UNIDIMENSIONAL AND MULTIDIMENSIONAL MEASURES OF LOCUS OF CONTROL AND THEIR RELATIONSHIP TO SELECTED PERSONALITY VARIABLES

A Dissertation

by

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ABSTRACT

Unidimensional and Multidimensional Measures
of Locus of Control and Their Relationship
to Selected Personality Variables. (May 1979)
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The purpose of this study was to assess the divergent and convergent validity of Levenson's multidimensional and Rotter's unidimensional approaches to the measure of Locus of Control (LOC) within the context of personality variables. The Levenson's Internal (I), Powerful Others (P), and Chance (C) LOC scales, the Rotter's Internal-External (I-E) LOC scale, the California Psychological Inventory (CPI) and the Sixteen Personality Factors Questionnaire (16PF) were administered to 150 college students enrolled in an introductory course in psychology.

The IPC and the I-E scales were found to be significantly correlated ($P<.05$) to the same 14 (of 18) CPI personality variables. In terms of predictive efficiency, the IPC was superior to the I-E scale in relation to the following variables: Capacity for Status, Sociability, Responsibility, Socialization, Communality, Achievement via Conformance, and Intellectual Efficiency. The I-E scale, on the other hand, proved to be more efficient than the combination of the IPC scales in the

prediction of variables Self-Control, Good Impression, and Achievement via Independence. No significant differences in predictive efficiency were found for Dominance and Psychological Mindedness. An interesting result was that both Levenson's and Rotter's instruments, each made unique contributions only to the prediction of variables Tolerance and Sense of Well-Being.

The Levenson and Rotter instruments differed in their relationship to the 16PF in that the former was found related to factor I (self-reliance vs. overprotectedness) and the latter to factor M (Conventionalism). The IPC and the I-E scales were found related to the same six 16PF personality factors. In terms of predictive efficiency and in contrast with the IPC scales, the I-E scale was unique in its relation to factors C (ego-strength), O (guilt proneness) and Q_4 (tenseness). No significant differences were found for factors B (intelligence), L (suspiciousness), and Q_3 (self concept control).

Levenson's and Rotter's LOC instruments tap more or less the same personality varibles. In terms of personality traits their difference is more qualitative than quantitative and their use in research may vary according to the specific personality varibles involved.

The combination of Levenson's IPC scales was found significantly correlated to the Rotter I-E scale with an $\underline{r}$=.6791 ($\underline{p}$<.01). While both LOC measures tap similar personality variables, there is enough difference stemming from their theoretical conceptualization as to prevent indiscriminant use and interpretations of one instrument in terms of the other. Levenson's multidimensional approach to the measures of LOC (IPC interplay) could be useful in the area of personality and

psychotherapy and further research on its potential applications is warranted.

DEDICATION

To my daughters, Norma Alexandra and Angela Raquel.

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I wish to express my appreciation to the members of my doctoral committee for their encouragement, support and accessibility throughout my studies at Texas A&M University. I would like to thank Dr. Donald G. Barker, my committee chairman and Dr. Albert Casey, Dr. William Nash and Dr. Darrell Smith, my committee members.

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CHAPTER I

INTRODUCTION

People differ in the degree to which they perceive their own actions to be instrumental in achieving their goals. There are people who act as if they expect to be effective in determining what happens in their lives. These individuals recognize their instrumentality even when they fail to achieve their goals. At the other extreme are people who generally act as if they cannot see any cause-effect relationship between their behavior and subsequent events. These individuals believe that everything they experience is controlled by forces which lie outside themselves. A common characteristic of the latter is that of abject helplessness, a sense of despair or fatalism. The concept of fatalism has been studied by numerous researchers. For example, Lewis (1961), Miller (1958) and Saunders (1958) found among members of the lower-class and poverty cultures a common belief that a man's life is subject to forces he cannot control.

The construct of Locus of Control (LOC) has been developed and proven helpful in conceptualizing this phenomenon. Rotter (1966) provided the definition, theoretical foundation, and general description of the LOC construct. Rotter essentially regards the LOC construct as a personality variable, i.e., a generalized expectancy which relates to whether individuals feel they possess or lack power over what happens to them. If individuals believe that the power to control their lives lies

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outside their personal limits, they are considered externally controlled.

Rotter's Internal-External Locus of Control Scale (I-E) is the most popular instrument used to measure the LOC construct. The I-E scale was conceived to be unidimensional, i.e., individuals were classified as internals or externals as their scores approached either end of a conceptualized internal-external continuum. Research on the reliability of Rotter's I-E scale has been consistent, and from a psychometric point of view, test-retest reliability of the scale appears adequate (Phares, 1976).

The research in the area of social activism has provided conflicting results regarding I-E's validity. Gore and Rotter (1963) found that black youth activists held more internal control expectancies than their peers. Other studies (Gurin, Gurin, Lao, & Beattie, 1969; Randsford, 1968) found contrary evidence, which indicated that blacks who were willing to participate in protest behavior scored toward externality. Hochreich (1975, 1978) reconciled these differences by suggesting that certain people, in specific circumstances, can be described as "defensive externals," i.e., they behave as internals but endorse external statements as a defense against failure.

Levenson (1972, 1973) has reconceptualized Rotter's I-E scale by creating a three-factor measure of LOC which consists of the following scales: (1) an internal control (I), (2) external control by powerful others (P), and (3) external control by chance (C). Levenson (1972) reasoned that individuals who believe that the world is ordered and controlled by powerful others, would behave and think differently from

individuals who believe that the world is unordered (chance). She maintained that it is necessary to delineate more specifically the construct of externality.

Levenson's multidimensional concept suggests that individuals who demonstrate specific high/low combinations of the LOC orientations I, P, and C may also demonstrate certain behavioral traits. Levenson and Miller (1976) reported some findings to support this hypothesis; they found that female activists and non-activists with similar liberal views scored differently on the P scale with activists scoring higher. Their comparison of two groups of students with different ideologies, lesbian activists vs. feminist activists showed that the groups differed on both the P and I scales with the lesbian group scoring significantly higher on the P scale and significantly lower on the I scale. This finding suggests that the interaction of Levenson's IPC scales can be useful in predicting behavior. The question remains whether the interplay of the scales relates to specific personality factors. Joe (1971) and Levenson & Miller (1976) further suggest that LOC variables should be studied at multidimensional levels.

Need for the Study

The LOC construct has received increasing attention in recent years. Its application to areas like counseling and psychotherapy, where there has been limited research emphasis, could prove to be very helpful. In order to expand on the potential applications of the unidimensional and multidimensional LOC concepts, construct validity must be investigated. Lanyon and Goodstein (1971) indicated that using the

internal consistency approaches in the construction of formal assessment devices, personality is defined in terms of what the particular personality test measures.

A number of basic questions need to be answered more definitively. Are Rotter's I-E scale and Levenson's IPC scales measuring the same thing? How do these scales relate to other personality factors? Lefcourt (1976) pointed out that LOC has been investigated in relation to depression and that more research is needed studying the relationship of LOC to other forms of behavioral pathology and personality factors.

Statement of the Problem

The purpose of this study was to assess the divergent and convergent validity of Levenson's IPC and Rotter's I-E LOC scales. It was proposed that the study would investigate the nature of the relationship between these two LOC scales and selected personality variables. The selected personality variables were defined by the scales of Gough's (1975) California Psychological Inventory (CPI) and Cattell's (1956) Sixteen Personality Factors Questionnaire (16PF). These tests are considered the best personality inventories among all those available.

Objectives

The three primary objectives of this study were to investigate:

1) The relationship between the IPC and the I-E scale,

2) the relationship of the IPC and I-E scales to the personality

scales of the CPI and 16PF, and

3) whether there are significant differences between the contributions of Levenson's IPC and Rotter's I-E scales in the prediction of the personality scales of the CPI and 16PF.

Definition of Terms

The following definitions were adopted to insure an understanding of the terms and concepts central to the study.

Locus of Control (LOC): A personality construct referring to an individual's generalized expectancy regarding reinforcement in his/her life.

Internal Locus of Control (I): A person's perception that the events in his/her life are consequences of his/her own behavior. This was operationally defined by the scores obtained on the I subscale of Levenson's (1973) IPC scales.

Chance Locus of Control (C): A person's perception that chance, fate or luck controls his/her life. These individuals believe there is no opportunity for them or others to be instrumental in life's happenings. This was operationally defined by the scores obtained on the C subscale of Levenson's (1973) IPC scales.

Internal-External Locus of Control (I-E): Rotter's (1966) Unidimensional scale which classifies people's beliefs as internal or external along an internal-external continuum. Externality was defined in the broader sense allowing no differentation between Powerful Others and Chance beliefs.

Basic Assumptions

For the purposes of this study the following assumptions were made:

1) The participants responded accurately and honestly to the instruments.

2) The instruments utilized yielded adequate and reliable sources of information regarding locus of control, personality variables, and personal information data.

3) A linear relationship between dependent and independent variables existed allowing the use of regression analysis procedures.

Limitations of the Study

Any results and conclusions from this study must be limited by the following factors:

1) Participants were not selected randomly, nor were restrictions imposed due to age, sex, ethnocentricity, academic major, or classification. The only requirement was that participants be undergraduate college students enrolled in an introductory psychology course.

2) Participation was completely voluntary. Students were given extra credit in their courses for completing the research instruments. Although there is evidence that the use of volunteers may introduce unwanted variation in the results (Huck, Cormier & Bounds, 1974), this study would have been impossible without volunteer participation.

3) Additional limitations of the study were those of any correlational research where causality cannot be inferred between dependent and independent variables.

CHAPTER II

REVIEW OF RELATED LITERATURE

Rotter (1966) developed the concept of internal-external control of reinforcement, which describes the degree to which an individual believes that reinforcements are contingent upon his/her own behavior. This concept reflects an individual's perception of the contingencies and this perception may or may not reflect actual contingencies. Locus of control is considered internal if reinforcements are seen as an outcome of individual efforts or personal characteristics. It is considered external if the reinforcement is primarily attributed to events or forces outside the person (e.g., chance, fate, God, society). Substantial research indicates that the LOC construct is an important variable in helping to explain behavior.

The review of literature is organized under the following headings:

1) Introduction to the LOC concept.
2) The measures of LOC.
3) Implications for Counseling and Psychotherapy.

Introduction to the LOC Concept

The earliest experimental studies of LOC were derived from Rotter's (1954) social learning theory. Rotter (1966) essentially regarded the LOC construct as a personality variable, i.e., a generalized expectancy which related to whether the individual felt he/she possessed or lacked power over what happened to him/her over a large number of situations. Locus of control may be generalized or specific. As the name suggests,

a specific locus of control is one in which the perception of contingencies is applied only to the one concrete situation to which the individual is responding. The situation-specific perception of contingencies is derived from the individual's expectancy, learned from previous experiences in the same situation, that reinforcements are, or are not, direct outcomes of his/her behavior or characteristics. A specific LOC need not be applied only to the one situation in which it was originally learned. It can be generalized to other situations which are perceived as either related or similar. In a given situation, then, it is theoretically possible to predict the likelihood for any behavior to occur as a function of (1) the value of the available reinforcement for the person, and (2) some additional function of (a) the value of the available reinforcement for the person, and (b) some additional function of both his/her generalized expectancy and the more specific situational expectancy that the given behavior will result in the reinforcement.

An example of the discriminant value of this concept is found in the research of cognitive activities and skill versus chance situations. In the area of cognitive activity, some studies conducted by Lefcourt and Telegdi (1971), Pines (1973), and Seeman (1963) concluded that internal subjects are more cognitively aware of the presence of information in the environment and more active in seeking information from other sources than external subjects. The source of information may be a factor in the degree of the cognitive activity in which internals and externals engaged. Lefcourt (1976) after reviewing several articles on this topic expressed that:

> The internals were found to show considerably more variability than externals. Their attentiveness, concern, and interest changed with the type of situation in which they were engaged. If the task offered a challenge to competence, the internals became more deliberate in their decision making during that task. Less skill-demanding tasks, on the other hand, elicited some carelessness and impulsivity from internals. Externals did not seem to draw such sharp distinctions about tasks as internals were apt to do. When task instructions did affect them, however, it was the more chance determined task which elicited their greater attention and deliveration (p. 58).

In skill vs. chance situations, internal subjects tend to prefer intermediate probability or extremely safe bets when compared to externals (Liveront & Scodel, 1960). Externals in chance situations tend to show more unusual shifts (up after failure and down after success), and smaller magnitude shifts of expectancy than internal subjects (Phares, 1957). Several studies (Julian & Katz, 1968; Lefcourt, Lewis, & Silverman, 1968) have shown differential performance of internals and externals in skill-chance situations. Their findings indicate that internals perform better than externals in skill situations.

Changes in LOC

Natural influences. Perhaps the simplest reason for changes in LOC beliefs stems from age changes. Phares (1976) observes that there is little data on the relationship between age and LOC belief. He suggested the need for longitudinal research with a set of I-E scale scores for the same population followed over a long period. Lefcourt (1976) suggested a U shaped relationship or a possible external-internal-external change. For example, with advanced age, one may

revert toward the helplessness of childhood. Lefcourt also reports that Kiehlbauch (1968) in a cross-sectional study with inmates found that both I-E scores and anxiety scores showed curvilinear relationship with length of stay in the reformatory. The subjects were more internal at the midpoint of their sentence.

Some changes in I-E orientation seem to be rather specific to the situation involved and transitory in nature. Gorman (1968) found that one day after the events at the 1968 Democratic National Convention, a group of people who were predominantly supporters of McCarthy, manifested I-E scores more external than the norms. McArthur (1970) reported that students who became less susceptible to the draft by the operation of the lottery produced more external I-E scores than did students whose status was not affected.

Instrumental influences. The studies reported in the various reviews of the literature dealing with attempts to change LOC (Lefcourt 1976; Phares 1976) can be grouped into (1) those which were conducted with a social learning theory (manipulation of specific expectancies) and (2) those which come from group experience studies (employing group psychotherapy or a group enrichment program approach). The studies conducted with a social learning background were classified by Lefcourt (1966) into two groups: (a) reference group manipulation and (b) cue explication. The studies employing reference group manipulation involve increasing expectancies of success by cognitively linking new goals with old successes (Lefcourt & Ladwing, 1965; Eisenman, 1972). From those studies it may be said that prestige suggestion needs to be related to goals toward which subjects have some expectancy of success.

Verbal prestige suggestion without experiential basis, or using past experience of success, does not produce changes in LOC.

Cue explication is another LOC change technique which falls under the rubric of social learning theory. Bandura (1969) contended that awareness of contingencies of reinforcement markedly accelerates learning. Lefcourt (1967) found that, while in the minimum cue conditions, internals were more achievement and goal oriented than externals; under the high cue conditions, externals repeatedly executed significantly greater number of internal responses.

The majority of the studies which employed group psychotherapy to effect change have indicated successful modification of perceived external LOC (Felton, 1971; Felton & Biggs, 1972; Foulds, 1971). Other studies based on group experience or group enrichment programs (non-psychotherapy) have also reported modifying LOC toward internality (Smith, 1970). Published findings suggest that the strategy of manipulating both verbal suggestions and reinforcement schedules appears to be the most appropriate in attempts to modify LOC orientation (Lefcourt, 1976).

The Measures of LOC

Various paper and pencil measures of generalized locus of control have been developed. Nowicki and Strickland's (1973) A Locus of Control Scale for Children and Bialer's (1961) Bialer-Cromwel Children's Locus of Control Scale measure generalized LOC among children. James' (1957) Internal-External Locus of Control Scale, Gurin, Gurin, Lao & Beattie's (1969) Multidimensional Internal-External Scale, and Rotter's (1966)

Internal-External Locus of Control Scale are some examples of measures for adults. The Gurin, Gurin, Lao & Beattie (1969) scale is a modified form of the Rotter scale and is specifically intended to measure LOC among blacks in the United States.

Unidimensional Approach

The Rotter (1966) I-E scale is the most popularly used generalized LOC instrument. The Rotter scale was originally conceived to be unidimensional in the measurement of generalized expectancy of internal or external control of reinforcements. A LOC score under this conception may classify a person as generally internal or external across situations. This I-E scale consists of a 23-item forced choice questionnaire, which is scored in the external direction; therefore, the higher the score the more external the individual. Because Rotter's scale samples a variety of areas of control, it claims to be a measure of generalized expectancy. The I-E scale has a test-retest reliability for several samples that varies from .45 to .83, depending upon the time interval and the sample involved. Phares (1976) concludes that the test-retest reliability of the instrument is quite adequate.

The research with the I-E scale in social activism and lately in the area of counseling and psychotherapy provided conflicting results. In the area of group counseling, for example, Gatz, Tyler, and Pargament (1978) found that black externals as opposed to what was expected gained or achieved more of their stated goals in group counseling than black internals. In the area of social activism, Gurin and Rotter (1968) found that black youth activists held more

internal control expectancies than their black peers. Other studies (Gurin, Gurin, Lao & Beattie, 1969; Ransford, 1968) found contrary evidence when blacks who were willing to participate in protest behavior scored toward externality. As indicated in Chapter I, Hochreich (1975, 1978) suggested that certain people in specific circumstances can be described as defensive externals, behaving as internals but endorsing external statements as defense against failure. Phares (1976) offered two possible explanations. One is that there are indications that black and lower-economic groups held more external beliefs due to differences in access to power and the presence of social barriers to group mobility. Another possible explanation, supported by Levenson (1972), is that the external measure or the I-E scale is too broad in its conception.

Sex is another area in which the I-E scale has received some criticism. Phares (1976) in his review of the literature expressed that a majority of studies do not find significant differences in the I-E scale for males and females. Rotter (1966), Gore and Rotter (1963), and Strickland (1965) did not find significant differences in I-E scores between male and female college students. Feather (1967), Ryckman, Rodda and Stone (1971), and Brown and Strickland (1972), nevertheless, found contradictory results in regard to sex and LOC. In these studies women were found to score more external than males. Phares (1976) and Platt, Pomeranz, Eisenman and Delisser (1970) suggest that the moderating effect of sex may be attributed to differential cultural roles commonly assigned to boys and girls.

Multidimensional Approach

Factor analytic investigations have shown the I-E scale multidimensionality. Abrahamson, Schluderman and Schluderman (1973), Mirels (1970), and Reid and Ware (1973) have all found at least two factors: (1) Felt mastery (Factor I), i.e., the belief that one is, or is not able to control events in one's personal life, and (2) System control (Factor II) i.e., the expectation that one is, or is not able to control the direction of the behavior of the other people in one's life (e.g., socio-political institutions). Hersch and Sheike (1967) reported certain data with adjective checklists which led them to suggest that externality is considerably less homogeneous than is internality.

Lefcourt (1976) pointed out that Levenson has advanced the most promising means for exploring the utility of a multidimensional measure of LOC. Levenson (1972, 1973) in order to reconceptualize Rotter's (1966) LOC scale (I-E), has created a three-factor measure of LOC which consists of (1) internal control, (2) external control by powerful others, and (3) external control by chance. Levenson (1972) comments on these scales as follows:

> Three new scales (Internal, Powerful Others and Chance--I, P, C) were constructed in order to measure belief in chance expectancies as separate from a powerful others orientation. The rationale behind this tripartite differentiation stemmed from the reasoning that people who believe the world is unordered (chance) would believe and think differently from people who believe the world is ordered but that powerful others are in control. In the latter case a potential for control exists. Furthermore, it was expected that a person who believes that chance is in control (C orientation) is cognitively and behaviorally different from one who feels that he himself is not in control (low I scale scorer)(p. 260).

Each of Levenson's (1973) Internal, Powerful Others, and Chance scales (I, P, C) of locus of control consists of eight items in a Likert 6-point format. This implies that the three scales are statistically independent of one another. All the statements are phrased so as to pertain only to the person taking the inventory. Test-retest reliabilities for a one-week period were .64, .74 and .78.

Levenson (1973) tested patients diagnosed as psychotic or neurotic at monthly intervals with her scale. On initial testing, patients scored higher on P and C scales than normal adult samples. After the second month of hospitalization, patients diagnosed as paranoid scored higher on the P scale than did all other patients. After a period of time under psychotherapy, internality scores I shifted toward the internal end of the continuum while the P and C scales remained constant. Prison inmates (Levenson, 1974) who scored high on the P scale had been disciplined with solitary confinement six times more frequently than inmates who had lower P scales. I and C scales were insignificant in the comparison.

Levenson and Miller (1976) investigated a student population and found that the IPC scales interplay was correlated with participation in specific social group activities. They obtained the following results:

1) conservative students tended to score higher on the I scale and lower on the C scale than liberal students.

2) highly activist liberals scored higher on the P scale than highly activist conservatives while,

3) conservative nonactivists scored higher on P than liberal nonactivists.

The researchers concluded that increases in the activism level of conservatives are correlated with proportional belief that powerful other forces are no longer in control of the world. The results obtained in collorary studies with females were as follows:

1) liberal activists scored higher on the P scale than liberal non-activists;

2) liberal activists scored higher on P than conservative activists; but conservative activists scored higher on the I scale than liberal activists.

Levenson and Miller (1976) concluded their research suggesting that the IPC scales could be used in future research to make predictions based on two or three of the IPC scale scores.

Implications for Counseling and Psychotherapy

Studies conducted to this time, which sought to relate LOC and psychotherapy, have been done utilizing a unidimensional approach. An examination of some of these studies gives the impression that it is possible and perhaps desirable to change people toward internality, especially those people who are not functioning well in society. Hersch and Scheike (1967) correlated the I-E scale with the California Psychological Inventory (CPI) and the Adjective Checklist (ACL) and found that internals were higher than externals on the Deviance, Tolerance, Good Impression, Sociability, Intellectual Efficiency, Achievement via Conformance, and Well Being scales of the CPI. On the ACL, internals

were more likely to describe themselves as assertive, achieving, powerful, independent, effective and industrious.

Skybut (1968) found that severely disturbed psychiatric patients who had been rated for severity of psychopathology on the basis of disorders of thought, affect, behavior, and social adjustment were more external than moderately disturbed patients and normal persons. Cromwell, Rosenthal, Shakow and Zahn (1961) and Harrow and Ferrante (1969) found that patients diagnosed as schizophrenic were discovered to be more external than other non-schizophrenic patients. Lottman and DeWolfe (1972) found process schizophrenics more external than reactive or non-schizophrenics. Other studies (Burnes, Brown & Keating, 1971; Powell & Vega, 1972) indicate that individuals with external orientations tend to admit more feelings of anxiety and depression. Bhatia and Golin (1978) found evidence to support the notion that external subjects exhibit greater frustration-produced agression than internals. Bhatia and Golin view aggression as regulated by a generalized belief in uncontrollability.

Significant correlations between anxiety and externality seem to indicate greater chronic distress, discomfort, or maladjustment on the part of externals. On the other hand, the review of the research on LOC and reaction to threat done by Phares (1976) and the studies done by Hochreich (1975, 1978) suggest that one functional value of an external LOC is its capacity to neutralize potentially threatening stimuli. Selecting tasks in advance that permit one easy access to excuses such as rationalization should failure occur, or attributing

blame for failure to outside forces are some "defenses" available to the individual.

Internality has also been found to be related to psychopathology. Some studies found that alcoholics scored in a more internal control direction than did the normative samples reported by Rotter in 1966 (Gross & Morosko, 1970; Pryer & Distefano, 1977). Goss and Morosko (1970), nevertheless, found in their sample a positive relationship between LOC and anxiety, depression, and clinical pathology as assessed by the MMPI; the more external the alcoholic, the more likely he responded in a pathological and dysphoric fashion to the MMPI. Berzins and Ross (1973) and Pryer and Distefano (1977) found hospitalized narcotic addicts to be significantly more internal than a rather large sample of university students. The internality in alcoholics and drug addicts can be perceived in their denial that they have become dependent upon a drug. It is not accidental that an important element in recovery for both alcoholics and drug addicts is the open admission of addiction.

Nowicki and Duke (1978) investigated the expectancies of clients applying for services at college counseling services. Using the Adult Nowicki-Strickland Internal-External Control scale (Ansie), they found that clients who dropped out of counseling following the intake interview were internals. Those internals that stayed in counseling stayed for a shorter time, but were rated as more improved than externals, who as a group were found to be higher in counseling readiness.

Nowicki and Duke (1978) indicated that potential procedures to help the internal client to remain in counseling can be found in the LOC literature. They suggested a contracting procedure in which the

internal client is asked to stay for a certain number of contracted sessions. Other general findings were that:

1) externals expected to have more sessions in therapy than internals;

2) externals were more reserved about their problems in therapy and with friends;

3) more externals than internals felt, before asking for help, that they could have handled the problem themselves.

4) externals tended to identify their problems as belonging to the areas of self understanding and social life in general.

5) externals were more likely to expect the therapist to give advice.

Extreme LOC in either the internal or external direction would seem to be maladaptive in current society. Extreme externals, for example, might seem aimless and helpless in their behavior, and they might be expected to expend little effort in achieving any goal. Extreme internals might seem unrealistic to the extent that in the pursuit of their goals, they would be unable to comprehend the need for, and usefulness of, the behavior of others.

In therapy clients are encouraged to shift attributions of cause, sometimes to external, sometimes to internal sources, depending on the circumstances involved in the case at hand. Lefcourt (1976) notes that "In social learning terms, shifts in specific expectancies from internal to external can be said to at times encourage the return of confidence or generalized expectancies of internal control" (p. 94).

Assuming that one type of LOC is not inherently preferred over, nor more productive than the others means perhaps that the productiveness of a specific type of LOC orientation largely depends on what kind of situation is prevalent. In a situation where reinforcements are delivered on a chance basis, it is obviously more adaptive and productive to employ any of the external LOC orientations. In another situation where reinforcements are contingent upon one's performance, an internal LOC is more effective (Lefcourt, Lewis & Silverman, 1968). The discovery of multidimensionality in the I-E scale, and furthermore, that it is possible for these dimensions to coexist independently within an individual is in congruency with the following speculation: It may not be a question of which type of LOC is best to have, but rather when to use which type of LOC.

Summary

The construct of LOC has gained increasing attention in recent years (Rotter, 1975; Throop & McDonald, 1971). Extensive reviews have been prepared by Joe (1971), Lefcourt (1976), and Phares (1976). LOC has been employed in the study of individual and group differences in risk-taking behavior, chance-oriented tasks, perception, information processing, and a host of other tasks. The application of LOC in the areas of counseling, psychotherapy, and social change are promising. Several measures of LOC have been developed to use with different populations and situations. The most widely used LOC scale to assess individual differences in locus belief, however, is the Rotter (1966). Conflicting findings using the unidimensional approach to measure LOC

have necessitated a search for multidimensional approaches. Levenson (1972) has reconceptualized the Rotter I-E scale into a multidimensional measure composed of Internal, Powerful Others and Chance scales.

The concept that there is multidimensionality in the measurement of LOC and the recognition that it is possible for various LOC beliefs to coexist independently within an individual will open new avenues of research. In order to understand the potential uses of Rotter's and Levenson's approaches, a comparison of both scales using personality factors to ascertain construct validity is desirable. Thus far, no such study has been reported in the literature.

CHAPTER III

METHOD

A correlational approach was used to investigate the divergent and convergent validity of the LOC measures within the context of personality variables. The application of regression analysis techniques permitted the attainment of the specific goals of this research. This section describes the subjects, instruments, procedures and analysis used.

Subjects

The sample (N=150) consisted of undergraduate students enrolled in an introductory psychology course at Lamar University, a medium sized campus located in Beaumont, Texas. The university has recently adopted an open-door admission policy and the enrollment consists mostly of students from families of lower and middle class incomes. Participation in the study was strictly on a voluntary basis, although students were given extra credit in their courses for completing the instruments. There was no attempt to randomize the selection of subjects. The sample was not restricted according to age, ethnicity, sex, academic major, or classification.

The data collected by the Personal Information Questionnaire (PIQ) describes the sample as follows: seventy percent of the students were females. This was representative of the sex ratio of the students in the psychology courses at the time of the study. An ethnic breakdown of the sample identified 64% as anglo-American, and 29% as minority

groups. There were 5% who did not give their ethnic-background. In regard to their age, 66% were between 18 and 25 years. A total of 40% of the participants reported holding a part-time job to help pay their academic expenses.

A total of 57% of the students were identified as freshmen; with the remaining 43% almost evenly distributed in the sophomore, junior and senior years. They were enrolled in the colleges of Business, Education, Engineering, Liberal Arts, Sciences, Social Sciences and as undeclared majors. Table I displays the PIQ results by both frequencies and percentages.

Instruments

The Internal-External Locus of Control Scale (I-E). Rotter's (1966) scale is a 23-item forced-choice questionnaire. The scale is scored in the external direction, i.e., the higher the score, the more external the individual. Because the I-E samples a variety of areas of control, it claims to be a measure of generalized expectancy. Rotter's I-E has a test-retest reliability for several samples that varies from .45 to .83 depending upon the time interval and the sample involved.

The Internal, Powerful Others, and Chance Scales of Locus of Control (IPC). Levenson's (1972) scales differ from Rotter's in various ways. The scales are reported to be statistically independent of one another and all the statements were phrased so as to pertain only to the person taking the test. The three scales have had high reported internal consistency and have not been found to correlate with a measure of social desirability (Levenson 1972). All of the scales

Table 1

Responses to the Personal Information Questionnaire (PIQ)

Item	Responses	
	n	%
1) Sex		
female	105	70
male	45	30
Total	150	100
2) Ethnic/Racial Background		
American Indian	2	1
American Black	37	25
Caucasian	96	64
Oriental	0	0
Spanish surname	8	5
other	6	4
no answer	1	1
Total	150	100
3) Age		
18-21	72	48
22-25	27	18
26-over	51	34
Total	150	100

Table 1 (continued)

Item	Responses n	Responses %
4) Attendance		
full-time	89	59
part-time	60	40
Total	149	99
5) Hold A Part-time Job	80	60
6) Classification		
freshman	85	57
sophomore	20	13
junior	23	15
senior	20	13
other	2	1
Total	150	100
7) Major		
business	25	17
education	16	11
engineering	5	3
health science	56	37
liberal arts	4	3
science	3	2
social science	29	19
undecided	12	8
Total	150	100

have a high degree of parallelism in content. Test-retest reliabilities for a one week period were reported between .64 to .78. Both Levenson's and Rotter's scales have been discussed in more detail in Chapter II.

The California Psychological Inventory (CPI). This inventory (Gough, 1975) is intended primarily for use with "normal" or non-psychiatrically disturbed subjects. The CPI consists of 480 items presented in a true-false format. The CPI includes 18 standard scales with each scale assessing one important facet of interpersonal psychology, and the total set furnishing a comprehensive survey of an individual profile from a social interaction point of view. Specifically, each scale is designed to predict how a person will behave under defined conditions and to identify individuals who will be described in characteristic ways by others who know them well or who observe their behavior in a particular context. The method used in the scale construction was what has come to be called the empirical technique. A criterion-dimension to be measured was first defined. Inventory statements which seemed to bear a relevance to the criterion were assembled in a preliminary scale. These scales were then administered to persons shown to be strongly characterized by that trait or dimension. Seven of the scales were constructed with a variation of the same principle, or what is called consistency analysis. Test-retest reliability varied from scale to scale and between different populations; for example, between .38 in the communality scales in high school males (N=100) to .85 in the responsibility scale for prison males (N=200).

The CPI has been reviewed in the most well-known and respected source of test information, the Mental Measurements Yearbook (MMY). It has been critized because of so many scales and their high intercorrelations. Nevertheless, Kelly (1965) in the Sixth Mental Measurements Yearbook reported that the CPI is one of the best available instruments of its kind. Golberg (1972) in the Seventh Mental Measurements Yearbook concluded that the CPI should be able to provide more valid behavioral predictions than other comparable personality instruments available. Golberg indicated further that enough empirical research has been accumulated to allow the practitioner to explore the usefulness of the CPI predictions in industrial, clinical, and educational settings.

The 18 scales of the CPI are grouped into four general themes as described in the following format suggested by Megargee (1977):

A) Measures of Poise, Ascendancy, Self-Assurance and Interpersonal Adequacy

1) Dominance: used to identify individuals who behave in a dominant, ascendant manner, who are able to take initiative and exercise leadership. Considered one of the best-validated scales of the CPI.
2) Capacity for Status: used to measure qualities of ambition and self-assurance that lead to status.
3) Sociability: used to measure degrees of enjoyment of social participation, outgoingness vs. fear of social visibility.

4) Social Presence: used to identify individuals who will show spontaneity, wit, and caprice in their social behavior.

5) Self-acceptance: used to identify individuals who are secure and self-confident. It is not necessarily a measure of self-adjustment psychopathologically speaking.

6) Sense of Well-Being: used as a validity scale to discriminate between individuals faking bad vs. individual in distress. It also has diagnostic meaning for normal individuals in that it indicates a sense of good health and feelings of vitality to face everyday social living.

B) Measures of Responsibility, Socialization, Maturity and Interpersonal Structuring of Values

7) Responsibility: used to identify people who are conscientious, responsible and dependable. Emphasizes the degree to which values and controls are conceptualized and understood.

8) Socialization: used to measure the extent to which values are internalized and used in everyday life. Originally conceived to measure socio-pathology trends.

9) Self-Control: used to assess the adequacy of self-regulating and self-control. Intended to reflect over-control and impulsivity.

10) Tolerance: used to differentiate between feelings of humanitarianism and progressiveness against hostility,

estrangement and disbelief. Used frequently in studies of social intolerance and anti-semitism.

11) Good Impression: used as a validity scale against protocols where the individual attempts to fake good. Also useful in identifying people who are concerned about how others react to them.

12) Communality: this third validity scale is used to identify protocols with a high number of random or senseless responses. There is some evidence that it may help differentiate between conventional and non-conventional individuals.

C) Measures of Intellectual Efficiency and Achievement Potential

13) Achievement via Conformance: used to identify individuals with a high need for achievement, who would perform well in structured and organized settings. (It can predict achievement in high school.)

14) Achievement via Independence: used to identify individuals with a high need for achievement who would perform well in settings and tasks in which independence of thought and of creativity are needed. Can predict achievement in college undergraduate courses.

15) Intellectual Efficiency: used to identify people who are well-organized, efficient and committed to intellectual and cultural pursuits. Correlates, very moderately with some measures of intelligences.

D) Measures of Intellectual and Interest Modes

16) Psychological Mindedness: used to investigate the degree of an individual's ability to understand how people feel and think. It is not necessarily a measure of sympathy, kindness, or nurturance. Reflects characteristics associated with scientific psychology.

17) Flexibility: used to identify people who are adaptable, flexible as opposed to rigid. One of the least valid CPI scales.

18) Femininity: used to identify along a continuum of psychological femininity. There has been a decreased emphasis in using this scale to detect sexual psychopathology.

The Sixteen Personality Factor Questionnaire (16PF). The 16PF is a self-administered questionnaire in which the subscales (contrary to the CPI) were developed from factor analytic research on normal and clinical groups. These analyses have identified 16 factors and cross-validated the test items through their correlation with the factors on different adult population samples. The reported test-retest reliability in a period of two month intervals for the different scales, using both large versions (A+B), was between .63 and .88 (Institute for Personality and Ability Testing, 1972). Form A, for adults was used in the present study.

Rorer (1972) in the Seventh Mental Measurements Yearbook classifies the 16PF as original in conception and design and that it may be the best personality inventory available. Bouchland (1972) states,

nevertheless, that more data needs to be available in order to make the interpretation of profiles manageable. The applications of the 16PF are growing, and at least one textbook discusses its clinical uses (Karson & O'Dell, 1976). The 16PF is supposed to measure functional or source traits, as opposed to subjective, theoretical surface traits which are presumably measured by other tests. The 16PF factors are as follows:

1) Factor A: Sizothymia vs. Affectothymia. Used to differentiate individuals as reserved or outgoing.
2) Factor B: Intelligence. Used to describe individuals as able or unable to handle abstract problems. It is used also as a measure of attention or distractability.
3) Factor C: Affected by feelings vs. Emotional stability. Used to discriminate between individuals with lower ego strengths and higher ego strength.
4) Factor E: Submissiveness vs. Dominance. It is a measure of dominance used to differentiate between submissiveness and ascendance tendencies of the individual.
5) Factor F: Desurgency vs. Surgency. Considered one of the components in the measure of extroversion. Used to differentiate between taciturn, sober or serious, and enthusiastic, happy-go-lucky individuals.
6) Factor G: Low superego strength vs. high superego strength or Expedient vs. Conscientious. Used to differentiate between self-control behavior and emotionally impulsive behaviors in individuals.

7) Factor H: Threctia vs. Parnia. Used to differentiate between shy, threat-sensitive individuals and the adventurous and socially bold ones.

8) Factor I: Harria vs. Premsia. Used to differentiate between tough minded and sensitive, dependent individuals.

9) Factor L: Alaxia vs. Protension. Used to differentiate between relaxed, trusting, accepting individuals and suspicious, jealous, inner tensed ones.

10) Factor M: Praxernia vs. Autia. Used to differentiate between practical individuals and unconventional, imaginative ones.

11) Factor N: Naivete vs. Shrewdness. Used to differentiate between forthright and astute, wordly individuals.

12) Factor O: Untroubled adequacy vs. Guilt proneness. Used to differentiate between individuals who tend to act-out their maladjustment vs. those who internalized their conflict.

13) Factor Q_1: Conservatism of temperament vs. Radicalism. Used to differentiate between conservative, traditional individuals and experimental, analytical, free-thinking ones.

14) Factor Q_2: Groups Dependency vs. Self-Sufficiency. One of the major factors in introversion. Used to differentiate between sound, dependent group followers and the more resourceful and self-sufficient one.

15) Factor Q_3: Low self-sentiment integration vs. High self-concept control. Used to identify individuals who are unable to control their own urges versus the ones who are

socially aware and careful in their social interactions. People who score low on Q_3 may feel maladjusted especially in the affective domain.

16) Factor Q_4: Low ergic tension vs. High ergic tension. Used to differentiate individuals who are relaxed, compared to those who show irrational worried anxiety and turmoil. It is a good predictor of automobile accidents (Cattell, Eber, & Tatsuoka, 1970).

Personal Information Questionnaire (PIQ): This instrument was designed by the researcher to gather demographic data on the subjects. Each participant was identified according to his/her sex, age, ethnic-racial background, academic major and classification.

Procedures

All subjects completed the following inventories with answer sheets which were collected in a packet coded with identification numbers:

1) California Personality Inventory (CPI)
2) 16 Personality Factors Questionnaire (16PF)
3) Social Reaction Inventory (I-E)
4) Personal Information Questionnaire (PIQ)
5) Attitude Statement Survey (IPC)
6) An introductory letter explaining the purpose of the study.

Data were collected by an assistant professor of psychology at the host institution during the last week of fall semester, 1977. Half of the students answered the CPI and the IPC the first day and the 16PF

and the I-E scale the second day. The procedure was reversed for the remainder of the students. Students requesting feedback gave their names and mailing addresses on a card provided by the examiner. The cards were collected separately from the research packets to insure anonymity.

Raw scores on all instruments were gathered and transferred to IBM cards by paid assistants. Raw data were preferred because this avoids subtle concealed relationships which might be inherent in standard scores. A computer listing of the data punched on cards was compared to the original data sheets to assure accuracy.

Analysis

The data were analyzed on an Amdahl 470/V6 computer. The Analysis of Behavioral Science Data (AOBSD) Package (Veldman, 1967) as modified by Dr. Donald G. Barker, Texas A&M University, was utilized to analyze the data. Program DISTAT (Veldman, 1967) was used to analyze the descriptive characteristics of the data. Program REGRAN (Veldman, 1967) was used to determine the correlations between the different LOC scales and between the selected personality variables. Program REGRAN also produced the regression analysis equations needed to assess the predictive capabilities of the LOC in relation to the personality variables.

CHAPTER IV

RESULTS

The data from this study were analyzed to study the divergent and convergent aspects of the construct validity of Rotter's and Levenson's LOC scales. The results are presented under the following headings corresponding to the specific objectives one, two, and three of the study: Intercorrelation among LOC Measures, Correlates of LOC and Personality Variables, and Comparison of the IPC and I-E scales in Predicting Personality Variables.

Intercorrelations Among LOC Measures

The relationship between the Levenson and Rotter LOC measures was assessed by the use of program REGRAN, to calculate a correlation of Levenson's IPC scales and Rotter's I-E scale. The program REGRAN also calculated a multiple correlation of the IPC scales and the I-E scale. The IPC multiple and individual correlations with the I-E scale and their coefficients of determination are found displayed in Table 2. Each scale of the Levenson test was correlated with the Rotter test to statistically very significant extents ($p<.01$). The multiple correlation (.68) was also significant.

Correlates of LOC and Personality Variables

The CPI

The relationships between the I-E and the multiple IPC scales with CPI scales were investigated through an inspection of the correlations

Table 2

Correlates of Levenson's and Rotter's LOC Measures

Levenson's Scales	Rotter's I-E Scale	
	r	r^2
I	-.4674**	(.2185)
P	.4598**	(.2114)
C	.5727**	(.3280)
Multiple Correlation	.6791**	(.4612)

** P<.01

provided by program REGRAN. Both LOC measures, in general, were found to be significantly correlated with 14 personality variables of the CPI: Dominance, Capacity for Status, Sociability, Sense of Well-Being, Responsibility, Socialization, Self-Control, Tolerance, Good Impression, Communality, Achievement via Conformance, Achievement via Independence, Intellectual Efficiency, and Psychological Mindedness. The following scales were found not to be significantly correlated with LOC measures: Self-acceptance, Social Presence, Flexibility and Femininity. Table 3 displays the results.

The I-E scale was found to be negatively correlated with the 14 CPI variables mentioned before, with correlations ranging from r=-.19 (p<.05) for Socialization and up to r+.47 (p<.01) for Sense of Well-Being. The single I scale of the IPC group was the only scale to correlate positively with the 14 CPI scales mentioned before, with correlations varying from r=.17 (p<.05) for Psychological Mindedness and r=.39 (p<.01) for Sense of Well-Being. The P scale was found to be significantly negatively correlated with 11 of the already mentioned 14 CPI scales. The four scales where no significant correlation was found were: Dominance, Socialization, Communality and Psychological Mindedness. Significant correlations between P and the 11 CPI scales were in the range of r=.-18 (p<.05) for Socialization and r=.-32 (p<.01) for Tolerance. The C scale correlated negatively with the 14 scales. Correlations for the C scale and the 14 CPI variables were in the range of r=-.17 (p<.05) for Socialization and r=-.43 (p<.01) for Sense of Well-Being.

Table 3

Correlates of the LOC Scales and the CPI Personality Variables

	CPI Variables	LOC Scales (n=150) I-E	Multiple IPC	I	P	C
1)	Dominance (Do)	-.2023*	.2977**	.2488**	-.1118	-.2197**
2)	Capacity for Status (Cs)	-.3365**	.4230**	.3698**	-.2367**	-.2719**
3)	Sociability (Sy)	-.1893*	.2963**	.2570**	-.1845*	-.1660*
4)	Social Presence (Sp)	-.1139	.1972	.1840*	-.0982	-.0963
5)	Self Acceptance (Sa)	.0046	.1618	.1577	.0035	-.0064
6)	Sense of Well Being (Wb)	-.4677**	.5190**	.3849	-.2762**	-.4339**
7)	Responsibility (Re)	-.3670**	.4046**	.2865**	-.2358**	-.3466**
8)	Socialization (So)	-.2600**	.3767**	.3458**	-.1263	-.2317**
9)	Self Control (Sc)	-.4065**	.3594**	.2551**	-.2214**	-.3047**
10)	Tolerance (To)	-.4620**	.4694**	.3206**	-.3157**	-.3989**
11)	Good Impression (Gi)	-.3289**	.3064**	.2276**	-.2222**	-.2261**
12)	Communality (Cm)	-.2248**	.3381**	.3042**	-.1238	-.2197**

Table 3 (continued)

CPI Variables	LOC Scales (n=150) I-E	Multiple IPC	I	P	C
13) Achievement via Conformance (Ac)	-.3867**	.4303**	.3202**	-.2180**	.3594**
14) Achievement via Independence (Ai)	-.3683**	.3573**	.1995*	-.1944*	-.3374**
15) Intellectual Efficiency (Ie)	-.3921**	.4651**	.3614**	-.1880*	-.3724**
16) Psychological Mindedness (Psy)	-.2900**	.2696*	.1741*	-.1458	-.2434**
17) Flexibility (Fx)	-.0164	.0982	-.0424	-.0802	-.0450
18) Femininity (Fy)	.0686	.0669	.0627	-.0168	-.0377

* P<.05

** P<.01

Multiple correlations of Levenson's IPC scales and the CPI variable are shown on the second column to the right of Table 3. The IPC multiple approach was found to be significantly correlated with the 14 CPI variables mentioned before. The multiple correlations for the IPC scales and the CPI variables ranged from r=.27 (p<.05) with Psychological Mindedness to r=-.52 (p<.01) with Sense of Well Being.

The 16PF

The relationships between I-E and IPC scales with the personality variables of the 16PF questionnaire were investigated through an inspection of the correlations produced by program REGRAN. Table 4 shows the results. Levenson's IPC and Rotter's I-E measures of LOC were found to correlate with the following 10 scales of the 16PF: factor A (reserved vs. outgoing), factor B (intelligence), factor C (ego strength), factor H (venturesome), factor I (tough vs. tenderminded), factor L (suspiciousness), factor M (conventionalism), factor O (guilt proneness), Q_3 (self-concept control) and Q_4 (tenseness). The following are the six factors that were not found to be significantly related to the LOC scales: factor E (helplessness vs. assertiveness), factor F, (prudent vs. impulsive), factor G (superego strength), factor N (shrewdness), factor Q_1 (conservativeness) and factor Q_2 (group adherence vs. self-sufficiency).

The I-E scale was found to correlate significantly with seven factors: Positively with factors L (suspiciousness), O (guilt proneness) and Q_4 (tenseness); and negatively with factors B (intelligence), C (ego strength), M (conventionalism) and Q_3 (self-concept control).

Table 4

Correlates of the LOC Scales and the 16PF Personality Variables

	16PF Factors	LOC Scales (n=150) I-E	Multiple IPC	I	P	C
1)	A (Reserved vs Outgoing)	-.0005	.1745	.1634*	.0343	-.0059
2)	B (Intelligence)	-.2157**	.2704**	.1339	-.1835*	-.2580**
3)	C (Ego Strength)	-.3229**	.3119**	.2321**	-.2324**	-.2197**
4)	E (Humble vs Assertive)	.0131	.1637	.1019	.0418	.0970
5)	F (Sober vs Happy go lucky)	-.0228	.1478	.1144	-.0530	.0207
6)	G (Superego strength)	.0111	.1113	.0799	.0120	-.0649
7)	H (Shy vs venturesome)	-.0907	.1937	.1778*	.0863	-.0377
8)	I (Tough vs Tender minded)	-.1057	.2507*	.1402	-.2247**	-.1200
9)	L (Suspiciousness)	.2268**	.2675*	.0711	.2592**	.2030*
10)	M (Practical vs Imaginative)	-.1800	.1753	.0626	-.1145	-.1735*
11)	N (Shrewdness)	-.0416	.1186	.0946	-.0548	.0011
12)	O (Guild proneness)	.3553**	.3512**	-.1866*	.1767*	.3343**
13)	Q_1 (Conservatism-Radicalism)	.1204	.1274	.0008	.0974	.1181

Table 4 (continued)

	16PF Factors	LOC Scales (n=150) I-E	Multiple IPC	I	P	C
14)	Q_2 (Group adherence-self sufficiency)	-.1343	.0857	.0099	-.0020	-.0705
15)	Q_3 (Self-concept control)	.2391**	.2473*	.1229	-.2084**	-.2138**
16)	Q_4 (Relax-tense)	.3541**	.3288**	-.2353**	.2489**	.2138**

* P<.05

** P<.01

The absolute value of the correlations ranged from $\underline{r}$=.18 ($\underline{p}$.<05) for the factor M (conventionalism) and $\underline{r}$=.36 ($\underline{p}$<.01) for the factor O (guilt proneness).

The I scale was correlated positively with factors A (reserved vs. outgoing), C (ego strength) and H (venturesome) and negatively with factors O (guilt proneness) and Q_4 (tenseness). The I scale was the only LOC scale which correlated significantly with factors A (reserved vs. outgoing) and H (venturesome). Absolute values of the correlations between the I scale and the four 16PF scales ranged from $\underline{r}$=.16 ($\underline{p}$<.05) for factor A and $\underline{r}$=.24 ($\underline{p}$<.01) for factor Q_4 (tenseness). The P scale was correlated negatively with factors B (intelligence), C (ego strength), I (tough vs. tender minded), Q_3 (self-concept control) and positively with factors L (suspiciousness), O (guilt proneness) and Q_4 (tenseness). The P scale was also correlated with factor I. Absolute values for this correlation ranged from $\underline{r}$=.18 ($\underline{p}$<.05) for factor B (intelligence) to $\underline{r}$=.26 ($\underline{p}$<.01) for factor L (suspiciousness). The C scale was found to correlate negatively with factors B (intelligence), C (ego strength), M (conventionalism) and Q_3 (self-concept control) and positively with factors L (suspiciousness), O (guilt proneness) and Q_4 (tenseness). The C scale was the only one to correlate with factor M (conventionalism). Absolute correlations between C and the 16PF factors ranged from $\underline{r}$=.17 ($\underline{p}$<.05) factor M (conventionalism) to $\underline{r}$=.26 ($\underline{p}$<.01) for factor B (intelligence).

Multiple correlation for the IPC scales and the personality variables of the 16PF are shown in the last column to the right on Table 4. Multiple correlations for the IPC scales were significant for seven of

the 16PF factors: B (intelligence), C (ego strength), I (tough vs. tender-minded), L (suspiciousness), O (guilt proneness), Q_3 (self-concept control) and Q_4 (tenseness). Correlations ranged from $\underline{r}$=.25 ($\underline{p}$<.05) for factor Q_3 (self concept control) to $\underline{r}$=.35 ($\underline{p}$<.01) for factor O (guilt proneness).

Comparison of the IPC and I-E Scales in Predicting Personality Variables

The efficiency of Levenson's (IPC) multidimensional and Rotter's (I-E) unidimensional measurements approaches to LOC was investigated in relation to their independent or overlapping contributions to the prediction of the personality variables of the CPI and 16PF. A step-wise regression procedure was used. All the personality variables in the CPI and 16PF that were found correlated with both I-E and IPC scales were identified and constituted a criterion variable. A regression equation (model 1) using Levenson's scales as predictor variables and a second equation (model 2) using Rotter's scale as predictor variables were prepared for each criteria. A third regression equation (model 3), using both Levenson and Rotter's scales as predictors, was also produced for each personality variable. Models 1 and 2 were compared to the full model 3 and the results are found displayed in Table 5.

The IPC and I-E scales, both were found related to 14 CPI variables. The IPC scales approach was found to contribute more than the I-E scale in the prediction of the following seven variables: Capacity for Status, Sociability, Responsibility, Socialization, Tolerance, Communality, Achievement via Conformance, and Intellectual Efficiency.

Table 5

Comparison of Regression Models 1 (IPC Scales) and 2 (I-E Scale)

With Full Model 3 (I-E + IPC) by Personality Variables

Personality Variables	F-ratios	
	Model 1[a] (IPC)	Model 2[b] (I-E)
CPI Factors		
Dominance	2.566	.0560
Capacity for Status	4.3810**	1.3660
Sociability	2.7760*	.0060
Sense of Well Being	5.3880**	5.7320*
Responsibility	2.7040*	2.9910
Socialization	4.3210*	.3090
Self Control	.7930	8.9150**
Tolerance	2.9510*	7.6000**
Good Impression	.8050	4.8560*
Communality	3.5270	.0690
Achievement via Conformance	3.340*	3.529
Achievement via Independence	1.550	6.1250*
Intellectual Efficiency	4.983**	3.105
Psychological Mindedness	0.0	1.842
16PF Factors		
B (intelligence)	1.5460	.439
C (ego strength)	1.0350	4.334*

Table 5 (continued)

Personality Variable	F-ratios Model 1 (a) (IPC)	Model 2 (b) (I-E)
L (suspiciousness)	1.6650	1.818
O (Guilt proneness)	1.7120	5.708*
Q_3 (Self concept controlled)	.7970	1.7930
Q_4 (Relax-Tense)	.9540	5.877*

note: n=150

(a) = df (3,146)

(b) = df (1,148)

* P<.05

** P<.01

The Rotter I-E scale was more efficient in the prediction of variables Self-Control, Good Impression and Achievement via Independence. Both scales, IPC and I-E, made special contributions to the predictions of variables Sense of Well-Being and Tolerance. The IPC and I-E scales, both were found related to six of the 16PF variables. The I-E scale was found superior to the IPC scales in the prediction of factors C (ego strength), O (guilt proneness), and Q_4 (tenseness).

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Summary and Discussion

The general purpose of this research study was to investigate the divergent and convergent validity of Rotter's (1966) unidimensional and Levenson's (1972) multidimensional approaches to LOC measurement within the context of personality variables in order to identify potential applications in the area of Personality and Psychotherapy. The specific objectives of the research were threefold:

1) To determine the relationship between Rotter's (1966) I-E scale and Levenson's (1972) IPC multiple scales.

2) To investigate the relationship of the I-E and IPC scales to the personality variables defined by the CPI and 16PF.

3) To investigate which approach (Levenson's or Rotter's) was a more efficient predictor of the selected personality variables.

This research assumed that even though Levenson's and Rotter's approaches to LOC differed in conceptualization, in practice, they were expected to be measuring the same construct. They were expected to have a near perfect correlation, i.e., close to r=1.00. The results indicated that the degree of relationship (r=.68) between the I-E scale and the IPC multiple scale, although significant, was less than the degree of lack of relationship (K=.73). It is when r=.7071 that the relationship and lack of relationship are equal (Guilford & Fruchter, 1973). The proportion of the variance observed on the I-E scales that was associated with the variance of the IPC scales amounted to 46 percent.

A discussion of the results obtained in the objective two will help explain, in terms of personality variables, part of the nature of the convergent relationship of the I-E and IPC scales. In terms of the convergent aspects of the LOC measures it can be concluded that the I-E and IPC multiple scales approaches are quantitatively almost the same, in terms of the personality variables with which they were found to be significantly related. Both measures contributed to the prediction of the same 14 CPI and six of the 16PF personality variables (Tables 3 and 4, pages 38 and 41, respectively).

The 14 CPI variables were Dominance, Capacity for Status, Sociability, Sense of Well-Being, Responsibility, Socialization, Social Control, Good Impression, Communality, Achievement via Conformance, Achievement via Independence, Intellectual Efficiency and Psychological Mindedness. The six 16PF variables were B (Intelligence), C (Ego Strength), L (Suspiciousness), O (Guilt proneness), Q_3 (Self-Concept Control), and Q_4 (Tenseness).

In terms of personality variables related to the domain of interpersonal behaviors (CIP), it was found that the main difference between the I-E and IPC approaches was not quantitative but qualitative (Table 5, page 45). While the IPC scales were found to be predictors of the degree to which controls are understood by an individual's sociability and responsibility, the I-E scale was found to be a better predictor of how individuals approve or endorse such controls (social control). The IPC scales were found to be a better predictor of how individuals are able to divert their efforts and abilities to obtain their goals (intellectual efficiency), and of their need to achieve in a structured

setting (achievement via conformance). The I-E scale, on the other hand, was found to be superior in its relationship to the individual's need for achievement in a non-structured setting (achievement via independence).

The IPC scales seem to be a better predictor of how individuals are in tune with their peers and their surroundings (communality). The I-E scale, nevertheless, is a better predictor of how individuals seek acceptance by their peers either in an overly conformist or self-centered ways (good impression). An interesting result was that both I-E and IPC approaches to LOC contributed in a unique manner to the prediction of an individual's tolerance and sense of well-being.

In terms of the personality factors which Cattell considers to be source traits, i.e., that composed the general structure of personality (16PF) it was found that the major quantitative differences between the LOC measures were factors I (self-reliant vs. overprotectedness) and factor M (conventionalism). The P scale was found to be specifically related to Factor I and the Rotter's I-E single scale to factor M (Table 4, page 41). According to the 16PF, the I-E scale differed qualitatively from the IPC multiple scales, by being a better predictor of personality factors dealing with the following dimensions: factor C (ego strength), factor O, (guilt proneness) and factor Q_4 (tenseness).

The results obtained with the 16PF indicated that both I-E and IPC scales correlate with some personality factors and that the I-E scale in some instances is a better instrument or predictor of some of the variables. The results obtained with the CPI seem also to point

toward a qualitative difference between the LOC measures with the IPC as the better predictor for the most variables.

Some investigators, most likely, will find that for their purposes either the I-E scale or the IPC multiple scales may be preferred for their superior ability to predict a specific personality variable. It should also be noted that the multidimensional approach (IPC scales) is particularly useful to differentiate types of LOC belief that could be related to specific personality variables (individual IPC correlations shown in Tables 3 and 4, pages 38 and 41, respectively). For example, intelligence as defined by factor B of the 16PF is related to externality (Levenson's P and C scales). Internality on the IPC scales is specifically related to factor A (cool vs. warmhearted) of the 16PF and to social presence (variable Sp) of the CPI.

Conclusions

1) Levenson's (1972) multidimensional and Rotter's (1966) unidimensional approaches to LOC measures were found to contribute to the prediction of several personality variables. They converged in most of the measures of several personality constructs defined by the CPI and 16PF. They diverge in the qualitative aspects of their relationship. This difference does not constitute enough evidence to conclude that in general one LOC approach is better than the other, but that the choice of either of the two LOC measures may depend upon the specific personality variables involved in a particular research.

2) Researchers should be aware of the relationship among the IPC and I-E scales, and the context in which one or the other measure is

more appropriate. While both LOC instruments tapped similar personality variables, there is enough difference stemming from their conceptualization as to prevent indiscriminant use and interpretation of one instrument in terms of the other.

3) More research on the utility of the Levenson multidimensional approach to LOC is needed in the area of psychotherapy and personality.

Recommendations

The convergent and divergent validity assessment of Rotter's unidimensional and Levenson's multidimensional approaches indicates that Levenson's IPC scales are valuable psychological instruments, with possible applications in the area of personality and psychotherapy. The following recommendations derived directly from the present research would be beneficial in further investigations of the multidimensional IPC scales.

1) The IPC interaction found in this study suggests that persons could be grouped according to how high or low they scored in each scale. A list of possible high/low combinations follows. A capital letter indicates high in a particular component, while a lower case letter indicates low standing.

1) IPC
2) IPc
3) IpC
4) iPC
5) Ipc
6) iPc
7) ipC
8) ipc

A multiple discriminant analysis procedure (Veldman, 1967) could compare how these specific groups differed across a set of personality

variables obtained from different personality or behavioral assessment devices.

2) Hierarchical grouping analysis is a clustering technique used to find out to what extent natural groups with similar scores or profiles in certain variables are described by another set of variables (Veldman, 1967). It is recommended that individuals be grouped according to their profile similarities on the IPC scales. After these groups are identified, the use of multiple discriminant analysis procedure is suggested to investigate group differences in selected personality variables.

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APPENDIX

DEAR PARTICIPANT:

THIS STUDY IS TO IDENTIFY HOW WELL TWO SHORT ATTITUDINAL SURVEYS ARE RELATED TO PERSONALITY CHARACTERISTICS. YOUR PARTICIPATION CONSISTS OF ANSWERING THE FOLLOWING INVENTORIES:

1) CALIFORNIA PERSONALITY INVENTORY (CPI) approx. 60 mins.
2) 16 PERSONALITY FACTORS QUESTIONNAIRE (16 Pf) approx. 45 mins.
3) SOCIAL REACTION INVENTORY approx. 10 mins.
4) ATTITUDE STATEMENT SURVEY approx. 5 mins.
5) PERSONAL INFORMATION QUESTIONNAIRE approx. 2 mins.

total approximate time 2 and 1/4 hours

YOU WILL RECEIVE TWO BOOKLETS OF ITEMS TO ANSWER, ONE FOR THE CPI AND ONE FOR THE 16 Pf. DO NOT WRITE ON THESE BOOKLETS; ANSWER SHEETS ARE PROVIDED. IT IS IMPORTANT THAT YOU ANSWER EACH AND EVERY ITEM ON THESE TESTS. READ THE INSTRUCTIONS CAREFULLY BEFORE YOU BEGIN EACH TEST.

YOUR RESPONSES WILL BE COMPLETELY ANONYMOUS; DO NOT GIVE YOUR NAME OR ADDRESS. INSERT YOUR ANSWER SHEETS IN THE ENVELOPE PROVIDED; RETURN THE TEST BOOKLETS TO THE EXAMINER.

IF YOU DESIRE AN ABSTRACT EXPLAINING THE STUDY AND RESULTS, FILL OUT A 3x5 INDEX CARD WHICH THE EXAMINER WILL HAVE. GIVE YOUR NAME AND MAILING ADDRESS WHEN YOU TURN IN YOUR ANSWER SHEETS. DO NOT INCLUDE THE CARD WITH YOUR ANSWER SHEETS. RESULTS SHOULD BE AVAILABLE BY NEXT FALL.

THANK YOU FOR YOUR PARTICIPATION.

PERSONAL INFORMATION QUESTIONNAIRE ID _____

PLACE AN X IN THE APPROPRIATE BLANK AND WRITE ANY INFORMATION REQUIRED IN THE SPACES PROVIDED.

SEX: FEMALE __ MALE __
AGE: __ __

ETHNIC/RACIAL BACKGROUND:

__American Indian
__American Negro
__Caucasian
__Oriental American
__Spanish Surnamed American
__Other (specify if desired)

MAJOR: (specify department)

_____.

CLASSIFICATION:

__Freshman
__Sophomore
__Junior
__Senior
__Other (specify _____

ATTENDANCE: __Full Time

OR

__Part Time

Social Reaction Inventory

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. 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 or 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. Be sure to find an answer for every choice. For each numbered question make an X on the line beside either a or b, whichever you choose as the statement most true.

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

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

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.

ATTITUDE STATEMENT

Directions: On the following page is a series of attitude statements. Each represents a commonly held opinion and there are no right or wrong answers. You will probably disagree with some items and agree with others. We are interested in the extent to which you agree or disagree with such matters of opinion.

Read each statement carefully. Then indicate the extent to which you agree or disagree by circling the number in front of each statement. The numbers and their meaning are indicated below:

If you agree strongly - circle +3
If you agree somewhat - circle +2
If you agree slightly - circle +1

If you disagree slightly - circle -1
If you disagree somewhat - circle -2
If you disagree strongly - circle -3

First impressions are usually best in such matters. Read each statement, decide if you agree or disagree and the strength of your opinion, and then circle the appropriate number in front of the statement. Give your opinion on every statement.

If you find that the numbers to be used in answering do not adequately indicate your own opinion, use the one which is closest to the way you feel. Your responses will be kept confidential.

Agree	Disagree		
+3 +2 +1	-1 -2 -3	1.	Whether or not I get to be a leader depends mostly on my ability.
+3 +2 +1	-1 -2 -3	2.	To a great extent my life is controlled by accidental happenings.
+3 +2 +1	-1 -2 -3	3.	People like myself feel that the people in power mostly determine what will happen in the lives of people like me.
+3 +2 +1	-1 -2 -3	4.	Whether or not I get into a car accident depends mostly on how good a driver I am.
+3 +2 +1	-1 -2 -3	5.	When I make plans, I am almost certain to make them work.
+3 +2 +1	-1 -2 -3	6.	Often there is no chance of protecting personal interests from bad luck happenings.
+3 +2 +1	-1 -2 -3	7.	When I get what I want, it's usually because I'm lucky.
+3 +2 +1	-1 -2 -3	8.	Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power.
+3 +2 +1	-1 -2 -3	9.	How many friends I have depends on how nice a person I am.
+3 +2 +1	-1 -2 -3	10.	I have often found that what is going to happen will happen.
+3 +2 +1	-1 -2 -3	11.	My life is chiefly controlled by powerful others.
+3 +2 +1	-1 -2 -3	12.	Whether or not I get into a car accident is mostly a matter of luck.
+3 +2 +1	-1 -2 -3	13.	Persons like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.
+3 +2 +1	-1 -2 -3	14.	It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.
+3 +2 +1	-1 -2 -3	15.	Getting what I want requires pleasing those people above me.

+3 +2 +1 -1 -2 -3 16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.

+3 +2 +1 -1 -2 -3 17. If important people were to decide they didn't like me, I probably wouldn't make many friends.

+3 +2 +1 -1 -2 -3 18. I can pretty much determine what will happen in my life.

+3 +2 +1 -1 -2 -3 19. I am usually able to protect my personal interests.

+3 +2 +1 -1 -2 -3 20. Whether or not I get into a car accident depends mostly on the other driver.

+3 +2 +1 -1 -2 -3 21. When I get what I want, it's usually because I worked hard for it.

+3 +2 +1 -1 -2 -3 22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.

+3 +2 +1 -1 -2 -3 23. My life is determined by my own actions.

+3 +2 +1 -1 -2 -3 24. It's chiefly a matter of fate whether or not I have a few friends or many friends.