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THE INFLUENCE OF TWO LEVELS OF ACHIEVEMENT ON THE COGNITIVE PERFORMANCE
OF INTERNALS, DEFENSIVE EXTERNALS, AND CONGRUENT EXTERNALS

by

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Theoretical Introduction

Internal-external control of reinforcement (I-E) refers to the extent to which people believe that reinforcements occur as a result of their behavior and abilities (internal) or as a function of luck, chance, fate, or the influence of powerful others (external). I-E (Rotter, 1966) is a construct derived from social learning theory (Rotter, Chance, & Phares, 1972) that has been found useful in predicting behavior across a variety of situations and need areas. The present investigation is concerned primarily with determining whether it is useful to divide the external dimension of the I-E or locus of control construct into two subgroups. In addition, this study will examine the cognitive performance of subjects under two levels of achievement motivation. A brief consideration of the theoretical context within which the I-E construct developed will be helpful in understanding several issues that are pertinent to this investigation.

Social learning theory (Rotter et al., 1972) has attempted to account for the complexities of behavior by considering the role of expectancy and situational variables along with reinforcement value. These elements are combined according to the following formula (Rotter et al., 1972, p. 14):

$$BP_{x,s_1,R_a} = f(E_{x,R_a,s_1} \ \& \ RV_{a,s_1}).$$

Behavior potential (BP) refers to the potential for behavior x to occur in situation 1, in relation to reinforcement a. Behavior potential is thus a function of the expectancy (E) of the occurrence of reinforcement a, following behavior x in situation 1, and the value of reinforcement (RV) a in situation 1.

The Concept of Expectancy

The expectancy for occurrence of a given reinforcement is determined not only by expectancies based on prior experiences in the same situation (E') but also on expectancies generalized from other relevant past experiences (GE). The following formula states the relationship (Rotter et al., 1972, p. 24):

$$E_{s_1} = f(E'_{s_1} \ \& \ GE).$$

The locus of control construct further refines our understanding of the role of expectancies by suggesting that the reinforcing properties of an event will vary as a function of the degree to which an individual believes that the reinforcement within a given situation is under personal control. The greater the perceived control, the greater will be the effect on expectancies of the occurrence of a reinforcement (Phares, 1957). Furthermore, numerous studies have supported the contention that perceived control can also be construed as a generalized problem solving expectancy that cuts across specific situations and need areas (Phares, 1976; Rotter, 1966; Rotter, 1975). Thus, in order to schematize the determinants of an expectancy in a particular situation (E_{s1}), an expansion of the basic formula is necessary (Rotter et al., 1972, p. 41):

$$E_{s1} = \frac{f(E' \ \& \ GE_r \ \& \ GE_{ps1} \ \& \ GE_{ps2} \ \dots \ GE_{psn})}{f(N_{s1})}$$

This formula may be read as follows: An expectancy in a particular situation (E_{s1}) is a function of expectancies based on prior experiences in the same situation (E'), and expectancies generalized from other similar attempts to obtain a given reinforcement (GE_r) and relevant generalized expectancies for classes of problem solving situations cutting across specific need categories (GE_{ps1} to GE_{psn}). All of this is affected by the number of experiences in situation one (N_{s1}).

I-E is therefore a generalized problem solving expectancy dimension that reflects an individual's belief regarding the degree to which behavior and subsequent reinforcements are causally related. There are a number of potentially important generalized problem solving expectancies besides I-E or locus of control. Interpersonal trust (Rotter, 1967) is a prominent one. This construct reflects the degree to which a person believes that the verbal statements of others regarding future behavior can be relied upon. Interpersonal trust is expected to clarify the relationship between I-E and behavior in the present study.

Internal-External Control

Rotter's (1966) Internal-External Control Scale (I-E Scale) makes it possible to order individuals along a dimension. Those at the internal end

believe that their behavior controls the occurrence of reinforcements. Conversely, those at the external end believe that reinforcements occur on the basis of luck, chance, fate, or the influence of powerful others. However, it is important to emphasize that the I-E notion represents a dimension and not a typology. The use of "internals" and "externals" is only a semantic convenience.

The I-E distinction is an important one because those who believe that they control the occurrence of reinforcements (internals) have been shown to be more likely to exert efforts to control their environment, more achievement oriented, and better adjusted than externals. In contrast, evidence indicates that externals' beliefs that reinforcements are beyond their control are essentially failures on their part to connect their behavior with its consequences. These failures are believed to be a consequence of a perceived inability on their part to influence the outcomes they experience. As a result, externals generalize less from past experience thereby impeding the learning process (Phares, 1976).

Defensive Externality

Although the utility of the I-E construct has been demonstrated in a variety of situations, several researchers have suggested that externals comprise a more heterogeneous group than had been believed initially (Rotter, 1966; Phares, Ritchie & Davis, 1968; Hochreich, 1968). The traditional conception of externals as people who passively accept their fate because of a traditional belief that reinforcements are beyond their personal control appears valid for "true" or "congruent" externals. Recently, however, the possibility of subdividing externals into two groups has been raised in the literature (e.g., see Phares, 1979). The behavior of this second group of externals seems motivated more by a desire to attribute expected failures to external agents rather than by a "real" belief in external control. Thus, they favor an external belief system when failure occurs or is expected but are willing, and usually anxious, to accept personal credit for successes when they occur. Because these tendencies appear most pronounced in achievement-oriented situations, this subgroup has been described as striving and achievement-oriented, characteristics that are typically associated with internals.

This second group also seems to rely on projective mechanisms when failure is anticipated or occurs and, as a result, have been described as "defensive externals" (Phares, 1976). The purpose of the present study is, therefore, to

examine and clarify the defensive external dimension within the larger I-E framework. If the utility of identifying defensive externals can be established an increase in our ability to predict behavior should be realized. In addition, an explanation for the relatively heterogeneous nature of the external dimension may be developed.

Most I-E studies have been concerned primarily with the manipulation of variables related to either the expectancy for success or to the attributional behavior of internals and externals. This is particularly true of the research related to defensive externality. As a result, fewer studies have considered actual differences in the cognitive performance of internals and externals, whereas virtually no study has evaluated the cognitive performance of defensive externals relative to the other subgroups. The present investigation will attempt to corroborate previous research regarding subjects' expectancies for success and attributional behavior. However, its primary focus is to determine the usefulness of identifying defensive externals as a distinct population by determining whether actual differences in cognitive performance occur among internals, congruent externals, and defensive externals under different levels of achievement motivation.

Literature Review

I-E Findings

Scores on the I-E Scale (Rotter, 1966) may be used to describe people as endorsing an internal or an external orientation. Intuitively, it seems that internals' beliefs that reinforcements are directly tied to their behavior would lead to behavior designed to master the environment thereby necessitating a greater sensitivity to the world about them. In contrast, externals should view their efforts as largely meaningless. They do not believe that their behavior is tied to reinforcements and therefore exert little effort to master the environment. Thus, they are not as motivated as internals to attend to situational cues. I-E research, for the most part, supports this view.

For example, studies involving internal-external control and attitudes toward information and social influence support the contention that internals are more sensitive than externals to situational cues. Seeman and Evans (1962) found that among a sample of patients in a tuberculosis hospital, internals had more objective information about their illness and were less

satisfied with the amount of information received from hospital personnel. They also asked more questions of doctors and nurses about tuberculosis and about how that information related to their particular case.

A similar study by Seeman (1963) examined the ability of inmates in a federal reformatory to remember information that was either relevant or not relevant to control of their personal goals. He found that internal inmates were more knowledgeable about how the reformatory was run, were more familiar with parole regulations, and were more aware of economic factors that might affect them after their release. However, he found no differences between internals and externals in retention of information that was not particularly pertinent to their future behavior. These findings are important because they suggest that internals are superior in recall abilities only when information is relevant to their future behavior.

Support for the notion that internals are superior in cognitive processing comes from work by DuCETTE and Wolk (1973). They used a simple problem-solving task in which the solution was suggested by the experimenter through the presentation of a non-verbal cue. Internals discovered the underlying rule more quickly than externals.

In another study, Wolk and DuCETTE (1974) found that internals were superior to externals in a proofreading task, both in actual number of errors found and on an incidental learning task (retention of the content of the material). This effect was exaggerated when the task was either very ambiguous or very difficult. This finding is important for the current study because it strongly suggests that internals are superior to externals in their attentiveness to situational cues and that they show superior recall and cognitive performance.

These studies clearly suggest that internals are more knowledgeable, at least in terms of personally relevant information than are externals. They are also more skilled at extracting relevant cues from the environment and using them to improve performance, as well as better able to process and retain information during an experimental task.

The above studies also give the general impression that internals may simply be more intelligent than externals. However, this does not appear to be the case. Hersch and Scheibe (1967) report nonsignificant correlations from $-.07$ to $.17$ between I-E and three different measures of intellectual ability. Kiehlbauch (1967) tested a group of reformatory inmates and

reported no correlation between intelligence and I-E Scale scores. Although modest correlations are reported occasionally (e.g., Powell & Centa, 1972), it appears that intelligence differences cannot account for internals' superior cognitive performance.

The primary purpose of this study is to examine the cognitive performance of defensive externals, congruent externals, and internals under different levels of achievement. It is anticipated that information relative to the utility of distinguishing between defensive and congruent externals will be developed. Central to this issue is the question of whether internals, as a group, are superior in cognitive processing to externals. Based on the research cited thus far, this appears to be the case. It would seem that internals, believing that reinforcements are contingent upon their own behavior, should make attempts to more effectively control their environment through seeking out and remembering salient information. In contrast, externals should have less incentive to seek out and remember information since they tend to perceive outcomes as independent of their own behavior. Before considering these issues, it is first necessary to examine the theoretical and methodological status of the defensive external construct.

The Defensive-Congruent External Distinction

Several methods have been used to differentiate congruent and defensive external subgroups. Davis (1970) reasoned that the distinction could be made by noting an individual's willingness to engage in behavior designed to improve deficiencies in valued need areas, e.g., academics. According to her thinking, "true" or congruent externals should be unwilling to take steps to improve their academic standing in college since their external orientation would dictate the futility of such action. In contrast, defensive externals should be willing to take such action. Their external beliefs were considered merely to be defenses against their low expectancies for achieving goals that are actually valued highly. Thus, she assumed that defensive externals would take advantage of opportunities designed to help them achieve these goals.

Those scoring at the external end of the I-E continuum were, therefore, designated "congruent" or "defensive" depending upon their willingness to take steps to improve their academic performance. In support of her hypothesis, Davis found that defensive externals placed a higher value on goals related to academic recognition but had relatively low expectancies

for attaining those goals. She reasoned that this discrepancy between expectancies and valued goals produced their defensive attitude.

Hochreich (1974) also examined the relationship between locus of control and defensive behavior, but unlike Davis she used interpersonal trust as the moderating variable. Hochreich reasoned that externals who exhibit defensive behavior should display a greater tendency to mistrust, be suspicious of, or blame others simply as a function of their defensive orientation. Subjects who scored high in externality but attained low scores on the Interpersonal Trust Scale (Rotter, 1967) were, therefore, viewed as showing a characteristic verbal defense and were labelled defensive externals.

In an effort to demonstrate the usefulness of this breakdown, Hochreich asked male subjects to read stories with success or failure outcomes. It was found that defensive externals attributed less responsibility to story heroes under failure conditions than either congruent externals or internals. This difference was most pronounced when failure occurred in the achievement-related condition.

A second study (Hochreich, 1975) demonstrated that male externals who actually experienced failure showed attributional patterns similar to those in the earlier study who had only rated story heroes. Defensive externals attributed the least responsibility to themselves and this effect was enhanced under achievement-related conditions.

Further clarification of the relationship between defensive externality and failure is provided by Phares and Lamiell (1974). They also used trust as a moderating variable and found that when offered a choice, externals in general, and defensive externals in particular, preferred tasks with a built-in potential for the rationalization of failure. The defensive externals also stated lower expectancies for success on nonrationalizable tasks than did internals, but internals and defensive externals set higher minimal goal levels than did congruent externals. These findings support the contention that defensive externals are achievement-oriented, as are internals, but become defensive and act like congruent externals on the I-E Scale in order to psychologically defend themselves against expected failure experiences.

Thus, the behavior of defensive externals appears to be contingent on the type of outcome that is anticipated. That is, they appear to be preparing for the "worst" by choosing rationalizable tasks. Their behavior also tends to fluctuate depending on whether their efforts meet with success or failure; accepting responsibility in the first case and denying it in the latter.

Although it may be argued that most of us are guilty of this tendency, the behavior of internals and congruent externals appears to be somewhat more consistent regardless of the type of task, the level of achievement, or the outcome. Again, these conclusions are based on studies that were concerned primarily with the expectancies or the attributional behavior of subjects, not with cognitive performance.

There is another interpretation suggesting the utility of distinguishing between congruent and defensive externals. Perhaps an external's lower expectancy for the achievement of valued goals is associated with an increased anxiety level, resulting ultimately in additional performance decrements. Many studies have, in fact, yielded low but significant correlations between externality and anxiety. These include: Butterfield (1964), using the Alpert-Haber Facilitating-Debilitating Anxiety Questionnaire, $r = .36$ and Strassberg (1973), using the IPAT Anxiety Scale, $r = .41$.

Theoretically, however, there is little reason to expect externals to be more anxious than internals. Because externals tend to perceive outcomes as independent of their own behavior and, as a result, are presumed to feel somewhat helpless in controlling the reinforcements they experience, a degree of passivity has been attributed to them. What could they gain by being anxious? Accordingly, although research indicates that there exists an association between externality and anxiety, this association remains unclear.

In this regard, it is possible that it is solely the influence of increased anxiety levels on the part of defensive externals that produces the elevated anxiety levels among externals as a group. Perhaps this increased anxiety is a consequence of the discrepancy between defensive externals' need to achieve valued goals along with their low expectancies for success. On the other hand, congruent externals, who presumably are the "real" externals, may just experience anxiety levels comparable to those of internals. This line of reasoning reconciles the apparent contradiction between I-E theory and the experimental findings.

It is therefore suggested that defensive externals' preference for rationalizable tasks and their pattern of extreme external attributions when failure occurs in achievement-related situations reflects an oversensitivity--a defensiveness--to failure or anticipated failure in achievement-related conditions. As a result, it is anticipated that their cognitive performance will suffer in a high-achievement, as compared with a low-achievement situation.

Two additional points raised by Hochreich (1974, 1975) will also be examined in the present study. First, in the 1974 study, she found no clear pattern in the attribution results for females and, as a result, used only male subjects in the latter study. However, Hochreich (1974) further reports that her results conflict with those of Davis and Davis (1972), in which the same I-E differences in attribution behavior were found for both sexes. Hochreich attributed the difference to the degree of personal involvement required by the two tasks, with the Davis and Davis task being more highly involving and competitive. These results raise the possibility that traditional sex-role stereotypes are reflected in the I-E dimension. In an effort to clarify this issue, the cognitive performance of both males and females will be analyzed in the current study.

The other point concerns Hochreich's (1975) suggestion that the distinction between high- and low-trust internals is not a useful one. She reasoned that it was only low-trust and high externality that reflected a characteristic verbal defense (blame projection), and that there was no reason to expect high- and low-trust internals to differ from each other in terms of the dependent measures she used. Again, the distinction will be made in the present study in an effort to clarify this issue.

Conclusions from the I-E Literature

The I-E construct has had an impact on both theory and research in psychology primarily because locus of control beliefs appear to modify the influence of situational reinforcers. The consequences of this modification may have far-reaching effects in that externals appear to have limited expectancies for attaining desired outcomes because of a preceived lack of control. This discrepancy between expectancies and needs may be exhibited in the form of increased anxiety levels as well as performance decrements on the part of externals

Because externals appear to comprise a more heterogeneous group than internals, the notion that it may be useful to separate them into two subgroups was suggested some time ago by several researchers (Rotter, 1966; Phares, Ritchie & Davis, 1968; Hochreich, 1968). This separation may help to identify externals whose belief systems represent more of a verbal defense against anticipated failure than any true belief in external control of reinforcements. This incongruent behavior appears especially pronounced when failure occurs or is anticipated in connection with achievement-related activities (Hochreich,

1974, 1975).

Specific Aims of this Study

In the present study, the performance of subjects on a memory task was expected to provide information about the cognitive performance of internals and externals, as well as about the capabilities of members of the four I-E subgroups in two achievement conditions. In order to examine these issues, a cognitive task from advertising research was used (Monaco, 1976). Ss in the present study were first asked to listen to two tape-recorded prose passages (Appendix C) that contain general descriptive information. Shortly thereafter, they were asked to respond to statements about information in the passages (see Appendix D). Some of this information was directly asserted as fact in the passages, whereas some of it only implied a conclusion. Subjects were required to distinguish between the two. This dependent measure is discussed at greater length in the Method section.

More specifically, the following hypotheses were tested:

1. In line with their superiority on cognitive tasks as demonstrated in previous research, the performance of internals was expected to surpass that of externals when a task requiring discriminations between assertions of fact and pragmatic implications was employed.
2. Previous research suggests that externals are sensitive to failure both before and after involvement in achievement-related tasks. This sensitivity is assumed to express itself in the form of higher anxiety levels during task performance, especially for defensive externals. Thus, a cognitive performance decrement was anticipated for defensive externals in a high-achievement as compared with a low-achievement condition. On the other hand, the cognitive performance of members of the high- and low-trust internal and congruent external subgroups was expected to remain stable across the achievement conditions.
3. Defensive externals have been shown in the past to be more unwilling than congruent externals and internals to accept responsibility for anticipated failure in achievement-related settings. It has also been suggested that they have a tendency to mistrust, be suspicious of, and blame others simply as a function of their defensive orientation. It was assumed that this defensive nature would manifest itself behaviorally as a reluctance to admit inadequacies on a task that is important to them, e.g., the cognitive task in the high-achievement condition of the current study. Thus, it was anticipated that

in high - achievement conditions, they would be less willing than members of the other three subgroups to acknowledge that they could not recall essential information.

It should be emphasized that the primary purpose of the present investigation was to compare the cognitive performance of internals and defensive and congruent externals under different levels of achievement motivation. However, since the present design permitted the collection of data regarding subject's expectancies for success and their attributional behavior, it provided the opportunity to corroborate previous research. Thus, it was expected to be possible to show once more that defensive externals will state lower expectancies for success than internals because of the relatively nonrationalizable qualities of this task (Phares & Lamiell, 1974), and that they will make more external attributions following the task (Hochreich, 1975, 1975).

Method

The general research plan involved selecting internally and externally oriented subjects and subdividing each group on the basis of their Interpersonal Trust Scale scores. In order to determine the particular effects of different levels of achievement motivation on the cognitive performance of internals and externals and of the subgroup members, subjects participated in a cognitive-memory task in either a high- or a low-achievement condition.

The Experimental Task

In order to investigate the questions raised in the current study, it was essential that the experimental task be one that was relevant for the respondents, yet also non-specific enough that generalized, rather than just specific expectancies were engaged. If cognitive performance is being evaluated, as was the case in the present study, the task must also be difficult enough so that potential differences in performance level can be demonstrated. The task developed by Monaco (1976) for memory research satisfies all of these requirements. Monaco's subjects listened to a prose passage and then responded to statements about information in the passage. He evaluated subjects' ability to determine whether the test statement had been asserted as a fact or only pragmatically implied in the passage. For example, when presented with the stimulus "The hungry python caught the mouse" (which implies pragmatically that the snake consumed it's prey), subjects will typically identify the direct assertion "The hungry python ate the mouse" as the original stimulus. A task designed to test Ss' ability to distinguish between the two should be relevant to the interests and skills of a subject population of college students and yet not one on which they will have had enough experience to have developed specific expectancies about their likelihood of success.

The Achievement Manipulation

In order to create a relaxed, low-achievement atmosphere, Ss in the control condition were told that the study was designed to determine the kinds of information college students attend to when presented with unfamiliar material. They were also told that the results of the study would be used for the development of an advertising awareness course to be offered the next semester. The experimenter included the information that there are not really any passing or failing grades for this type of exercise and that he was interested

primarily in their unique response patterns. The experimenter tried to create a cordial, friendly atmosphere for the presentation of this preliminary information. He smiled throughout, invited questions, and responded to them in a supportive, nurturing manner.

Under the achievement-oriented condition, the purpose of the procedure was to arouse the Ss' achievement-related motives. This was done by informing Ss that the experimenter was in the final stages of the development of a short-hand college and job performance scale. These Ss were also told that the experimenter was a graduate student majoring in industrial psychology, and that several of the larger corporations had funded the research and would shortly be selecting middle and top level executives on the basis of candidates' scores on tests similar to the one they were about to take. These Ss were also told that the initial results of the research had indicated that those who do well on this "examination" can be expected to be successful in college as well as in a variety of post-graduate pursuits. Finally, Ss were advised that those who "failed" the test would be seen in individual sessions by the experimenter sometime during the following week. This "warning" was designed to enhance the achievement-related aspects of the situation. The experimenter adopted a perfunctory attitude while presenting the above information in an effort to reinforce the achievement-related atmosphere. Following the instructions, the experimental and control groups were treated similarly.

The present design afforded an opportunity to evaluate the effectiveness of the achievement manipulation. A question intended to measure the impact of this variable was therefore incorporated into the design of this experiment.

Selection and Assignment of Subjects

Ss for this study were drawn from three large introductory psychology classes at Kansas State University. Approximately 900 people were pretested and 160 were selected to participate in the study. Ss received credit toward completion of their psychology course requirements.

Ss were selected on the basis of their scores on the I-E Scale (Rotter, 1966) and on Rotter's (1967) Interpersonal Trust Scale (see Appendices A & B). The I-E Scale is a forced-choice instrument that consists of 29 pairs of items, of which six are fillers and are not scored. Each of the 23 remaining items indicate a belief in either internal or external control of reinforcement. The test is scored in the external direction with the range of possible scores being

from zero to 23 (23 is the most external score possible).

The mean I-E score was 10.16, with a SD of 3.82. Internals were defined as those with scores of one to nine, inclusive, whereas externals were defined by scores of 13 through 21, inclusive. This breakdown represents approximately the upper and lower thirds of the I-E distribution.

The Interpersonal Trust Scale is a 25 item, Likert-type instrument, that measures the generalized expectancy that the verbal statements of others can be relied upon. Higher scores indicate greater levels of interpersonal trust. The mean score was 78.79 with a SD of 10.75. Matching the upper and lower thirds of the Interpersonal Trust distribution with the upper and lower thirds of the I-E distribution did not result in a sufficient number of subjects to fill out each cell in the design. Therefore, members of the upper forty percent of the Interpersonal Trust distribution (84-102) were designated high-trust and the lower forty percent (59-75) low-trust.

The four groups were, therefore, as follows: (a) defensive (low-trust) externals, Ss in the upper third of the I-E distribution and the lower 40 percent of the trust distribution; (b) congruent (high-trust) externals, Ss in the upper third of the I-E distribution and the upper 40 percent of the trust distribution; (c) low-trust internals, Ss in the lower third of the I-E distribution and the lower 40 percent of the trust distribution; and (d) high-trust internals, Ss in the lower third of the I-E distribution and the upper 40 percent of the trust distribution.

Twenty male and twenty female Ss were included in each of these groups resulting in N = 160. One-half of the Ss from each of the eight groups were then assigned randomly to either the experimental (achievement-related) group or the control (low-achievement) group, resulting in N = 10 for each cell in the design.

Procedure

Approximately two months after the pretesting, Ss were tested in one of the two achievement conditions in groups ranging in size from eight to 21.

After the introductory remarks that were designed to create the achievement manipulation, all Ss heard two tape-recorded prose passages titled "The Cabin" and "Jose" (Monaco, 1976; see Appendix C). Prior to responding to statements about information in the passages, all Ss answered a question that was designed to evaluate their expectancies for success on the task (see Appendix D). They were also asked to read information

regarding the difference between an assertion of fact and a pragmatic implication along with information about responding to statements about which they were uncertain. Ss then responded to twenty statements based on information in "The Cabin" and twenty statements based on "Jose" (see Appendix D). These statements were designed to test the respondent's ability to remember and integrate information from the two stimulus passages. Ss were required to determine whether the information in each of the statements had been directly asserted as fact in the stimulus passage, or merely implied pragmatically. Ss were awarded one point for each correct distinction, resulting in a possible total score of forty. This score provided the dependent measure for Hypotheses 1 and 2.

The information that Ss read about responding to statements about which they were uncertain was designed to provide a measure of their willingness to acknowledge uncertainty about the correct response to a specific statement. It was assumed that unwillingness to acknowledge uncertainty was tantamount to defensiveness and would therefore help to clarify the defensive external dimension. Ss were instructed to circle any answer of which they were largely uncertain. The total number of answers circled--again, a possible total score of forty--provided the dependent measure for Hypothesis 3.

Immediately upon completion of this task, Ss responded to three additional questions designed to contribute to interpretations of the major findings. These questions were included on the second answer sheet (see Appendix D). The first question concerned Ss' ratings of how important it was that they do well on the task. It was designed to test the effectiveness of the achievement manipulation. The second question asked whether Ss thought they received an above average score. It was intended to provide information about Ss' expectations for success following the primary experimental task. The final question concerned subjects' attitudes about the organization of the task. It was designed to give them an opportunity to project blame onto the task rather than accept personal responsibility for their performance.

Results

In order to examine the issues raised in the present study, results were analyzed in the following sequence. Initially, the effectiveness of the achievement independent variable was tested. Then, the two main hypotheses concerning the cognitive performance of internals compared with externals, and the internal and external subgroups were tested. Thirdly, the prediction about subjects' willingness to acknowledge uncertainty was tested. Finally, a number of supplementary analyses are presented. They are designed to clarify the results pertaining to the major hypotheses.

Measurement of Subjects' Motivation to Achieve

The question "How important was it for you to do well on this task?" was designed to provide information about the effect of the manipulation of achievement motives. Here, the dependent measure was subjects' responses on a 1-7 scale. The mean score was 4.81 for Ss in the high-achievement condition and 4.67 for those in the low-achievement condition. From Table 1 it can be seen that the results of a 2(I-E) X 2(Achievement Levels) X 2(Sex) analysis of variance show that there is no difference between these two

Table 1
Analysis of Variance of the
Measurement of Subjects' Motivation to Achieve

Source	df	MS	F	Omega Squared
Internal-External Control (I-E)	1	11.56	6.38*	.03
Achievement	1	.76	.42	
Sex	1	1.81	1.00	
I-E X Achievement	1	.51	.28	
I-E X Sex	1	.06	.03	
Achievement X Sex	1	1.06	.58	
I-E X Achievement X Sex	1	1.41	.78	
Error	152	1.81		
Total	159			

* $p < .01$

mean scores as indicated by the absence of a main effect for Achievement ($F = .42$). Thus, on the basis of these data, it appears that the attempt to create two different levels of achievement motivation was unsuccessful.

I-E and Cognitive Performance

The first hypothesis of the present study predicted that internals would be better able than external Ss to distinguish between assertions of fact and pragmatic implications. The dependent measure for this hypothesis consisted of the absolute number of correct responses to forty test statements about information in two stimulus passages. This prediction was tested by means of a 2(I-E) X 2(Achievement) X 2(Sex) analysis of variance that evaluated the main effect for I-E, as well as various other relationships of interest. From Table 2 it can be seen by calculating the average of the two male and two female mean scores in both achievement conditions that the mean was 26.79 for internals and 27.34 for external Ss. The main effect for I-E that is presented in Table 3 shows that there was

Table 2
Mean Number of Correct Assertion versus Implication Distinctions
by Subjects in the High-and Low-Achievement Conditions

Achievement conditions				
Group	n	High	Low	
Males				
Externals	40	26.75	(3.84) ^a	27.20 (3.68)
Defensive	(20)	28.40	(3.27)	27.00 (3.65)
Congruent	(20)	25.10	(3.79)	27.40 (3.89)
Internals	40	28.40	(2.80)	25.85 (2.94)
High-trust	(20)	28.90	(3.28)	27.20 (2.08)
Low-trust	(20)	27.90	(2.29)	24.50 (3.14)
Females				
Externals	40	27.50	(2.89)	27.90 (3.60)
Defensive	(20)	28.60	(2.83)	27.00 (4.16)
Congruent	(20)	26.40	(2.63)	28.80 (2.83)
Internals	40	26.55	(2.61)	26.35 (3.53)
High-trust	(20)	25.90	(2.33)	25.90 (2.81)
Low-trust	(20)	27.20	(2.82)	26.80 (4.23)

Note. Maximum score = 40.

^aStandard deviations are in parentheses.

Table 3
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for Internals and Externals

Source	df	MS	F*	Omega Squared
Internal-External Control (I-E)	1	12.10	1.14	
Achievement	1	9.03	.85	
Sex	1	.03	.00	
I-E X Achievement	1	32.40	3.04	
I-E X Sex	1	19.60	1.84	
Achievement X Sex	1	13.23	1.24	
I-E X Achievement X Sex	1	14.40	1.35	
Error	152	10.66		
Total	159			

*All F values failed to reach significance at $p = .05$.

no difference demonstrated in the cognitive performance of internals and externals.

The I-E Subgroups, Achievement Motivation, and Cognitive Performance

The second hypothesis suggested that defensive externals would have greater difficulty distinguishing between assertions of fact and pragmatic implications in the high-achievement as compared with the low-achievement condition of the current study. The rationale for this hypothesis was based on the assumption that defensive externals would experience increased anxiety levels in the achievement-related condition as a consequence of their presumed sensitivity to achievement-related cues. A decrement in the mean performance scores for defensive externals was therefore predicted in the high-achievement condition. It was also expected that because of the more consistent nature of their behavior in various achievement settings, the cognitive performance of congruent externals, and high- and low-trust internals would not fluctuate across the achievement conditions. The dependent measure was the same as for the first hypothesis. The means for the various subgroups in the two achievement conditions are presented in Table 2. The

Table 4
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for the I-E Subgroups

Source	df	MS	F	Omega Squared
Internal-External (Subgroups) Control				
(I-E) subgroups	3	9.51	.93	
Achievement	1	9.03	.88	
Sex	1	.03	.00	
I-E (subgroups) X Achievement	3	37.34	3.66*	.05
SME for Defensive Externals	(1)	22.50	2.20	
SME for Congruent Externals	(1)	55.25	5.41*	.10
SME for High-trust Internals	(1)	7.25	.71	
SME for Low-trust Internals	(1)	36.10	3.53	
I-E (subgroups) X Sex	3	23.64	2.31	
Achievement X Sex	1	13.25	1.30	
I-E (subgroups) X Achievement X Sex	3	5.54	.54	
Error	144	10.22		
Total	159			

* $p < .05$.

I-E subgroup means can be calculated by averaging the male and female scores.

The predictions were examined by means of a 4(I-E subgroups) X 2(Achievement X 2(Sex)) analysis of variance that tested the simple main effects for the four I-E subgroups across the achievement conditions. As shown in Table 4, the results do not show a decrement in the cognitive performance of defensive externals ($F = 2.20$). Also contrary to expectations was the result showing a significant decrement in the performance of congruent externals in the high-achievement condition ($F = 5.41$, $p < .05$). This hypothesis was supported, however, for high- and low-trust internals; that is, their performance did not fluctuate significantly in the two achievement conditions ($F = .71$ & 3.53 , respectively). Thus, this hypothesis was supported for high- and low-trust internals, but the results for the two external subgroups appear to be in direct opposition to the predictions.

Further consideration of the relationship among the subgroups across the achievement conditions was thought to be of potential benefit. The interaction that represents this relationship is statistically significant ($F =$

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3.66, $p < .025$), a finding that indicates there is a relationship between the level of achievement motivation and the cognitive performance of subgroup members (see Table 4). This interaction is illustrated in Figure 1.

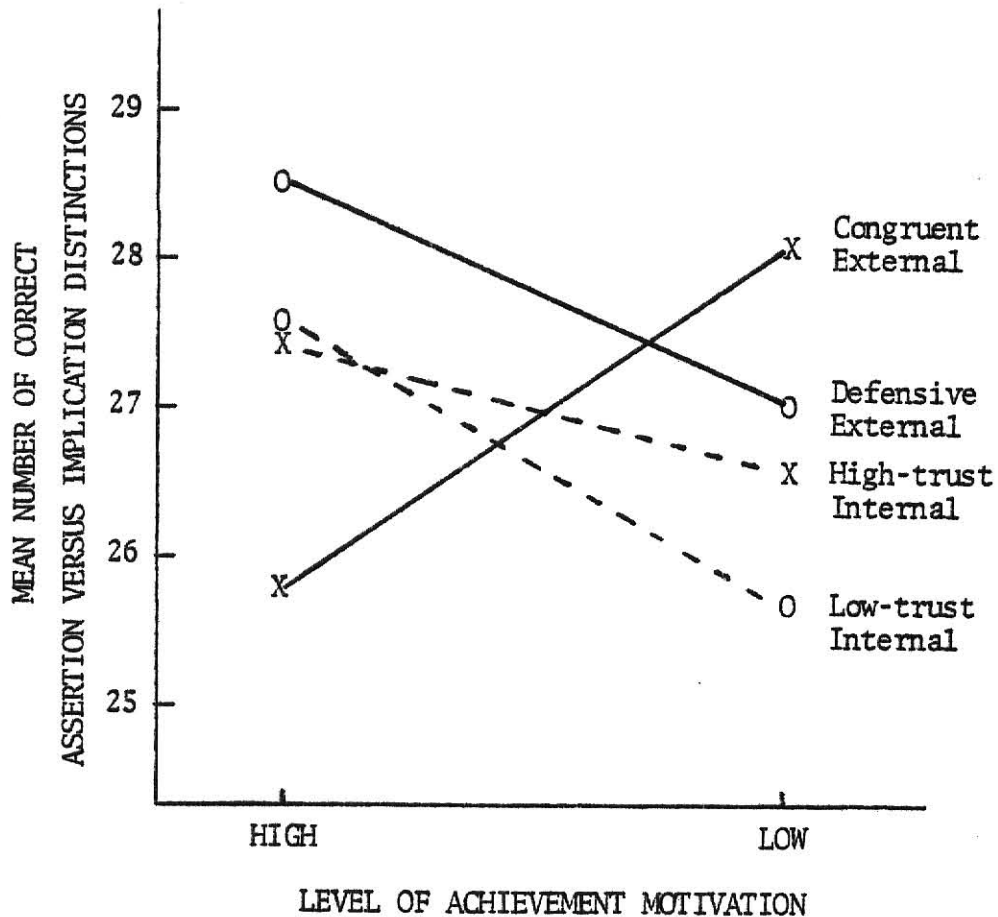


Figure 1. The interaction between I-E subgroups and the achievement variable.

Willingness to Acknowledge Uncertainty

The third hypothesis suggested that in the high-achievement condition, defensive externals would be less willing to acknowledge that they could not recall information about the stimulus material than would members of the other three subgroups. The rationale for this hypothesis was based on the presumed reluctance of defensive externals to accept responsibility for failure in achievement-related conditions and their presumed tendency to mistrust, be suspicious of, or blame others. Ss were instructed to circle any answer about which they were largely uncertain. The dependent measure, then, was the absolute number of answers circled. Again, the maximum possible score was forty.

The mean number of answers circled as uncertain was 3.1 for defensive externals, 3.65 for congruent externals, 3.55 for high-trust internals, and 2.00 for low-trust internals. The prediction was tested by means of the planned comparisons shown in Table 5. From this table, it can be seen that

Table 5
Analysis of Variance of the
Measure of Ss' Willingness to Acknowledge Uncertainty
in the High-Achievement Condition

Source	df	MS	F*	Omega Squared
Internal-External (Subgroups) Control (I-E) subgroups	3	11.42	.76	
Defensive Externals vs. Congruent Externals	(1)	3.03	.20	
Defensive Externals vs. High-trust Internals	(1)	2.03	.13	
Defensive Externals vs. Low-trust Internals	(1)	12.01	.80	
Error	76	15.04		
Total	79			

*All F values failed to reach significance at $p = .05$.

no statistically significant differences were demonstrated between the mean for the defensive external subgroup and the means for each of the other three subgroups. Thus, there does not appear to be a difference between the willingness of defensive externals and each of the other three subgroups to acknowledge uncertainty in achievement-related conditions.

The Utility of the Male-Female Distinction

In addition to providing information about the cognitive performance of internals and externals, the I-E X Achievement X Sex analysis of variance adds information that contrasts the performance of males and females. As shown in Table 3, the results of the tests of the main effect for sex ($F = .00$), the I-E X Sex interaction ($F = 1.84$), the Achievement X Sex interaction ($F = 1.24$), and the I-E X Achievement X Sex interaction ($F = 1.35$) did not demonstrate a significant influence of the sex variable.

Similarly, the I-E(subgroups) X Achievement X Sex analysis of variance that is shown in Table 4 includes tests of the main effect for sex ($F = .00$), the I-E(subgroups) X Sex interaction ($F = 2.31$), the Achievement X Sex interaction ($F = 1.30$), and the I-E(subgroups) X Achievement X Sex interaction ($F = .54$). Again, none of these results reflected any significant influence from the sex variable.

In order to further clarify this issue, the male and female components of the I-E X Achievement and the I-E(subgroups) X Achievement interactions were analyzed separately. As shown in Tables 6 and 7, the I-E X Achievement interaction is statistically significant for males ($F = 4.02$, $p < .05$), but is not for females ($F = 1.09$). As noted in Table 6, it appears to be the contribution of the simple main effect for male internals ($F = 5.81$, $p < .025$) that accounts for the significant interaction for males.

From Tables 8 and 9, it can be seen that the results are similar in the case of the I-E(subgroups) X Achievement interaction. The relationship is again significant for males ($F = 2.75$, $p < .05$) but not for females ($F = 1.41$). Here, it appears that the low-trust internal male subgroup was the major contributor to the significant male interaction ($F = 5.52$, $p < .05$). Thus, it appears either that these performance phenomena are more easily detectable among both male internals and externals and male subgroup members, i.e., fewer male subjects are needed to produce the effect, or that the cognitive performance of women is simply influenced differently by variations in levels of achievement motivation.

To sum up, data concerning sex differences appear to be ambiguous. Consequently, exclusion of women from experimental designs similar to the one employed here does not seem warranted at this time.

Table 6
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for Male Internals and Externals

Source	df	MS	F	Omega Squared
Internal-External Control (I-E)	1	.45	.04	
Achievement	1	22.05	1.97	
I-E X Achievement	1	45.00	4.02*	.04
SME for Internals	(1)	65.03	5.81**	.06
SME for Externals	(1)	2.03	.18	
Error	76	11.19		
Total	79			

*p<.05

*p<.025

Table 7
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for Female Internals and Externals

Source	df	MS	F*	Omega Squared
Internal-External Control (I-E)	1	31.25	3.08	
Achievement	1	.20	.02	
I-E X Achievement	1	1.80	1.09	
Error	76	10.14		
Total	79			

*All F values failed to reach significance at $p = .05$.

Table 8
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for Male Members of the I-E Subgroups

Source	df	MS	F	Omega Squared
Internal-External (Subgroups) Control				
(I-E) subgroups	3	18.57	1.77	
Achievement	1	22.05	2.11	
I-E (subgroups) X Achievement	3	28.82	2.75*	.06
SME for Defensive Externals	(1)	9.80	.94	
SME for Congruent Externals	(1)	26.45	2.53	
SME for High-trust Internals	(1)	14.45	1.38	
SME for Low-trust Internals	(1)	57.80	5.52*	.19
Error	72	10.47		
Total	79			

* $p < .05$

Table 9
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for Female Members of the I-E Subgroups

Source	df	MS	F*	Omega Squared
Internal-External (Subgroups) Control				
(I-E) subgroups	3	14.58	1.46	
Achievement	1	.20	.02	
I-E (subgroups) X Achievement	3	14.07	1.41	
Error	72	9.96		
Total	79			

*All F values failed to reach significance at $p = .05$.

Further Analyses Relative to the Subgroup Distinctions

It has been reported by Bruno (1977) that efforts to train Ss to distinguish pragmatic implications from direct assertions have led to the realization that the number of "i" responses to implications will generally be lower than the number of "a" responses to direct assertions. She suggests that responding "a" to direct assertions only requires that the subject remember something explicitly stated in the passage, whereas an "i" response to an implication requires the subject to make an inference. It may, therefore, be possible that there are differences among subgroups in their ability to correctly identify pragmatic implications; a more cognitively complex task. In order to test the relationship between I-E subgroup membership and this ability, a chi square analysis was performed on the number of correct assertion and implication distinctions made by members of each subgroup as shown in Table 10.

Table 10
Number of Correct Assertion and Implication Distinctions
Broken Down by I-E Subgroup Membership

Type Statement	Subgroup			
	Defensive External	Congruent External	High-trust Internal	Low-trust Internal
Direct Assertions	549	527	525	553
Pragmatic Implications	561	550	554	511

The result of the chi square analysis for these data was nonsignificant ($X^2 = 3.05$, d.f. = 3) indicating that there is no relationship between I-E subgroup orientation and ability to distinguish assertions or implications. In addition, only the low-trust internal subgroup was more accurate in identifying assertions than implications, a result that contradicts Bruno's reasoning. However, there is no apparent rationale for this finding.

As mentioned earlier, the results of the analysis of the simple main effects for each of the four subgroups across the achievement conditions provided limited information about the utility of distinguishing between defensive and congruent externals and between high- and low-trust internals. In an effort to clarify this issue, the I-E(subgroups) X Achievement interaction that is illustrated in Figure 1 was divided into two of its interactional

Table 11
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for High-trust and Low-trust Internals

Source	df	MS	F	Omega Squared
Internal (Subgroups) Control (I)	1	14.40	1.35	
Achievement	1	9.03	.85	
Sex	1	.03	.00	
I X Achievement	1	19.60	1.84	
I X Sex	1	44.10	4.14*	.07
Achievement X Sex	1	13.22	1.24	
I X Achievement X Sex	1	1.60	.15	
Error	72	10.65		
Total	79			

* $p < .05$

Table 12
Analysis of Variance of the Correct
Assertion versus Implication Distinctions
for Defensive and Congruent Externals

Source	df	MS	F	Omega Squared
External (Subgroups) Control (E)	1	13.61	1.16	
Achievement	1	3.61	.31	
Sex	1	10.51	.90	
E X Achievement	1	74.11	6.31*	.11
E X Sex	1	7.81	.67	
Achievement X Sex	1	.01	.00	
E X Achievement X Sex	1	.11	.01	
Error	72	11.75		
Total	79			

* $p < .025$

components. That is, a 2(Defensive and Congruent External) X 2(Achievement) analysis of variance was employed to examine the relationship between the two external subgroups, and another 2(High- and Low-trust Internal) X 2(Achievement) analysis of variance tested this relationship for the internal subgroups. As shown in Tables 11 and 12, the results failed to demonstrate a significant interaction effect for the two internal subgroups ($F = 1.84$) but did show a significant effect for the external subgroups ($F = 6.31$, $p < .025$). Thus, Hochreich's conclusion that the high- and low-trust internal distinction is not a useful one, whereas the defensive-congruent external is, is supported by these data.

Expectancy Results

Pretask

As is customary in I-E research studies, subjects' initial expectancies were assumed to be reflected by their pretask estimates of performance. It was anticipated that internals would express higher expectancies for success than externals. This trend was also expected to be reflected in the responses of members of the four subgroups. In other words, the expectancies of members of the high- and low-trust internal subgroups were expected to exceed those of defensive and congruent externals. Operationally, expectancies were measured on a 1-5 scale by responses to the following instructions: "Before continuing, we would like an estimate of how you expect to do on this task. Please circle one of the following: very good, good, average, not too hot, poor."

As can be seen by calculating the average of the male and female mean responses in both achievement conditions as shown in Table 13, the mean rating was 3.75 for internals and 3.47 for external Ss. The analysis of variance that is summarized in Table 14 indicates that as anticipated, the expectancies were significantly higher for internals than for externals ($F = 5.85$, $p < .02$).

From Table 13, the mean expectancy rating can also be calculated for each of the four subgroups by the same averaging process. As can be seen from Table 15, the difference among the mean rating of the two internal subgroups (3.75), the defensive external subgroup (3.60), and the congruent external subgroup (3.35) was statistically significant ($F = 2.80$, $p < .04$). Planned comparisons indicated that only the difference between the two internal means and the congruent external mean was statistically significant ($F = 6.27$, d.f. = 1, 79, $p < .025$). Thus, as anticipated, internal Ss expressed higher pretask expectancies for success than externals. Furthermore, it appears that the

Table 13
Mean Pretask and Posttask Expectancy Measure Scores

Groups	n	Males		Females	
		Achievement conditions			
		High	Low	High	Low
Pretask Expectancies					
Externals	40	3.65 (.74) ^a	3.40 (.84)	3.45 (.62)	3.40 (.61)
Defensive	(20)	3.70 (.48)	3.70 (.68)	3.50 (.71)	3.50 (.53)
Congruent	(20)	3.60 (.84)	3.10 (.99)	3.50 (.52)	3.30 (.68)
Internals	40	3.90 (.74)	3.85 (.77)	3.55 (.66)	3.70 (.71)
High-trust	(20)	4.20 (.63)	3.90 (.74)	3.40 (.84)	3.50 (.85)
Low-trust	(20)	3.60 (.84)	3.80 (.79)	3.70 (.48)	3.90 (.57)
Posttask Expectancies					
Externals	40	4.25 (1.68)	4.55 (1.24)	4.70 (1.00)	4.30 (1.38)
Defensive	(20)	4.50 (1.65)	4.70 (1.49)	5.10 (.74)	4.40 (1.35)
Congruent	(20)	4.00 (1.70)	4.40 (.97)	4.30 (1.25)	4.20 (1.40)
Internals	40	5.45 (1.05)	5.20 (.76)	4.70 (1.35)	4.70 (1.41)
High-trust	(20)	5.70 (.95)	5.40 (.84)	4.30 (1.70)	4.90 (1.73)
Low-trust	(20)	5.20 (1.14)	5.00 (.67)	5.10 (.99)	4.50 (1.08)

Note. Pretask expectancies were measured on a 5-point scale and the posttask measure was based on a 7-point scale.

^aStandard deviations are in parentheses.

Table 14
Analysis of Variance of the
Pretask Expectancy Measure for Internals and Externals

Source	df	MS	F	Omega Squared
Internal-External Control (I-E)	1	3.03	5.85*	.03
Achievement	1	.10	.19	
Sex	1	1.23	2.37	
I-E X Achievement	1	.40	.77	
I-E X Sex	1	.23	.44	
Achievement X Sex	1	.40	.77	
I-E X Achievement X Sex	1	.00	.00	
Error	152	.52		
Total	159			

* $p < .02$

Table 15
Analysis of Variance of the
Pretask Expectancy Measure for the I-E Subgroups

Source	df	MS	F	Omega Squared
Internal-External (Subgroups) Control (I-E) subgroups	3	1.43	2.80*	.03
Achievement	1	.10	.20	
Sex	1	1.23	2.40	
I-E (subgroups) X Achievement	3	.43	.85	
I-E (subgroups) X Sex	3	.96	1.88	
Achievement X Sex	1	.40	.79	
I-E (subgroups) X Achievement X Sex	3	.13	.26	
Error	144	.51		
Total	159			

* $p < .04$

congruent external subgroup is the primary contributor to the lower expectancies expressed by the external Ss.

Posttask

Posttask expectancies were measured on a 1-7 scale by responses to the question "How likely is it that you achieved an above average score?". Respondents did not receive feedback about their performance prior to responding to this question and it is therefore, in some respects, a duplication of the pretask measure. It was included, however, to determine whether there was any change in the rank order of the subgroup means on the two expectancy measures. It was suspected that as a result of actually experiencing the difficult nature of the experimental task, defensive externals would become concerned with the possibility of failure and as a result would lower their expectancies for success.

The internal and external and subgroup means can be calculated from Table 13 as they were for the pretask expectancies. Tables 16 and 17 show that both the main effect for I-E ($F = 7.83, p < .01$) and the main effect for I-E(subgroups) ($F = 3.48, p < .02$) were significant. However, a comparison of the pretask and posttask subgroup means indicates that there was no change in the rank order of defensive externals relative to the other three subgroups. Thus, it appears that merely being involved in a difficult task does not bring out the defensive nature of the defensive external orientation.

Table 16
Analysis of Variance of the
Posttask Expectancy Measure for Internals and Externals

Source	df	MS	F	Omega Squared
Internal-External Control (I-E)	1	12.66	7.83*	.04
Achievement	1	.31	.19	
Sex	1	2.76	1.71	
I-E X Achievement	1	.06	.04	
I-E X Sex	1	5.26	3.25	
Achievement X Sex	1	.51	.31	
I-E X Achievement X Sex	1	2.26	1.40	
Error	152	1.62		
Total	159			

* $p < .01$

Table 17
Analysis of Variance of the
Posttask Expectancy Measure for the I-E Subgroups

Source	df	MS	F	Omega Squared
Internal-External (Subgroups) Control (I-E) subgroups	3	5.67	3.48*	.04
Achievement	1	.31	.19	
Sex	1	2.76	1.69	
I-E (subgroups) X Achievement	3	.79	.49	
I-E (subgroups) X Sex	3	2.47	1.52	
Achievement X Sex	1	.51	.31	
I-E (subgroups) X Achievement X Sex	3	1.52	.94	
Error	144	1.63		
Total	159			

* $p < .02$

Attributional Behavior

Attributions were measured on a 1-7 scale by subjects' responses to the statement "The task was made more difficult than necessary partly because of the way it was organized." Externals were expected to project responsibility for their performance to the task rather than to themselves to a greater degree than internals. It was also anticipated that this effect would be exaggerated for defensive externals relative to members of the other three subgroups.

As can be seen by calculating the average of the male and female mean responses in both achievement conditions as shown in Table 18, the mean rating was 3.41 for internals and 3.51 for external Ss. The analysis of variance that is summarized in Table 19 indicates that the difference between the two is not statistically significant ($F = .20$).

The mean attributional rating for the four subgroups can be calculated from Table 18 by the same averaging process. As can be seen from Table 20, the difference among the means for the defensive external (3.65), the congruent external (3.38), the high-trust internal (3.25), and the low-trust internal (3.57) subgroups was not statistically significant ($F = .67$). Thus, contrary to expectations, there does not appear to be a tendency on the part of externals in general, and defensive externals in particular, to project responsibility for their behavior to situational factors following this task.

Table 18
Mean Scores for the Attributional Measure

Groups	n	Males		Females	
		Achievement conditions			
		High	Low	High	Low
Externals	40	3.60 (1.45) ^a	3.65 (1.29)	3.60 (1.13)	3.20 (1.60)
Defensive	(20)	4.10 (1.52)	3.40 (.84)	3.60 (1.08)	3.50 (1.90)
Congruent	(20)	3.10 (1.37)	3.90 (1.73)	3.60 (1.17)	2.90 (1.29)
Internals	40	3.10 (1.43)	3.75 (1.15)	3.10 (1.40)	3.70 (1.62)
High-trust	(20)	2.80 (1.69)	3.30 (.82)	3.00 (1.25)	3.90 (1.73)
Low-trust	(20)	3.40 (1.17)	4.20 (1.48)	3.20 (1.55)	3.50 (1.51)

Note. Scores represent responses on a 1-7 scale.

^aStandard deviations are in parentheses.

Table 19
Analysis of Variance of the
Attribution Measure for Internals and Externals

Source	df	MS	F*	Omega Squared
Internal-External Control (I-E)	1	.40	.20	
Achievement	1	2.03	1.02	
Sex	1	.63	.31	
I-E X Achievement	1	6.40	3.12	
I-E X Sex	1	.40	.20	
Achievement X Sex	1	.63	.31	
I-E X Achievement X Sex	1	.40	.20	
Error	152	1.99		
Total	159			

*All F values failed to reach significance at $p = .05$.

Table 20
Analysis of Variance of the
Attribution Measure for the I-E Subgroups

Source	df	MS	F*	Omega Squared
Internal-External (Subgroups) Control (I-E) subgroups	3	1.34	.67	
Achievement	1	2.03	1.01	
Sex	1	.61	.31	
I-E (subgroups) X Achievement	3	2.51	1.25	
I-E (subgroups) X Sex	3	1.34	.67	
Achievement X Sex	1	.63	.31	
I-E (subgroups) X Achievement X Sex	3	2.31	1.15	
Error	144	2.00		
Total	159			

*All F values failed to reach significance at $p = .05$.

Discussion

Discussion pertaining to the results obtained in this study will be presented in a sequence similar to that used in the Results section. Accordingly, issues relating to the effectiveness of the manipulation of the achievement variable will be addressed first, followed by discussion of Ss' cognitive task performance, including both the absence of difference between internal and external Ss and other findings concerning the performance of the I-E subgroups across the different achievement conditions. Discussion of the primary hypotheses will conclude with several comments concerning the lack of differences among members of the I-E subgroups' willingness to acknowledge uncertainty in the high-achievement condition.

Finally, results of the supplementary analyses will be discussed. Specifically, the focus will be on issues pertaining to the usefulness of distinguishing between men and women relative to cognitive performance and on the utility of employing the I-E subgroups distinction. Results pertaining to Ss' expectancies for success and their attributional behavior will also be addressed.

Measurement of Subjects' Motivation to Achieve

The question "How important was it for you to do well on this task?" was designed to provide information about the effect of the achievement manipulation. It was reasoned that respondents in the achievement-related condition would experience greater levels of achievement motivation and that this would influence their responses to this question. However, since the obtained data do not support this rationale, there are serious questions about the impact of the major independent variable in this study. If the construct validity of this dependent measure can be assumed it would seem that the manipulation may simply not have been potent enough to have the desired effect and, consequently, any conclusion relative to differential cognitive performance in response to achievement "pressures" cannot be substantiated by these data.

This conclusion seems somewhat questionable, however, for several reasons. First, the manipulation used in the current experiment is quite typical of numerous other attempts to artificially induce different levels of achievement motivation. For example, Moulton, Raphelson, Kristofferson, and Atkinson

(1958) used a similar manipulation to successfully create different levels of motive arousal. In another study that investigated the nature of the differences in self concept among Ss classified according to the strength and generality of achievement motivation, Martire (1956) also used a very similar technique. In each of these studies, however, the influence of the achievement manipulation was assumed rather than tested, although the results were in line with predictions that required different levels of achievement motivation.

It appears, then, either that a number of prior investigators are wrong, or, more probably, either the manipulation employed here failed for unknown reasons, or the dependent measure (a simple question about task importance) was inadequate to detect the effects of the manipulation.

Two results from the present study lend support to the latter line of reasoning. First, the statistically significant I-E(subgroups) X Achievement interaction suggests a "real" influence of the achievement variable on the cognitive performance of subgroup members. Consequently, barring a Type II error in these data, it appears that the achievement manipulation influenced performance. (Conversely, the absence of significant results where achievement motives were expected to be reflected in performance supports the conclusion that the manipulation failed.) Secondly, the significant main effect for I-E on the "task importance" measure suggests the possibility that it appealed to Ss' I-E orientation rather than to their achievement motives. Indeed, in retrospect, it appears that the wording of the statement may have actually measured the tendency of internals to set higher minimal goal levels than externals (Phares & Lamiell, 1974) or to some other aspect of the I-E orientation, rather than Ss' motivation to achieve.

It should also be noted that the "task importance" measure was used in the pilot study for the present experiment. Although the manipulation and the procedure were virtually the same in both studies, the results in the pilot did reveal a significant difference between Ss' achievement-related motives in the experimental and control conditions.

Given all this evidence, the reliability of the single item dependent measure used in the current study may certainly be questioned. Traditional thinking on the issue suggests that the reliability of an instrument is proportional to its length, other things being equal (the Spearman-Brown formula). In other words, the fewer number of items, the less reliable a measure tends to be. This is similar to the logic that calls for greatly

increased confidence in experimental findings after their replication; the more replications, the greater the confidence.

In retrospect, then, it appears that the "task importance" measure was a poor one. Consequently, the impact of the achievement manipulation cannot be assessed with certainty on the basis of the information available. However, the preponderance of evidence seems to point to the conclusion that there was some difference in its effect. The significant results of the pilot study, and the I-E(subgroups) X Achievement interaction, the relatively unsophisticated nature of the instrument, the significant main effect for I-E, as well as the fact that other investigations have relied on a similar procedure, all tend to support this conclusion.

I-E and Cognitive Performance

The first hypothesis in this study predicted that the cognitive performance of internals would surpass that of externals on a memory task that required discriminations between assertions of fact and pragmatic implications. It was reasoned that because of their greater sensitivity to situational cues, internals would not only be more attentive to the information in the two stimulus passages but would make better use of the information that was provided about how to distinguish between assertions and implications. The data from the present experiment, however, do not support this prediction. The internal group did not differ significantly from the external group on the performance measure.

This result is somewhat surprising in view of the Wolk and DuCette (1974) findings mentioned earlier. In their study, internals were superior to externals not only in detecting errors in verbal material but on a measure of incidental learning (retention of the content of the material). However, a consideration of the impact of the achievement manipulation used in the present study relative to other findings reported by Lefcourt, Lewis, and Silverman (1963) may help to clarify these unexpected results.

Lefcourt et al. (1963) placed Ss in a level of aspiration situation in which they were required to perform a motor skill task. They discovered that internals were more attentive when they believed their performance was skill- as opposed to chance-determined. Internals also reported fewer task-irrelevant thoughts in the skill as compared with the chance condition. Although there were similar differences among externals, they were much less pronounced. In addition, the results of the Seeman (1963) study mentioned

earlier, are consistent with this finding. He concluded that internals may be superior in recall abilities only when information is relevant to their future behavior.

Thus, the surprising similarity in the cognitive performance of internals and externals can be accounted for by a relatively simple explanation that is grounded, at least indirectly, in prevailing I-E research. That is, if Ss in the high-achievement condition of the present study perceived the task as more skill- than chance-determined, and if they saw information as more relevant to their future behavior, we might expect reactions similar to those reported by Lefcourt et al. and Seeman. The performance of internals should therefore improve in the high- as compared with the low-achievement condition of the present study. In contrast, if the reaction of externals to skill as opposed to chance-determined tasks is less pronounced, as suggested by Lefcourt et al., there should be less change in their cognitive performance in response to changing levels of achievement motivation. However, although the interaction between I-E and the achievement variable that reflects these relationships was not statistically significant ($F = 3.04, p < .08$), there was a trend in the data indicating that the cognitive performance of internals and externals may conform to the patterns suggested by the Lefcourt et al. and the Seeman findings. In any case, the unexpected finding that there is no difference in the cognitive performance of internals and externals indicates that further inquiries along these lines certainly seem warranted.

The I-E Subgroups, Achievement Motivation, and Cognitive Performance

The second hypothesis stated that defensive externals would experience increased anxiety levels in the high-achievement condition and would, as a result, have greater difficulty discriminating between assertions of fact and pragmatic implications in that as opposed to the low-achievement condition. It was also expected that because members of the other three subgroups had not demonstrated the degree of sensitivity to achievement-related cues as had defensive externals, their performance would not fluctuate significantly across the two achievement conditions.

This hypothesis was supported for high-trust and low-trust internals; that is, their performance did not fluctuate significantly in the two achievement conditions. In contrast, the results for the two external subgroups appear to be in direct opposition to the predictions. The cognitive

performance of defensive externals was expected to reflect their presumed sensitivity to achievement-related cues, but this was not the case. The results indicate that there was no influence of the experimental treatment. Conversely, the performance of congruent externals was expected to remain stable but in fact showed a significant decrement in the high-achievement condition. Thus, it appears that it is the cognitive performance of congruent rather than defensive externals that suffers in achievement-related conditions.

The rationale for this hypothesis suggests that members of the subgroups experience different levels of anxiety when involved in achievement-related activities. Although the results were unanticipated for the two external subgroups, it is still possible to account for these data by addressing the potential differential effects of anxiety on performance. As mentioned earlier, the findings of Butterfield (1964) and Strassberg (1973) demonstrated a low but significant correlation between externality and anxiety. Both studies discuss anxiety as having facilitating or debilitating potential relative to behavior. It is therefore possible that anxiety may have had a debilitating effect on the cognitive performance of congruent externals in the high-achievement condition but had little effect on the performance of internals and defensive externals in either achievement condition. Thus, the debilitating effects of the achievement-related instructions presumably were lessened in the low-achievement condition for the congruent externals and they were "freed" to be more competent.

However, neither the Strassberg nor the Butterfield studies distinguished between defensive and congruent externals, so this reasoning lacks an empirical foundation. But it is possible that the elevated anxiety levels they found for externals reflected the contribution of congruent externals, who perceived themselves involved in an achievement-related task while serving as Ss in these two studies. In any case, this rationale is highly speculative and its validity cannot be determined on the basis of these data.

Willingness to Acknowledge Uncertainty

The third hypothesis suggested that in the high-achievement condition, defensive externals should be less willing to acknowledge that they could not recall information about the stimulus material than would members of the other three subgroups. The rationale for this hypothesis was based on the presumed reluctance of defensive externals to accept responsibility for failure in achievement-related conditions and their presumed tendency to

mistrust, be suspicious of, or blame others. Respondents were instructed to circle any answer about which they were largely uncertain. The dependent measure, then, was the absolute number of answers circled. However, no difference between the defensive external mean and those of the other three subgroups was indicated by an analysis of the data.

It is possible that the instructions for this measure were unclear or that some respondents simply did not regard them as important once they began responding to the assertion versus implication questions. Indeed, their pattern of responding seemed random. Consequently, there was a large group variance ($s^2 = 13.85$). There was no discernable pattern to this use; that is, none of the subgroups made more efficient use of the measure by circling a larger proportion of incorrect answers than the others. The apparent absence of meaningful results could therefore be as much a measurement problem as any indication that there are no differences among these subgroups relative to defensive behavior.

Furthermore, there is an important difference in procedure between this study and those upon which this hypothesis was based (Hochreich, 1974, 1975). In Hochreich's work, Ss actually experienced failure (either directly or vicariously), whereas Ss in this study were responding to the dependent measure while still involved in the primary experimental task. The lack of meaningful differences among the four subgroup means suggests that merely being involved in achievement-related situations does not catalyze the presumed defensive external orientation. Manifestation of their defensive nature may actually require that they experience failure, or at least that the prospect is more prominent than it may have been during this experiment. Thus, the failure of the results of the present study to replicate Hochreich's may be due to differences in the tasks employed.

The Utility of the Male-Female Distinction

Overall, the results of this investigation do not support Hochreich's conclusion that female members of the four I-E subgroups do not behave like their male counterparts. There were no statistically significant differences among the results of any of the tests for the main effect or the interaction effect of the sex variable on any of the major dependent measures.

However, in support of Hochreich's position, it should be noted that both the I-E X Achievement and the I-E(subgroups) X Achievement interactions were statistically significant for males but were not significant for females. As a

consequence, it appears that a more powerful experimental design (greater N) is needed to detect these influences for women than for men. But the data may also simply reflect a reaction on the part of males to different achievement cues and the absence of a reaction for women. If this is the case, substantial support would be provided for Hochreich's conclusion. However, any final decision to exclude women from similar research appears to be premature.

Further Discussion Relative to the Subgroup Distinctions

With respect to distinguishing between high- and low-trust internals, it was noted that Hochreich (1974, 1975) concluded that there is no reason to expect them to differ from each other in terms of the dependent measure she used. The same conclusion seems warranted relative to the results of the present study. The interaction reflecting the cognitive performance of the high- and low-trust internal subgroups across the achievement conditions was not statistically significant (see Table 11 and Figure 1). In addition, there was no difference between the internal subgroup means in either achievement condition. Thus, there is no evidence to contradict the long held belief that the internal dimension of the locus of control construct is homogeneous relative to the external dimension with respect to the dependent variables studied to date.

As mentioned earlier, the results of the current study pertaining to the cognitive performance of the external subgroups were unexpected. Contrary to the predictions, the performance of defensive externals was not adversely affected in the high-achievement condition, nor did the performance of congruent externals appear to be uninfluenced across conditions. Thus, the achievement variable had an unexpected effect on the cognitive performance of both the defensive and congruent external subgroups and it appears to be the performance of congruent rather than defensive externals that is adversely affected in achievement-related conditions.

However, although it has been tacitly assumed that the utility of distinguishing between the two external subgroups rested on a demonstration of the uniqueness of the defensive external orientation, it is just as reasonable to consider the behavior of congruent externals in relation to the behavior of defensive externals as evidence for making the distinction. Thus, even though the obtained results were unexpected, and to some degree difficult to account for, they seem to indicate that there is an advantage in distinguishing between the external subgroups. The interaction between the defensive and congruent

subgroups across the two achievement conditions was statistically significant (see Table 12 and Figure 1), as was the simple main effect for congruent externals (see Table 4). In sum, although it must be kept in mind that serious questions have been raised about the influence of the attempt to manipulate achievement motives in this study, it appears that the cognitive performance of defensive and congruent externals is differentially influenced by levels of achievement motivation. When these data are considered in light of Hochreich's (1974, 1975) findings, the conclusion that the defensive-congruent external distinction is a useful one seems warranted.

However, the results of the "acknowledged uncertainty" and the expectancy dependent measures indicate that conceptualizing the defensive external orientation strictly in terms of its defensive aspect may not be appropriate. That is, defensive externals did not exhibit an exaggerated unwillingness to acknowledge that they were uncertain about their responses. Although it was mentioned that there may have been a problem with the validity of the "acknowledged uncertainty" measure, it is also possible that it reflected the true state of affairs, namely, that there is no difference in defensiveness among subgroups on this dimension. The expectancy measures that will be discussed shortly also did not show a difference in the behavior of defensive externals in a situation where defensiveness, if it is an intrinsic part of an individual's orientation, might be expected to exhibit itself. Thus, the defensive aspect of the defensive external orientation may be catalyzed only in relatively specific situations, i.e., when failure either occurs or is imminent, and may therefore be only one of the salient features of a defensive external orientation.

Expectancy Measures

It appears that simply participating in a task where achievement-related cues are present does not sufficiently arouse the defensiveness of defensive externals. Their expectancies appear to be relatively uninfluenced by mere involvement in achievement-oriented activities, as evidenced by the fact that their rank order among the four subgroups on the two expectancy measures remained unchanged prior to and following the task. In this regard, it should be noted that Hochreich (1975) found a significant decrease in expectancies for defensive externals relative to congruent externals following failure feedback. Again, it appears that failure must be a more probable outcome than it was in the present study in order to engage the defensive aspect of

a defensive external orientation.

To recapitulate, although there are strong indications that the defensive-congruent external distinction is useful, questions about the pervasiveness of the defensive aspect of the defensive external orientation appear to require further attention.

Attributional Measure

The measure of attributional behavior, like the expectancy measures, was expected to provide information about the behavior of subgroup members in the absence of failure feedback. It was intended to clarify Hochreich's (1975) finding that in response to questions about the test itself, the attributions of defensive externals were more situationally oriented than were those of members of the other three subgroups. Although Hochreich's results showed that for most items on her measure defensive externals attributed more responsibility to situational sources, she found no differences among subgroups in response to the question "Do you think that the instructions for this task are clear and complete enough?" This measure is similar to the one used in the present study: "The task was made more difficult than necessary, partly because of the way it was organized." Thus, it is possible that these results simply replicate Hochreich's.

She reasoned that the absence of differences in the attributional behavior of the four subgroups, as determined by responses to a measure like the one above, might be due to the fact that the task instructions were, in fact, clearly understandable and also because the testing situation was ideal. As a result of these optimal conditions, there was no legitimate target for blame projection. This may also be the case in the present study. It appears, then, that there was no additional information developed as a result of the inclusion of this measure.

Summary

This study investigated the relationship between internal-external control (I-E) and cognitive performance under two levels of achievement motivation. Within that context, an attempt was also made to determine whether the theoretical distinction between defensive and congruent externals is a useful one. Eighty male and eighty female subjects were divided into two groups, one holding the generalized expectancy that reinforcements are directly tied to their behavior (internals) and the other believing that reinforcements are not contingent upon their behavior (externals). Members of these two groups were further subdivided based upon their generalized expectancy that the verbal statements of others can be relied upon, a measure of interpersonal trust. This procedure resulted in the creation of four subgroups, each consisting of twenty male and twenty female subjects: defensive and congruent externals, and high- and low-trust internals.

One half of the subjects from each of these subgroups were led to believe that the purpose of the study was to determine the kinds of information college students attend to when presented with unfamiliar material. They were also given "low-achievement" instructions that there were not really any passing or failing grades for this type of exercise and a general effort was made to create a relaxed, low-achievement atmosphere. The other twenty members of each subgroup were exposed to the high-achievement instructions. They were led to believe that research had indicated that those who do well on this "examination" could be expected to be successful on a variety of postgraduate pursuits and that they would be required to see the experimenter in an individual session should they fail to do well.

All subjects were then asked to listen to two tape-recorded prose passages and later were asked to respond to questions that required them to distinguish between assertions of fact and pragmatic implications relative to information in the passages.

Contrary to expectations, members of the high- and low-trust internal groups were not better able than defensive and congruent externals to distinguish between assertions and implications. In addition, the cognitive performance of defensive externals was not adversely affected in the high-achievement condition, nor were members of the defensive external group less willing to acknowledge uncertainty about their responses than members of the other three subgroups. These results, then, did not support the major

hypotheses of the present study.

Additionally, it was noted that there is some question about the success of the attempt to produce two different levels of achievement motivation. A dependent measure that was designed to evaluate the influence of the manipulation showed no significant difference between subjects in the experimental and the control conditions. But it was suggested that a preponderance of evidence points to either a "real" influence of the achievement manipulation or to the inadequacy of this particular dependent measure. Thus, it was concluded that the impact of the achievement manipulation cannot be assessed with certainty on the basis of the available information.

There are, however, indications that the findings of this study may contribute information about the utility of distinguishing between defensive and congruent externals and about the relationship between the locus of control construct and cognitive performance under different levels of achievement motivation. When the performance of externals as a single group is considered across the achievement conditions, the results are consistent with prevailing I-E theory. That is, due to their perceived lack of personal control, the cognitive performance of externals is relatively unaffected by different achievement cues. The results of this study suggest that when the defensive-congruent external distinction is made and cognitive performance is evaluated under various levels of achievement motivation the subtle, yet significant, complexities of the external dimension may become apparent.

It was posited that these cognitive performance phenomena may reflect either a simple preference on the part of subgroup members for a particular achievement level or differential responses to the anxiety accompanying achievement or nonachievement-related activities.

The results also indicate that it is not useful to distinguish between high- and low-trust internals on this type of task. However, the results are somewhat contradictory relative to distinguishing between men and women with respect to the relationship between cognitive performance and levels of achievement motivation.

It was noted that attempts to explain these unanticipated results are largely speculative at this point due to their post hoc nature. Consequently, further research is required to clarify the issues raised here.

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Appendices

Appendix A

SOCIAL REACTION INVENTORY

This is a questionnaire to find out the way certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Your answers to the items on this inventory are to be recorded on a separate answer sheet which follows the questionnaire. Print your name and any other information requested by the examiner on the answer sheet, then finish reading these directions and go on immediately to answer the questions.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Find the number of the item on the answer sheet and check the alternative (a or b).

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

Remember

Select the alternative which you personally believe to be more true.

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.
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.
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.
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.
b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
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.
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 he is like.
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.
b. Many times exam questions tend to be so unrelated to course work, that studying is useless.
11. a. Becoming a success is a matter of hard work, luck has little to do with it.
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.
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.
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.
b. Many times we might just as well decide what to do by flipping a coin.
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.
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.
18. a. Most people don'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.
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.
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.
b. It is difficult for people to have much control over the things politicians do in office.
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.

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.
 - 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.
 - b. Sometimes I feel that I don't have enough control over the direction my life is taking.
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

Opinion Survey

We would like to find out how people feel about a variety of things today. There are 25 statements. We would like to know whether you agree or disagree with each one. There are, of course, no right or wrong answers; different people feel differently.

Your answers should be recorded on a separate answer sheet. Print your name and any other information requested.

Please answer each item carefully, but quickly. On the answer sheet, there is a scale going from strongly agree to strongly disagree. For each item, indicate the strength of your belief by placing the scale number next to the item number.

For example, for item number 1, if you disagree strongly, place a 5 in the space provided. If you mildly agree, place a 2, etc.

Any questions? Okay, begin and be sure to place the scale number that really indicates your feeling next to each item.

1. Hypocrisy is on the increase in our society.
2. This country has a dark future unless we can attract better people into politics.
3. Using the honor system of not having a teacher present during exams would probably result in increasing cheating.
4. The United Nations will never be an effective force in keeping world peace.
5. Most people would be horrified if they knew how much news the public hears and sees is distorted.
6. Even though we have reports in newspapers, radio, and T.V., it is hard to get objective accounts of public events.
7. If we really knew what was going on in international politics, the public would have reason to be more frightened than they now seem to be.
8. Many major national sports contests are fixed in one way or another.
9. Most people can be counted on to do what they say they will do.
10. In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy.
11. Fear of social disgrace or punishment rather than conscience prevents most people from breaking the law.
12. Parents usually can be relied upon to keep their promises.
13. The judiciary is a place where we can all get unbiased treatment.
14. It is safe to believe that in spite of what people say most people are primarily interested in their own welfare.
15. The future seems very promising.
16. Most elected public officials are really sincere in their campaign promises.
17. Most experts can be relied upon to tell the truth about the limits of their knowledge.
18. Most parents can be relied upon to carry out their threats of punishment.
19. In these competitive times one has to be alert or someone is likely to take advantage of you.
20. Most idealists are sincere and usually practice what they preach.
21. Most salesmen are honest in describing their products.
22. Most students in school would not cheat even if they were sure of getting away with it.
23. Most repairmen will not overcharge even if they think you are ignorant of their specialty.
24. A large share of accident claims filed against insurance companies are phony.
25. Most people answer public opinion polls honestly.

Appendix CSTIMULUS PASSAGES
(Monaco, 1976)The Cabin

The old cabin looked down from the hilltop onto a valley below. From the cabin the cry of a seagull could be heard. At the sound a squirrel scurried across the roof of the cabin, loosening shingles in its path, and jumped into the open arms of the nearby tree--the oak tree which had protected the cabin for generations; the old oak which had cooled the cabin with its shade during the hot, blazing summers.

The cabin had been sturdily built, but the wind from the valley now rattled and shook the cabin door. It was nearing the end of summer and the hot days had been gradually cooling as fall approached.

A pile of freshly cut logs and an axe lay in front of the cabin, but the cabin was now empty.

There was no porch in front of the cabin, just two chairs, there, to sit in on the frequently cool nights. The chairs were rustic looking and uncomfortable without pillows. They were set far apart.

Jose

Jose arose early in the morning. After dressing, he ate breakfast and then went over to the neighborhood school. He was pleased that the sun was shining today.

Many of the children in the 3rd-grade class greeted Jose as he sat at his desk. He didn't greet them back. Jose was nervous and anxious for class to start because he had been absent for over a week. Jose liked school and his mother was a teacher. His father also worked at the school.

Alice, a friend of Jose's from the 2nd-grade class said "hello" to him as she passed by--Jose sat near the door. Alice's classroom was nextdoor to Jose's, but they seldom saw one another during the day. Alice's classroom was larger and had more window space than Jose's, so that all of the 2nd-grade students were tempted to look out at the rooftops of the houses below.

The principal stopped inside of the 3rd-grade classroom and said "hello" to Jose. Jose thought that the jolly principal resembled a character in the comic strips, although he would never tell anyone so. The principal was an older man, bald and pigeon-toed. All of the children and all of the teachers respected him. Jose was no exception.

At last the buzzer signaling the start of the classes sounded and Jose lost his anxiety in the excitement of the day.

Appendix D

ANSWER SHEET

Before continuing, we would like an estimate of how you expect to do on this task. Please circle one of the following.

Very good Good Average Not too hot Poor

In order to assist you in responding to the following statements, I will present some information about the difference between an assertion of fact and an implication. When asked to recall the statement "The hungry python caught the mouse," many people remember "The hungry python ate the mouse" as the original sentence. Even though the latter statement is implied or inferred by the first, it clearly is not asserted as a fact. That is, once caught, the mouse could have escaped.

The following questions will test your ability to make this distinction relative to information in "The Cabin." If the statement was directly asserted in the passage, mark an "X" through the letter "a" for asserted, while if the statement was merely implied or inferred, mark an "X" through the letter "i" for implied or inferred. In order for us to gain a more complete understanding of the results of your responses, we would also like you to circle any answer of which you are largely uncertain.

The CabinAsserted Implied

- | | | |
|--|---|---|
| 1. The cabin was on a hill. | a | i |
| 2. There were two chairs in front of the cabin. | a | i |
| 3. The cabin was above the valley. | a | i |
| 4. There were shingles on the cabin's roof. | a | i |
| 5. The logs were cut with an axe. | a | i |
| 6. The cabin was old. | a | i |
| 7. Two people owned the cabin. | a | i |
| 8. It was a log cabin. | a | i |
| 9. The cabin was near the sea. | a | i |
| 10. The cabin had no porch. | a | i |
| 11. The logs were freshly cut. | a | i |
| 12. The cabin was protected by the tree. | a | i |
| 13. The chairs were old. | a | i |
| 14. It was approaching the start of fall. | a | i |
| 15. The cabin is a one story building. | a | i |
| 16. The cabin had a fireplace. | a | i |
| 17. The cabin door was rattled and shaken by the wind. | a | i |
| 18. The axe lay on top of the logs. | a | i |
| 19. The chairs had pillows. | a | i |
| 20. A tree was near the cabin. | a | i |

THE INFLUENCE OF TWO LEVELS OF ACHIEVEMENT ON THE COGNITIVE PERFORMANCE
OF INTERNALS, DEFENSIVE EXTERNALS, AND CONGRUENT EXTERNALS

by

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B. A., Southern Illinois University, 1970

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This study investigated the relationship between internal-external control (I-E) and cognitive performance under two levels of achievement motivation. Within that context, an attempt was also made to determine whether the theoretical distinction between defensive and congruent externals is a useful one. Eighty male and eighty female subjects were divided into two groups, one holding the generalized expectancy that reinforcements are directly tied to their behavior (internals) and the other believing that reinforcements are not contingent upon their behavior (externals). Members of these two groups were further subdivided based upon their generalized expectancy that the verbal statements of others can be relied upon, a measure of interpersonal trust. This procedure resulted in the creation of four subgroups, each consisting of twenty male and twenty female subjects: defensive and congruent externals, and high- and low-trust internals.

One half of the subjects from each of these subgroups were led to believe that the purpose of the study was to determine the kinds of information college students attend to when presented with unfamiliar material. They were also given "low-achievement" instructions that there were not really any passing or failing grades for this type of exercise and a general effort was made to create a relaxed, low-achievement atmosphere. The other twenty members of each subgroup were exposed to the high-achievement instructions. They were led to believe that research had indicated that those who do well on this "examination" could be expected to be successful on a variety of postgraduate pursuits and that they would be required to see the experimenter in an individual session should they fail to do well.

All subjects were then asked to listen to two tape-recorded prose passages and later were asked to respond to questions that required them to distinguish between assertions of fact and pragmatic implications relative to information in the passages.

Contrary to expectations, members of the high- and low-trust internal groups were not better able than defensive and congruent externals to distinguish between assertions and implications. In addition, the cognitive performance of defensive externals was not adversely affected in the high-achievement condition, nor were members of the defensive external group less willing to acknowledge uncertainty about their responses than members of the other three subgroups. These results, then, did not support the major

hypotheses of the present study.

Additionally, it was noted that there is some question about the success of the attempt to produce two different levels of achievement motivation. A dependent measure that was designed to evaluate the influence of the manipulation showed no significant difference between subjects in the experimental and the control conditions. But it was suggested that a preponderance of evidence points to either a "real" influence of the achievement manipulation or to the inadequacy of this particular dependent measure. Thus, it was concluded that the impact of the achievement manipulation cannot be assessed with certainty on the basis of the available information.

There are, however, indications that the findings of this study may contribute information about the utility of distinguishing between defensive and congruent externals and about the relationship between the locus of control construct and cognitive performance under different levels of achievement motivation. When the performance of externals as a single group is considered across the achievement conditions, the results are consistent with prevailing I-E theory. That is, due to their perceived lack of personal control, the cognitive performance of externals is relatively unaffected by different achievement cues. The results of this study suggest that when the defensive-congruent external distinction is made and cognitive performance is evaluated under various levels of achievement motivation the subtle, yet significant, complexities of the external dimension may become apparent.

It was posited that these cognitive performance phenomena may reflect either a simple preference on the part of subgroup members for a particular achievement level or differential responses to the anxiety accompanying achievement or nonachievement-related activities.

The results also indicate that it is not useful to distinguish between high- and low-trust internals on this type of task. However, the results are somewhat contradictory relative to distinguishing between men and women with respect to the relationship between cognitive performance and levels of achievement motivation.

It was noted that attempts to explain these unanticipated results are largely speculative at this point due to their post hoc nature. Consequently, further research is required to clarify the issues raised here.