = 4.06$; $p < .005$) and for failure versus no feedback ($F = 6.516$; $F_{95, 1, 45} = 4.06$; $p < .025$). Summaries of these analyses

appear in Appendix O, Tables 3 and 5, respectively. The trials by groups interaction was not significant when the success and no feedback conditions were compared. A summary of this analysis appears in Table 4 of Appendix O. These analyses indicate that the failure condition resulted in differential rates of change in I-E score when compared to both the success and no feedback conditions, while the change in I-E scores under the success condition was essentially no different from that which occurred when subjects received no performance feedback.

The change in I-E score from pre to post-testing was also examined under each feedback condition separately. The failure condition resulted in a significant change ($F = 12.72$; $F_{.95, 1, 45} = 4.06$) in an external direction (+4.21) while no significant differences were found from pre to post-testing for the success (-1.62) and no feedback conditions (-.05). Summaries of these analyses for the success, failure, and no feedback conditions appear in Appendix O, Tables 6, 7, and 8, respectively.

The simple effects for the original trials by feedback interaction were lastly explored by examining the differences among feedback groups at both the pre and post-testing. There were no significant differences among the three feedback groups on the pretest. A summary of this analysis appears in Table 9, Appendix O. The analysis of the post-test I-E scores for the three feedback groups demonstrated that there were significant differences among the groups. ($F = 4.85$; $F_{95, 2, 51} = 3.186$). A summary of this analysis appears in

Table 10, Appendix O. A Neuman-Keuls' Multiple Range Test was used to test the differences among means for the three feedback groups. This analysis demonstrated that the failure group ($\bar{X}$ = 29.28) was significantly more external than the success group ($\bar{X}$ = 23.33) on the post-test. Neither the success group nor the failure group were significantly different from the no feedback group ($\bar{X}$ = 26.167). A summary of this analysis appears in Table 11, Appendix O.

2. Analysis of the IAR Scores.

a. Total I Score

Means and standard diviations for treatment groups on the total I score are presented in Table 1, Appendix P. The Cochran Test for homogeniety of variance was not significant ($C = .1728$; $C_{.95, 9, 11} = .2535$), thus homogeniety of variance may be assumed. The analysis of the total I score revealed a significant trials effect ($F = 5.04$; $F_{.95, 1, 45} = 4.06$) indicating an overall change across treatment groups toward a more internal orientation from the pre-test ($\bar{X}$ = 25.704) to the post-test ($\bar{X}$ = 26.759). A summary of this analysis is presented in Table 2, Appendix P.

b. I^+ Subscale

Means and standard deviations for treatment groups on the I^+ subscale are presented in Table 1, Appendix Q. The Cochran Test for homogeniety of variance was not significant ($C = .2177$; $C_{.95, 9, 11} = .2535$), thus homogeniety of variance can be assumed. The analysis

of the IAR I^+ subscale data revealed no significant effects. A summary of this analysis appears in Table 2, Appendix Q.

c. I^- Subscale

Means and standard deviations for treatment groups on the I^- subscale are presented in Table 1, Appendix R. The Cochran test for homogeniety of variance was not significant ($C = .1746$; $C_{.95, 9, 11} = .2535$), thus homogeniety of variance can be assumed. The analysis of the I^- subscale score data revealed a significant trials effect ($F = 7.819$; $F_{.95, 1, 45} = 4.06$), indicating a significant shift toward a more internal orientation from pre-test ($\bar{X} = 12.352$) to post-test ($\bar{X} = 13.185$) across all groups. A summary of this analysis is presented in Table 2, Appendix R.

Analysis of Task Motivation Questions

The subjects provided ratings on three task motivation questions immediately after receiving the task instruction questions and prior to taking part in the experimental task situation and receiving performance feedback. These questions were asked only once. A two factor analysis of variance (factorial design) was used to analyse the effects of task instruction (skill, chance, and no control orientation) and performance feedback (success, failure, and no feedback) on subjects ratings for each of the three task motivation questions. A pictorial representation of the design appears in Figure 3.

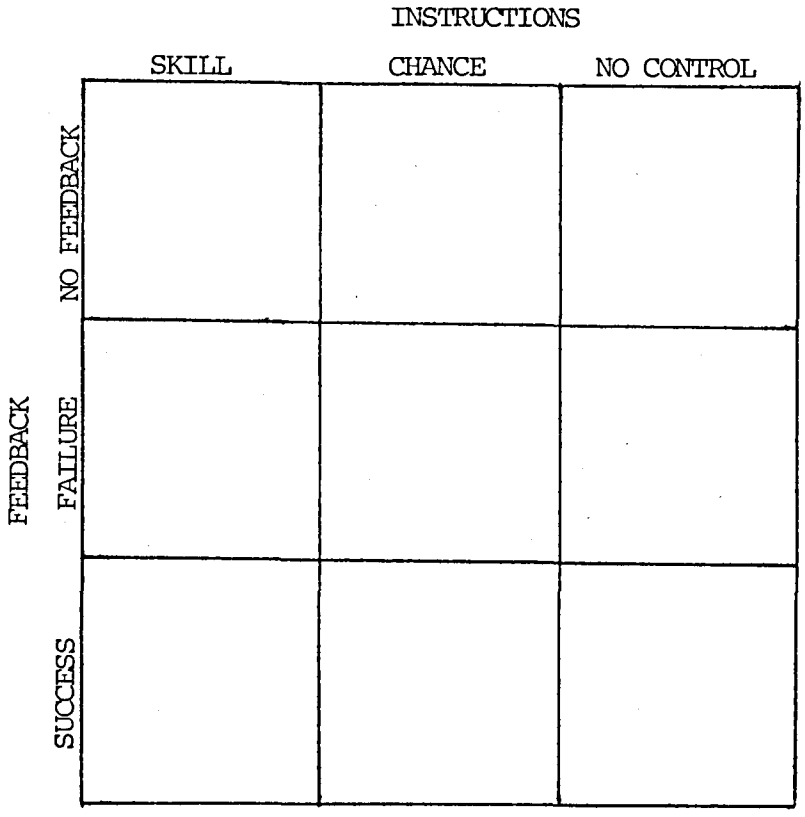

Figure 3. Design for Analysis of Task Motivation Questions.

1. Task Motivation Question 1: "How important is this task to you?

Means and standard deviations for treatment groups on subjects ratings of how important the task was to them appear in Table 1, Appendix S. A nonsignificant Cochran Test (C = .2042; $C_{95, 9, 5}$ = .3286) permitted the assumption of homogeniety of variance. Analysis of the data revealed no significant results. A summary of this analysis is presented in Table 2, Appendix S.

2. Task Motivation Question 2: How important is it that you do well on this task?

Means and standard deviations for treatment groups on subjects ratings of how important it was that they do well on the task appear in Table I, Appendix T. The Cochran Test was not significant (C - .1629; $C_{.95, 9, 5} = .3286$), thus homogeniety of variance may be assumed. The analysis revealed no significant results. Table 2, Appendix T summarizes this analysis.

3. Task Motivation Question 3: How well do you think you will do on this task?

Means and standard deviations for treatment groups on subjects ratings of how well they expected to do on the task are presented in Table 1, Appendix U. A nonsignificant Cochran Test (C = .1730; $C_{.95, 9, 5} = .3286$) indicated that homogeniety of variance could be assumed. The results of the analysis revealed no significant results. A summary of the analysis is presented in Table 2, Appendix U.

D. DISCUSSION

The present investigation attempted to further explore the effects of two variables which Allin (1978) hypothesized as being important in influencing the modification of locus of control. These variables have been suggested in the literature, but there has been a definite paucity of well controlled studies designed to test their effects. Based primarily on the work of Eisenman (1972) Allin predicted that the experience of personal control (skill instructions) in a task situation would lead to an increase in internal control, while the experience of no personal control (chance instructions) would lead to an increase in external control. Allin further predicted that, based on studies by Sobel (1974) and Andrisani and Nestel (1976), the experience of success would lead to greater internal control while the experience of failure would lead to greater external control. The work of Epstein and Komorita (1971) and Brecher and Denmark (1972), not reviewed by Allin, also clearly support his hypotheses.

Since Allin's results demonstrated significant interaction effects but failed to reveal any significant main effects by the independent variables, further research was deemed necessary to better understand the relationships among these variables. The Rotter I-E scale, used in the Allin study, was intended to be a broad gauge instrument and not designed to allow for high prediction in specific situations (Rotter, 1975). Soloman and Oberlander (1974) state that "since a control orientation presumably develops out of a person's experiences in a variety of

particular situations, and it is likely that for many individuals these experiences have been very different in different kinds of situations, it is logical to expect that an individuals' control orientation in one class of situations may be very different from what it is in another class of situations (p. 133)." The Rotter I-E scale has been widely criticised because of its generality and multidimensionality concerning three important parameters of control orientation:

1. Generalization across persons (Gurin, et. al., 1969) and across reinforcement areas (Mirels, 1970)
2. Agents of external control (Hersch and Scheibe, 1967; Levenson, 1973 a, 1974).
3. Types of reinforcement: positive versus negative (Crandall, et. al., 1965; Mischel, et. al., 1974).

It was the contention of the present study that differential variance on any of these parameters could have obscured Allin's results. The present study employed the Intellectual Achievement Responsibility Questionnaire (Crandall, et. al., 1965) to measure locus of control orientation. The IAR was designed to be specific to the academic achievement situation, limit agents of external control to significant others in the child's life, and assess control orientation for positive and negative events separately. In addition, following the reasoning of Soloman and Oberlander, a task specific measure of locus of control, developed by Epstein and Komorita (1971) was used in the present study to assess changes in control orientation specific to the task situation. The present study also considered the possibility that control orientation may undergo

differential modification with respect to the two sexes.

Thus, in essence the present study was a replication of Allin's study using two scales more specific in nature than the Rotter I-E scale and a more stringent design. The hypotheses were identical to those in the Allin study. Personal control (skill instructions) in a task situation was expected to lead to greater internal control and no personal control (chance instructions) to greater external control. In addition, it was predicted that success on the task would result in greater internal control and failure in greater external control. No interaction effects were hypothesized as there was little evidence upon which to base such predictions.

The hypothesis relating to situational control(skill versus chance versus no control biasing instructions) received no support in the present study. Allin's (1978) results indicating that instructional control biasing interacted with type of feedback was not substantiated. No significant effects for type of instruction were found on either of the two locus of control measures used in the present study.

It is possible that the skill-chance instructions were not effective in producing a skill-chance biasing of subjects. Based on the results of a skill-chance rating scale which subjects answered just after receiving instructions, Allin concluded that his skill-chance instructions were effective in producing differential biasing of subjects. It is difficult to assess from the present data whether or not the skill versus chance instructions were effective. It was originally

proposed to use a skill-chance rating scale as Allin did. This was deleted from the present study however, because of its similarity to several items on the Locus of Control Scale for Success-Failure, most noteably numbers six and nine (see Appendix D). It was assumed that the task specific Locus of Control Scale for Success-Failure would replace the skill-chance rating scale. The analysis of this scale revealed no significant effects for type of instruction, however. The only evidence to indicate that the skill chance biasing did have some effect appeared in the analysis of the rating for the task motivation question, "How well do you think you will do on this task?" This question was asked immediately after the control biasing instructions were given. The main effect for instructions approached significance ($p < .1$). The subjects given skill instructions tended to have a higher expectancy for success ($\bar{X} = 4.8$), than those given chance instructions ($\bar{X} = 4.2$), while those subjects given neither skill nor chance instructions tended to rate the question similar to the skill instructed group. These results must be interpreted with extreme caution since the instructions X feedback interaction also approached significance ($p < .1$), even though the question had been asked prior to the time the subjects had actually received differential performance feedback.

Eisenman (1972) using the Rotter I-E scale, found a significant shift toward an external direction for subjects given chance instructions, a significant shift toward a more internal orientation for skill instructed subjects, and no

significant change for the control group. Eisenman's subjects, however, were exposed to three different situations in which they experienced the skill or chance situation (3 verbal conditioning experiments). The subjects in the present study received the instructions only once and took part in only one task situation. This suggests that it may take more than one exposure to skill versus chance situations to significantly effect control orientation. Also, the subjects in both the Allin and Eisenman studies were college students while the subjects in the present study were middle school age children. It is possible that these children were not able to understand the implications of the skill-chance biasing in terms of how much personal control they experienced in the situation.

The failure of the skill-chance instructions to result in changes in subjects scores on the IAR may have been due to the fact that the IAR limits agents of external control to significant others in the child's life. Thus, it is possible that had a personal control - no personal control biasing of subjects been effected by the skill-chance instructions, the IAR would not have been sensitive to this dimension of control orientation.

The results did provide some support for the hypothesis concerning success versus failure performance feedback. The results of the analysis of the Locus of Control Scale for Success-Failure were fairly clear. Subjects experiencing failure changed significantly toward a more external orientation and subjects experiencing success tended to become more internal,

although this was not significant. The rate of change of the failure group was also significantly different from the no feedback group, while the success group was not. This indicates the possibility that failure may be a more powerful force in the child's life. On the pre-test there were no differences among the three feedback groups while on the post-test the failure group was significantly more external than the success group, while neither success nor failure were significantly different from the no feedback group. The rate of change of the success and failure groups was also significantly different. These results indicate that performance feedback had important effects on the subjects control orientation for the experimental task and in the directions predicted. This occurred despite some weaknesses noted in the Locus of Control Scale for Success-Failure. The first nine items are worded in the positive direction and the last five items are worded in the negative direction. A few of the subjects seemed to have difficulty adjusting to this switch as there seemed to be a change in responding in terms of control orientation that occurred at this point which is difficult to explain otherwise. It should be emphasized that this is only conjecture on the part of the experimenter, and at most occurred in only a very small minority of the subjects.

The results from the analysis of the IAR indicated no significant effects in regard to type of performance feedback experienced. This leaves unanswered the question as to how changes in situational control, as are apparent from the

analysis of the Locus of Control Scale for Success-Failure, generalize to the larger spheres of control orientation. The IAR, which Crandall developed as a more specific measure than the Rotter I-E Scale, may itself be multidimensional.

In a recent study, Andrews and Debus (1978) found that with the use of a task specific measure of causality attribution, clear results were indicated that temporal persistence and resistance to extinction were found to be positively related to attribution of failure to insufficient effort and negatively related to attribution of failure to ability and task difficulty, in line with their hypotheses. The IAR, however, showed only relatively "limited and weak relations with persistence and with the attributional responses made for success and failure experiences (p. 158)". These authors conclude that "the IAR may not be as suitable a measure of attributional predispositions as has been apparently assumed in many previous studies. As a measure designed to apply to achievement situations generally, the IAR may have limited application in predicting attributional predisposition in a specific task or situation. Investigations that base their findings solely on attributional responses measured by means of the IAR perhaps should therefore be interpreted with caution, and use of behavioral measures should be preferred in future attribution studies (pp. 163-164)".

The only significant finding in the present study with regard to the IAR was a significant shift towards greater internal control across all treatment groups on the I^- subscale and the total I score. This finding may have been unique to

the population studied. The students at the two schools from which subjects in the present study were drawn are almost exclusively White and from upper middle class or above families. Several of the subjects in the failure condition continued to think they had done poorly even after they were debriefed and assured they hadn't really failed. After being thanked by the experimenter, two of the subjects apologized for having done so poorly as they were leaving the room. The experimenter assured these two that they really hadn't done poorly. Several of the teachers reported that students had returned to class talking about how poorly they had done. The results from the analysis of the task specific Locus of Control Scale for Success-Failure indicated that failure may be a very potent force for these children; and the experience of failure or the fear of it may have been dealt with by internalizing their failure experiences. These results also suggest the possibility that the I^- subscale may be less stable than the I^+, contradictory to Crandall et. al.'s (1965) data.

The evidence from the present study highlights the need for a better understanding of just what the concept of locus of control is and seriously questions the viability of a generalized locus of control measure, even for a fairly specific domain such as the academic achievement situation, which the IAR purportedly measures. At this point, much further research is necessary before we can determine what dimensions of control orientation can be grouped together in a single scale.

The present study also considered the possibility of differential responding on the locus of control measures by males and females. A thorough examination of the data revealed little difference among males and females in terms of their rates of change from pre to post-testing, thus no post hoc statistical tests were applied.

The importance of gaining a better understanding of factors involved in the modification of locus of control is most evident in the areas of psychotherapy and education. Gaining a more internal control orientation is generally considered to be of primary importance to the therapeutic process (Lefcourt, 1972). Externality has generally been associated with poorer adjustment, higher anxiety, and less positive affect states (Platt and Eisenman, 1968; Ray and Katahn, 1968; Wareheim and Woodson, 1971; Watson, 1967). The locus of control literature has also demonstrated that the development of internal control leads to increases in information seeking, and information utilization (Crandall, 1970; Davis and Phares, 1967; Phares, 1969; Lefcourt, 1967). In light of these studies, a knowledge of what factors bring about an increase in internal control may be crucial to education. Stevens (1972) believes that there may be a reciprocal relationship between intelligence and locus of control, that is, not only does intelligence mediate internal-external control orientation, but also internal-external control orientation effects the development of intelligence.

The value of an internal control orientation has been espoused throughout the locus of control literature. The

present study, however, also explored the factors which may be involved in bringing about greater external control. The importance of a better understanding of these factors is less obvious. The finding by DuCuette, et. al. (1972) that maladjustment in their sample was due to a lack of homogeniety between control orientations for positive and negative events points in this direction. Therapeutic intervention could thus involve increasing either internal or external control depending on the nature of the relationship between control expectancies for positive and negative events within the individual. Rotter (1966) suggested that the relationship between I-E scores and maladjustment is likely not a linear one but that extremes in either direction would theoretically lead to difficulties. Gurin and Gurin (1970), from their studies with disadvantaged persons, conclude that, "Clearly, the problem of learning new expectancies is no longer one of changing from an external to an internal orientation. Rather, poor people are presented with the much more difficult problem of learning to make very complex judgements as to when an internal orientation reflects intrapunitiveness rather than a sense of efficacy, when an external orientation becomes defensive rather than a realistic blaming of the social system. Moreover, these judgements must be made at a time when objective opportunities are in flux, making an accurate picture of reality all the more difficult (p. 104)".

It is pertinent at this point to mention Lefcourt's (1976) caution against viewing locus of control as a personality trait, as if it were a possession of the individual. Lefcourt

argues that the stability and change which are evidenced in the locus of control literature only make sense if individuals are said to construct events, some of which pertain to causality, rather than that they have a locus of control trait or are internals or externals. The evidence which has been presented which questions the viability of locus of control as unidimensional also supports this contention. In light of this data, we would have to speak of locus of control traits for each factor or dimension such as academic achievement, interpersonal relations, physical areas, etc. At present our lack of knowledge about how locus of control generalizes from situation to situation makes it absurd to conceptualize a locus of control trait. The present study, then was not an attempt to modify a personality characteristic or trait, but rather an investigation designed to examine how specific control expectancies might change within a specific situation, the task itself and the academic achievement situation. The present study provides evidence that performance feedback is an important factor in modifying control orientation for a very specific situation, but how this generalizes to larger domains, such as academic achievement is left unanswered.

The present study also examined motivational variables that the literature indicated might effect the modification of locus of control.

The value of the task for an individual subject and their motivation to do well might effect the results. Naditch (1973) found that there was a significant correlation between

internal-external control orientation and three areas of competance (school achievement, sports achievement, and social popularity) with male subjects, only for those subjects who indicated that these areas were important to them. The subjects were asked to answer two questions pertaining to the value they placed on the task: "How important is this task to you?" and "How important is it that you do well on this task?" Subjects were also asked to indicate how well they expected to do on the task, since this factor may have important effects on control orientation (Gurin and Gurin, 1970). For instance, a person expecting to do well might react differently to success than a person expecting to do poorly. Allin (1978) asked his subjects to provide ratings on these three questions immediately after they received the task instructions. Allin analysed these results in a two factor design, task instructions (skill versus chance) and performance feedback (success versus failure versus no feedback). His results indicated that: (a) the subjects did not differ in terms of the importance they placed on the task, (b) skill instructed subjects indicated that it was more important that they do well than chance instructed subjects, (c) the success feedback group had a higher expectation for doing well than the no feedback group. The results of the analysis of the three task motivation questions in the present study revealed no significant results, except for the trends already discussed for the question pertaining to the subjects' expectancy for doing well. The most viable explanation for the lack of significance with

regard to the task motivation questions is that the skill-chance instructions were not effective with the children used as subjects in the present study as was discussed with regard to their responses to the locus of control measures.

Several other subject variables not specifically addressed in the present study which the literature indicates might have effects on the modification of locus of control provide interesting possibilities for future research.

Class, race, and cultural differences in locus of control orientation have been well documented in the literature. Gurin, et. al.'s (1969) finding that it is externality in Blacks that was related to more socially active coping measures is particularly relevant to the present study. It may be that various social and ethnic group members in the sample would react differently to the independent variables in terms of shifts in control orientation. Although this factor was not specifically controlled for in the present study, it has been shown that the IAR is relatively insensitive to differences in social class and ethnic group (Solomon, Houlihan, and Parelius, 1969). Crandall, et. al. (1965) suggested that the more general scales such as the Rotter I-E may show race and class differences while the IAR does not because the former "refer to broad and nonspecific situations in the general environment where there are real differences in the power of members of different social strata to exert effective influence, while the IAR refers to school situations where teachers exhortations about responsibility and reinforcement contingencies for achievement efforts are the same for children from different social strata (p. 104)."

Random sampling was relied upon to control for several other factors which previous research has demonstrated to be important to locus of control orientation as it was explored in the present study. The most widely investigated of these factors has been the differential responding of individuals classified as internals and externals. The research has indicated that there are differences in subjects grouped as internals versus externals with respect to attribution of responsibility for success and failure (Davis and Davis, 1972; Lefcourt, Hogg, Struthers, and Holmes, 1975; Gilmore and Minton, 1974; Kaiser, 1975; Kroventz, 1974), changes in confidence levels after experiences of success or failure (Feather, 1968; Ryckman, Gold, and Rhodda, 1971; Ryckman and Rhodda, 1971), reactions to threat or defensiveness (Phares and Lamiell, 1974; Phares,Ritchie, and Davis, 1968; Phares, 1971), sensitivity to environmental stimuli (DuCette and Wolk, 1973), response to intrinsic versus extrinsic feedback (Baron, et. al., 1974), and performance under skill and chance conditions (Watson and Baumal, 1967). The present study made no attempt to differentiate between internals and externals. There is little consensus in these studies as to how to differentiate between internals and externals.

Random sampling was also relied on to control for subject differences in need achievement and self esteem. Weiner and Kuckla (1970) found that individuals high in need achievement tend to accept responsibility for their success but not their failures, while no such relationship was evident for persons

low in need achievement. Epstein and Komorita (1971) found that it was the individuals who were in the mid range on a self esteem measure who differed most on the locus of control scale with respect to success-failure experiences. Task difficulty (Weiner and Kuckla, 1970),degree of success or failure (Kroventz, 1974), and degree of past successful experience (Lefcourt and Ladwig, 1965 b) have also been suggested as important factors in control orientation.

The present research has indicated that subjects may change their control orientation in a specific situation without effecting their control orientation for a more generalized domain. Future research would do well to concentrate on more clearly defining the parameters of locus of control modification in specific situations and examining more closely how changes in control orientation in one dimension effect control orientation in another. Rubner (1975) developed the Situational Locus of Responsibility (SLR) Inventory which he believes "will permit examining of the situational multidimensionality of the I-E construct (p. 4259)". The SLR was constructed for use with seventh to twelfth grade pupils. It consists of three, twenty-four item scales, each offering common experiences involving friends, school and family respectively. Each of the three subscales contains positive and negative experiences. "The subject is asked <u>first</u> to decide whether the experience is 'within' or 'beyond' his or her control and then <u>how much</u> within or beyond his control it is by distributing five points as either 5 - 0 (completely within), 4 - 1 (mostly within),

3 - 2 (slightly within), 2 - 3 (slightly beyond), 1 - 4 (mostly beyond), or 0 - 5 (completely beyond) (p. 4260)". This scale has received little attention but its format offers interesting possibilities for the examination of situational control orientation in a wide variety of areas.

APPENDIX A

The Rotter Internal-External Locus of Control Scale

and Scoring Instructions

The Rotter Internal-External Locus of Control Scale is a 23-item forced choice questionnaire with six filler items. It is scored in the external direction.

I more strongly believe that:

1. ___a. Children get into trouble because their parents punish them too much.
   ___b. The trouble with most children nowadays is that their parents are too easy with them.

E 2. ___a. Many of the unhappy things in people's lives are partly due to bad luck.
   ___b. People's misfortunes result from the mistakes they make.

3. ___a. One of the major reasons why we have wars is because people don't take enough interest in politics.
E ___b. There will always be wars, no matter how hard people try to prevent them.

4. ___a. In the long run people get the respect they deserve in this world.
E ___b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. ___a. The idea that teachers are unfair to students is nonsense.
E ___b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

E 6. ___a. Without the right breaks one cannot be an effective leader.
   ___b. Capable people who fail to become leaders have not taken advantage of their opportunities.

E 7. ___a. No matter how hard you try some people just don't like you.
   ___b. People who can't get others to like them don't understand how to get along with others.

8. ___a. Heredity plays the major role in determining one's personality.
   ___b. It is one's experiences in life which determine what they're like.

E 9. ___a. I have often found that what is going to happen will happen.
___b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. ___a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
E ___b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. ___a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
E ___b. Getting a good job depends mainly on being in the right place at the right time.

12. ___a. The average citizen can have an influence in government decisions.
E ___b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. ___a. When I make plans, I am almost certain that I can make them work.
E ___b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. ___a. There are certain people who are just no good.
___b. There is some good in everybody.

15. ___a. In my case getting what I want has little or nothing to do with luck.
E ___b. Many times we might just as well decide what to do by flipping a coin.

E 16. ___a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
___b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

E 17. ___a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
___b. By taking an active part in political and social affairs the people can control world events.

E 18. ___a. Most people can't realize the extent to which their lives are controlled by accidental happenings.
___b. There really is no such thing as "luck".

19. ___a. One should always be willing to admit his mistakes.
___b. It is usually best to cover up one's mistakes.

E 20. ___a. It is hard to know whether or not a person really likes you.
___b. How many friends you have depends upon how nice a person you are.

E 21. ___a. In the long run the bad things that happen to us are balanced by the good ones.
___b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. ___a. With enough effort we can wipe out political corruption.
E ___b. It is difficult for people to have much control over the things politicians do in office.

E 23. ___a. Sometimes I can't understand how teachers arrive at the grades they give.
___b. There is a direct connection between how hard I study and the grades I get.

24. ___a. A good leader expects people to decide for themselves what they should do.
___b. A good leader makes it clear to everybody what their jobs are.

E 25. ___a. Many times I feel that I have little influence over the things that happen to me.
___b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. ___a. People are lonely because they don't try to be friendly.
E ___b. There's not much use in trying too hard to please people, if they like you, they like you.

27. ___a. There is too much emphasis on athletics in high school.
___b. Team sports are an excellent way to build character.

28. ___a. What happens to me is my own doing.
E ___b. Sometimes I feel that I don't have enough control over the direction my life is taking.

E 29. ___a. Most of the time I can't understand why politicians behave the way they do.
___b. In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX B

The Crandall Intellectual Achievement Responsibility Questionnaire and Scoring Instructions

Internal alternatives are denoted by an I and the test is scored in an internal direction. Positive-events items are indicated by a plus sign, and negative events by a minus sign following the I. A child's I^+ score is the sum of all positive events for which he assumes credit, and his I^- score is the sum of all negative events for which he assumes blame. The total I score is the sum of the I^+ and I^- subscales.

The IAR Scale

1. If a teacher passes you to the next grade, would it probably be
   (a) because she liked you, or
I^+ (b) because of the work you did?

2. When you do well in a test at school, is it more likely to be
I^+ (a) because you studied for it, or
   (b) because the test was especially easy?

3. When you have trouble understanding something in school, is it usually
   (a) because the teacher didn't explain it clearly, or
I^- (b) because you didn't listen carefully?

4. When you read a story and can't remember much of it, is it usually
   (a) because the story wasn't well written, or
I^- (b) because you weren't interested in the story?

5. Suppose your parents say you are doing well in school. Is it likely to happen
I^+ (a) because your school work is good, or
   (b) because they are in a good mood?

6. Suppose you did better than usual in a subject at school. Would it probably happen
I^+ (a) because you tried harder, or
   (b) because someone helped you?

7. When you lose at a game of cards or checkers, does it usually happen
   (a) because the other player is good at the game, or
I^- (b) because you don't play well?

8. Suppose a person doesn't think you are very bright or clever.
I^- (a) Can you make him change his mind if you try to, or
   (b) are there some people who will think you're not very bright no matter what you do?

9. If you solve a puzzle quickly, is it
   (a) because it wasn't a very hard puzzle, or
I^+ (b) because you worked on it carefully?

10. If a boy or girl tells you that you are dumb, is it more likely that they say that
   (a) because they are mad at you, or
I^- (b) because what you did really wasn't very bright?

11. Suppose you study to become a teacher, scientist, or doctor and you fail. Do you think this would happen
I^- (a) because you didn't work hard enough, or
   (b) because you needed some help and other people didn't give it to you?

12. When you learn something quickly in school, is it usually
I^+ (a) because you paid close attention, or
   (b) because the teacher explained it clearly?

13. If a teacher says to you, "Your work is fine," is it
   (a) something teachers usually say to encourage pupils, or
I^+ (b) because you did a good job?

14. When you find it hard to work arithmetic or math problems at school, is it
I^- (a) because you didn't study well enough before you tried them, or
   (b) because the teacher gave problems that were too hard?

15. When you forget something you heard in class, is it
   (a) because the teacher didn't explain it very well, or
I^- (b) because you didn't try very hard to remember?

16. Suppose you weren't sure about the answer to a question your teacher asked you, but your answer turned out to be right. Is it likely to happen
   (a) because she wasn't as particular as usual, or
I^+ (b) because you gave the best answer you could think of?

17. When you read a story and remember most of it, is it usually
I^+ (a) because you were interested in the story, or
   (b) because the story was well written?

18. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be
I^- (a) because of something you did, or
   (b) because they happen to be feeling cranky?

19. When you don't do well on a test at school, is it
(a) because the test was especially hard, or
I^- (b) because you didn't study for it?

20. When you win at a game of cards or checkers, does it happen
I^+ (a) because you play real well, or
(b) because the other person doesn't play well?

21. If people think you're bright or clever, is it
(a) because they happen to like you, or
I^- (b) because you usually act that way?

22. If a teacher didn't pass you to the next grade, would it probably be
(a) because she "had it in for you," or
I^- (b) because your school work wasn't good enough?

23. Suppose you don't do as well as usual in a subject at school. Would this probably happen
I^- (a) because you weren't as careful as usual, or
(b) because somebody bothered you and kept you from working?

24. If a boy or girl tells you that you are bright, is it usually
I^+ (a) because you thought up a good idea, or
(b) because they like you?

25. Suppose you become a famous teacher, scientist, or doctor. Do you think this would happen
(a) because other people helped you when you needed it, or
I^+ (b) because you worked hard?

26. Suppose your parents say you aren't doing well in your school work. Is this likely to happen more
I^- (a) because your work isn't very good, or
(b) because they are feeling cranky?

27. Suppose you are showing a friend how to play a game and he has trouble with it. Would that happen
(a) because he wasn't able to understand how to play, or
I^- (b) because you couldn't explain it well?

28. When you find it easy to work arithmetic or math problems at school, it is usually
(a) because the teacher gave you especially easy problems, or
I^+ (b) because you studied your book well before you tried them?

29. When you remember something you heard in class, is it usually

I^+ (a) because you tried hard to remember, or
(b) because the teacher explained it well?

30. If you can't work a puzzle, is it more likely to happen

I^- (a) because you are not especially good at working puzzles, or
(b) because the instructions weren't written clearly enough?

31. If your parents tell you that you are bright or cleaver, is it more likely

(a) because they are feeling good, or

I^+ (b) because of something you did?

32. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often

I^+ (a) because you explained it well, or
(b) because he was able to understand it?

33. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is it likely to happen

(a) because she was more particular than usual, or

I^- (b) because you answered too quickly?

34. If a teacher says to you, "Try to do better," would it be

(a) because this is something she might say to get pupils to try harder, or

I^- (b) because your work wasn't as good as usual?

APPENDIX C

The IAR and Instructions as Used in the Present Study

QUESTIONNAIRE 2

This questionnaire describes a number of common experiences most of you have in your daily lives. These statements are presented one at a time, and following each are two possible answers. Read the description of the experience carefully, and then look at the two answers. Choose the one that most often describes what happens to you. Put a circle around the "A" or "B" in front of that answer. Be sure to answer each question according to how you really feel.

If, at any time you are uncertain about the meaning of a question, raise your hand and the person who passed out the questionnaires will come and explain it to you.

1. 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?

2. When you do well on a test at school, is it more likely to be
   (a) because you studied for it, or
   (b) because the test was especially easy?

3. When you have trouble understanding something in school, is it usually
   (a) because the teacher didn't explain it clearly, or
   (b) because you didn't listen carefully?

4. When you read a story and can't remember much of it, is it usually
   (a) because the story wasn't well written, or
   (b) because you weren't interested in the story?

5. Suppose your parents say you are doing well in school. Is it likely to happen
   (a) because your school work is good, or
   (b) because they are in a good mood?

6. Suppose you did better than usual in a subject at school. Would it probably happen
   (a) because you tried harder, or
   (b) because someone helped you?

7. When you lose at a game of cards or checkers, does it usually happen
   (a) because the other player is good at the game, or
   (b) because you don't play well?

8. Suppose a person doesn't think you are very bright or clever.
   (a) can you make him change his mind if you try to, or
   (b) are there some people who will think you're not very bright no matter what you do?

9. If you solve a puzzle quickly, is it
   (a) because it wasn't a very hard puzzle, or
   (b) because you worked on it carefully?

10. If a boy or girl tells you that you are dumb, is it more likely that they say that
   (a) because they are mad at you, or
   (b) because what you did really wasn't very bright?

11. Suppose you study to become a teacher, scientist, or doctor and you fail. Do you think this would happen
   (a) because you didn't work hard enough, or
   (b) because you needed some help and other people didn't give it to you?

12. When you learn something quickly in school, is it usually
   (a) because you paid close attention, or
   (b) because the teacher explained it clearly?

13. If a teacher says to you, "Your work is fine," is it
   (a) something teachers usually say to encourage pupils, or
   (b) because you did a good job?

14. When you find it hard to work arithmetic or math problems at school, is it
   (a) because you didn't study well enough before you tried them, or
   (b) because the teacher gave problems that were too hard?

15. When you forget something you heard in class, is it
   (a) because the teacher didn't explain it very well, or
   (b) because you didn't try very hard to remember?

16. Suppose you weren't sure about the answer to a question your teacher asked you, but your answer turned out to be right. Is it likely to happen
   (a) because she wasn't as particular as usual, or
   (b) because you gave the best answer you could think of?

17. When you read a story and remember most of it, is it usually
   (a) because you were interested in the story, or
   (b) because the story was well written?

18. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be
    (a) because of something you did, or
    (b) because they happen to be feeling cranky?

19. When you don't do well on a test at school, is it
    (a) because the test was especially hard, or
    (b) because you didn't study for it?

20. When you win at a game of cards or checkers, does it happen
    (a) because you play real well, or
    (b) because the other person doesn't play well?

21. If people think you're bright or clever, is it
    (a) because they happen to like you, or
    (b) because you usually act that way?

22. If a teacher didn't pass you to the next grade, would it probably be
    (a) because she "had it in for you," or
    (b) because your school work wasn't good enough?

23. Suppose you don't do as well as usual in a subject at school. Would this probably happen
    (a) because you weren't as careful as usual, or
    (b) because somebody bothered you and kept you from working?

24. If a boy or girl tells you that you are bright, is it usually
    (a) because you thought up a good idea, or
    (b) because they like you?

25. Suppose you became a famous teacher, scientist, or doctor. Do you think this would happen
    (a) because other people helped you when you needed it,or
    (b) because you worked hard?

26. Suppose your parents say you aren't doing well in your school work. Is this likely to happen more
    (a) because your work isn't very good, or
    (b) because they are feeling cranky?

27. Suppose you are showing a friend how to play a game and he has trouble with it. Would that happen
    (a) because he wasn't able to understand how to play, or
    (b) because you couldn't explain it well?

28. When you find it easy to work arithmetic or math problems at school, is it usually
    (a) because the teacher gave you especially easy problems, or
    (b) because you studied your book well before you tried them?

29. When you remember something you heard in class, is it usually
    (a) because you tried hard to remember, or
    (b) because the teacher explained it well?

30. If you can't work a puzzle, is it more likely to happen
    (a) because you are not especially good at working puzzles, or
    (b) because the instructions weren't written clearly enough?

31. If your parents tell you that you are bright or clever, is it more likely
    (a) because they are feeling good, or
    (b) because of something you did?

32. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often
    (a) because you explained it well, or
    (b) because he was able to understand it?

33. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is it likely to happen
    (a) because she was more particular than usual, or
    (b) because you answered too quickly?

34. If a teacher says to you, "Try to do better," would it be
    (a) because this is something she might say to get pupils to try harder, or
    (b) because your work wasn't as good as usual?

APPENDIX D

Epstein and Komorita's Locus of Control Scale for Success-Failure Scoring Instructions

This scale consists of 14 items to which the subject indicates his agreement or disagreement on a 4-point scale (from "very much agree" to "very much disagree"). Scoring consists of differentially weighting the alternatives of each item in the direction of external control. An I before the item indicates that agreement with the statement is internal control. An E before the item indicates that agreement with the statement is external control. The instructions ask the child to answer the items in direct relation to his performance on the task. The stems of the items are the following:

I 1. It depends on how carefully you work.

I 2. It depends on how much confidence you have in yourself.

E 3. It depends on whether the person testing you likes you or does not like you.

E 4. It depends on whether you feel well or not well.

I 5. It depends on how much hope you have.

I 6. It depends on how much good or bad luck you have.

I 7. It depends on how alert you are during the game.

I 8. It depends on how much you care about the game.

I 9. It depends on how much ability you have.

E 10. It does not depend on how carefully you work.

E 11. It does not depend on how much you believe you will do well.

E 12. It has nothing to do with how much you pay attention to the game (task).

E 13. It does not depend on how much you think about the game.

E 14. It does not depend on how well you understand the game.

Instructions used by Epstein and Komorita (1971) were the following:

> This game has been played by other children. After they played, some children found out they had done well and

others found out they had done poorly. When these children were asked "why did you do well or poorly?" they gave the following reasons. As you read each reason, remember whether you did well or poorly. Then, show how much you agree or disagree with the reason.

APPENDIX E

The Locus of Control Scale for Success-Failure As Used for the Pre-Test

QUESTIONNAIRE 1

This task was performed by other children. After they finished, some children found out they had done well and others found out they had done poorly. When these children were asked "Why did you do well or poorly?" they gave the following reasons. As you read each reason think about how well or how poorly you would expect to do on this task. Then, show how much you agree or disagree with the reason by circling the number which is closest to what you believe.

1. It depends on how carefully you work.
   (very much agree) 1 2 3 4 (very much disagree)

2. It depends on how much confidence you have in yourself.
   (very much agree) 1 2 3 4 (very much disagree)

3. It depends on whether the person testing you likes you or does not like you.
   (very much agree) 1 2 3 4 (very much disagree)

4. It depends on whether you feel well or not well.
   (very much agree) 1 2 3 4 (very much disagree)

5. It depends on how much hope you have.
   (very much agree) 1 2 3 4 (very much disagree)

6. It depends on how much good or bad luck you have.
   (very much agree) 1 2 3 4 (very much disagree)

7. It depends on how alert you are during the task.
   (very much agree) 1 2 3 4 (very much disagree)

8. It depends on how much you care about the task.
   (very much agree) 1 2 3 4 (very much disagree)

9. It depends on how much ability you have.
   (very much agree) 1 2 3 4 (very much disagree)

10. It does not depend on how carefully you work.
    (very much agree) 1 2 3 4 (very much disagree)

11. It does not depend on how much you believe you will do well.
    (very much agree) 1 2 3 4 (very much disagree)

12. It has nothing to do with how much you pay attention to the task.
    (very much agree) 1 2 3 4 (very much disagree)

13. It does not depend on how much you think about the task.
(very much agree) 1 2 3 4 (very much disagree)

14. It does not depend on how well you understand the task.
(very much agree) 1 2 3 4 (very much disagree)

APPENDIX F

The Locus of Control Scale for Success-Failure As Used for the Post-Test

QUESTIONNAIRE 1

This task was performed by other children. After they finished, some children found out they had done well and others found out they had done poorly. When these children were asked "Why did you do well or poorly?" they gave the following reasons. As you read each reason think about how well or how poorly you think you did on this task. Then, show how much you agree or disagree with the reason by circling the number which is closest to what you believe.

1. It depends on how carefully you work.
   (very much agree) 1 2 3 4 (very much disagree)

2. It depends on how much confidence you have in yourself.
   (very much agree) 1 2 3 4 (very much disagree)

3. It depends on whether the person testing you likes you or does not like you.
   (very much agree) 1 2 3 4 (very much disagree)

4. It depends on whether you feel well or not well.
   (very much agree) 1 2 3 4 (very much disagree)

5. It depends on how much hope you have.
   (very much agree) 1 2 3 4 (very much disagree)

6. It depends on how much good or bad luck you have.
   (very much agree) 1 2 3 4 (very much disagree)

7. It depends on how alert you are during the task.
   (very much agree) 1 2 3 4 (very much disagree)

8. It depends on how much you care about the task.
   (very much agree) 1 2 3 4 (very much disagree)

9. It depends on how much ability you have.
   (very much agree) 1 2 3 4 (very much disagree)

10. It does not depend on how carefully you work.
    (very much agree) 1 2 3 4 (very much disagree)

11. It does not depend on how much you believe you will do well.
    (very much agree) 1 2 3 4 (very much disagree)

12. It has nothing to do with how much you pay attention to the tas
    (very much agree) 1 2 3 4 (very much disagree)

13. It does not depend on how much you think about the task.
    (very much agree) 1 2 3 4 (very much disagree)

14. It does not depend on how well you understand the task.
    (very much agree) 1 2 3 4 (very much disagree)

APPENDIX G

Sample Task

This experiment studied what people do when they see someone hurt. It was done in the downtown area of a big city where there were a lot of people walking by. The person doing the experiment had one of his helpers make believe they fell down and then they cried out for help. This person was called the victim, and sometimes a man was used and sometimes a woman. Some people stopped to help and some just walked by. The experimenter asked these people to come to his office to talk to him and take tests to measure how smart they were, their fearfulness, and their confidence in themselves. After doing this 25 times, the person doing the experiment discovered that:

_____1. More people stopped to help when the victim was a woman.

_____2. The people who stopped were smarter than those who just walked by.

_____3. The main reason people gave for why they stopped to help was that they would want someone to help them if they were hurt.

_____4. More women stopped to help than men.

_____5. The average age of the people who stopped to help was younger than those who passed by.

_____6. The people who walked by were more fearful than those who stopped to help.

_____7. When the victim was a man, more women stopped to help than men.

_____8. The main reason people gave for not stopping was that they were afraid to get involved.

_____9. The people who stopped to help were more confident.

____10. Most of the people who stopped to help were or had been members of the Boy Scouts or Girl Scouts.

APPENDIX H

INSTRUCTIONS FOR SAMPLE TASK

Read the experiment very carefully. Below the experiment are listed ten things that might have been discovered in the experiment. Your task is to decide which of the ten things really were discovered in the experiment and which were not. Write TRUE in the space in front of the statement if you think that it really was discovered in the experiment. Write FALSE in the space in front of the statement if you think that it was not found in the experiment. There could be any number of true or false statements.

APPENDIX I

Skill (Personal Control) Oriented Instruction Sheet

Read the experiment very carefully. Below the experiment are listed ten things that might have been discovered in the experiment. Your task is to decide which of the ten things really were discovered in the experiment and which were not. Write TRUE in the space in front of the statement if you think that it really was discovered in the experiment. Write FALSE in the space in front of the statement if you think that it was not found in the experiment. There could be any number of true or false statements.

You will be given three experiments. Please hand each back to me when you are finished so that I may examine it.

Based on what you know about people you should be able to figure out what was really discovered in these experiments and what was not. There are connections between the experiments and what was really discovered in them which make sense if you can figure them out.

Before going on, please answer the following questions.

1. How important is this task to you?
   (NOT IMPORTANT) 1 2 3 4 5 6 7 (IMPORTANT)

2. How important is it that you do well on this task?
   (NOT IMPORTANT) 1 2 3 4 5 6 7 (IMPORTANT)

3. How well do you think you will do on this task?
   (VERY POORLY) 1 2 3 4 5 6 7 (VERY WELL)

APPENDIX J

Chance (No Personal Control) Oriented Instruction Sheet

Read the experiment very carefully. Below the experiment are listed ten things that might have been discovered in the experiment. Your task is to decide which of the ten things really were discovered in the experiment and which were not. Write TRUE in the space in front of the statement if you think that it really was discovered in the experiment. Write FALSE in the space in front of the statement if you think that it was not found in the experiment. There could be any number of true or false statements.

You will be given three experiments. Please hand each back to me when you are finished so that I may examine it.

You have little to base your decisions on in this task. The connections between the experiments and what was really discovered in them don't always make sense. How well you do on this task is a matter of guess-work.

Before going on, please answer the following questions.

1. How important is this task to you?
   (NOT IMPORTANT) 1 2 3 4 5 6 7 (IMPORTANT)

2. How important is it that you do well on this task?
   (NOT IMPORTANT) 1 2 3 4 5 6 7 (IMPORTANT)

3. How well do you think you will do on this task?
   (VERY POORLY) 1 2 3 4 5 6 7 (VERY WELL)

APPENDIX K

No Control Orientation Biased Instruction Sheet

Read the experiment very carefully. Below the experiment are listed ten things that might have been discovered in the experiment. Your task is to decide which of the ten things really were discovered in the experiment and which were not. Write TRUE in the space in front of the statement if you think that it really was discovered in the experiment. Write FALSE in the space in front of the statement if you think that it was not found in the experiment. There could be any number of true or false statements.

You will be given three experiments. Please hand each back to me when you are finished so that I may examine it.

Before going on, please answer the following questions.

1. How important is this task to you?

   (NOT IMPORTANT) 1 2 3 4 5 6 7 (IMPORTANT)

2. How important is it that you do well on this task?

   (NOT IMPORTANT) 1 2 3 4 5 6 7 (IMPORTANT)

3. How well do you think you will do on this task?

   (VERY POORLY) 1 2 3 4 5 6 7 (VERY WELL)

APPENDIX L

Experimental Task

Experiments 1, 2, and 3 (Trials)

EXPERIMENT 1

This experiment studied people taking chances. A group of college students who were studying about business were asked to play a game in which they made believe that they invested money in real business. The teacher kept track of how much money the students would actually have made or lost by looking at the stock market page of the newspaper each day. Each student started out with $2,000.00 of play money. Each day the students could buy or sell stocks. The game lasted two months. They were told that the three students that made the most money would get A's in the course. The students all took tests and answered questions about themselves; how smart they were, how much they liked themselves, how much they liked other people, and how good a leader they were. It was discovered in this experiment that:

_____1. People who take a lot of chances with money don't like themselves very much.

_____2. On rainy days the students usually lost money.

_____3. The smartest students made the most money.

_____4. No one ever made any money on Fridays.

_____5. Students who said they didn't like other people very much didn't take many chances with their money.

_____6. The students who were the best leaders took the biggest and most chances with their money.

_____7. The students who lost all their money were poor leaders.

_____8. The students who said they didn't like other people very much usually put their money in a bank where it would be safe but where they wouldn't make very much.

_____9. None of the students made any money.

____10. The three students who got A's in the course all said they liked themselves very much.

EXPERIMENT 2

This experiment studied how and why people change their attitudes or beliefs. The person doing the experiment was trying to find out what would be the best way to change people's attitude toward dental care. A group of 100 people were asked a series of questions about how well they took care of their teeth. These questions gave information about how the people brushed their teeth, used dental floss, went to the dentist, and so forth. Fifty of these people were shown a film which tried to scare them into taking better care of their teeth by showing pictures of rotten teeth, diseased gums, and dentists pulling out teeth. The other half of the people were shown a film which merely explained how to take better care of your teeth and showed examples of the proper way to brush and use floss. After one week and again after six months the people were asked the same questions about how well they took care of their teeth and how important they felt this was. It was discovered in this experiment that:

_____1. People who saw the scary film changed their beliefs more than the people who saw the film which just gave explanations and examples.

_____2. Children under age 12 changed their attitudes more than adults.

_____3. People who saw the film which gave explanations and examples said they had better dental habits at the end of one week but were back to their same old habits after six months.

_____4. People who saw the scary film got worse in their dental habits.

_____5. Adults over 21 years of age changed very little in their beliefs.

_____6. Of the people who saw the scary film, the females changed most.

_____7. The people who saw the scary film reported better dental habits after one week and had changed even more so after six months.

_____8. Most of the people went to the dentist within one week.

_____9. Most of the children under age 12 who saw the scary film refused to go to the dentist afterwards.

____10. Most of the people said the films didn't affect them one way or the other.

EXPERIMENT 3

This experiment studied different methods of teaching. There were three ninth grade classes at three different schools which took part. Each class was taught by a different method. In class A the teacher always told the students what to do and how to do it. In class B the teacher and the students worked together to plan things. In class C the students did everything by themselves, the teacher only answered questions or helped out when she was asked to. At the end of one month all of the classes took tests to see how much they had learned. The students were also asked to rate on a ten point scale how

much they liked school. What was discovered in this experiment was:

_____1. There were more absences for students in class C.

_____2. Class A made the highest grades on the tests at the end of the month.

_____3. The girls in all three classes said they liked school more than the boys.

_____4. The students in class C did very well in History but very poorly in Math.

_____5. The students in class B liked school more than the students in the other two classes.

_____6. The teacher in class C reported more fights and behavior problems than the other two teachers.

_____7. Class B had the poorest grades on the tests at the end of the month.

_____8. The students in class A liked school less than the students in the other two classes.

_____9. The students in class C decided to play games and didn't learn anything.

____10. There was little difference in the three classes on the tests they took at the end of the month.

APPENDIX M

Informed Consent Form

The purpose of this form is to help you understand what will happen during this experiment. You are a volunteer and may decide to stop and not take part at any time.

The goal of this experiment is to explore the factors that students believe to be important in determining the outcome of things that they do, for instance, whether they are successful or not. The experiment will consist of two sessions (approximately 45 minutes each) about two weeks apart. You will be asked to fill out two questionnaires which ask you to answer questions concerning your thoughts and feelings about what you believe to be important in bringing about the things that happen to you, your successes and/or failures. These questions are not generally considered to be very personal in nature. An example of this type of question is:

When you play a game and lose, do you lose*
(a) because you just didn't play well, or
(b) because the game was hard?

I will meet with you individually for the second session and you will be asked to perform a simple task. This will consist of reading brief summaries of a few experiments and trying to pick out from a list what was actually discovered in the experiment.

All of the information you give about yourself and how you do on the task will be held in strict confidence. All answer sheets and anything that may connect a given individual with a questionnaire or task performance will be destroyed as soon as the results have been tabulated. There will be a time at the end of the experiment when you can ask any questions you have about the experiment.

Your signature on this form means that you understand the basic goals and procedures of this experiment and that you volunteer to participate. You may decide to cease participation at any time, and you may ask that any of the information you have given not be used. It in no way means that you have given up any of your legal rights.

Signed _____

Date _____

*Item #9. from the Stanford Preschool Internal-External Scale (Mischel, Zeiss, and Zeiss, 1974).

APPENDIX N

Debriefing

Some people think that how well they do or what happens to them depends on their own abilities or talents. Other people think that luck or what the people around them do to them is most important. And some people are kind of in between. This experiment studied how these kinds of beliefs might change.

Some of the students who took part in this experiment were told that they could figure out the right answers on the task, some were told they would have to depend on guess-work, and some weren't told anything about what was important for doing well. Also, some of the students were told that they did very well on the task, some that they did very poorly, and some weren't told anything about how they did. Actually, the experiments were all made up and there were no real right or wrong answers.

Please do not talk to anyone about this experiment until after everyone has taken part. If you do, it could make the results false and your time would have been wasted.

Thank you very much for taking part in this experiment. Your efforts are very valuable. If you have any questions, please ask them. I will be happy to try to answer them.

Thank you again.

APPENDIX O

Tables for Analysis of Locus of Control Scale For Success-Failure Scores

TABLE 1: Means and Standard Deviations

	Pre Test		Post Test	
	M	S.D.	M	S.D.
Skill Instructions				
Success feedback	25.333	3.882	25.5	1.871
Failure feedback	22.833	2.317	29.5	7.204
No feedback	28.333	4.719	27.667	7.23
Chance Instructions				
Success feedback	24.667	3.386	24.5	3.937
Failure feedback	24.667	3.777	30	6.542
No feedback	23.167	3.189	24	4.69
No Control Orientation				
Success feedback	24.83	2.994	23	3.847
Failure feedback	26.5	6.656	28.333	7.685
No feedback	27.17	4.215	26.833	7.705

TABLE 2: Summary of Instructions X Feedback X Trials Analysis

Source	SS	df	MS	F	p
Total	2919.213	107			
Between Subjects	1975.713	53			
Instructions	19.685	2	9.843	<1	N.S.
Feedback	154.296	2	77.148	2.07	N.S.
I X F	124.315	4	31.079	<1	N.S.
$Error_b$	1677.417	45	37.276		
Within Subjects	943.5	54			
Trials	26.009	1	26.009	1.729	N.S.
Trials X Instructions	20.13	2	10.065	<1	N.S.
Trials X feedback	188.741	2	94.37	6.275*	<.005
T X I X F	31.87	4	7.968	<1	N.S.
$Error_w$	676.75	45	15.039		

*$F_{95, 4, 45} = 2.5875$

TABLE 3: Simple Effects, Trials by Groups (Success Versus Failure)

Source	SS	df	MS	F	p
Groups	144.5				
Trials	40.5				
Trials X Groups	174.222	1	174.222	11.585*	<.005
$Error_w$ (Total)	676.75	45	15.039		

*$F_{.95,1,45} = 4.06$

TABLE 4: Simple Effects, Trials by Groups (Success Versus No Feedback)

Source	SS	df	MS	F	p
Groups	76.056				
Trials	12				
Trials X Groups	11.389	1	11.389	<1	N.S.
$Error_w$ (Total)	676.75	45	15.039		

TABLE 5: Simple Effects, Trials by Groups (Failure Versus No Feedback)

Source	SS	df	MS	F	p
Groups	10.889				
Trials	93.389				
Trials X Groups	98	1	98	6.516*	<.025
$Error_w$ (Total)	676.75	45	15.039		

*$F_{95, 1, 45} = 4.06$

TABLE 6: Simple Effects, Trials by Group 1 (Success)

Source	SS	df	MS	F	p
Trials for Group 1 (success)	23.361	1	23.361	1.553	N.S.
$Error_w$ (Total)	676.75	45	15.039		

TABLE 7: Simple Effects, Trials by Group 2 (Failure)

Source	SS	df	MS	F	p
Trials for Group 2 (Failure)	191.361	1	191.361	12.724*	<.001
$Error_w$ (Total)	676.75	45	15.039		

*$F_{95, 1, 45} = 4.06$

TABLE 8: Simple Effects, Trials by Groups 3 (No Feedback)

Source	SS	df	MS	F	p
Trials by Group 3 (No feedback)	.028	1	.028	<1	N.S.
$Error_w$ (Total)	676.75	45	15.039		

TABLE 9: Simple Effects, Feedback Groups at Pre-Test

Source	SS	df	MS	F	p
Total	902.833	53			
Between Groups	24.778	2	12.389	<1	N.S.
Within Groups	878.056	51	17.217		

TABLE 10: Simple Effects, Feedback Groups at Post-Test

Source	SS	df	MS	F	p
Total	1990.37	53			
Between Groups	318.259	2	159.13	4.854*	<.05
Within Groups	1672.111	51	32.786		

*$F_{95, 2, 51} = 3.186$

TABLE 11: Summary of Neuman-Keuls' Multiple-Range Test

Group 2 (Failure) Versus Group 3 (No Feedback)
C. $diff._2$ = 3.844

29.278 - 26.167 = 3.111 (not significant)

Group 3 (No Feedback) Versus Group 1 (Success)
C. $diff._2$ = 3.844

26.167 - 23.333 = 2.834 (not significant)

Group 1 (Success) Versus Group 2 (Failure)
C. $diff._3$ = 4.613

29.278 - 23.333 = 5.945 (significant)

APPENDIX P

Tables for Analysis of IAR - Total I Score

TABLE 1: Means and Standard Deviations

	Pre-Test		Post-Test	
	M	S.D.	M	S.D.
Skill Instructions				
Success Feedback	24	2.53	27.667	2.582
Failure Feedback	26.167	2.858	26.667	4.131
No Feedback	25.167	3.545	25.667	3.386
Chance Instructions				
Success Feedback	24.667	4.502	26.167	3.545
Failure Feedback	26.167	1.941	26	4.195
No Feedback	26.5	1.517	27.333	3.141
No Control Orientation				
Success Feedback	26.667	2.944	26.5	3.017
Failure Feedback	24.833	3.125	28.167	1.472
No Feedback	27.167	1.472	26.667	4.502

TABLE 2: Summary of Instructions X Feedback X Trials Analysis

Source	SS	df	MS	F	p
Total	1021.213	107			
Between	667.72	53			
Instructions	11.358	2	5.659	<1	N.S.
Feedback	4.581	2	2.29	<1	N.S.
I X F	16.237	4	4.059	<1	N.S.
$Error_B$	635.583	45	14.124		
$Within^B$	353.493	54			
Trials	30.09	1	30.09	5.042*	<.05
T X I	10.271	2	5.136	<1	N.S.
T X F	9.049	2	4.524	<1	N.S.
T X I X F	35.507	4	8.877	1.487	N.S.
$Error_W$	268.577	45	5.968		

*$F_{95, 1, 45} = 4.06$

APPENDIX Q

Tables for Analysis of IAR - I^+ Subscale Scores

TABLE 1: Means and Standard Deviations

	Pre-Test		Post-Test	
	M	SD	M	SD
Skill Instructions				
Success Feedback	13.167	1.329	13.833	1.722
Failure Feedback	13.667	1.862	13.833	1.722
No Feedback	13	2.966	12.667	2.733
Chance Instructions				
Success Feedback	12.667	2.582	12.833	2.137
Failure Feedback	14.333	.517	13.833	1.472
No Feedback	13.17	1.472	13.33	2.066
No Control Orientation				
Success Feedback	13.5	2.168	13.5	2.811
Failure Feedback	12.5	2.074	14.33	1.751
No Feedback	14.17	.983	14	2

TABLE 2: Summary of Instructions X Feedback X Trials Analysis

Source	SS	df	MS	F	p
Total	396.852	107			
Between	260.852	53			
Instructions	2.241	2	1.12	<1	N.S.
Feedback	4.796	2	2.398	<1	N.S.
I X F	14.648	4	3.662	<1	N.S.
$Error_b$	239.167	45	5.315		
Within	136	54			
Trials	1.333	1	1.333	<1	N.S.
T X I	1.722	2	.861	<1	N.S.
T X F	1.722	2	.861	<1	N.S.
T X I X F	8.056	4	2.014	<1	N.S.
$Error_w$	123.167	45	2.737		

APPENDIX R

Tables for Analysis of IAR - I^- Subscale Scores

TABLE 1: Means and Standard Deviations

	Pre-Test		Post-Test	
	M	SD	M	SD
Skill Instructions				
Success Feedback	10.833	1.472	13.833	1.472
Failure Feedback	12.5	1.517	12.833	2.858
No Feedback	12.167	.983	13	2.098
Chance Instructions				
Success Feedback	12	2.098	13.333	1.751
Failure Feedback	11.333	1.835	12.167	3.189
No Feedback	13.33	1.366	14	1.549
No Control Orientation				
Success Feedback	13.17	1.329	13	1.549
Failure Feedback	12.33	2.338	13.83	1.472
No Feedback	13	1.549	12.67	3.386

TABLE 2: Summary of Analysis of IAR - I^- Subscale

Source	SS	df	MS	F	p
Total	421.213	107			
Between	269.713	53			
Instructions	4.019	2	2.009	<1	
Feedback	3.852	2	1.926	<1	
I X F	14.259	4	3.565	<1	
$Error_B$	247.583	45	5.502		
Within	151.5	54			
Trials	18.75	1	18.75	7.819*	$<.01$
T X I	5.056	2	2.528	1.054	N.S.
T X F	4.667	2	2.33	<1	
T X I X F	15.111	4	3.778	1.575	N.S.
$Error_W$	107.917	45	2.398		

*$F_{95,\ 1,\ 45} = 4.06$

APPENDIX S

Tables for Analysis of Task Motivation
Question 1: How Important Is This Task to You?

TABLE 1: Means and Standard Deviations

	M	SD
Skill Instructions		
Success Feedback	4.833	1.835
Failure Feedback	4	1.673
No Feedback	5	.632
Chance Instructions		
Success Feedback	5	1.673
Failure Feedback	5.167	1.472
No Feedback	4	1.789
No Control Orientation		
Success Feedback	5	1.414
Failure Feedback	4.667	1.211
No Feedback	4.333	2.161

TABLE 2: Summary of Instructions X Feedback Analysis

Source	SS	df	MS	F	p
Total	124	53			
Instructions	.111	2	.056	.022	N.S.
Feedback	2.333	2	1.167	.459	N.S.
I X F	7.222	4	1.806	.711	N.S.
Error	114.333	45	2.541		

APPENDIX T

Tables for Analysis of Task Motivation

Question 2: How Important Is It That You Do Well On This Task?

TABLE 1: Means and Standard Deviations

	M	SD
Skill Instructions		
Success Feedback	5.167	1.329
Failure Feedback	4.333	1.751
No Feedback	6.5	.837
Chance Instructions		
Success Feedback	4.5	1.871
Failure Feedback	5.667	1.862
No Feedback	4.667	1.033
No Control Orientation		
Success Feedback	5	1.897
Failure Feedback	5.333	1.211
No Feedback	5.5	1.871

TABLE 2: Summary of Instructions X Feedback Analysis

Source	SS	df	MS	F	p
Total	128.148	53			
Instructions	1.593	2	.796	<1	N.S.
Feedback	4.148	2	2.074	<1	N.S.
I X F	15.741	4	3.935	1.66	N.S.
Error	106.667	45	2.37		

APPENDIX U

Tables for Analysis of Task Motivation

Question 3: How Well Do You Think You Will Do On This Task?

TABLE 1: Means and Standard Deviations

	M	SD
Skill Instructions		
Success Feedback	4.5	.548
Failure Feedback	4.333	1.033
No Feedback	5.667	1.033
Chance Instructions		
Success Feedback	4.333	.817
Failure Feedback	4.5	.837
No Feedback	3.833	.409
No Control Orientation		
Success Feedback	4.667	.817
Failure Feedback	4.833	.753
No Feedback	4.833	.983

TABLE 2: Summary of Instructions X Feedback Analysis

Source	SS	df	MS	F	p
Total	46.833	53			
Instructions	4.111	2	2.056	2.656	N.S.
Feedback	.778	2	.389	<1	N.S.
I X F	7.111	4	1.778	2.297	N.S.
Error	34.833	45	.774		

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