Internal-External Control of Reinforcement Versus Field Dependence-Field Independence

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INTERNAL-EXTERNAL CONTROL OF REINFORCEMENT
VERSUS
FIELD DEPENDENCE-FIELD INDEPENDENCE

A Thesis
Presented to
the Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Robert E. Colclough
April 1972
INTERNAL-EXTERNAL CONTROL OF REINFORCEMENT

VERSUS

FIELD DEPENDENCE-FIELD INDEPENDENCE

APPROVED April 27, 1972

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I would like to express my sincere appreciation to Dr. C. Clinton Layne, my Thesis Committee Chairman, for his generous and patient giving of himself, his time, and his expertise in guiding this study. I would also like to thank Dr. James Craig and Dr. Jack Conner for their continued help and support. And a very special thanks to my wife Linda, and my daughter Lisa, for their support, encouragement and patient understanding during all stages of this study.
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Introduction

Most authors have regarded the concepts of internal-external control and field dependence-field independence as two basically separate dimensions. However, in the area of personality, the two concepts may be related to a considerable degree. A review of the literature suggests that many of the same personality characteristics which can be attributed to internally controlled individuals are also common to field independent people. Also, those characteristics common to externally controlled people are found in field dependent individuals (Cardi, 1962; Franklin, 1963; Crowne & Liverant, 1963; Strickland, 1962; Getter, 1962; Gore, 1962; Elliot, 1961; Witkin, Lewis, Hertzman, Machover, Meissner, & Wapner, 1954).

The initial research concerning locus of control as conceptualized by social learning theory (Rotter, 1954, 1960) explains the perception of reinforcement as being differentially unique to all individuals. For instance, a spanking might be seen as a reward by some children and as a punishment by others. Rotter states that one of the determinants of how an individual reacts to reinforcement is his subjective perception that the reinforcement occurs independent of any of his own actions and is controlled by forces outside of himself. Those individuals who believe that reinforcement
is controlled mainly through chance factors in their environment have been labeled externally controlled persons, while those who perceive the event of reinforcement as contingent upon their own behavior are termed internally controlled.

The concept of field dependence-field independence was first empirically founded as the result of a series of studies (Asch & Witkin, 1948a, 1948b, 1948c, 1948d) which investigated factors utilized by the individual in establishing an upright position when in the absence of a surrounding visual field. In the earlier studies of the series, Witkin and Asch (1948a, 1948b) learned that by tilting a mirror or the whole room in which a S was enclosed, one could alter the S's visual cues enough to cause difficulty in attempting to adjust a movable rod to true vertical or horizontal. The results obtained were interesting in the fact that although all Ss were influenced to some degree by the tilting mirror or room, some were consistently more influenced than others. It appeared that some Ss were consistently dependent upon the visual field in their attempt to adjust the rod to vertical or horizontal while others were relatively unaffected by the visual field. Therefore, Ss were differentially termed field dependent or field independent. In the later studies of the same series it was found that those earlier Ss who appeared to be dependent upon the visual field also were influenced by having their bodies tilted and by viewing a tilted luminous frame in an otherwise blank visual field. Consistent with the earlier experiments, the field independent
Ss had relatively little difficulty in moving the rod to upright or horizontal. Field dependent Ss experienced considerable difficulty in manipulating the rod.

The present investigation assessed the possibility of a significant relationship between the two concepts of internal-external control and field dependence-field independence. This was done in two studies. Study I determined if a correlation existed between two tests that were shown to be representative measures of the two concepts. Study II was an attempt to research the relationship between the two concepts in relation to their influence on Ss' performance on a behavioral task, a conformity situation.
Review of Relevant Literature

Internal-External Control of Reinforcement

Rotter (1966) and Lefcourt (1966) both view the variable of internal-external control of reinforcement as significant in the study of individual differences as related to personality characteristics. For the purposes of the present study, a review of relevant studies in which the internal-external control dimension as seen in its relation to personality characteristics appears appropriate.

The first investigator who attempted to measure individual differences in reference to the internal-external control dimension was Phares (1955, 1957) in his studies of expectancy changes in chance and skill situations. Phares constructed a Likert-type scale in which 13 items were stated as items indicating external control of reinforcement and 13 items indicating internal control. He found that Ss scoring high on the 13 external items tended to behave on a skill versus chance situation in a manner that was similar to all other high external Ss. That is, they tended to take fewer chances and showed more unusual shifts in behavior than did those Ss who scored low on the 13 external items.

James (1957), in an unpublished doctoral dissertation, constructed a lengthy revision of the Phares scale in which he added 26 more items plus those items which appeared most
successful in the earlier Phares scale. He kept the Likert-type format and with this James-Phares scale was able to find significant correlation between his scale and the personal adjustment score of the Rotter Incomplete Sentences Blank (Rotter, 1950). His study also indicated that both extreme internals and extreme externals seemed to be less adjusted than those individuals whose scores fell in the middle of the distribution.

Using Rotter's (1954) Level of Aspiration Board (LAB), Simmons (1959) found that certain performance patterns indicated that Ss who emitted cautious-defensive behavior on the LAB also scored in the high externally controlled range on the James-Phares scale. Likewise, high internal Ss appeared to be more aggressive and success oriented in their performance on the LAB.

Rotter, Liverant and Seeman (1962) broadened the James-Phares scale through an extensive series of studies in which they developed subscales to assess different areas such as achievement, social and political attitudes and affection. The results of their investigations showed that their 60 item, forced-choice questionnaire did not generate separate subscale predictions as was intended. Due to these findings, the idea of gathering differential information with regard to various subscales was abandoned.

The final version of the James-Phares scale was developed by Rotter (1966) and is currently the most widely used scale in studying the internal-external control dimension. Rotter's scale, the I-E Scale, is a 29 item, forced
choice instrument which includes six filler items designed to make the purpose of the scale less likely to the S. The test is constructed to correlate with the value that an individual may place on internal or external control, but the items themselves are not addressed directly to the S's preference for internal or external control. All items deal with the individual's subjective appraisal about how reinforcement is controlled.

There have been many studies which make use of the I-E Scale in an attempt to identify various behavioral variables that appear to be peculiar to select populations of individuals. Straits and Sechrest (1963) found a significant relationship between the internal-external control dimension and smoking. Their investigation showed that non-smokers were significantly more internally controlled than smokers. In a replication of the above study, James, Woodruff, and Werner (1965) found the same results to be true. Non-smokers are more internally controlled than smokers. They also studied Ss who had read the Surgeon General's report on smoking and found that males who had read the report and had quit smoking for a specified time period were more internal as measured by the I-E Scale than those males who had read the report and had not quit smoking. Perhaps the feeling that one can control the environment is also related to the belief that one can control himself. The difference among females was not significant and was attributed to the fact that they might be motivated by other variables such as weight gain when not smoking.
Several studies have attempted to link internal-external control with academic performance. Cardi (1962), in a study of academic failure, found that college students who were failing academically perceived themselves to be more externally controlled than those students who were not experiencing scholastic difficulties. In another study of the degree to which individuals strive for academic success, Franklin (1963) investigated the reported evidence of achievement motivation in high school students. Achievement motivation was defined as early attempts to investigate colleges, the amount of time spent in homework, parent’s interest in homework, and the intention to go on to college. His work suggested that those students who were on the internal end of the distribution, as measured by the I-E Scale, tended to be more motivated toward further academic achievement than students scoring toward the externally controlled end of the continuum. Efran (1963) found that high school students who were internally controlled tended to "repress" or forget their academic failures more readily than externally oriented students. The results of Efran’s study suggest that the externally controlled individual experiences less need to forget his failures. It is likely that he has already accepted environmental forces as the determining factors in his success-failure experiences. Internals seem to feel the need to repress their failures, because failure appears to be a threat to their self esteem.

Several separate investigations (Crowne & Liverant, 1963; Strickland, 1962; Gore, 1962) have dealt with the
relationship of the internal-external dimension to conformity. All of the studies appear to support a general conclusion with regard to internal-external control and conformity. A person who perceives himself as being internally controlled may or may not go along with influence from his external environment, depending upon whether he perceives this influence to be beneficial to him. However, if the internally controlled person perceives the external influence to be a subtle manipulation of him without his awareness, he tends to resist any such outside force. These findings would suggest that the internally controlled individual would actively resist conformity if perceived to be detrimental or subtly manipulatory. The externally controlled individual, however, would appear to show less resistance to conformity in social situations and would tend to view external manipulation as less threatening than his counterpart on the opposite end of the control dimension.

In a more recent study concerning the internal-external locus of control, Hersch and Scheibe (1967) used college students as Ss in order to attempt a correlation of the I-E Scale with several other measures of personality characteristics. They found that a positive correlation existed between the I-E Scale and selected scales of the California Psychological Inventory (CPI), and also between the I-E Scale and the Adjective Check List (ACL). Hersch and Scheibe were also able to discern a number of descriptive personality-oriented adjectives that were characteristic of internality and externality. Those Ss who perceived
themselves as being internally controlled, as measured by the I-E Scale, also rated high on the ACL measures of Achievement, Dominance, and Endurance. Conversely, the internals scored lower on the ACL scales of Succorance and Abasement. The internals' scores on the CPI appeared to further substantiate the ACL scores. On the CPI the internally controlled S was significantly higher in the areas of Dominance and Intellectual Efficiency. The converse of the above relations held true for the externally oriented individuals. To provide further clarification of the internal-external dimension, Ss were asked to give self-report adjectival descriptions. Extreme internals described themselves as being independent, self-confident, ambitious, assertive, and persevering. The externally controlled group appeared to be more heterogeneous and checked only one adjective significantly more often—self-pitying.

In summary, a review of the relevant literature associates significant personality variables with the internal-external control dimension. Internally controlled individuals seem to smoke less and to be able to quit smoking easier than externals. Internals appear to experience considerable academic success and are achievement oriented individuals who are notably troubled when faced with failure. Externally controlled individuals appear to be less success-oriented, achieve to a lesser degree in academic situations, and are bothered relatively little by failure situations. Externally controlled individuals can be described as generally conforming to the influence of a group, whereas internals
appear to be selective about their degree of conformity and actively resist when perceiving that they are being manipulated by external factors. Finally, internally controlled individuals can be characterized as being dominant persons who seem to have the need to stick with a task until it is completed. They show a high level of endurance. Externally controlled people seem to feel a need to help others, to socialize and have a tendency to be self-pitying and self-devaluating.

Field Dependence-Field Independence

As a result of his earlier research (Witkin & Asch, 1948a, 1948b, 1948c, 1948d), Witkin (1950) devised a standardized test, the Embedded Figures Test (EFT), which determined the ease with which an individual could see a given figure independently of the complex figure in which it is presented. Jackson (1956) developed an instrument similar to Witkin's original scale except that the number of items were reduced and the time required for a S to complete it was lessened considerably. Jackson's scale still correlated .98 with the Witkin scale.

Most of the recent studies associated with field dependence-field independence have used Group Form V (EFT V). This instrument was also developed by Jackson and his colleagues (Jackson, Messick & Myers, 1964). It has the obvious advantage of being able to be administered in a group situation while still correlating .83 with Witkin's original EFT.
Witkin and his associates (Witkin, Lewis, Hertzman, Machover, Meissner, Wapner, 1954) investigated the hypothesis that field dependence-field independence may be factors that could be measured on a maturational continuum. They attempted a series of cross-sectional studies which indicated that the abilities of field dependence and field independence increase with age through adolescence and then do not change appreciably. In a later study, Elliott and McMichael (1963) attempted to further validate Witkin's hypothesis dealing with the "leveling off" effect of field dependence-field independence. Their Ss were college males and were divided into two groups on the basis of their performance on Witkin's Rod and Frame Test (RFT), another determiner of field dependence-field independence. Group One, the field dependent group, received training on how to resist the influence of the tilted frame in their attempts to adjust the movable rod to upright. Group Two, the field independent group, received identical training, but also received feedback and discussion on each judgment in their attempts to adjust the rod to an upright position. Upon completion of the task, it appeared that Group Two had not only bettered Group One, but had also bettered their own previous performance. However, this improvement was found to be only temporary for a retest showed the field independent group to be performing at their previous level of ability. Therefore, Elliott and McMichael concluded that after adolescence an individual's tendency toward field dependence-field independence does remain relatively constant.
Witkin and his colleagues (1962) entertained the possibility of an environmental hypothesis in which child training practices and general surroundings both may affect personality characteristics and perceptual motor behavior. Many current studies have attempted to relate field dependence-field independence with specific personality characteristics and also with behavior in social situations.

Weissenberg and Gruenfeld (1966) investigated the hypothesis that field independent supervisors would be more "structure" or task oriented and that field dependent supervisors would tend to be more considerate of their co-workers. Those individuals who appeared to be task oriented, however, were not field independent supervisors, but were intermediate between extreme field dependent and extreme field independent. Elliott (1961), in a study of personality characteristics, described a field independent person as one who "actively attempts to master and reorganize the environment and strives for independence, leadership, special skills and competencies." Daugherty and Waters (1969) investigated Elliott's statement about leadership qualities of field independent individuals in a study of college students who were in positions of leadership. By comparing the scores made by college leaders and non-leaders on such measures as the short form of the EPT (Jackson, 1956), the RFT, and a test of closure flexibility, Daugherty and Waters found that college leaders do appear to be more field independent than college students who were not acting in a leadership capacity.
Social conformity studies have been numerous and quite comprehensive in their relationship to the field dependent-field independent dimension. Witkin, et al., (1954) compared field dependent and field independent Ss' scores on three widely used projective techniques. They concluded that field dependent individuals showed a passive, dependent, conforming orientation toward their environment. Field independent Ss appeared to approach their social environment in a more assertive, independent, non-conforming manner. Rudin and Stagner (1958) found by using the California P Scale and the RFT, that field dependent people were much more susceptible to conform to authority in a social situation.

Empirical studies under laboratory conditions have appeared to be consistent in finding that field dependence is related to conformity. Rosner (1957) administered Witkin's EFT to twenty Ss scoring high and twenty Ss scoring low on an Asch conformity test and found that high conformists tended to score significantly in the field dependent range. Low conformists appeared to score in the field independent range. Solar, Davenport, and Bruehl (1969) designed an experiment to test Witkin's field dependence-social conformity hypothesis in a meaningful behavioral situation. They identified field dependent and field independent individuals by their performance on the Witkin EFT and the RFT. Solar and his colleagues then paired a field independent S with a field dependent S and asked them to jointly set a movable rod to vertical in the RFT. In every case the mean displacement
from true vertical of the pair working together was in the direction of greater field independence than the mean scores of the two individuals working alone. The results obtained, therefore appear to add construct validity to Witkin's hypothesis that field dependent individuals tend to be socially compliant. Wallach, Kogan, and Burt (1967) combined a study of risk-taking tendencies and social conformity in working with a group of adult male Ss who were identified as field dependent or field independent as the result of scores on the short form of the EFT. They found that field dependent Ss take more risks in a betting situation, after group discussion about risk-taking. Conversely, field independent Ss seem to take less risks after discussing risk-taking within a group situation.

A summary of the personality traits of field dependent-field independent individuals would characterize the field independent person as being a task oriented, less socially considerate, low risk taking, assertive, non-conforming individual who has tendencies toward leadership and the development of competencies and special skills. The field dependent person seems to be better able to socialize; he is more considerate of others and tends to be able to conform to group standards more readily. He also has the tendency to be less achievement oriented and to take more risks in socially influenced situations. The field dependent person does not reflect an inclination toward leadership and does not show a basic drive for competency or the attainment of special skills.
Statement of Problem

The literature is apparently devoid of references in which the internal-external control dimension and field dependence-field independence are viewed as a measure of similar personality characteristics. However, such personality characteristics as those possessed by both field independent and internally controlled individuals logically point to some type of interrelationship between the two concepts. Both internally controlled and field independent people are seen as assertive, achievement oriented individuals who resist conformity to group standards. Both exhibit a low frequency of risk taking behavior and both seem to be dominant individuals who are found in positions of leadership. At the opposite end of the continuum, it appears that both externally controlled and field dependent people are submissive to group influence, are prone to take more risks, are less achievement oriented, and are less success oriented when put in a competitive situation.

The present study investigated the relationship between internal-external control and field dependence-field independence. The following hypotheses were tested:

1. Scores of Ss who have completed both the I-E Scale and the EFT V will correlate significantly (.80 or higher using a Pearson product-moment correlation), thus indicating that the two tests seem to be measures of the same concept.
A correlation below .80 would indicate that the **I-E Scale** and the **EFT V** are measuring two relatively separate and unrelated concepts.

2. Internally controlled-field independent Ss will obtain a significantly lower score on an Asch conformity test than externally controlled-field dependent Ss. In other words, internally controlled-field independent Ss will behave in a non-conforming manner. Externally controlled-field dependent Ss will more readily conform to social pressures as measured by an Asch conformity situation.
Study I

In order to determine the degree of similarity between internal-external control and field dependence-field independence a correlational study was designed using tests that are measures of the two concepts.

Method

Subjects. The Ss were 100 white, male, Introductory Psychology students at Western Kentucky University. The Ss volunteered in order to partially fulfill the course requirements for Psychology 100.

Design. In Study I, a comparison of the Ss' performances on both the I-E Scale and the EFT V was assessed by the use of a Pearson product-moment correlation.

Procedure. Each S was given both the I-E Scale and the EFT V (see Appendices A & D) in a group testing situation. The directions for each test were read to the Ss by the E (see Appendices B & C), and the entire testing period lasted approximately 30 minutes.

Scoring and analysis. The data obtained in Study I was analyzed by the use of the Pearson product-moment correlation. A correlation coefficient of .80 or higher was to indicate a significant relationship between Ss' scores on both the I-E Scale and the EFT V.
Results

A comparison of the Ss' scores on the I-E Scale and the EFT V yielded a Pearson product-moment correlation of .0942. This correlation indicates that no significant relationship between the I-E Scale and the EFT V exists.
Study II

The purpose of Study II was to test the hypothesis that those Ss who were internally controlled according to the I-E Scale and field independent as assessed by the EFT V were significantly less conforming than externally controlled, field dependent Ss. This was done by observing Ss' behavior under controlled conditions in a conformity situation.

Method

Subjects. The 63 Ss selected for use in this study were part of the original population of Ss used in Study I. They were chosen for this study according to their scores on the I-E Scale and the EFT V. Using approximately the upper and lower 30% of the distribution of scores on each test as cut-off points, Ss scoring high (8 and above) and low (4 and below) on the I-E Scale and high (11 and above) and low (9 and below) on the EFT V were chosen as the sample for the Asch conformity test.

Design. A 2 X 2 factorial design was employed. One independent variable was the locus of control as seen at two levels, internally controlled (low score on the I-E Scale) and externally controlled (high score on the I-E Scale). The other independent variable was the degree of dependence on the visual field, with the two levels being
field independence (high score on the EFT V) and field dependence (low score on the EFT V). Four groups of Ss were formed. One group of Ss were externally controlled, field independent. A second group included internally controlled, field independent Ss. The third group of Ss were externally controlled, field dependent and the remaining group included internally controlled, field dependent Ss.

Procedure. The Asch conformity test (see Appendix F) was administered in which each S was one of seven to nine Ss who were seated in a classroom to participate in what appeared to be a simple visual discrimination experiment. All Ss were required to match the length of three comparison lines (see Appendix E for a description of the lines). One of the three comparison lines was equal to the standard; the other two lengths differed from the standard and each other by considerable amounts. The total task consisted of eighteen such comparisons, and the Ss were required to announce their judgments orally in the order in which they were seated. In order to produce the conformity effect, only one S in the above group was the real or intended S. The other Ss, unknown to the intended S, were confederates. The confederates had met with the E before the actual conformity testing situation and had been instructed to exert social pressure on the intended S by performing in a predetermined manner. On trials one through twelve (see Appendix F) they were instructed to respond with unanimous, but obviously wrong answers in matching the length of a
comparison line to the standard line. Trials a. through f. were neutral trials in which the confederates responded with correct judgments. Those trials were interspersed with the wrong judgments in order to lend face validity to the task. Therefore, the intended S was the only S in the room who did not know the real purpose of the experiment.

The seating arrangement consisted of two rows of chairs with three to five chairs in each row. When the Ss (confederates and intended S) entered the room they were instructed (seemingly at random) as to where they would sit. The intended S was always placed in the second row (the row farthest from the E), and in the next to last seat on the left. The E then read a printed set of instructions (see Appendix G) and then showed the Ss each standard line, followed by the three comparison lines. As mentioned above, the Ss were asked to give their comparisons orally. As the intended S heard the majority respond from time to time unanimously and with judgments that were obviously contradictory to his own, a clear disagreement situation was introduced between the intended S and the rest of the group.

At the end of each session, the intended S was interviewed by the E. This interview session served four purposes. First, the E explained the true purpose of the experiment and elicited the S's reactions. Second, the E attempted to alleviate any anxiety or subjective distress that the S might have experienced as a result of being "duped." Third, the S was questioned to determine whether he had learned the nature of the experiment before coming
into the room. Fourth, a verbal commitment not to mention the purpose of the study for a period of at least four weeks was obtained from each S.

Scoring and analysis. Mean scores of each of the four groups involved in the Asch conformity test were analyzed with a 2 X 2 factorial analysis of variance. Duncan's Multiple Range Test was employed to conduct multiple comparisons concerning the four groups.

Results

The mean scores of the four groups (see Table 1) were analyzed by the use of a 2 X 2 factorial analysis of variance (see Table 2). The data summarized in Table 2 indicates that Ss who scored in the internally controlled range on the I-E Scale behaved significantly different on the Asch conformity test from Ss who scored in the externally controlled range on the I-E Scale, F = 9.98, p < .005. In other words, internally controlled Ss conformed significantly less often than externally controlled Ss. It was also found that field independent Ss conformed significantly less often than field dependent Ss, F = 8.37, p < .025. There was no significant interaction between internal-external control and field dependence-field independence in terms of social conformity (see Figure 1).

Using the Duncan multiple comparison procedure, the mean conformity behaviors (see Table 1) for the four groups were ranked. The mean of the field independent, internally controlled group fell at one end of the continuum (non-conformists) while the mean of the field dependent, externally
controlled group fell at the other end (conformists). These two groups differed significantly from each other \( (p < .05) \). The performances of the two remaining groups, the field independent, externally controlled Ss and the field dependent, internally controlled Ss did not differ significantly from each other or the two extreme groups mentioned above.

**Table 1**

Group Mean Scores for Asch Conformity Test

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<tr>
<th>Group</th>
<th>N</th>
<th>Mean Score</th>
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<tr>
<td>Externally Controlled, Field Independent</td>
<td>20</td>
<td>7.3000</td>
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<tr>
<td>Internally Controlled, Field Independent</td>
<td>14</td>
<td>4.2857</td>
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<tr>
<td>Externally Controlled, Field Dependent</td>
<td>14</td>
<td>10.3571</td>
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<tr>
<td>Internally Controlled, Field Dependent</td>
<td>15</td>
<td>7.0666</td>
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</table>
### TABLE 2

Factorial Analysis of Variance  
\((N = 63)\)

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (I-E)</td>
<td>125.74</td>
<td>1</td>
<td>125.74</td>
<td>9.98*</td>
</tr>
<tr>
<td>B (EPT V)</td>
<td>105.48</td>
<td>1</td>
<td>105.48</td>
<td>8.37**</td>
</tr>
<tr>
<td>A X B</td>
<td>27.50</td>
<td>1</td>
<td>27.50</td>
<td>2.18</td>
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<td>Error</td>
<td>743.21</td>
<td>59</td>
<td>12.59</td>
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<tr>
<td>Total</td>
<td>1001.93</td>
<td>62</td>
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</table>

\*\*p \textless .005  
**p \textless .025

Note.
Figure 1. Internal-External Control, Field Dependence-Field-Independence Interaction.
Discussion

Comparison of I-E Scale to EFT V

The unexpectedly low Pearson product-moment correlation (0.0942) between the I-E Scale and the EFT V is somewhat at odds with the predictive implications suggested by the existing literature. Although the present study appears to be one of the first investigations to actually assess the possibility of a significant interrelationship between internal-external control and field dependence-field independence, studies mentioned earlier in this study have described personality characteristics that are common to both concepts. The results obtained from the correlational analysis suggest that although the internal-external control dimension and the concept of field dependence-field independence may have some personality correlates common to both, the two scores on measures of these factors are not necessarily correlated. The present findings would appear to agree with Rotter's (1966) reference to some unpublished data that suggest no correlation between the I-E Scale and embedded figures tests.

Locus of Control and Degree of Dependency on the Visual Field as Related to Conformity

The statistical analysis of the data associated with the Asch conformity test indicated results that were quite consistent with the current literature. Internally
controlled Ss conform less often than externally Ss. As mentioned previously, separate studies by Crowne and Liverant (1963), Strickland (1962), Getter (1962) and Gore (1962) have all suggested that internally controlled individuals appear to resist group pressures that would cause them to conform. Conversely, externally controlled people seem to conform to group pressure much more readily. The current study would seem to lend support to these earlier findings.

Earlier findings by Witkin, et al. (1956), Rosen (1957), and Wallach, et al. (1967) submit evidence to suggest that field independent Ss resist social pressures that might cause them to conform in various situations, while field dependent individuals appear to conform more readily to group pressure. The results of this study are in agreement with the earlier studies, thus strengthening the notion that field dependent individuals tend to be more conforming than field independent people.

Thus, it can be seen that internally and externally controlled individuals behave in a predictable fashion when placed in a potential conformity situation. The same holds true for field dependent and field independent people. The results of the present study indicate that the predictability of an individual's behavior in a conformity situation can be increased if the individual obtains certain combinations of scores on the I-E Scale and the EFT V. Those individuals who scored in both the internally controlled range on the I-E Scale and the field independent range on the EFT V perform in a quite predictable and non-conforming manner.
on the Asch conformity test. It was also found that the externally controlled, field dependent individuals conformed much more readily than what was average for the entire group of Ss. Thus, when an individual is internally controlled one might predict that he would not conform to group pressure, but if he is both internally controlled and field independent the predictability of his behavior in a conformity situation is much greater. The same holds true for externally controlled, field dependent Ss. The relative significance of this increased power of predictability might be apparent in several settings. The combined use of the I-E Scale and the EFT V as screening instruments to predict an individual's tendency toward conformity could prove to be useful in settings where the knowledge of one's tendency to conform is needed. For example, the tendency toward conformity to group pressures would seem to be an important variable to consider in the selection of officers for the armed services. Most of the service branches have employed a live conformity situation to assess a potential officer's tendency to conform to group pressures (Asch, 1956). The use of the I-E Scale and the EFT V as a partial substitute for this technique would be expected to be beneficial.

Implications for Further Research

The results of the present investigation suggest several opportunities for further study. It appears that a replication of this study is warranted in order to further substantiate the results found in the present investigation.
The current findings pose an interesting situation. We have found two personality measures that do not correlate, but from which the same behavior i.e., conformity, can be predicted. Therefore, there might be other personality measures that do not correlate with one another, but do add to the predictability of behavior on a specified task. For instance, Getzels and Jackson (1960) found that although several measures of creativity and intelligence did not correlate, high creativity-low intelligence and high intelligence-low creativity Ss performed equally well on tests of academic performance. Thus, the predictability of an individual's performance in an academic situation may be increased by knowing his scores on several measures of creativity and intelligence. As noted earlier in this study, Cardi (1962) found a direct relationship between locus of control and academic performance. Therefore, if a measure of internal-external control was added to measures of creativity and intelligence, the predictability of an individual's behavior in an academic situation might be greatly increased. Strickland and Crowne (1962) found that individuals who experienced a high need for approval as measured by the Marlow-Crowne Scale of Social Desirability conformed significantly more often in an Asch conformity situation than those Ss who felt a lower need for approval. If this measure was added to measures of internal-external control and field dependence-field independence, the predictability of one's performance on the Asch conformity test might be greatly increased.
It may be profitable for psychologists to discern common behavioral correlates among other scales such as introversion-extroversion and external control-internal control, etc. It appears that it is possible that one's behavioral predictability on certain tasks can be significantly increased by the correct combination of scores on various personality measures.

Summary

The concepts of internal-external control and field dependence-field independence as measured by the I-E Scale and the EFT V respectively, do not show a significant correlation. There appears to be no significant interaction between internal-external control and field dependence-field independence in relation to their effects on Ss' behavior in a conformity situation. When viewed separately, however, the two concepts can increase the predictability of a Ss' behavior in a conformity situation. It was found that this predictability can be increased further if an internally controlled S is also field independent. These individuals are found to be generally non-conforming. An increased predictability is also found in the behavior of Ss who are externally controlled and field dependent. They tend toward conformity in a significantly large number of instances.

The present study has shown that an individual's relationship with respect to two personality correlates may be used as a predictor of his performance on a behavioral task. The need for further research on common
behavioral correlates of various personality measures appears to be warranted by the results of the present investigation.
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Appendix A

Internal-External Control Scale
(Rotter, 1966)

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 they're 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 really useless.

11. a. Becoming a success if one wants to, is a matter of hard work, luck has little or nothing 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.
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 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 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.

Notes: Score is number of underlined items.
* denotes filler items.
Appendix B

Instructions for the I-E Scale
(Rotter 1966)

This is a questionnaire to find out the way in which 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, and then circle the letter to the left of the statement that is your choice. 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.

Please answer these items carefully but do not spend too much time on any one item. In some instances you may discover that you believe both statements or neither one. Be sure, in such cases, to select the one you most 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.
Appendix C

Instructions for Embedded Figures Test V
(Jackson et al., 1964)

Each problem in this test is made up of two designs, a complicated figure on the first page and a simple figure on the next. In each problem the simple design is contained in the larger design. You are to find where the simple design is contained in the complicated design and sketch it in over the lines of the figure.

Here is an example of a complicated figure, a simple figure, and the complicated figure shown again with the simple figure sketched in.

![Complicated figure](image1)
![Simple figure](image2)
![Simple figure sketched in](image3)

The smaller figure is always present in the larger figure and always in the upright position. Be sure the figure you find is exactly the same as the simple figure, both in size and proportions. Work carefully and as systematically as you can. If you feel that you cannot solve one of the figures, you may skip it and come back to it later if you have time, but you will waste time if you
keep skipping from figure to figure. Do not worry about erasing completely if you have one or two incorrect lines, but be sure that you have all the correct ones clearly indicated.
Appendix D

Simple and Complex Figures Used in the

Embedded Figures Test V
(Jackson et al., 1964)

The simple figure on each trial is designated by the letter a. The complex figure within which the simple is to be found is designated by the letter b. There are 16 trials represented in the EFT V.

a. b.  
Trial 1

a. b.  
Trial 2

a. b.  
Trial 3

a. b.  
Trial 4

a. b.  
Trial 5

a. b.  
Trial 6
Appendix E

A Description of the Lines Used in the Asch Conformity Test
(Asch, 1956)

The lines were vertical black strips, 3/8 inches wide, pasted on white cardboards which were 17 1/2 by 6 inches. One card carried the standard line; on the other card appeared the three comparison lines. All lines start at the same level, their lower ends being 2 1/2 inches from the lower edge of the cards. The standard line appeared in the center of the card, while the comparison lines were separated by a distance of 1 3/4 inches. The comparison lines were numbered 1, 2, and 3 from left to right with black gummed figures 3/4 inches long. They were placed directly underneath the lines and 1/2 inch from their lower end. The standard and its matched comparison line were always separated by 40 inches.
Appendix F

Majority Responses to Standard and Comparison Lines

on Successive Trials of Asch Conformity Test

(Asch, 1956)

<table>
<thead>
<tr>
<th>Trial</th>
<th>Length of Standard</th>
<th>Length of Comparison Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>a*</td>
<td>10&quot;</td>
<td>8 3/4&quot; 10&quot; 8&quot;</td>
</tr>
<tr>
<td>b*</td>
<td>2</td>
<td>2 1 1 1/2</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>3 3/4 4 1/4 3</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>5 4 6 1/2</td>
</tr>
<tr>
<td>c*</td>
<td>4</td>
<td>3 3/4 4 1/4 3</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3 1/4 8 6 3/4</td>
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</tr>
<tr>
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<td>2 1 1 1/2</td>
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<td>3</td>
<td>3 3/4 4 1/4 3</td>
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<tr>
<td>8</td>
<td>5</td>
<td>5 4 6 1/2</td>
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<tr>
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<td>3</td>
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<tr>
<td>12</td>
<td>8</td>
<td>6 1/4 8 6 3/4</td>
</tr>
</tbody>
</table>

*Letters of the first column designate "neutral" trials, or trials to which the majority responded correctly. The numbered trials were "critical," i.e., the majority responded incorrectly.
Appendix G

Directions Read to Subjects in the Asch Conformity Test
(Asch, 1956)

This is a task involving the discrimination of lengths of lines. Before you is a pair of cards. On the left is a card with one line; the card at the right has three lines differing in length; they are numbered 1, 2, and 3, in order. One of the three lines at the right is equal to the standard line at the left—you will decide in each case which is the equal line. You will state your judgment in terms of the number of the line. There will be 18 such comparisons in all.

As the number of comparisons is few and the group small, I will call upon each of you in turn to announce your judgments, which I shall record here on a prepared form. Please be as accurate as possible. Suppose you give me your estimates in order, starting at the right in the first row, proceeding to the left, and then going to the second row.