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THE RELATIONSHIP BETWEEN LOCUS OF CONTROL, GENDER, AND
ACADEMIC ACHIEVEMENT

by
Helene Eksterowicz

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree
of
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at
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Approved by _____
Dr. Dihoff

Date Approved 5-4-99

ABSTRACT

Helene Eksterowicz

The Relationship Between Locus of Control, Gender, and Academic Achievement
1999

Advisors: Dr. Klanderman and Dr. Dihoff
School Psychology MA Program

This study intended to look at the relationship between locus of control, gender, and academic achievement. The following variables were used: Rotter's I-E scale, Trice's Academic Locus of Control Scale, gender, and college GPA/grades. A sample of 59 subjects (36 female, 23 males) were obtained from the Rowan University student body and each were given the two scales. Six hypotheses were tested using correlational statistics such as the Pearson r , independent t-test, and analysis of means. Results found that a positive relationship existed between Rotter's and Trice's scales. It was also found that although no relationship existed between Rotter's scale and GPA/grades, a significant correlation was found between Trice's measure and GPA/grades. In addition, sex differences were found using Trice's measure but not Rotter's scale. Significant differences were also found between the sexes on the variables of GPA and grade scores, with females possessing higher GPA and grades. Lastly, upon analyzing the mean scores of both sexes on samples cited in Rotter's 1966 article and that of the current Rowan sample, it was found that there were indeed apparent differences; mainly, individuals from both sexes of the Rowan 1998 study tended to score more externally as compared to Rotter's samples.

MINI-ABSTRACT

Helene R. Eksterowicz

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1999

Advisors: Dr. Klanderman and Dr. Dihoff
School Psychology MA Program

This study was proposed to investigate the relationship between locus of control, gender, and academic achievement. Results indicated that Rotter's and Trice's scale were similar, Trice's scale correlated with GPA/grade scores, sex differences were evident in scores from Trice's measure, GPA/grades were correlated with sex differences, and that there was an increase in externality in scores from 1998 to 1966.

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Chapter 1

Introduction

Studies involving locus of control have captivated psychological literature for more than thirty years. In 1966, Julian Rotter revealed to the scientific community a theory on locus of control in an article entitled, "Generalized Expectancies for Internal Versus External Control of Reinforcement." Within this highly regarded article based upon social learning theory, a new and revised instrument measuring locus of control called the Rotter's Internal-External Locus of Control Scale was revealed. Since then many studies have emerged using the scale either alone or with various other instruments in order to show relationships between personality characteristics of internality and externality and differences in sex, culture, academic achievement, self-concept, self-esteem, motivation, and in many other areas. Also many respected researchers have elaborated upon Rotter's ideas of locus of control in order to explain such phenomena in areas of perception of control, personal causation, efficacy, personal competence, learned helplessness, and causal attributions (Lefcourt, 1991).

One such area of concern, particularly relevant to this study, is the relationship between sex differences and locus of control. In one college sample tested by Rotter (1966), it was found that females tended to be more external than males in their expectancies of reinforcements. In a follow-up study by Cellini and Katorowski in 1982 regarding Rotter's samples, they found that internality/externality orientations could and do change due possibly to social and personal changes. In their particular study, they

disclosed that social changes taking place in the United States could be possibly responsible for changes in the locus of control of individuals of both sexes; meaning that over time, individuals of the same generation and those from a different one could possibly vary in their internality and externality orientations toward reinforcements (Cellini & Katorowski, 1982). This is one area of concern that will be discussed later in this study for possible variation in locus of control of individuals of different achievement levels and of different sexes.

In addition, numerous studies relating locus of control orientations to academic achievement have surfaced. A recent study by Biggs (1997) found that internality correlated positively with grade point average or GPA and course grades. Other studies have corroborated this finding by noting significant differences between high achievers and average achievers on measures of locus of control. Other studies involving achievement and locus of control in classroom settings have cited that internality is positively related to certain school achievement related behaviors such as class participation and study skills that are said to aid in learning and achievement (Trice, 1985).

Information from studies involving sex differences and those involving academic achievement along locus of control have instigated much stipulation collectively among researchers trying to find a correlation between the two. This current study was executed in order to shed some light upon the uncertain nature between whether sex differences on locus of control measures are still precedent in the overall population; it also was undertaken to show whether sex differences still play a huge part in differentiating high

achieving individuals from those in the general or average achieving population in a suburban college setting on two measures of locus of control.

Need

This study was proposed in order to reveal if sex differences in academic achievement are still noticeable and relevant in the nineties. Due to the changes in how society views women as more achievement and career oriented than ever in our nation's history, the elements of externality or depictions of external control are assumed by the researcher to be minimal within the general population. Hence, women who are at higher levels jobs and who are in a sense high achievers of their gender group should possess higher expectancies of internal control. Thus the need to intentionally show that high achieving women possess more internal control upon their destinies than before would be another positive acknowledgment that women are making prominent strides toward someday achieving social equality.

Taking a different angle from the proposed need to study sex differences in our nation, is the applied approach of psychology - that is to provide practical solutions to problems in personality that impact everyone in their lives. In measuring differences b/t the sexes in general and in the high achieving versus general achieving college population, is the factor that individuals with low internality (a known attribute which adversely impacts achievement) will emerge from this study. What has been a triumphant recent discovery in research is the fact that internality can be modified by attending brief group therapy sessions (Shechtman et. al, 1996). Hence, by identifying these individuals in this study aims could be made to assist these individuals by

increasing their internal locus of control in order to help them in their academic achievement in college and in other relevant areas.

Purpose

The purpose of this study is show how groups varying on achievement can differ and to see if sex differences have lessened in the higher achieving population than in the general population. Using the Rotter's Internal-External Locus of Control Scale (Rotter, 1966) along with the Academic Locus of Control Scale (Trice, 1985), appropriate means have been brought together to help accurately ascertain whether sex differences are still evident in the nineties in a college population of high and average achieving students. Also relevant to this study is help find a correlation between internality in general with both sexes on the two measures and superior achievement; also Rotter's general scale and Trice's specific locus of control scale will be analyzed to see if the two do correlate with one another.

Hypotheses

The hypotheses of this study are described as being numerous in nature. The first set of hypotheses states that the higher achieving group will score higher in internality scores than the average achieving group. This is drawn from studies that have revealed positive findings between internality and academic achievement. The second set of hypotheses state that sex differences in high achievers will be less pronounced than in average achievers in a general college population using both the Rotter's Internality-Externality Locus of Control Scale, which is a more general measure of expectancies and the Academic Locus of Control Scale, a more specific measure of academic behaviors (of

personality) related to achievement. This study thus assumes that social changes in the depictions of women will indeed reflect upon women's attitudes toward locus of control. And finally the third set of hypotheses states that internality/externality scores of Rotter's I-E scale will correlate with Trice's Academic Locus of Control Scale, due to fairly modest correlation of .50 between the two measures as cited by Trice (1985).

Theory

Background for this study was taken from various assumptions proposed and championed by social learning theorists. Social learning theory, in a broad sense, took a broad step away from the ideas of radical behavior theory. It emphasized looking at behavior of individuals from both a social learning and also from a cognitive stance. This cognitive component was evident in many of the tenants of social learning theory and specifically in concept of expectancies. Expectancies were defined as mental representations that occur within an individual concerning their past outcomes, present situations, and in predicting their chances for desired future outcomes. Extracting this notion from social learning theory, Rotter (1954) stated that locus of control was a kind of prevalent expectancy, or cognitive strategy, by which people learn to evaluate situations and their outcomes. For example, Rotter believed that some individuals have an internal locus of control, meaning that they believe that they are in control over their own fate and life's circumstances. Thus by expanding effort and knowledge from within themselves, they can influence the control of reinforcement internally. On the other hand, there are those in the population that feel that the environment, luck, chances, or other people externally control their fate and destiny. These individuals feel that effort or internal measures are useless in controlling reinforcements. This feeling of focusing

outwardly implies one taking a more passive stance to life, saying in an essence - why even try? In turn, these expectations of control shape their behavior in a variety of situations and consequently, the results of their behavior help to further shape their expectancies over time (Morris, 1993).

Rotter (1966) took these notions of internal and external expectancy of reinforcements and related them directly to locus of control. This locus of control was expected to contain both internal and external personality characteristics that a person uses in forming their expectations. His scale, the Rotter's Internal-External Locus of Control Scale showed just that. By using a self-report scale consisting of 29 items containing a series of opposite sentences, one was asked to evaluate which statement was more characteristic of their personality or stance towards expectancies of reinforcement. Another researcher Trice took this idea of locus and control one step further by introducing a test to measure the academic locus of control of individuals in school, called the Academic Locus of Control Scale.

Whichever measure of locus of control, the main idea of social learning theory remains the same: that there is always an interaction among three factors, that being the person, the situation, and the evaluation of expectancies obtained by that person from that person's experiences (Morris, 1993). From researchers such as Bandura and Rotter, ideas towards human nature and personality have shifted away from sole conditioning championed in behaviorism to a more socially and cognitively set of factors that focus on a world where humans are actively taking part in and thus are receiving feedback for their interpretation.

Definitions

Attribution Retraining or Therapy - therapeutic treatment method for reinstating psychological control. Used here in this article to induce a mastery orientation in students, by emphasizing lack of effort to failure not ability (Perry & Penner, 1990) or by emphasizing changing attributions for problems from stable to unstable causes (Wilson & Linville, 1982).

Expectancies - cognitions or mental acts that people formulate about the outcomes of certain events.

Grade point average or GPA - the cumulative grade-point average computed by first multiplying the grade received in each course by the amount of credits obtained in order to equal the grade points. These number of grade points of all courses are then divided by the total credits for each, to eventually reveal the cumulative GPA.

High achievers - those individuals with high achievement towards scholastic endeavors. In this study high achievers are those with GPA at or over 3.5.

Locus of control or LOC- an expectancy whether a perceived reinforcement is under internal or external control.

a. **Internal locus of control** - an expectancy that a reinforcement is perceived to be under one's own control via effort or other internal factors.

b. **External locus of control** - an expectancy that a reinforcement is perceived to be under the control of other people, the environment or society, chance, or luck.

Social learning theory - branch of psychology which emphasizes learning by observing others (modeling) or by written instructions. In this paper social learning theory, as formulated by Bandura and Rotter, pertains directly to the idea of expectancies of internal

versus external control of reinforcements that people possess as personality characteristics of themselves.

Assumptions

There are two main assumptions built upon in this study. One is that the two groups being studied, high achievers and average achievers, are representative of those in the general population. Since high achievers are being defined as those with GPA's over 3.5, the sense that GPA's can vary institution to institution and from program to program conveys some variability in usage and meaning of the term. Here the researcher is basing the overall college GPA of Rowan University and assuming that it is characteristic in meaning and in degree of that in other institutions and programs of study.

The second assumption relates to the premise that participants in the study have answered the questions on both the Rotter Internal-External Locus of Control Scale and the Academic Locus of Control Scale openly and honestly. Since these are both self-report measures testing individuals' attitudes and personality characteristics, it is assumed that the subjects are selecting items that are most characteristic of their personality and not a product of their particular affect or situation in their lives. Since personality characteristics are assumed to be stable and consistent over time, this is the precise reason that the researchers are presuming that these measures are accurately assessing the enduring facets of personality, namely locus of control, in their subjects.

Limitations

The limitations in this study are also two-fold in nature. The first limitation relates to sample size and representativeness. The sample size of this study of sex differences in high and average achievers is indeed small in nature as compared to other

studies and to the general population. Therefore, generalizability should be and might be limited due to sample size as relating to the general population.

The second limitation pertains to the representation of men and women in the general population. Since a small sample size of both sexes was taken, it is safe to conclude that this sample may not be characteristic of men's and women's attitudes and personality across the nation. Also findings here would also be limited due to the exact population, being mainly college students ages 18-22, and geographical and local area, being mostly from the New Jersey area and mostly from suburban areas. So again generalizability to other areas of the United States and other local regions containing urban and rural populations should be taken into account.

Overview

In Chapter 2, the researcher will review the pertinent literature relevant to the study of the following areas: locus of control (in general), locus of control and it's relation to sex differences and academic achievement of groups of differing achievement levels, and also ways in which individuals can be helped with therapy in order to improve their locus of control orientations to their own benefit. In Chapter 3, the research design of the study will be discussed relevant to the type of sample used, measurement devices, overall design, the set of testable hypotheses, analysis of models used, and the conclusion or summary section. And in Chapter 4, the researcher will disclose the analysis of the results of the study that have emerged. But before results of this study are shown, the literature review contained next in Chapter 2 will fill the reader in on what to expect or not to expect later based upon other research studies that have already been completed in similar subject areas as addressed in this current study.

Chapter 2

Introduction

Topics related to locus of control will be presented in a comprehensive literature review format according to certain areas of interest to this particular study. Initially the first discussion will contain an analysis of the construct “locus of control” as defined by Rotter (1966) in his social learning theory and how it has evolved over the past thirty years. The second section will pertain to the examination of the various instruments, namely the two used in this study, that depict variations in locus of control in a general and more specific sense. The third area will discuss the important studies related to how the construct of locus of control correlates with academic achievements across individuals in various settings. The fourth part will consist of individual differences in locus of control, pertaining namely to sex and sociocultural differences. The fifth and final section of this review of literature will focus on various studies which have been implemented in order to change or modify one’s locus of control in order to be more educationally beneficial.

History of the Term: Locus of Control

In Rotter’s 1966 article, “Generalized Expectancies for Internal Versus External Control of Reinforcement,” the term locus of control was presented within Rotter’s background in social learning theory. The role of reinforcement was presented initially from a behavioral perspective, meaning that importance of reinforcement or reward was “universally recognized as a crucial one in the acquisition and performance of skills and

knowledge” (Rotter, 1966, p.1). But Rotter further embellished upon this idea of reinforcement and added another focus on it - a cognitive stance. He explained that certain events or situations could be perceived by individuals in very different and unique ways. This in turn, would lead to different reactions or behaviors taken according to and dependent upon one’s particular perception of the situation. Rotter contended that one’s “determinants of [a particular] reaction is the degree to which the individual perceives that the reward follows from, or is contingent upon, his own behavior or attributes (internal control) versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions (external control) ” (Rotter, 1966, p.1). Relating to this perception regarding expectancies experienced uniquely by an individual is the all important premise that one perceives some kind of a causal relationship between one’s own actions and the presence of a reward.

A particular perception need not only be conceptualized in an all or nothing fashion. An individual could perceive that one’s effort is important but not entirely based upon one’s acquiring a reinforcement, meaning that chance, luck, and powerful others do indeed have some influence over our reinforcements. Again this perception is only measured by the degree of an individual’s perception at a particular time and thus is acted upon accordingly. If the degree of externality pervades one’s perceptions continuously, one can be regarded as having an external locus of control towards reinforcement. On the other hand, if the degree of internality is overemphasized then the individual is seen to have an internal locus of control.

This construct of locus of control was theorized to be instrumental in predicting and understanding the different process of learning in different contexts by different

people. It also implied that individual differences in the degrees of internality and externality would prove to be consistent also. Namely, he was conceptualizing this concept as being a form of an enduring personality trait which should remain stable across time and setting. These sex and individual differences will later be discussed in the third section of this review of literature.

From a social learning stance, the background for this construct relates back to the terms of expectancy and its relation to reinforcement. According to the theory, “a reinforcement acts to strengthen an expectancy that a particular behavior or even will be followed by that reinforcement in the future” (Rotter, 1966, p.2). It is then assumed that once such expectancies are acquired successfully, that failure relating to not acquiring the reinforcement in question will serve to decrease the expectancy. This cognitive process in turn, can serve to continuously evaluate or change an expectancy based upon instances of success or failure in certain situations.

Thus one’s own unique past reinforcement schedule will differ from another person in degree to which each describe internal versus external perceptions relating to acquiring reinforcements. Taking this view, expectancies were said to generalize from one particular situation to other situations which were similar. Also using this general perception or inclination towards viewing the nature of reinforcements which are unique to an individual, this view entails that this tendency towards internality or externality will be a somewhat stable characteristic in making up one’s own personality profile. For example, individuals possessing an internal locus of control orientation were found to be associated with a more active pursuit of valued goals - related to social action, information seeking, alertness, autonomous decision making and a sense of well-being

(Lefcourt, 1991). While those with an external locus of control were commonly diagnosed as depressed, anxious, and less able to cope with stressful life experiences (Lefcourt, 1991).

This assumption of relative stability, having also cross-cultural significance, and the very notion of individual differences has excited much interest and publications in the past thirty years. As Rotter has explained in a later article that personality involves an interaction between the person and the environment and that different situations will evoke different behavior (1990). But however, he thus still assumed that there may be generalized tendencies toward expectancies that may be portrayed consistently from situation to situation.

Indeed as Lefcourt mentioned in an article concerning the durability and impact of the term locus of control, that the fields of clinical and personality psychology were moving progressively away from its initial focus of locus of control as a stable personality characteristic involving needs and traits related to the words of Murray, Atkinson, and McClelland. Lefcourt contended that instead the focus had shifted from relating the construct of locus of control not towards stable and unchangeable, inborn personality traits to a more flexible and controllable facet toward behavioral change. Thus he contended that this applied focus had been mostly centered upon the purpose of change in individuals, which redesigned expectancies as malleable and subject to reinterpretation by individuals. This sense of optimism towards change has sparked much interest relating to proper management of perceptions in different disorders and particularly in perceptions of control in academic situations relating to achievement, which will be discussed later.

Even today the construct of locus of control is still overwhelmingly evident and relevant in numerous articles, publications, and therapies. And the essence and importance of the construct is still regarded by Shapiro et al. as a “core element of [one’s] understanding of how [one] lives in the world” by many researchers of various disciplines (Marks, 1998, p.251). But as addressed in an article by Lawrence Marks, the term locus of control was often viewed in regards to a Western sociocultural stance (1998). This Western philosophy towards locus of control conceptualizes internality as being a hallmark of one’s perceptions about possessing personal control over one’s surroundings. However as viewed specifically within this cultural framework, Rotter contended that usefulness of the construct of locus of control has been demonstrated in explaining and understanding social problems and feelings of powerlessness that had occurred in the United States (Rotter, 1990).

As Rotter cited, his initial basis for creating this construct was believed as resulting from his years of practicing psychotherapy and a subsequent understanding which resulted from particular analysis of individuals problems (Marks, 1998). From his point of view, he derived the construct of locus of control in an “attempt to explain certain discrepancies in learning studies of performance and extinction” (Marks, 1998, p.251). He contended that analyzing this particular term was an ingenuous way to explain the predictions in behavior by using both behavioral, cognitive, and social learning theories combined (Marks, 1998).

When viewed from both a Western and cultural stance, Rotter’s popularity associated with locus of control bore much significance to the feelings and perceptions of what was going on in the United States during the 1970’s and 1980’s. With the social

problems and riots concerning the Vietnam War, Watergate, the inner city riots, and political assassinations, it was no wonder that social scientists were looking for ways in order to conceptualize the nation's intense feelings of rejection of external control (Rotter, 1990). But still Rotter in his APA award address contended that the overwhelming amount of articles, about 4700 citations to his 1966 article, was related mostly to scientifically technical reasons or characteristics: the importance of a precise definition of the construct, the imbedding of the construct in a broader theory, the measurement principles as derived from psychological theory, and the dissemination of knowledge (Rotter, 1990).

Measures of Locus of Control

For whatever reason that the concept of locus of control has sparked continued interest, still attention and vigor in constructing an appropriate measure of internality/externality of control would even ignite more publications and controversy. Thus measures of generality to specificity have surfaced to help depict individuals perceptions of control expectancies and how they relate to behavior and personality.

The first undertaking in designing a locus of control measure was made by Phares in 1959, seven years before Rotter's famous 1966 article (Rotter, 1966). Phares, in attempting to study generalized expectancies in internal and external locus of control, developed a 26 item Likert scale. The twenty-six items consisted of thirteen items expressed as external attitudes and another 13 consisting of internally based attitudes (Rotter, 1966). Upon statistical analysis, Phares found that that those who answered more external items were found to show differences, though not significant enough, than

those with internal attitude orientations. This measure helped to increase interest in a test that maybe could find some significant differences between internal/external groups.

Next a researcher named James aimed to revise Phares measure in his 1957 dissertation. Using also a Likert format, he made 26 items like Phares but included filler items taken from items from Phares test that proved to be successful. Like Phares, he set out to prove that externals would perform the same in chance and skill situations. He found low but significant correlations between locus of control orientations and subjects' answers in chance and skill situations, with externals performing almost the same way in both situations and hence broader generalization than internals (Lefcourt, 1982). This test later began known as the James-Phares scale.

Later Liverant, Rotter, and Seeman determined to broaden the James-Phares test and to develop subscales for achievement, affection, and social and political attitudes. Also to control for the factor of social desirability, a new forced-choice questionnaire was used instead of a Likert type scale (Rotter, 1966). After statistical analysis of item correlations and factor analysis, the scale was reduced to sixty items by Liverant. Upon further analysis, they found that the subscales did not formulate separate predictions (Rotter, 1966). For example, achievement subscale items tended to highly correlate with social desirability. On the realization of this major flaw, they then intended to abandon efforts to create specific subscales for internal and external orientations (Rotter, 1966).

By using the Maslow-Crowe Social Desirability Scale with the revised James scale, they sought to eliminate items which correlate high with social desirability. Reduction of the scale was again undertaken by Liverant, Rotter, and a new researcher Crowe by using internal consistency and item validity statistical techniques. The last and

final version of this scale yielded a twenty-nine forced-choice item test, with six filler questions. This scale was later called the Internal-External Scale or I-E scale and later Rotter's Internal-External Locus of Control Scale (Rotter, 1966).

The I-E scale as seen by using face validity openly appeared to be measuring one's beliefs about what they feel governs the world they live in. According to the directions, subjects are asked to indicate which statement (out of only two choices corresponding to internal and external beliefs) they strongly believe to be true, not what one thinks should be true or like to be true (Rotter, 1966). Hence, this test of generalized expectancy for reinforcement asks for responses based upon one's belief not anyone else's. Also according to the instructions for the I-E scale, it was discussed that subjects could possibly perceive that the two choices could be believed to be both true. Here the subjects are asked to "be sure to select the one you more strongly believe to be the case as far as you're concerned" (Rotter, 1966, p.26). The final statement of instructions before one attempts to take the test asks the subject to respond independently to each item when making choices throughout the test and not to be influenced by previous statement answers (Rotter, 1966). Interestingly, this disregardment of previous statements should provide a more varied amount of responses based upon the particular content of the questions.

Several statistical tests were cited in Rotter's 1966 article to help support the I-E scale. Samples of data were taken at the Ohio State University, Purdue opinion poll, 10th, 11th and 12th grade students to confirm internal consistency. The estimates for internal consistency were found to be relatively stable, r .65-.76 (Rotter, 1966). Reasons indicated for the only moderately high internal consistency that were cited pertain to the

fact that the test was comprised of “a samples of attitudes in a wide variety of different situations [and that] the test was an additive one and items are not comparable” (Rotter, 1966, p.10). Later a study by Mirels, he found two factors: a belief in mastery over one’s life and a belief that one can impact political institutions (Mirels, 1970). This study confounded the assumption made by Rotter than the I-E scale measured a unidimensional trait. Eight years later a study involving factor analysis found four factors, namely the difficult-easy world, the just-unjust world, the predicable-unpredictable, and the politically responsive-unresponsive world sets (Collins, 1974). Conclusions from the these two studies involving factor analysis of the I-E scale would indicate likeliness that subscale measures could be possible with proper reworking and further clarity of items on the scale. But, as Rotter contended, that the scale was not developed as an measurement device for specific situations but rather as a low prediction for general behavior tendencies across situations (Furham & Steele, 1993).

Two samples from Ohio State and one sample from prisoners from the Colorado Reformatory were used to find test-retest reliability. One month retests yielded consistent scores but scores after two months had decreased, reasons indicated were different testing conditions (Rotter, 1966). And again Ohio State students (four samples), Kansas State University, and Ohio Federal prisoners were used to find correlations between the Marlowe-Crowe Social Desirability Scale. Scores with the social desirability scale yielded lower correlations than with the James sixty item scale, with new correlations of $-.07$ to $-.35$ (Rotter, 1966). Other samples were also used to find correlations with intellectual measures, but correlations were found to be quite low, with

male prisoners portraying negligible correlations (Rotter, 1966). Other individual differences will be discussed in section four.

Other criticisms of Rotter I-E scale by Collins and Mirels and others, as related to subcomponents/factors of the scale, appeared to be numerous in studies thereafter. In a recent study by Carver (1997), he contended that the scale confounds internal locus of control with expectancies of positive outcomes. He found, upon administration of bogus responses and how they were viewed by subjects, that agreement with internal items were related to feelings of confidence. In summary, agreement with internal items implied confidence while agreement with external were unrelated to confidence ratings; meaning that some of the responses on the I-E were measuring more than just the construct locus of control and were also dependent on observations of good outcomes.

Other problems associated with the test were compiled by Furnham and Steele in their critique of measures of locus of control (1993). In the article are cited problems with the test and construct along with methodological issues that were cited also by Rotter in 1975. One particular issue of generality of the I-E scale had been and thus continues to be the topic of debate and of new test construction of measures of generality for different groups and specificity for various situations. The broad issues of generalized expectancies toward reinforcements, as discussed by Rotter, was precisely the focus of the I-E scale. For the construction of the scale, items were selected according to different areas and settings to give a broad and general sense of one's perceptions of expectancy regarding reinforcements (Rotter, 1990). But broad is what the I-E is and what was intended by Rotter, and thus has yielded a plethora of useful information about generalized tendencies relating to personality. Thus by consequence

many other measures covering specific areas (academic achievement) in detail are also unique and useful to their specific purpose as Rotter's scale was to his.

New and revised measures for generality and specificity were indeed numerous and noteworthy. After Rotter's I-E scale, Levenson in 1975 devised a three dimensional scale called the IPC to be used with prison inmates. Another scale called the Multidimensional-Multiattributational Causality Scales or MMCS devised by Lefcourt in 1981, according to attribution theory, was designed to measure both achievement and affiliation (Furnham & Steele, 1993).

Specific locus of controls scales and those used with certain populations also have surfaced in vast numbers over the years and are collectively reviewed in an article by Furnham and Steele in 1993. Some health related locus of control scales have been developed by Duke and Cohen (1975) and later by Kent, Matthews and White (1984), specifically related to dental behaviors (Furnham & Steele, 1993). But the most famous health related locus of control questionnaires was the Multidimensional Health Locus of Control (MHLC) Scale developed by Wallston et al. in 1978 which was replaced by the unidimensional measure called the Health Locus of Control (HLC) Scale developed by Wallston, Wallston, Kaplan, and Maides in 1976 (Furnham & Steele, 1993). Also a scale for children's health behaviors called the Children's Health Locus of Control (CHLC) questionnaire was developed by Parcel and Mayer in 1978, which correlated children health beliefs with health related behaviors (Furnham & Steele, 1993). Other health scales also included the Drinking-Related Locus of Control Scale, Alcohol Responsibility Scale, Health-Specific Locus of Control Scale, The Mental Health Locus of Control Scale, Weight Locus of Control Scale, Dieting Beliefs Scale, Dyadic Sex Regulation

Scale, Fetal Health Locus of Control Scale, Depression Locus of Control Scale, and the Cancer Locus of Control Scale (Furnham & Steele, 1993).

Scales for different age groups have also been formulated. For children the Intellectual Achievement Responsibility Questionnaire, The Locus of Control Scale for Children by Nowicki & Strickland, Locus of Control Scale for Minority Groups, Locus of Control Scale for Children's Perceptions of Social Interactions (Furnham & Steele, 1993). Nowicki and Strickland have also developed well researched and known scales for adults, preschool and primary children, and for those over 65 years old.

Another area of concern over the years, as generated from Rotter's 1966 article to Levenson's book Locus of Control is the relationship between locus of control and academic achievement in students of all ages. The history behind this area of study will be further discussed in section 3 of this literature review. The specific measurements between academic achievement and locus of control have typically compared the I-E scale's locus of control construct with students' measures of GPA, achievement test scores, and indications of achievement motivation. More specific tests measuring locus of control involving achievement related behaviors and beliefs have also surfaced over the years, including one by Clifford, Katovsky, and Crandall in 1965, Clifford in 1976, and Lefcourt, VonBaeyer, Ware, and Cox in 1979 (Trice, 1985).

Recently, a measure by Trice (1985) was developed to measure a range of achievement related behaviors in college students and how those behaviors relate to achievement scores called the Academic Locus of Control Scale. The test was based upon various prior claims that internality was positively related with class participation, academic performance, and scores on academic achievement tests as well as behaviors

and dispositions which aid learning and performance (Findley & Cooper, 1983). The test consisted of 28 true-false questions (reduced from an original set of 90 questions) and was scored based on external item responses, like the I-E scale by Rotter (Trice, 1985 & Ibrahim, 1996).

Upon conducted statistical analysis, Trice had reported a .50 correlation with the I-E scale by Rotter, -.31 with Smith's Achievement Motivation Checklist (nAch), -.15 with Marlowe-Crowe Social Desirability Scale, and .08 with the Academic Locus of Control Scale (AAA) by Clifford (Trice, 1985). The significant correlations with Rotter's I-E scale and the nAch measure by Smith indicated the presence of construct validity for Trice's scale; high scores on the I-E scale represent a high external locus of control and high scores on the nAch measure represent high amounts of achievement motivation. Test-retest after five weeks was found to be highly reliable with .92 score and a KR-20 internal consistency score of .70 (Trice, 1985). According to data of the two samples tested, the range of scores were between 0-26 with a mean of 12.79 in the original sample, $SD=4.84$ (Trice, 1985). Predictive validity coefficients as compared to final exam grades (-.32) and attendance (-.30) were statistically significant.

A cross cultural validation study by Ibrahim with an Omani population in 1996 using Trice's Academic Locus of Control Scale, Rotter's I-E scale, an Arabic multifaceted achievement motivation scale, and GPA was undertaken. Ibrahim found sex differences in the Omani population, with women ($M=13.1$, $SD=3.6$) scoring higher on externality than men ($M=12.1$, $SD=2.98$), due mostly to social and cultural reasons. Correlations with the Rotter's I-E scale yielded a figure of .33 using the product-moment statistical technique and -.45 for the achievement motivation test used. Upon comparison

with Rotter's I-E scale, Trice's locus of control measure was cited as a better predictor of GPA, with a predictive validity coefficient of .19 which was significant (Ibrahim, 1996). Based upon this reason along with the strong correlations between Trice's and Rotter's measures of locus of control, both measures were used in this current study between high and average achievers in a college setting.

Locus of Control and Its Relation to Academic Achievement

Rotter in his 1966 article then hypothesized that a relationship between locus of control and achievement was likely. He theorized that those displaying an internal locus of control would "show more overt striving for achievement than those who felt they had little control over their environment" (Rotter, 1966, p.21). The only potential obstacles with adult college populations in his formulations were what he termed "defensive external" or those who portray a particular external stance in failure situations and the fact that there might be more specificity in "determining response than in other kinds of situations" (Rotter, 1966, p.21).

But nevertheless, studies have yielded similar findings as Rotter had mentioned. Earlier studies by Cellini with school aged children, Franklin with high school students and Rotter and Mulry with adults found mixed and indirect relationships between scores on achievement tests, achievement motivation measures, different motivational tasks, and the I-E scale (Rotter, 1966). But this search for evidence of correlations between these variables served as an impetus for further investigation and more detailed measures and studies involving students of all ages. Later studies sought to examine the relationships between such factors of locus of control and certain behaviors associated with academic achievement . A study by Ducette and Wolk revealed that externals tended to display

more extreme behavior than internals on dimensions of occupational risk, educational risk, shifts in levels of aspiration, persistence, physical estimation, and cognitive estimation, $\chi^2=11.95$ ($df=1, p<.001$), $\chi^2=9.33$ ($df=1, p<.01$), $\chi^2=11.74$ ($df=1, p<.001$), $\chi^2=9.84$ ($df=1, p<.01$), $\chi^2=.7$ ($df=1, ns$), and $\chi^2=3.05$ ($df=1, p<.10$), respectively (1972). Another study by Bialer with mentally retarded and normal children found that, regardless of group differences in intellect, with age there was an increased amount of tendency towards internality, response to success-failure cues as opposed to hedonistic cues, and to delay gratification leading to a greater reward (Bialer, 1961). This led to conclusions that with maturity came increased internality and other factors that relied upon and were mediated by that orientation. Together these studies showed an indirect account of the many hypotheses involving the two variables of locus of control and achievement of various kinds, that were later extensively studied thereafter.

Many review articles were undertaken to prove or disprove the assumptions that internal locus of control was more associated with academic achievement as Rotter had mentioned by summarizing individual study findings (Findley & Cooper, 1983). Studies particularly in educational settings involving students of all ages were likewise included in many of the reviews. In a review by Phares in 1976 it was concluded that internals did display superior achievement, in populations with children and less with adults (Findley & Cooper, 1983). Bar-Tal and Bar-Zohar in studying reviews involving both children and adults found that there existed “a firm trend indicating that the perception of locus of control is related to academic achievement,” showing degree of internality highly associated with higher academic achievement than externals (Findley & Cooper, 1983, p.420).

In an article by Otten in 1977 the study used Rotter's I-E scale, an Autobiography locus of control measure, and a combined locus of control score to illustrate correlations with academic performance and degree attainment. It was found that combined scores of locus of control yielded significant correlations related to grades for both undergraduate and graduate students, $t=.21$, $p<.05$ (Otten, 1977). As for degree attainment, internals were found to present more in the graduate population than in the undergraduate, (Rotter=6.00, Auto=5.15) (Otten, 1977). All in all, internals were found to be more likely to complete doctorate degrees in 5 years or drop out while externals tended to be still working on their doctorates over 5 years or to receive terminal masters degrees. This study shed a favorable light upon the perceived control factors that do contribute to achievement and degree attainment.

In a review by Findley and Cooper in 1983 of 98 related studies and 275 hypothesis, they found that across all studies that positive correlations were found between internality and greater academic achievement in 193 hypothesis, negative correlations in 25 findings, 55 null hypothesis and 2 were deemed significant but with a specific direction not stated. Also 126 significant hypothesis were found to be positively statistically significant while 9 were found to be negatively significant (Findley & Cooper, 1983). They also concluded in a final remark that specific measures of locus of control were associated with stronger effects, hence the need and decision to use Trice's new specific academic measure of locus of control in the present study.

In a meta-analytic study and an 11 year follow-up to Findley and Cooper's review article, the findings again were quite similar. Kalechstein and Nowicki also found that both measures of general and specific expectancies for locus of control were positively

correlated with academic achievement, $Z_{ma}=13.97$, $p<.0001$ and $Z_{ma}=20.39$, $p<.0001$ respectively, with a tendency for internals to possess greater achievement than externals (1997). But again the need to examine further the variables in this complex relationship between locus of control and achievement with a specific measure was cited again as a further suggestion to more accurately assess locus of control in the area of academic achievement; again, the current study has taken the supposed suggestion and has attempted to use a more specific scale by Trice to help resolve this urgent need for more concrete and more detailed accounts of the relationship between the two variables.

A discussion of individual studies involving school-aged children in educational settings must be undertaken to further reveal more in-depth findings on the issue. Various studies reviewed by Smith et al. involving adolescents have revealed these significant findings between internality and academic achievement (Smith et al., 1998). Others such as Kopera-Frye in 1991 have found that externality was negatively related to achievement (Smith et al., 1998); another study by Morris and Tiggemann in 1998 disclosed the same main idea with college students, that Thompson's involving avoidance of failure stance that externalizing success was related with "self-handicapping performance limiting behavior" (Morris & Tiggemann, 1998 and Thompson, 1997). Likewise, other researchers such as Forsyth and McMillan (1981) and Ramaniaiah & Adams (1981), cited by Smith et al., have noted that students who attribute success in school to internal causes such as effort were more likely to be successful, while externals were more prone to associate low course grades with more external factors (Smith et al., 1998).

Other research studies have tried to link locus of control, academic achievement and self-esteem together to produce more descriptive findings. Studies by Benson et. al and Downs & Rose have found a positive relationship between internality, high academic performance, and high self-esteem and externality and low self-esteem and low achievement (Smith et al., 1998). But still other findings have failed to support the relationships mentioned above in older students (Smith et al., 1998).

Other studies involving college students and locus of control to other variables have been very noteworthy and enlightening. One study by Rose et al. in 1996 used the Nowicki-Strickland Locus of Control Scale, the Study Process Questionnaire, Scholastic Aptitude Test, class attendance, and GPA in order to try to predict success in achievement situations in college. Research based upon this study was relied on by Biggs (1997) who revealed that internals are more likely to use the 'deep approach' to learning by relating previous learning with new information being learned, to be more assertive, to perceive that success is more dependent on their effort, and to then exert more effort towards achieving success. The results of the study confirmed earlier findings, that externals had lower grade point averages presented by the negative correlation between GPA and locus of control, $r = -.26$ (Rose et al., 1996). Therefore as consistent with other findings, internals tend to be positively correlated with GPA and course grades (Rose et al., 1996). This study was particularly useful in the present study that had designed a similar yet different approach with both older and more recent measures of locus of control.

Sex and Social Differences in Locus of Control: A Brief Note

Rotter in his famous 1966 featuring his new I-E scale measuring locus of control

orientations briefly touched upon some sex and sociocultural differences in the measure. From these samples, he found that sex differences were slight overall. But in a University of Connecticut sample, means were found to be higher than in most of the sample scores compiled in the Midwestern university samples, $\underline{M}=8.72$ for males and $\underline{M}=9.62$ for females in U. of Connecticut and $\underline{M}=7.71$ for males and $\underline{M}=7.75$ for females (Rotter, 1966). This finding, depicting women as scoring more external than males, served as another rush for reasons why and how such a difference did and could occur.

Also cited in the Rotter's 1966 article were indications that African American college students were more external on their locus of control scores than their Caucasian classmates. A study cited by Rotter cited scores from African American inmates that showed increased external scores that were significantly different as compared to Caucasian inmates, $\underline{M}=8.97$ and $\underline{M}=7.87$ respectively (Rotter, 1966). Noted was the fact that this sample was selected to control for differences in social class, age, intelligence, and reason for incarceration differences beforehand.

In a later article by McGinnies et al. in 1974, a study of sex and cultural differences in locus of control in five countries indicated more interesting findings. According to a 2x5 analysis of variance, it was found that overall females had higher scores on the externality dimension of the I-E scale than males, sex($\underline{F}=21.53$) and country ($\underline{F}=24.52$), $p<.001$ (McGinnies et al., 1974). Females from Sweden and those from Japan, Australia, the United States, and New Zealand were found to have the greatest external scores according to the country main effects, $\underline{M}=15.59$, $\underline{M}=12.07$, $\underline{M}=11.54$, $\underline{M}=10.65$, $\underline{M}=10.66$, $p<.001$ respectively (McGinnies et al., 1974). All in all, this gave an

indication that females also were overall more external than males even in other sociocultural areas, although differences did vary from country to country.

In a later book by Lefcourt in 1982, a review of articles on sex and cultural differences cited many important factors. In an article by Bar-Tal and Bar-Zohar cited differences in female and male college students in association with grades, $r=.27$, $p<.10$ for females externality scores on Rotter's I-E scale and $r=-.39$, $p<.01$ for scores on an externality measure of attribution for success subscales from the IAR scale (Lefcourt, 1982). Together with this finding along with others by Nowicki in 1973 and 1974, externality was commonly associated with female attitudes toward achievement while internality was associated with male attitudes toward achievement (Lefcourt, 1982). These findings were interpreted according to a theory developed by Horner that interpreted this externality orientation towards achievement as a "fear of success" factor commonly found in women (Lefcourt, 1982 and Walsh, 1987).

In a somewhat different study in 1984, locus of control and assertiveness differences in males and females were discussed along with social causations. Upon relations between scores on the Adult Nowicki-Strickland Internal-External Scales (ANS-IE), there was found to be a significant correlation between internality and high assertiveness for males and not females, $r=-.52$, $p<.004$ and $r=-.09$, $p<.65$ respectively (Cooley & Nowicki, 1984). This discrepancy was explained according to social values in our country that depict males as being encouraged more for assertive actions than females (Cooley & Nowicki, 1984). While internality was assumed to be equally championed by both sex across the country, reasons for differences between men and women on locus of control orientations were not discussed.

In a somewhat recent article in 1989 by DeBradander and Boone sex differences were presented in a different light. Social acceptability reasons were cited for females scoring more internally than males by indications that more social desirable answers were selected by females, $B=-.22$, $t=-.167$, $p<.05$, one tailed test (Debradander & Boone, 1989). It was also commented, that according to the above findings, that the Rotter's I-E scale may have a different meaning for females; a discussion relating social factors depicting women as more dependent on external factors (including obeying others and conforming across many situations) than men and women as more prone to give socially acceptance answers based on that premise are cited as related reasons for the above significant findings (DeBradander & Boone, 1989 and Platt et al., 1970).

Improving Locus of Control in Educational Settings

After studies depicting that locus of control was indeed relevant to academic achievement in various setting, a more applied and positive aspect had started to emerge. In the educational realm of psychology, researchers had set out to find ways to help those students whose locus of control was external that was consequently exhibiting a detrimental effect upon their academic performance. This section will review various fairly recent studies concerned with how to improve locus of control perceptions (to the internal orientation) with elementary, secondary, and college students.

One particular study investigated why and how student engagement and perceived control correlated with achievement in an elementary class setting (Skinner et al., 1990). It was found that students perceptions of control that involved mainly a internal stance (effort vs. ability), also had the most engagement in academic activities, $t=14.62$, $p<.0001$. It was also found that teachers' contingent behavior had a significant effect on

promoting positive beliefs pertaining to control in academic endeavors and engagement, $r=.33$. Summing up these two significant findings, educational implications involving teacher contingency and involvement in the classroom as a form of “provid[ing] structure within which children can learn ‘what it takes’ to do well in school” (Skinner et al., 1990, p.31).

Another article in a journal entitled *Education* discussed a set of many tactics that could be used by teacher to promote a sense of control over students’ academic achievement. Based upon subsequent research by Nunn, it is cited that there were significant correlations between a students psychological adjustment and an internal locus of control (Nunn & Nunn, 1993) It is also noted that with the knowledge that internality is positively associated with achievement, that action patterns of task persistence and achievement (correlated with internality also) are also associated with greater adjustment; hence, linking adjustment and an internal locus of control as important to achievement. Also cited were reports of at risk students with mainly external belief sets as being more anxious, lacking in self-esteem, and depression indicators (Nunn & Nunn, 1993).

Research by Matteny and Edwards (1979) as cited in another article indicated that with a contingency management program implemented by 25 teachers contributed to greater internal locus of control and significant gains in academic achievement (Nunn & Nunn, 1993). Another study by Dweck that focused upon teaching children that after failure situations that effort as opposed to ability was the contributor to their failure, found that students increased in persistence and achievement, $\bar{X}=51.4$ and -9.2 while students in a control group faired less, $\bar{X}=50.4$ and 46.0 , $t(10)=3.64$, $p<.005$ (Dweck, 1975). The students with training also had adopted a more positive attitude not

characteristic of learned helplessness, $\bar{X}=19.5$ as compared to a helplessness stance $\bar{X}=19.5$, $t(20)=3.11$, $p<.0005$ (Dweck, 1975).

From these findings Nunn and Nunn formulated eight educational implications that could be used to promote self-determination and empowerment in the classroom. These included deriving appropriate reinforcement values for learning tasks, emphasizing effort instead of ability, presenting high expectations for performance for externals, emphasizing participant ownership over accomplishments in learning, requiring parents to promote internal values, making sure that task are deemed as important, enforcing student-centered teaching methods, and providing ways to decrease depressive, anxious, or helpless symptomology (Nunn & Nunn, 1993).

Another study by Shechtman et al. studied the effects of brief group therapy upon low achieving elementary school students' academic achievement, self-concept, social acceptance, and locus of control (1996). On measures between pretest and posttest scores, those who received the therapy experienced significant progress in the all four variables, as analyzed by MANOVA profiles, $F_s(1,105)$ =self-esteem 13.04, locus of control 27.70, math grades 37.78, and language grades 59.82 (Shechtman et al., 1996). In summation, the researchers cited that "change in academic performance requires an intrinsic motivation to make an extra effort and a strong belief in one's ability to make a change" (Shechtman et. al., 1996, p.380). They also claimed that group experiences such as this therapeutic one could provide students with an increased sense that change is indeed possible and that self reflection is needed in order to identify negative and nonproductive behaviors and strategies related to achievement (Shechtman et. al., 1996)

Focusing on a different population, college students have also been a population which researchers have devoted their time and interest towards. In a study by Perry and Penner (1990), expressiveness of instructors were analyzed and attributional retraining was implemented for reestablishing psychological control for increasing academic achievement and adjustment in college students. Using an ANOVA of locus of control x attributional retraining x instructor expressiveness, it was found that attributional retraining yielded a significant difference on locus of perceived causes, $F(1,189)=6.33$, $Mse=25.30$, $p<.01$ and also an interaction with locus of control, $F(1,189)=4.22$, $p<.05$. Students with an internal locus of control displayed an internal stance after attributional retraining than before, $t(116)=3.64$, $p<.01$. Although externals did not increase in internality orientation, their means were found to be similar to the range of internals and more likely due to contingency feedback instead (Perry & Penner, 1990). In conclusion, they stated that expressive instruction “increases their achievement immediately after a lecture and their perceived success of and control over performance, instills greater confidence in their achievement, and causes them to believe that they tried hard and to have more responsibility for their successes and failures” (Perry & Penner, 1990, p.270).

In another study involving altering subjects' attributions from stable (more internal) to unstable (more external) causes for their problems in college, educational intervention was again associated with astonishing results. After information depicting that the average college freshman tended to increase their GPA over four years, they also watched a videotape of upperclassman who reported an increase in GPA since their freshman year. Results from statistical analysis revealed an increase in grades in the end of the freshman year, M increase = .11, compared to those who received no information

or videotape, $\underline{M} = -.14$ (Wilson & Linville, 1982). Also an increase in GPA was reported in the end of the sophomore semester also, $\underline{M}s = .34$ and $-.05$ as compared to those with no information, $\underline{F}(1,26) = 4.27, p < .05$ (Wilson & Linville, 1982). Expectations perceiving an increase in GPA over the college years were reported by subjects who received the information as compared to those who did not, $\underline{M}s = .45$ and $.24$; therefore, this confirmed a another positive link between attributional retraining and academic performance (Wilson & Linville, 1982).

In another study by Magnusson and Perry in 1989, it was found that expressiveness of instructors and contingency feedback made indeed a difference. Students who received contingency feedback experienced more control over their performance ($\underline{M} = 5.80$) than did noncontingency students ($\underline{M} = 5.00$) (Magnusson & Perry, 1990). Expressiveness of instructors also had a significant effect upon externals who also were given contingency feedback, $\underline{t}(268) = 2.56$, but not for noncontingency $\underline{t}(268) = 2.35$. Using Pillai-Barlett statistic showing a $2 \times 3 \times 2$ MANOVA, a three way interaction between locus of control x contingency feedback x expressive of instructors yielded a significant interaction, $\underline{F}(8,528) = 2.212, p < .05$. Together with these findings and that of Perry and Penner, educational implications involving increased expressiveness and attributional retraining are indeed necessary, important, and can be utilized in order to facilitate higher achievement in both internals and especially, externals (Magnusson & Perry, 1989; Perry & Penner, 1990).

Finally, a review article by Kirschenbaum and Perri entitled "Improving Academic Competence in Adults" focused upon the analysis of 20 best-controlled studies and three comprehensive reviews by Entwisle in 1960, Bednar and Weinberg in 1970,

and Mitchell and Piatkowaska in 1974 on this particular subject area (1982). Upon review major significant outcomes that have emerged to be helpful to college students upon improving their GPA, grades, anxiety, or attitude are presented as follows featuring a three-component model involving motivational-study skills-self-regulatory skills:

1. Having students perceive of themselves as in control of the intervention process may indeed have a motivational effect.
2. Assuming that many students are lacking in appropriate study skills (reading, note taking, paper writing, test taking, and frequent studying), improving these skills requires hard work and motivators (setting events) such as perceived or internal control, volunteer status or materially compensated participation, technologically oriented intervention structure and positive efficacy expectations.
3. Training in basic self control or self regulatory skills such as self-monitoring, self-evaluation, self-consequence, and stimulus control and specialized self-regulatory processes such as planning and problem solving, have been proven to aid in academic achievement and upon the continuation of mastering appropriate study skills.

(Kirschenbaum & Perri, 1982, p.90-91)

Another issues involving college students, especially freshman, have centered upon teaching study skills and adjustment for increasing student achievement. In an article by Cone and Owens (1991), it was cited that nearly 50% of four year colleges offered a courses as mentioned, both with or without credit. The article also cites reports that freshman are notoriously insufficient in study skills and show a propensity to be

anxious in the new college setting. From these findings, Cone and Owens using the Nowicki-Strickland Locus of Control Scales with students who had taken the study skills and adjustment course found that they had achieved higher GPA's than previously thought possible, $\underline{M}_{diff}=.15$, as compared to those who were enrolled in the course, $\underline{M}_{diff}=-.08$ (Cone & Owens, 1991). Even more interesting was that externals as a group scored better in their GPA's than were predicted, $\underline{M}_{diff}=.14$ (Cone & Owens, 1991). Externals that completed the course also scored significantly more internal $\underline{M}_{diff}=-5.0$ than externals who did not take the course $\underline{M}_{diff}=2.18$ (Cone & Owens, 1991). From these findings from this particular study, there seems to be substantial proof that study skills and adjustment course can indeed be beneficial for all students, especially externals in increasing GPA scores and internality orientations.

All in all, all these studies presented in this review present a positive and hopeful sense upon programs and modifications which can be implemented to increase academic achievement, locus of control, and other relevant areas among all students. With more studies being executed presently and in the future, possibly students who are having or have a propensity to have difficulty in perceiving internal control and academic achievement can indeed be helped before it is too late. Along with refinements in the locus of control construct and in other areas such as self-esteem, adjustment, and learning strategies/study skills, the outlook for the future in educational implications for students at risk, showing difficulty, underachievers, and average students of all ages does indeed look promising.

Summary

The locus of control construct as cited by Rotter in 1966 according to social

learning theory is indeed a well researched and psychologically significant term that has been applied to many populations, settings, and to other related concepts. Historical significance is also relevant in that literally thousands of articles have created and embellished upon using Rotter's concept of locus of control and thus have revealed many significant findings. Although modifications and comments concerning whether the term locus of control is indeed stable and consistent, the realization that the construct is relevant in studying personality differences in individuals is still deemed important and noteworthy in the light of the present study.

As for the measures of locus of control, particularly Rotter's I-E scale (1966) and Trice's Academic Locus of Control Scale (1985), much research and statistical analysis has thus proved the significance in noting personality and situational differences in internals and externals using both these measures. With a good presence of face validity, stable internal consistency and good retest reliability, the I-E scale has continued to be administered as an adequate experimental measure of locus of control. Although Rotter's I-E scale has been criticized on many grounds, such as that it depicts only general expectancies as related to locus of control, important information concerning the various questions of achievement, political, etc. imbedded within the scale provide usefulness outside and inside the broad/generalized and specific realms. Also with a .50 mild correlation with Trice's measure and the I-E scale, good internal consistency, and highly reliable retest reliability, Trice's scale has also demonstrated its place within the field of academic achievement and locus of control combined. As for any flaws pertaining to specificity in the I-E, Trice's scale specified for academic achievement behaviors related to locus of control in college students should provide additional and complimentary

information thereby reducing the inherent misrepresentations in Rotter's measurement as related to achievement in this current study.

In relation to the summation of findings concerning academic achievement and locus of control orientations of various groups of students, the results seem to be unanimous. The initial relationship hypothesized by Rotter between internality and greater overall achievement (and externality and lower achievement/grades) has been supported and confirmed in various past and recent studies. Also certain thought processes in certain situations or tasks have been correlated distinguishing externals into a more heterogeneous grouping situation rather than merely a homogenous grouping, this finding has shed light upon the specific cognitions involved by certain groups of externals in various situations involving effort and chance in various tasks.

As for the relationships between sex differences and sociocultural differences on locus of control orientations, there appears to be much speculation and confusion. But nevertheless, interesting findings linking females to higher externality orientations, due possibly to social issues, have indeed excited interest (in this current study and other studies) in examining whether these differences are still evident in the late 1990's. Also differences in degree of externality of female perceptions of control are indeed interesting and indicate that some similarities and differences exist between different countries both culturally and socially throughout the years.

Finally on a more applied sense and positive note, educational implications toward improving internality orientations among externals in order to improve academic achievement in classroom settings have also been very instrumental and likewise beneficial to students of all ages. Such interventions such as brief group therapy,

attribution retraining, self determination/empowerment, and expressiveness and involvement of instructors have proved to be successful in altering locus of control perceptions and thus in improving GPA and courses grades in students in need of assistance. This again is a particularly interesting topic area in that it encompasses several successful interventions that can and should be used if predictions in the current study are found to be significant, namely if the general population of college students are lower in internality than higher achieving students with a GPA of 3.0 or higher.

Chapter 3

Sample

The sample selected were undergraduate psychology students that were currently enrolled in Abnormal Psychology, Behavior Modification, Psychology of Personality, and Child Development courses. Out of these classes, fifty-nine volunteers were gathered before class and given the tests. Twenty-three subjects were male and thirty-six were female, due to the large population of females in those classes. They ranged in age from 19 to 49, with a mean of roughly 22. They were all selected from the Rowan University student body, which is located in suburban, southern New Jersey. Their GPA's ranged from 2.5 to 3.95, $\underline{M}=3.13$ and their typical course grades ranged from A's to C's, with the mean being approximately around the B average. Most of the subjects also were juniors in college status.

Measures

One of the measures used in the study was Rotter's Internal-External Locus of Control Scale, commonly called the I-E Scale. This experimental test was located in Rotter's 1966 article entitled "Generalized Expectancies for Internal Versus External Control of Reinforcements." In this article instructions for its administration were given in the appendix section, which were followed in accordance with subjects in this study. In this test two statements are given and subjects are asked to circle either statement a or b, therefore indicating which statement that they more strongly believed to be more true than the other. They were told that there are no right or wrong answers and that just their

opinions or personal beliefs are most important. They were told to answer each set of statements independently from the other previous sets.

No manual was ever created for this instrument, but many reliability estimates for different populations are noted in Rotter's 1966 article and in others as well. In terms of validity, biserial item correlations ranging from .109 to .480 based upon 400 male and female combined scores are cited along with the actual test on page 11 (Rotter, 1966). For measures concerning reliability, specifically of internal consistency using split half Spearman-Brown and Kuder-Richardson reliability measures, means for males and females from two Ohio State University samples of 100 psychology students were .65 and .70 for males and .79 and .76 for females respectively, with a combined score of .73 and .73 also (Rotter, 1966). This sample showed that females tended to score higher on externality than males on both samples, with similar results duplicated elsewhere. But other means from a second sample from the same university with a sample of 400 psychology students (using Kuder-Richardson reliability) were .70 for males, .70 for females, and .70 combined; therefore, this sample showed a more equal distribution of scores for both sexes (Rotter, 1966). A nationally stratified sample of 1000 10th, 11th, and 12th graders from a Purdue opinion poll done by Franklin (1963) yielded a mean score of .69 combined (Rotter, 1966).

Test-retest reliability scores using Ohio State University students and prisoners from the Colorado Reformatory are cited in Rotter's 1966 article. Means from the university sample of 60 students given one month after the first administration were .60 for males and .83 for females, and .72 combined (Rotter, 1966). Using university students again who were given the test 2 months after the first administration yielded

scores of .49 for males, .61 for females, and .55 combined (Rotter, 1966). Together these studies of test-retest reliability yielded only a 1 point drop in scores, in the direction of lesser externality (Rotter, 1966).

Correlations between the I-E scale and the Marlowe-Crowne Social Desirability scale were also given. From samples of Ohio State University and Kansas State University psychology students along with Ohio Federal prisoners, correlations ranged from -.07 to -.35 which were considered an improvement from the former 60 item I-E scale where correlations ranged higher, -.35 to -.40 (Rotter, 1966). As for correlations between the I-E scale and intellectual measures, they ranged from -.22 to .03 which were considered very low (Rotter, 1966).

The next test given was the Academic Locus of Control Scale for college students which was developed by Trice in 1985. This test also is an experimental measure, which was given in Trice's 1985 article without instructions for administration. The test is set up in a true-false type of format and instructions (made by the experimenter with Rotter's instructions in mind) were given as follows: "please read each of the 28 statements and decide whether you *more strongly believe* the statement in question is true or false" and next the subjects are asked to "either print a letter **T** for '**true**' or **F** for '**false**' on the line in front of the number of the statement"

This measure is indeed different from Rotter's I-E Scale for its intended focus was that of specifically measuring academic locus of control by noting differences in study habits and behaviors of various college students rather than a generalized locus of control instrument as Rotter's. Cited by Trice is a product-moment correlation of .50 with Rotter's scale, which was stated to be significant and in the direction postulated to

cite construct validity. Noted by the researcher in this study is the fact that the .50 correlation between the two tests is indeed noteworthy since the Rotter's scale measures more general locus of control orientations overall in one's personality, while Trice's test measures more specific locus of control orientations toward academic achievement only.

Again with this measure, no manual was ever devised but information regarding reliability was noted in the article (Trice, 1985). Using a sample of students from a state college, scores ranged from 2 to 26, with a mean of 12.79 ($SD=4.84$) (Trice, 1985). Means for males and females cited were $M=12.61$, $SD=4.22$ and $M=12.95$, $SD=4.93$ respectively (Trice, 1985). In another sample of 82 psychology students from a private college, scores were $M=13.22$, $SD=4.92$ and from the other sample scores were $M=12.46$, $SD=4.32$ (Trice, 1985). Test-retest reliability was established with the sample of psychology students from the private college. The scores for test-retest reliability were .92 and a KR-20 internal consistency score of .70 was also cited (Trice, 1985). Product-moments correlations as cited previously in this study were .50 with Rotter's I-E scale, -.31 with Achievement Motivation Checklist (nACH), -.15 with the Crowne and Marlowe Social Desirability Scale, and -.09 with Clifford's Academic Locus of Control Scale or AAA (Trice, 1985). Limited predictive validity was also cited with significant correlations between extra credit (-.36), final grades (-.32), and attendance (-.30), as were noted as outcomes being compared to the scores on the test in the procedure section of the article (Trice, 1985).

Design

This study was designed as a descriptive study, set up to show whether measures of locus of control tend to correlate with academic achievement measured by GPA

scores. Variables included in this study are namely Rotter's I-E scale, Trice's Academic Locus of Control Scale, Gender (male and female), and GPA or Typical Course Grades. This correlational study involves describing the relationships between the following variables: the two scales, each scale and academic achievement (GPA), and gender on both measures along with academic achievement scores.

Testable Hypotheses

Hypothesis 1

H0 = There will be no correlation between scores on Rotter's I-E scale and Trice's scale.

H1 = There will be a correlation between Rotter's scale and Trice's scale.

Hypothesis 2

H0 = There will be no correlation between Rotter's scale and college academic achievement scores (GPA).

H1 = There will be a correlation between Rotter's scale and GPA scores.

Hypothesis 3

H0 = There will be no correlation between Trice's scale and college academic achievement scores (GPA).

H1 = There will be a correlation between Trice's scale and GPA scores.

Hypothesis 4

H0 = There will be no correlation between Gender on Rotter's and/or Trice's scale.

H1 = There will be a no correlation between Gender on Rotter's and/or Trice's scale. (going along with null)

Hypothesis 5

H0 = There will be no correlation between Gender and GPA/grade scores.

H1 = There will be no correlation between Gender and GPA/grade scores.

Hypothesis 6

H0 = There will be no correlation between Gender scores on Rotter's scale of samples from 1966 and 1998.

H1 = There will be a correlation between Gender scores on Rotter's scale of samples from 1966 and 1998. (women be more internal)

Analysis

The analyses chosen for this study are correlational in nature. Statistical methods such as the Pearson r and the independent t-test were tabulated to note relationships between two sets of variables via analysis on data presented in a computer statistical program SPSS. Means for average scores for males, females, and both were looked at for scores on Rotter's I-E scale, measuring for externality of general locus of control and Trice's scale, measuring externality for specific academic locus of control. GPA was rounded to be nearest whole or half number, for example 3.0 or 3.5, which ever is closest. For example, gender was established and encoded as 1 = Males and 0 = Females on data entry along with numerical codes for course grades and college status.

Summary

In summary, samples from Rowan University undergraduate psychology students will be collected and analyzed for relationships between locus of control orientations and academic achievement. These relationships are more specifically noted in the hypotheses section of this chapter. Then with data collected and hypotheses noted, the information

will be entered into a computer program called SPSS (using correlational methods such as the Pearson r and independent t-test) and analyzed for correlational relationships between the variables of Rotter's I-E scale, Trice's Academic Locus of Control Scale, Gender, and academic achievement (measured via GPA scores).

Chapter 4

Introduction

The following statistical analysis of this current study involving the locus of control construct and its relation to academic achievement and sex differences has been undertaken. The following variables were addressed accordingly: Rotter's I-E scale, Trice's Academic Locus of Control Scale, gender, and academic achievement measured via grades and college GPA. These variables were analyzed using correlational statistics in order to ascertain whether or not a relationship between the variables existed. Using past studies and information concerning the locus of control construct and its supposed relationship between the variables cited, a total of six testable hypotheses were generated.

Analysis of Results

In Hypothesis 1, it was stated that there was expected to be a correlation between Rotter's scale and Trice's scale that were used in the study. From analyzing the mean scores obtained in the sample, it was found that Rotter's scale ($\underline{M}=11.81$, $\underline{SD}=3.82$) and Trice's scale ($\underline{M}=12.00$, $\underline{SD}=4.23$) were very close in relation to each other. Other descriptive statistics involving mean scores and standard deviations can be found in Table 4.1 and thus will be discussed as it pertains to the material being discussed accordingly.

Table 4.1: Table of Mean and Standard Deviation Scores

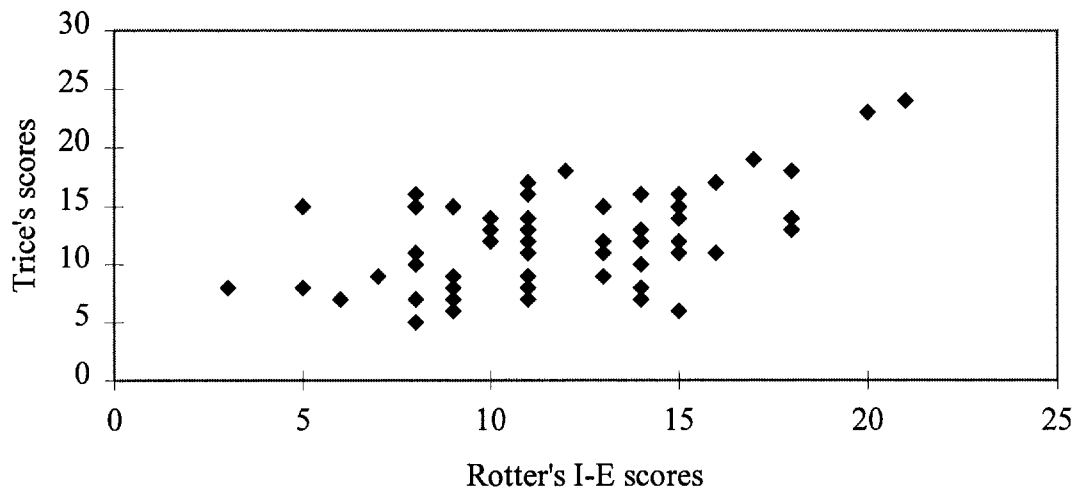
	N	Minimum	Maximum	Mean	SD
Rotter	59	3.0	21.00	11.81	3.82
Trice	59	5.0	24.00	12.00	4.23
GPA	59	2.28	3.95	3.13	.41
Grades	59	2.00	4.00	3.29	.56
Status*	59	1.0	4.0	2.92	.73

*Note: For college status column, 1=freshman, 2=sophomore, 3=junior, and 4=senior status.

From looking roughly at the data obtained, it was noticed that an increased in a score in one scale usually indicated an increased score in the other. Those with the highest scores in Rotter's, that being a 21 for example, usually indicated and did in this case that a higher score on Trice's scale was also very likely, hence the corresponding score of 24. While using the Pearson r correlational measure, it was found that scores on Rotter's scale and Trice's scale were indeed found to be significant, $r=.558$, $p<.01$; and thus the null hypothesis was rejected. This finding was related directly to be proposed figure by Trice (1985) that indicated there was a .50 correlation between scores on Trice's academic achievement locus of control scale and Rotter's general locus of control scale. This finding of the .558 correlation between the two is especially important for it shows that a significant correlation, although low, does exist between scores on the two scales which are seemingly different in scope. As shown in Figure 4.1, one can roughly

see the positive correlational relationship between Rotter's and Trice's scale and thus one can assume a somewhat positive relationship exists.

Figure 4.1: Positive Relationship Between Rotter's and Trice's Scale



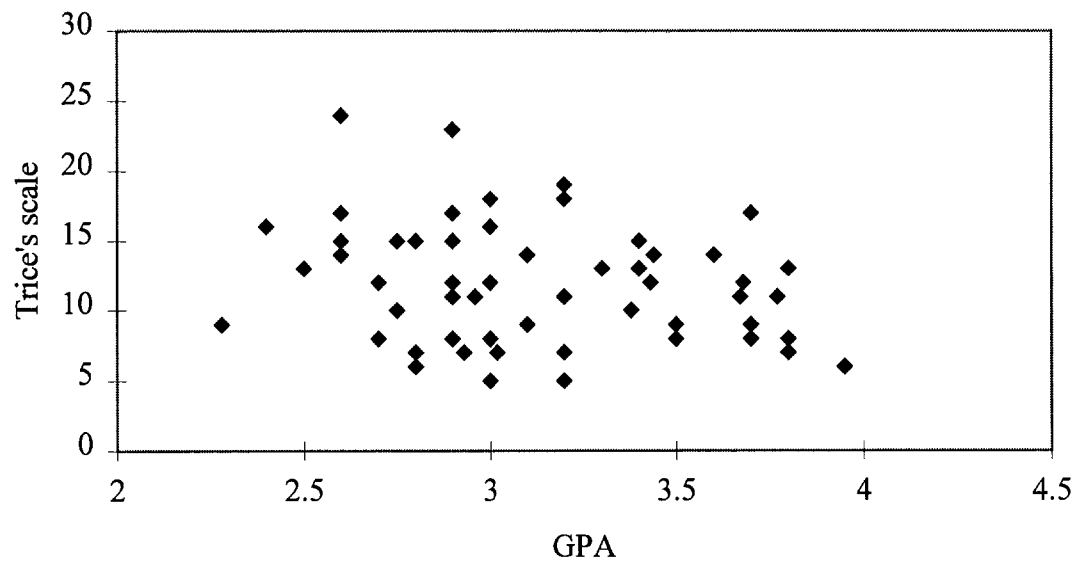
But on the other hand, it also shows that the two scales are also different in content and thus should be used only with appropriate related variables in order to find more significant and meaningful findings; as will be discussed later in Hypothesis 2 and 3, that Trice's scale yielded more appropriate findings as related to what was measured in this study concerning particularly academic achievement.

While secondly in Hypothesis 2, it was proposed that there would be a correlation between Rotter's scale and academic achievement as measured by GPA and grades. The mean GPA in the study was found to be quite high as found also in the grades that were cited by the subjects, $\underline{M}=3.13$, $\underline{SD}=.4061$ and $\underline{M}=3.29$, $\underline{SD}=.5587$ respectively. When comparing the two together, it was found that there was a significant correlation between GPA and grades, $\underline{r}=.866$, $\underline{p}<.01$. This showed that the two variables, namely GPA and

grades, were indeed related and found to be similar in measuring the intended academic achievement area of concern. In discussing the finding relating the two measures of academic achievement to Rotter's scale, it was found that no relationship existed between the variables, $r = -.044$, $p > .05$ for GPA and $r = -.120$, $p > .05$ for grades. This thus confirmed the null hypothesis, which stated there would be no relationship between GPA and/or grades and Rotter's scale. This thus showed that Rotter's general scale was not shown to be related to academic outcomes, as assumed by other studies. This will be discussed in more detail in Chapter 5.

Next, Hypothesis 3 sought to see whether there would be a correlation between Trice's scale and academic achievement measured via GPA and/or grades. In contrast to the findings presented above as found using Rotter's scale with the same variables, there existed significant findings between Trice's scale and GPA and grades, $r = -.258$, $p < .05$ and $r = -.306$, $p < .05$ respectively. The negative values present were due to the fact that an inverse relationship between scores on Trice's scale and GPA/grade scores was present, meaning that with increased scores on Trice's measure (indicating a more external orientation) that there tended to be lower GPA/grade scores reported by subjects. This is indeed concurrent with past literature claiming that internal locus of control was indicative of superior academic achievement in school. This negative relationship can certainly be seen in Figure 4.2 as shown on the next page. All in all, this finding served to reject the null hypothesis which assumed there would be no relationship between the variables in question.

Figure 4.2: Negative Relationship between Trice's scale and GPA



In discussing the findings of Hypothesis 4, it was intended that there would be no correlation between gender on Rotter's and Trice's scales; hence, the experimenter assumed the null hypothesis would prevail. Mean scores by the two genders on both Rotter's and Trice's scales are shown in Table 4.2 on the next page.

Table 4.2: Summary Table of Mean Scores from Rotter's and Trice's Scales

Sex		Rotter	Trice
Female	Mean	11.72	11.14
	N	36	36
	SD	3.92	4.16
Male	Mean	11.96	13.35
	N	23	23
	SD	3.75	4.09
Total	Mean	11.81	12.00
	N	59	59
	SD	3.82	4.23

By analyzing the means comparing how the two sexes performed on each of the measures mentioned, it can be seen that some similarities and some differences did surface. Thus by looking at the scores from Rotter's scale, one can see that the males and females scored very close to one another, $\underline{M}=11.96$, $\underline{SD}=3.75$ and $\underline{M}=11.72$, $\underline{SD}=3.92$ respectively. These very similar scores are indeed indicative that gender differences, as shown in this study, are fairly slim as relative to general locus of control orientations. Upon further analysis using an independent t-test, it was found that indeed no significant difference was noted, $t=.228$, $p>.05$. Again, this finding certainly confirms what the mean scores indicated, mainly that no sex differences on Rotter's measure were evident. This confirmed the assumed null hypothesis cited by the experimenter beforehand claiming no differences between the sexes on Rotter's scale would be found.

On the other hand, by looking at the scores of each gender on Trice's more specific locus of control scale, one can see how differences are also apparent. For as seen by the data collected, the male subjects on average scored higher on Trice's scale than the female subjects, $\underline{M}=13.35$, $\underline{SD}=4.09$ and $\underline{M}=11.14$, $\underline{SD}=4.16$ respectively. From further analyses upon conducting an independent t-test, it thus confirmed that the sex differences were indeed significant on Trice's measure, $t=2.004$, $p<.05$. This section of Hypothesis 4 serves to reject the null hypothesis of no correlation and thus serves to alternatively accept the fact that there was indeed a correlation or difference between the sexes on this measure. This finding is indeed quite puzzling for it goes against past research claiming that females tend to be more external and males tend to be more external in their locus of control orientations. Again this will be discussed in detail in the discussion section of Chapter 5.

Hypothesis 5 takes on another of the variables in the discussion of whether sex differences exist between academic achievement measured via college GPA and grades. As expected, the experimenter sought to prove that no correlation or differences existed between the sexes on either of the variables mentioned above. Upon analyzing the mean GPA and grades scores according to gender, it was observed that some differences were evident in the sample. In discussing college GPA mean scores, males tended to score slightly lower than females, $\underline{M}=2.93$, $\underline{SD}=.39$ and $\underline{M}=3.26$, $\underline{SD}=.36$ respectively. But upon further looking at the mean scores and their standard deviations, one can see that the differences were quite large, at least one standard deviation apart. Upon statistical analysis of using again an independent t-test, it was found that a significant difference was evident, $t=-3.301$, $p<.05$. This finding serves to reject the null hypothesis that was

assumed and illustrate that there was indeed a significant difference between the two genders on the measure of college GPA, meaning that the women in the study tended to possess higher GPA than the male subjects.

Upon looking at the second measure of academic achievement, it can be seen that gender differences between overall reported college grades were also evident. By analyzing the mean scores, it can be observed that females tended to report higher grades than the males in this study, $\underline{M}=3.44$, $\underline{SD}=.50$, $\underline{M}=3.04$, $\underline{SD}=.56$. Although the differences between the two means appeared slight, an analysis done via an independent t-test confirmed that the mean differences were indeed statistically significant, $t=-2.85$, $p<.05$. This finding also served to reject the null hypothesis stated in Hypothesis 5 and thus assume that differences between the two sexes on both GPA and grade scores do still exist but this time that females were the ones that outscored the males in this study (a further discussion of this topic will be taken up later in Chapter 5).

As for the last hypothesis to be test, Hypothesis 6, it was assumed that there would be differences on female scores on Rotter's I-E scale between Rotter's samples compiled in 1966 and those collected in this 1998 study. It was mainly assumed was that females, due to cultural and social changes since the last sixties, would tend to score more internal today than in 1966. But from analyzing the different samples of Rotter's 1966 study, it was found that much variation existed between the female scores and also the male scores. A visual comparison between the samples can be observed in Table 4.3.

Table 4.3: Mean Scores from Rotter's 1966 Samples as Compared to Current 1998

Sample				
Sample	N	Sex	Mean	SD
Ohio State U.*	1180	M	8.15	3.88
		F	8.42	4.06
Kansas State U.*	113	M	7.71	3.84
		F	7.75	3.79
U. of Conn.*	303	M	8.72	3.59
		F	9.62	4.07
Boston subjects 18yrs. old*	57	M	10.00	4.20
		F	9.00	3.90
Rowan U. – 1998	59	M	11.96	3.75
		F	11.72	3.92

* as cited in Rotter's 1966 article, "Generalized Expectancies for Internal Versus External Control of Reinforcement."

Starting with Rotter's Ohio State University sample, it can be seen that the mean scores for both males and females were much lower than that of the current sample collected at Rowan University in 1998, $\underline{M}=8.15$, $\underline{SD}=3.88$ and $\underline{M}=8.42$, $\underline{SD}=4.06$ as compared to $\underline{M}=11.96$, $\underline{SD}=3.75$ and $\underline{M}=11.72$, $\underline{SD}=3.92$ respectively (Rotter, 1966, p. 15). With at least one standard deviation above the means of both males and females of the Ohio State University study, it can be noted that the increased scores from that of the current sample

are indeed puzzling; by stating that there are indeed differences between the sample involving both sexes, it would entail that both sexes increased their external orientations on Rotter's scale. This consequently served to deny the hypothesis that women would be more internal due to social and cultural changes that have taken place since the 1960's. Again sample size is a crucial factor since Rotter's 1966 Ohio State University sample was composed of 1180 subjects while the current study involved only 59 college students. This again will be taken up later in more detail later in the next chapter.

But also by looking at the other samples compiled in Rotter's 1966 article, there can be seen differences of the same sort and magnitude between both the sexes as compared to the current 1998 study mean scores. The Kansas State University sample and the University of Connecticut sample both display means much lower than that of the current study for both males and females, $\underline{M}=7.71$, $\underline{SD}=3.84$ and $\underline{M}=7.75$, $\underline{SD}=3.79$ for the Kansas sample and $\underline{M}=8.72$, $\underline{SD}=3.59$ and $\underline{M}=9.62$, $\underline{SD}=4.07$ for the Connecticut sample (Rotter, 1966, p. 15). This again serves to illustrate that external locus of control orientations have risen over the years as compared to now. Again sample sizes are a factor with the Kansas sample having 113 subjects and the Connecticut sample having 303 subjects as compared to 59 subjects in the Rowan study sample. Only in the 18 years old Boston subjects do the mean scores come even close to that of the Rowan study sample, with $\underline{M}=10.00$, $\underline{SD}=4.20$ for males and $\underline{M}=9.00$, $\underline{SD}=3.90$ for females. But again the Rowan study mean scores are again much higher, $\underline{M}=11.96$ for males and $\underline{M}=11.72$ for females, but at least with this sample the means came closer and the sample sizes were comparable at 57 for the Boston study and 59 for the Rowan study; this could shed

light on the significance of having a comparable sample size to compare the mean scores from the different samples (Rotter, 1966).

Summary

A total of six hypotheses were tested overall and some significant findings were revealed. Regarding Hypothesis 1, it was found that a positive correlation between Rotter's and Trice's scales did exist and thus confirmed the H_1 hypothesis that there was indeed a significant relationship existed between the two measures; thus the null hypothesis was denied. Regarding Hypothesis 2, it was found that no significant relationship existed between scores on Rotter's scale and academic achievement measured via GPA and grades. Thus the null hypothesis in this instance was confirmed. On the other hand, in Hypothesis 3 it was revealed that there was a significant correlation between Trice's scale and academic achievement measured again by GPA and grades. While comparing sex differences on Rotter's scale in Hypothesis 4, it was found that there were no significant correlations between either of the sexes and thus the null hypothesis was confirmed. In contrast, when Trice's scale was tested it became evident that a significant correlation regarding sex differences was found. Thus in this instance, the null hypothesis was denied and the H_1 was accepted.

In addressing Hypothesis 5, it was found that both grades and GPA were significantly correlated with differences found between the sexes, with females having higher GPA and grades scores. As for the last hypothesis tested Hypothesis 6, it was found that by comparing the mean scores from Rotter's 1966 samples to the current Rowan University sample done in 1998 that there were indeed differences between the two sets of samples. Overall, female and male scores from the current sample were

indeed larger (meaning more external orientations) than in the 1966 samples compiled by Rotter; thus it can be noted that both sexes tended to increase their external orientations rather than their internal orientations. Finally, one can say that the last hypothesis which claimed that there would be an increase in internality on behalf of the females in the study was found to be untrue but differences in the other direction were found; this served to reject the null hypothesis which claimed to find no differences between the two sets of samples and the H_1 was consequently confirmed. A table labeled Table 4.4 has been inserted on the next page to help illustrate the findings in a more visual and organized manner.

Table 4.4: Summary of Hypotheses Tested and Their Outcomes

Hypotheses	Significance (yes/no)	Reject or Accept
1: There will be a correlation b/t scores on Rotter's and Trice's scales.	Yes, $r=.558$, $p<.01$	accept
2: There will be a correlation b/t Rotter's scale and GPA and grades.	No	Reject
3: There will be a correlation b/t Trice's scale and GPA and grades.	Yes, $r=-.258$, $p<.05$ and $r=-.306$, $p<.05$.	Accept
4: There will be no correlation b/t sex on Rotter's and Trice's scales. (null)	No for Rotter's scale Yes for Trice's scale: $t=2.004$, $p<.05$.	Accept null for Rotter's Reject null for Trice's.
5: There will be no correlation b/t gender and GPA and grades. (null)	Yes for grades and GPA $t=-3.301$, $p<.05$ grades $t=-2.849$, $p<.05$ GPA.	Reject null for both GPA and grades.
6: There will be a correlation b/t gender scores on Rotter's scale of samples from 1966 and 1998.	No statistically testing done, although differences between the two sets of samples existed.	Accept there were superficial differences noted.

Chapter 5

Summary

This study intended to look at the relationship between locus of control, gender, and academic achievement. The following variables were used: Rotter's I-E scale, Trice's Academic Locus of Control Scale, gender, and college GPA/grades. A sample of 59 subjects (36 female, 23 males) were obtained from the Rowan University student body. A total of six hypotheses were tested using correlational statistics such as the Pearson r , independent t -test, and analysis of means. Results found that a positive relationship existed between Rotter's and Trice's scales. It was also found that although no relationship existed between Rotter's scale and GPA/grades, a significant correlation was found between Trice's measure and GPA/grades. In addition, sex differences were found using Trice's measure but not Rotter's scale. Significant differences were also found between the sexes on the variables of GPA and grade scores, with females possessing higher GPA and grades. Lastly, upon analyzing the mean scores of both sexes on samples cited in Rotter's 1966 article and that of the current Rowan sample, it was found that there were indeed apparent differences; mainly, individuals from both sexes of the Rowan 1998 study tended to score more externally as compared to Rotter's samples.

Discussion

Upon looking back upon the current study that was conducted, it was noticed that a few key features or trends in the data collected tended to stand out. It did seem overall that the locus of control construct was indeed related to GPA/grades or academic

achievement as mentioned in past literature. It also was seen that there were sex differences on Trice's measure but not Rotter's measure. This is indeed an interesting trend to note for it lends support to the assumption that men and women may have similar locus of control orientations regarding general areas but different external-internal orientations regarding more specific areas like academic achievement (as shown in Trice's measure). Thus this could show that differences between the sexes regarding study skills and practices are indeed noteworthy and full of interesting details yet to be discovered.

Also from looking superficially at the mean scores from both Rotter's 1966 samples and that of the current Rowan University sample, there seemed to be evident discrepancies between the multiple sets of scores. Indeed the occurrence of unusually high external scores from both sexes in the current study did shed some light upon other factors that could have been at work such as sample size and representativeness and with the high ratio of female to male subjects used. Indeed the current sample only had 59 mostly female subjects and thus results from the study do seem to be limited from that respect. But the usually high scores that were noted were indeed interesting in this day and age of increased individualism on behalf of both men and women in both educational and occupational areas. For one would expect as we approach the millennium that the population would be more internally directed or self-directed rather than more externally focused or directed towards outcomes in one's own life. Again this is an interesting finding or observance and one that should be addressed or investigated in the future.

From looking upon the some of the assumptions mentioned in Chapter 1, it should be addressed that the concerns over GPA scores, the Rowan sample in particular, and the

very nature of using two self-report measures of locus of control orientations were indeed vital ones to the main framework of the study. Taking the topic of GPA scores into account, it should be noted that a normal distribution of scores that was expected to be found indeed not collected. The GPA scores ranged quite highly from 2.5 to 3.95, with a mean of 3.13. From this unintentional dispersion of scores, it was concluded that high achievers and average achievers could not be readily grouped into exact categories as expected. In addition, with most of the scores were in the B to high B range, it became clear that the low GPA group (that having low to high C's) was not going to be adequately represented. Hence, the two groupings were eliminated and gender differences along GPA and grade scores were analyzed instead.

Also looking back at the GPA scores from this Rowan University sample, it can be noted that the scores seemed to be too usually high. This could have been due to the fact that only those with high GPA's so happened to be in the classes that were selected. Another reason could be due to the nature of not using true GPA scores as reported from the Rowan University registrar but student reported GPA scores. These scores could have been intentionally inflated in the students' favor or could have been only rough estimates of what they thought their GPA scores were currently. The sample problem is again inherent in the variable of grades also that were also reported by the students themselves and not actual grades that were entered by the teachers and given to the registrar. All in all, the occurrence of high GPA and grade scores were definitely taken into account when analyzing the results.

The last assumption that will be addressed pertains to the topic of using self-reports measures like Rotter's I-E scale and Trice's scale. It was assumed that the

subjects responded openly and honestly on both of these measures. It was also assumed that their true locus of control orientations were to be reflected in their scores and thus assumed to be accurate measures of their personality characteristics or attitudes towards expectancies of reinforcement. Thus it seems safe to address the fact that the subjects sampled could have been less than honest in reporting their true responses to the questions. Taking the two measures together could have added to the strain of trying to complete the two measures before class started and thus could have instigated some pressure, frustration, or dissatisfaction due to the time that was needed to complete and read the consent forms, demographics sheet, Rotter's scale, Trice's scale, and a feedback sheet. Also it is also safe to address that fact that Rotter's and Trice's scales are indeed accurate indicators of locus of control orientations. Indeed Trice's scale was more intended to measure academic attitudes and study habits as related to academic locus of control whereas Rotter's scale intended to measure general locus of control via the following areas: achievement, affection, and general social and political attitudes. Hence it should be noted that the study was hence based on the assumption that the two scales were indeed fairly accurate measures of locus of control orientations and not something else, of which they might be unknowest to the experimenter at the time.

Addressing the limitations of this study was indeed noteworthy and reasonable at this stage. The main limitations that were addressed were the representativeness of the sample and its sample size. Indeed drawing a student sample from Rowan University, which is a suburban campus in Southern New Jersey, does indeed have its drawbacks. Thus it is safe to conclude that perhaps the sample is not truly representative of the whole US college population. Another factor of the sample was that more women were found

and used in the study than men, 36 to 23 respectively. Though not intended, it seemed that more women were enrolled in the psychology classes that were sampled and could perhaps be due to a socio-cultural phenomena of gender linked majors such as psychology, teaching, etc. Another factor was the occurrence of only 59 subjects that were administered the measures and collected for this study. Indeed time constraints, availability of classes interested in the study, lack of volunteers interested, and the small class sizes did indeed have a great impact on the number of subjects used in this study. For comparability purposes, it was found that when trying to compare this current sample with those cited in Rotter's 1966 article that sample size was indeed an issue. For example, in the 1966 Ohio State University sample over 1000 subjects were used; when trying to compare that huge sample with the 59 subjects found in this study, it became evident that comparability would have to be addressed very carefully and within limits. Likewise, a small sample of 57 subjects from 1966 was also used to more accurately compare and contrast the scores of those subjects to the ones found in the current 1998 Rowan University study.

Conclusion

This study was proposed to investigate the relationship between locus of control, gender, and academic achievement. Results indicated that Rotter's and Trice's scale were similar, Trice's scale correlated with GPA/grade scores, sex differences were evident in scores from Trice's measure, GPA/grades were correlated with sex differences, and that there was an increase in externality in scores from 1998 to 1966.

From looking more in-depth at the results obtained and explained in Chapter 4, it should be noted that most of the hypotheses tested were in accordance with past research

and similar studies involving the locus of control construct, gender differences, and academic achievement. Indeed the significant finding of Hypothesis 1 that was portrayed in the positive correlation between Rotter's and Trice's scales was indeed indicative of the statistics mentioned by Trice (1985). Trice found a .50 correlation between his measure and Rotter's I-E scale, which served to show that the two measures though seemingly different in content are somehow similar in depicting locus of control orientations. Again the .558 finding in the current study did seem to tend support to Trice's finding that the two measures are roughly similar in scope.

Regarding Hypothesis 2 and its results, it was found that no significant relationship existed between Rotter's measure and academic achievement measured via GPA/grades. This seems to serve as a reminder that Rotter's general measure of locus of control is indeed more general and less specific as seen in this instance regarding the area of academic achievement. This was precisely the reason why Trice's specific measure of academic locus of control was included in the study to help illustrate a higher potential of finding a significant correlation between the locus of control construct and academic achievement.

As mentioned above and what was intended to be found by the addition of Trice's measure, it was found regarding Hypothesis 3 that a significant correlation was found between scores on Trice's scale and academic achievement measured by GPA/grades. These significant correlations of $r = -.258, p < .05$ for GPA and $r = -.306, p < .05$ for grades showed that with increased scores (representing externality) on the scale there was a tendency for lower GPA and grades. Hence, those that scored low on Trice's measure also had a higher GPA than those that scored higher on the scale. This certainly goes

along with Trice's findings and past research that internality tends to be associated with higher academic achievement as reflected by certain classroom or study behaviors, which Trice's scale was proposed to measure. Also this negative correlation found in this study also mimicked the findings presented by Trice concerning the predictive validity of the scale measured by final exam grades and attendance.

Concerning the next Hypothesis 4, it was found that gender differences were quite evident on Trice's measure but not on Rotter's measure of general locus of control. Regarding the finding of no relationship between gender and Rotter's scale, it should be noted that Rotter cited only that slight sex differences were typically observed. Only in one University of Connecticut sample addressed in his 1966 article was it observed that females in the sample tended to score higher (meaning more externally) than males. Other articles addressing this issue have found mixed results regarding sex differences/similarities and why they are apparent.

However, on Trice's measure there was found a significant relationship between scores on his test and sex differences. Particularly, it was found that in this study that males tended to score higher than females. This finding in this study certainly served to cast some doubt upon past research studies which have indicated that females tend to score higher than males. Reasons cited in support of this trend are that externality was more associated with female attitudes toward achievement while internality was more associated with male attitudes toward achievement. Particularly, Horner's description of a phenomenon called the "fear of success" construct took this trend in research a bit further. With this Horner claimed that women tend to adopt this external stance toward academic endeavors in reaction to the negative view of women as not competent enough

as men and as part of the double bind that women's conflicting roles as a worker and mother that are frequently encountered. Again this current study lended support that college women in 1998 tend to be more internal than their male classmates, indicating that possibly female attitudes have become more internally rather than externally based. Also this could indicate that possibly the phenomena of "fear of success" has maybe been pushed aside as more women are being educated and are now more work-bound than before. Whatever the reason for this occurrence found in this study, it seems that more positive trends towards increased internality and decreased externality might be encountered in years to come as social barriers are broken down and women are treated more equally both educationally and occupationally.

Concerning Hypothesis 5, it was found that sex differences did exist on measures of academic achievement such as GPA and grade scores. Particularly, women in the sample tended to score higher on GPA and also grades. This difference was found also to be significant on both GPA and grade scores and thus the finding was indeed enlightening to the experimenter. On the one hand, it can be possibly noted that maybe women in the late nineties are focusing more on education and academic achievement than ever before and thus are beginning to surpass their male counterparts. This indeed would be an interesting and positive finding that would serve to shed some light upon the topic of overcoming social and stereotypical barriers and obstacles that women have had to face in the past. But another reason for this finding must also be addressed and that concerns the distressing limitation of sample size. Indeed out of the 59 subjects that were used in the sample, most of them were women (36) as compared to men (23). This could

have indeed skewed the results for it can be said that the male gender was not adequately represented.

While looking at the last hypothesis that was tested, it was found by just looking at the mean scores of samples cited in Rotter's famous 1966 article and in the current 1998 study that differences were indeed evident. Although no statistical analysis was done for exact scores from the subjects in Rotter's samples were not accessible to the experimenter, such differences in scores must and should be noted. For example, from looking at the scores from the Ohio State University sample of 1180 subjects and from that of the Kansas State University sample of 113 subjects, it can be noticed that the mean scores tended to fall in approximately around the low external score of 8 (Rotter, 1966). These scores are indeed low when compared to the scores taken from the current study which showed unbelievably high external scores close to 12. But when looking at the Boston 18 year old subjects sample, it was found that their scores came the closest to scores found in the current study. While looking for similarities between the two samples, it was noticed that the sample sizes were almost identical in number and possibly that could have been one of the reasons for the similarity in scores and thus could likewise account for the vast differences found in the other samples. Whatever the reason or cause for this occurrence, there did exist unusually high external scores on behalf of the subjects used in the current 1998 study for both sexes. This could possibly be attributed to the lack of concern for such areas as covered in Rotter's I-E scale such as politics and career matters. Today's college students might be less concerned with these issues than before and thus might tend to be more external in their orientations or not personally involved enough to assume an internal stance. Certainly, that is only one

possible explanation and obviously other factors must taken into account when discussing this or any other finding.

Implications for Further Research

As addressed in Chapter 1 and 2, educational interventions for improving locus of control in order to promote a more internal stance has been extensively researched by such educational psychologists such as Ellen Skinner et al. (1990), Nunn and Nunn (1993), Dweck (1975), and many others. The apparent reasons for this push towards designing programs to increase students internal locus of control orientations rests certainly upon studies by Phares (1976), Findley and Cooper (1983), Kalechstein and Nowicki (1997) and many others that link internality with superior academic achievement. Thus these programs have been used with elementary, secondary and college students in order to teach or alter their sense of control over events toward the more internalized stance emphasizing personal control such as effort and self-determination tactics.

In an essence, these studies do shine a positive and hopeful light upon improving students academic achievement in school by altering their locus of control in the more internal direction. In the current study, unbelievably high scores from both sexes were encountered on Rotter's measure and on Trice's also. Particularly, the males in the study (who on average scored very external) also tended to have lower GPA's and grade scores. Thus I point to the first possible implication that maybe conclusions drawn from the studies mentioned above for improving internality could possibly to be used for students in this sample at Rowan University. Possibly interventions cited such as ones by Wilson and Linville in 1982 and Perry and Penner in 1990 that both used attributional retraining,

by Magnusson and Perry in 1989 that used expressiveness of instructors and contingency feedback with college students, and by Cone and Owens in 1991 that cited reasons for students to have accessible classes that teach study skills and adjustment for increasing academic achievement have overall been very successful and thus could prove to be worthwhile interventions to be used with college students at Rowan University.

Particularly, one suggestion would that colleges and universities should have available classes that teach study skills and college adjustment for incoming freshmen. For some students, the first few years of college can indeed be a frightening experience where study skills are key to survival and adjustment is crucial towards buffering stress from being on one's own, from intense college classes, and from the transition from high school to college life. Also as mentioned above, I believe that these classes should be somehow made accessible to the incoming freshman's schedule so that early in one's college experience one can learn how to study and prepare for college tests and course work before a rough year of low GPA's and low grades serve to discourage or force these students to abandon college altogether. For thus it has been noted that one half of college freshman tend to drop out after only one year and thus something must be done in order to ease this transition and to make the first year of college more pleasurable and less stressful by preparing them for the changes in academics, social life, and other issues (Steinberg, 1999). All in all, I would strongly urge in the future that programs for the students used in this study or other college freshman yet to come be instituted and possibly required by the colleges or university to help ease the transition to college by increasing study skills and knowledge and address college adjustment issues to keep individuals in college and on the right track from the beginning.

Furthermore, since Trice's measure seemed to most accurately measure academic locus of control and how it relates to achievement, it seems wise to maybe in the future have this measure be used in college with students. First it could possibly be used with those coming into college in order to identify those in need of relevant study skills and training. Also it could be used after interventions such as study skills training in college or elsewhere to see if the interventions achieved what was intended. Together with using Trice's measure as a valid measure of academic locus of control and by instituting relevant and effective study skills and adjustment courses to freshman college students, it should help to alleviate some of the problems frequently encountered the first year of college and thus in the future help to identify and help those in need of assistance before it is too late.

In regards to the replication of this study and its variables, a few future instructions or ideas should be addressed accordingly. Initially, one would entail that any future study should involve a large and more representative sample size. In addition, one would also suggest that multiple samples such as in Rotter's 1966 article be used and factored in for comparability of scores across the nation and with other countries. Another consideration would be to more accurately collect GPA and grades scores via the college registrar or teachers in order to have a more exact portrayal of academic achievement of each student rather than a rough self-report quote. Again, in addressing this area of academic achievement it seems important to address that possibly in the future that along with Trice's measure that other measures focusing specifically on academic locus of control or other personality measures related to academics be used. This could help shed light upon the many factors involved with predicting and correlating

student personality/attitude features with academic achievement to see how those students and others can benefit from interventions and other measures designed to help them achieve what they are most capable in school.

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