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Locus of Control and Outcome Expectancy:

A Complementary Model of
Women's Attributions to Failure

Submitted to the School of Psychology,
University of Ottawa, in partial ful-
fillment of the requirements for the
degree of Doctor of Philosophy

by

Verna-Jean Amell Semkow

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Curriculum Studiorum

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Abstract

Recent research suggests that women may accept failure more readily than men, because they have learned to expect failure rather than success. The purpose of this study was to determine: *One*, whether expectancy was the crucial factor in causal attribution theory, and whether it could be altered through exposure to a series of successful outcomes. *Two*, whether women would employ attributions in a predictable and systematic manner when faced with failure, if given an altered expectancy. And *three*, if given exposure only to failure outcomes, whether locus of control would differentiate same sex subjects with regard to their employment of self-protective attributions.

Eighty-nine female undergraduate students at the University of Ottawa, ages 17-71 (with a mean age of 22), were assigned to Internal and External Locus of Control groups by excluding subjects with scores in the mid-range (8-12) on the Rotter Internal/External Locus of Control Scale. These 89 subjects were then further divided into two treatment groups: an initial success subsequent failure group (SUCCESS), and an initial failure subsequent failure group (FAILURE). The results indicate that the treatment manipulation of altering outcome expectancy was effective in that SUCCESS subjects had higher probability of success ratings than FAILURE subjects throughout final failure trials. The second hypothesis was also confirmed: females given the expectation to succeed, employed systematic biased attributions to account for failure. The third hypothesis, that a motivational self-serving bias would be employed differentially by internal and external locus subjects, was not supported.

"The manner in which people account for their successes and failures plays a significant role in the attainment of excellence... The realistic employment of both internal and external explanations of performance by the individual is essential. Attributing all failures to luck or powerful others will not, in all likelihood, lead to persistence necessary for achievement. On the other hand, always attributing outcomes to internal factors (even when unwarranted) might lead to a degree of guilt or self-abasement that could impair optimal performance."

E.J. Phares, 1976

INTRODUCTION

INTRODUCTION

It is well documented that there is a difference in the attribution styles of males and females after success and failure experiences (Deaux, 1976; Deaux & Farris, 1977; Deaux, White & Farris, 1975; Dweck & Goetz, 1978; Feather, 1969; Feather, 1968; Feather, 1966; Feather & Saville, 1967; Gilmour & Minton, 1974; Ickes & Layden, 1978; Kuiper, 1978; Lefcourt, 1966a; Lefcourt, 1972; McMahan, 1975; Prociuk, Breen & Lussier, 1976; Prociuk & Lussier, 1975; Ryckman & Sherman, 1973; Weiner, 1974; Weiner, Heckhausen, Meyer & Cook, 1972; Weiner, Neirenberg & Goldstein, 1976). The difference is most striking after a failure experience. Males described as having a belief in internal locus of control and high self-esteem, attribute failure to an *external* condition: either the task difficulty or bad luck. However, females who were also identified as having an internal locus of control and high self-esteem attributed the failure to an *internal* condition: specifically lack of ability, and only secondarily did they attribute the failure to bad luck (Page, 1973). This externalizing of negative outcomes by men and internalizing of negative outcomes by women has come to be referred to as a sex difference in attribution styles (Ickes & Layden, 1978).

The problem here is that the locus of control construct posits that individuals with a generalized internal locus of control will engage in motivated attribution biases in the face of failure to maintain a sense of internal control and self-esteem (Ryckman & Sherman, 1973). How is it possible that these women appear to be internal in their locus of control? What effect would continued attributions to lack of ability have on (1) the level of self-esteem of these women; and (2) their perceived locus of control?

Considering that locus of control can be conceptualized as a broad personality trait and as a situational state; is it possible that the majority of women (the empirical data is quite convincing) in the achievement situation function as though they were externally controlled? The construct validity of the concept of locus of control as a personality trait is endangered if one answers "yes" to this question.

A more parsimonious explanation of the sex difference in attribution style, may be found in the achievement literature with respect to expectations of success/failure and the influence of consistent/inconsistent outcomes on those expectancies. It has been demonstrated that differential reinforcement of failure and success experience in academic achievement with school children eliminates the sex difference in attributional style (Dweck & Goetz, 1978). It therefore appears that the research in achievement settings clarifies the problem of attributions being made on the basis of a

simple internal/external dimension by adding a second dimension of the stability and variability of the causal attributions (Weiner, 1974). The research in this area clearly demonstrates the contingencies involved between expectancy of success (or failure), task outcome, and attribution. It also explores the impact of social learning on developing attribution biases. However, as Phares states (1976), the ramifications of the self-attributions females make in those situations (ability attributions after failing) encompass more than an achievement context. (See Beck, 1971, and the influence of negative self-statements on depression; Prociuk, Breen & Lussier, 1976; and Kuiper, 1978.)

Consider this: what is the affective consequence of continued acceptance of responsibility for failure? Do women not know how to engage in ego-enhancing, self-protective biased attributions? (Miller & Ross, 1975). Would women identified as having a perceived internal locus of control be able to shift their attributions in favour of self-protective biased attributions after repeated failure to avoid continued loss of self-esteem? Or, if one accepts Kelley's position (1971), that the attribution biases are not ego-enhancing, but are motivated by the need to justify continuation of control attempts and persistence at the task, why is it that these biases still do not occur in women? The issue here is not with demonstrating the presence of self-serving attribution biases, but concern about the *absence* of any such motive. And, if the findings

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of Dweck & Goetz (1978) are correct, can several years of learned biases be altered by manipulating the consistency of outcome of events and consequently the expectancy for success?

These questions constitute the foundation of the research presented here. The exploration of these issues will hopefully serve to "restore balance" to the incongruities in the empirical findings, the theory of outcome expectancy and the construct of locus of control. A blending of these theories (based on a model articulated by Weiner (1974)) will serve to:

- 1) yield a parsimonious outcome expectancy explanation of the results; and
- 2) enhance the substantive nature of the findings from a social learning perspective (see Phares, 1976).

The area of sex-linked attribution styles is critical in clarifying the conflicts between these two theoretical models, as neither alone adequately explains the findings to date (see Lefcourt, 1976).

The literature will be reviewed in three sections. The first section will present the work of a number of original thinkers in the area of interpersonal perception, social learning theory, locus of control, and achievement motivation (outcome expectancy), to establish a perspective in which to place the issues presented above, and to recognize the significance of the empirical findings on a much broader plane. The second section will be concerned with the actual differences obtained with respect to males and females, and some of

the issues will be explored. The final section will present the working model adopted for the purpose of this investigation and the predictions which can be generated from this model.

CHAPTER I

THE PROBLEM REVIEWED

Section 1: A Theoretical Foundation

In the past twenty years, social psychologists have produced a considerable body of research in the area of attribution. They have explored the relationship between an individual and his environment with particular attention to the individual's perception of control over his environment. This research has included the perception of causal relationships between outcomes and actions; the direction of responsibility for outcomes, whether under internal or external control, and the way in which people perceive or account for these outcomes. Several theoretical assumptions about control, responsibility, and the causal relationship are inherent in this research. Three major theoretical perspectives that have differing emphases and varying assumptions with respect to the perception of causal responsibility, will be presented in this section. The first theoretical perspective is Interpersonal Perception and Social-Learning Theory; the second perspective is Locus of Control; and the third perspective is Achievement Motivation.

The major focus of this section will be on the theoretical assumptions of these models. Some mention of empirical work will be made with the intent of outlining which aspects of the theory have been researched. The main body of empirical

findings will be presented in Section II. This section will provide the reader with a comprehensive perspective in which to place those empirical studies on sex differences in attribution style.

A. The Broad View: Interpersonal Perception,
Social Learning Theory

In 1958, Fritz Heider published a book entitled *The Psychology of Interpersonal Relations*. The theories, models and viewpoints in present day locus of control theory and achievement outcome expectancy theory had their origins in this book. Throughout his book, Heider discusses the conditions which affect the attribution of causality to personal (internal) or environmental (external) forces. These conditions rest on one basic assumption about man: man strives to maintain a sense of balance and stability in his world.

This assumption has several implications. First it suggests that man strives to affect some control in his environment through the perception of his power (to control) or his ability. Second, man judges (attributes) the causes of outcomes such that he maintains a balance between his perception of his ability and his assessment of his ability based on the actual outcome. This is commonly known as Heider's "balance theory" (Gilmour & Minton, 1974). For example, if a person's assessment of his personal ability is high, then success will tend to be attributed to the self, since success is consistent, or in balance, with the person's high, positive assessment of his

ability. In the case of failure, the responsibility for the outcome will be attributed externally, since failure is inconsistent, or out of balance, with the individual's positive assessment of his ability. Conversely, if a person's assessment of his personal ability is negative or low then the balance model will dictate that success be attributed to external influences, and that failure be attributed to internal sources, in order that balance be maintained.

Harold Kelley (1971) further developed the concepts of control and responsibility. His theory of attribution posits that there are logical inferences being made by a person about outcomes that allow for an increase in the amount of control one has in managing himself and the environment. This involves being cognizant of the *consistency* of the outcome information over time, the *consensus* that exerting control yields the expected effect, and the *distinctiveness* of the outcome. *Consistency* is evident in the stability or variability of the expected outcome. The outcome of a throw of the die is highly variable and inconsistent. The effect that effort has on a task yields a *consensus* about the personal control over an outcome. Trying harder when throwing a die does not have much influence on the outcome. And finally, if the outcome is *distinct* in that over ten trials you managed to throw 7 or 11 only once, there is less likelihood of attributing that outcome to personal control than if it were less distinct and occurred ten times in a row. Although the

emphasis here is on logical inferences, Kelley does acknowledge the presence of systematic biases and asymmetries in the use of available information. He posited that the purpose of attribution biases was in determining the continuation of control attempts.

The attribution to the self of success and the attribution to external factors of failure provides the basis for the continuation of control attempts. If attributed to the self, success is a reason to exercise one's own causal powers again. (Kelley, 1971, p.23)

These biases reflect a system partially in support of an internal locus of control orientation. This view promotes action-oriented purposeful activity.

For Kelley, the concept of control is introduced with respect to one's environment as a

sort of *balance* between controlling the *controllable* and controlling the *important*. Thus, on one hand, control tendencies will persist only if a person has some successes in exercising control. So it is essential that his control efforts be directed toward realms in which he has some chance of being effective. On the other hand, what is controllable is not always what is most important. To persist in attempting control with respect to important but intractable conditions is to experience repeated failure and, usually to dampen one's control efforts. But *not to attempt* to exert control in relation to such circumstances is unnecessarily to delimit the quality of one's life. Thus, some sort of compromise must be reached between limiting and extending one's control attempts--a compromise between, so to speak, a philosophy of external and internal locus of control. (Kelley, 1971, pp.22-23)

The motive Kelley has delineated for people's perception of causality and control is basically: to give meaning and purpose to our actions in the world. The influence of this motive on our attributions has been divided into three categories by Wortman (1976). They are: (1) the illusion of contingency; (2) the illusion of control; and (3) the illusion of freedom. Support for these categories has been found respectively in that:

- (1) subjects perceive a causal connection between chance occurrences;
- (2) people exaggerate their ability to influence uncontrollable outcomes (i.e. games of chance); and
- (3) people underestimate the extent to which their behavior is controlled by situational or external forces.

The studies reviewed by Wortman (1976) suggest that "people minimize the role of chance in producing various outcomes, exaggerate the relationship between their behavior and 'uncontrollable' life events, and tend to be unaware of the extent to which their behavior is controlled by external factors" (Wortman, 1976, p.43). To Kelley then, the reason people make attributions in this manner is that there is a motive to persist in attempting control over our environment.

Julian Rotter and his colleagues Chance & Phares (1972) explored causation and control from a social learning perspective. They refined Heider's hypothesis concerning the naive psychology of man by recognizing individual differences with respect to the belief in personal control. Those who

believe that the events in their lives are a consequence of their own behavior, skills or internal dispositions are described as having a belief in internal locus of control, while those who believe that events are unrelated to their own behaviors, and therefore beyond personal control, are described as having a belief in external locus of control. The emphasis for Rotter et al. (1972) was on personal belief rather than logical inference. This leads to a rather different exploration of interpersonal relations than Kelley's orientation. However, locus of control was not considered by Rotter et al. to be independent from the influence of the social context. As Rotter (1966) states, locus of control is not concerned with whether an individual is controlled from within or without. The emphasis is on the person's perception of the relationship between their behavior and reinforcement.

It is a generalized *expectancy*, as opposed to a specific expectancy, being an abstraction developed from a host of experiences in which expectancies have met with varying degrees of validation.¹ (Lefcourt, 1972, p.2)

As Phares (1976) states, social learning theory goes beyond traditional learning theory because it assumes that "reinforcement will 'stamp in' behavior only when the causal link is perceived by the individual." (Phares, 1976, p.3) It attempts to study personality through the interaction of the

¹The emphasis is mine.

individual and his meaningful environment. It encompasses both general and specific determinants of behavior (primarily learned social behavior) as well as the individual's perspective of those determinants, his attitudes, values and expectations.

One of the basic assumptions in social learning theory about man, is that there is a purposeful quality to human behavior; that behavior is goal directed, or motivated, and that positive and negative motivators can be determined by observing the "direction" of the behavior. Another basic assumption is that expectancies that the goal will occur are regarded as prime determinants of behavior, reinforcement alone does not explain behavior adequately.

The complexity of social learning theory (requiring that expectancies, reinforcement values, and the situation all be considered in making predictions about behavior) is preferable to relying on a single variable such as a trait, habit, or other internal characteristic. An individual's behavior potential is far from being static; it changes as that person encounters new experiences that in turn lead to changes in his or her expectancies or in the values he or she ascribes to reinforcements.

(Phares, 1976 p.14 *sic*)

Human behavior is complexly determined by several variables, including reinforcement value (need), expectancies, and the psychological situation. While locus of control is an important determinant of behavior, its effects are moderated by these other social learning theory concepts including reinforcement value and situational determinants.

Therefore, its effects need to be considered in relation to these other concepts. One should not expect strong relationships to occur if predictions are made solely from locus of control.

With this in mind, the dimension of locus of control was explored for its utility in predicting attributions. Of the wide range of causal attributions which an individual can posit to explain an outcome (e.g., mood, ability, time of day, task difficulty, fate, etc.), Rotter chose to single out two attributes which he felt were clearly representative of internal (or personal) control and external (or environmental) control. These were *ability* and *luck*. From his research and those of others, many aspects of achievement motivation and personality have emerged. Rotter was able to develop a scale of Internal-External Locus of Control (1966) to distinguish individuals on this dimension with respect to broad generalized concepts (i.e., politics, academics and leadership, etc.). Other research has supported the validity of this construct and scale, and has related these concepts to other aspects of personality such as self-esteem (Ryckman & Sherman, 1973). As Phares (1976) stated, the I-E literature is very diverse and deals with several needs other than achievement and involves a much wider array of behaviors than attribution. However, a great deal of interest has centered on the internal-external control dimension and its usefulness in predicting attributions in an achievement context and in personality

research exploring the relation of self-esteem and depression to locus of control. Let us now consider some of that research.

B. Locus of Control

This section will confine itself to the review of two areas of locus of control research, namely the application of the control construct to the personality dimensions of interest to this research paper, and secondly the investigation of achievement behavior and attributions. For a comprehensive review of locus of control research see Joe, 1971; Lefcourt, 1966b, 1972, and 1976; and for a complete bibliography see Throop & MacDonald, 1971.

The research to be cited here has tested two basic assumptions of the locus of control construct. The first assumption which has been tested is that given differentiation on the locus of control dimension, there should be accompanying differences with respect to the valuing of inner qualities or characteristics. This should then result in identifiable differences in self esteem and the employment of self-serving attribution biases. The second assumption is that given knowledge of a person's locus of control we should expect that someone *internal* in locus of control, will make attributions to an internal determinant, i.e. *ability*, while an *external* locus person should make attributions to an external determinant, i.e. *luck*.

1. *Characteristic Differentiation of Internal and External Locus of Control*

A basic characteristic of the internal individual appears to be their greater efforts at coping with or attaining mastery over their environment. Phares (1976), in a review article, noted the following characteristics of internal persons:

they have superior cognitive processing skills;

they seem to acquire more information, make more attempts to acquire it, are better at retaining it, are less satisfied with the amount of information they possess, are better at using information and devising rules to process it, and generally pay more attention to relevant cues in the environment.

Internals also exhibit greater self-control, and there is some evidence to suggest that internals are more likely to be cautious and to engage in less risky behaviors.

Joe (1971), in another review article, notes that externals, in contrast to internals, are relatively anxious, aggressive, dogmatic, and less trustful and more suspicious of others, lack self-confidence and insight, have low needs for social approval, and a greater tendency to use sensitizing modes of defenses. Internals tend to manifest greater interest and effort in achievement related activities than do externals.

The rationale for internals to expend more effort in the achievement setting is that:

in order to continue to pursue success one must, at least to some degree, attribute the locus of responsibility to internal factors. Otherwise, the pursuit of excellence becomes rather irrational, and the satisfaction that normally comes from success is impossible. That is, persistence in achievement behavior, the enjoyment of success, or the experience of disappointment in failure all seem necessary to attain competence, but they all seem inappropriate when the control over reinforcement is thought to reside in factors over which the individual has little control.

(Phares, 1976, pp.114-115)

Some support for this assumption has been found in that internals attach greater value to skill attained outcomes while externals prefer chance activities (Phares, 1976).

Midgley & Abrams (1974) lend further support to this notion.

They gave female subjects the Rotter I-E scale and M. Horner's incomplete story lead, designed to evoke achievement anxieties. They found that motive to avoid success stories were significantly positively associated with external control scores.

The external control orientation has been described as the phenomenological equivalent of helplessness by Lefcourt, Hogg, Struthers & Holmes (1975). In tasks using anagram sets of varying difficulty, they found that high confident internals attributed responsibility for outcomes to themselves more than did low confident externals. This difference was most prominent when subjects failed. Lefcourt *et al.* (1975) account for this difference by stating that:

it has been assumed that internals experience their success and failures as more meaningful events than do externals, who may regard many of such experiences as less personally relevant. Consequently, externals should be less defensive about negative feedback than should internals.
(p.391)

There is some support for this interpretation in that internals in recalling outcomes "forget" their failures. Gilmour & Minton (1974) report that internals make more internal attributions for success and external attributions for failure than do externals, who externalize the cause for success and accept the blame for failures. This pattern of internals "externalizing" failure, and of externals accepting failure has been investigated with respect to self-esteem, depression, and the employment of self-serving biases. Ryckman & Sherman (1973) administered Rotter's I-E scale and items from a feeling of inadequacy scale. There were no sex differences for males and females. However, subjects were differentiated in that subjects with higher self-esteem tend to be more internally controlled. In a study of depressed and non-depressed females, Kuiper (1978) found that only depressives exhibited internal or personal attributions for failure; they lacked a self-protective bias. Does this suggest then, that not employing a self-protective bias makes one prone to depression? Does it also follow that if only internals have an investment in employing self-serving biases, that most depressed people have an external locus of control?

First, it has been suggested by Rotter (1966) and by Lefcourt (1966a) that at either end of the control dimension there may be pathological extremes. The depressive could be an internal person who takes personal responsibility for all outcomes with little acknowledgement of environmental contingencies. Secondly, there is need for further support of the self-serving bias hypothesis. Miller & Ross (1975) in a review of this issue point out that research on the internal-external dimension does not provide strong evidence for self-serving biases in causal attributions. While evidence for self-protective attribution biases is minimal, there are at least some data consistent with a self-enhancement position. In this position it is expected that internals will attribute success to themselves to enhance their perception of control over reinforcements and ascribe greater value to their abilities. Despite the controversy over motivational and non-motivational interpretations of asymmetrical causal attributions, Miller & Ross (1975) state that it would be premature at this point to deny the possibility of self-serving causal attributions. This aspect of the attribution process and its relationship to locus of control will be reconsidered in Section II with attention paid to the sex difference in the use of attribution biases.

The preceding section has outlined some of the characteristics with which the locus of control dimension differentiates individuals. It has also touched on some of the issues

which result from an extension of the control construct to other aspects of personality. It is evident even in this brief overview that although the I-E rationale is sound, there is a need for caution in the interpretation of results.

What then is the status of the locus of control dimension in achievement research?

2. *Perceived Control and Attributional Responsibility*

In this section, the assumption that the direction of the locus influences the direction of the attribution will be considered.

Investigations of this assumption can be divided into two major groups. The first group includes those studies which investigate perceived control as a *generalized expectancy*. For example, prior to attempting a task an individual who believes he does not control the outcome of events in his life (under external control) will expect success or failure to occur due to chance factors beyond his control (Fanelli, 1973; Feather, 1966; Karabenick & Srull, 1978; Lefcourt, 1966b, 1972, 1976; Rotter, Chance & Phares, 1972; and Weiner, 1974). The second group includes those studies which vary the *task structure* in order to influence the perception of the level of expected control. For example, a task which varies the outcome from trial to trial will result in any individual perceiving that he has little control over the outcome, hence he attributes success or failure to chance (Feather, 1968;

Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971). (The majority of the research to be presented in Section II is of this type.)

Much of the early research into the application of the control construct to predicting expectancy for future reinforcement (success or failure) has come to be known as skill/chance research. It followed from a basic assumption in the I-E construct: that internals should value their skill or ability, an internal characteristic which they can utilize to obtain reinforcements; and that externals should rely on chance or luck as they do not value as highly their abilities. This assumption should be verified in a number of ways: Internals should prefer skill tasks while externals should prefer chance tasks; ambiguous tasks should be differentially perceived; and expectancies for future reinforcement should differ in accordance with the individual's general expectancy (locus of control) regardless of the situational determinants. The studies tested these hypotheses in a number of basic designs. The experimenter often presented chance or skill instructions prior to onset of the task, or the task itself was clearly representative of a skill or chance task, i.e. betting, or the task was so ambiguous as to allow subjects to apply their own evaluation of it as a skill or chance task. The subjects were required to indicate their confidence or probability or chance in obtaining future success or failure on the task.

In a review of the skill/chance research, Rotter (in Rotter, Chance & Phares, 1972) found support for the majority of these expectations. The high internal subject with a strong belief that he can control his own destiny was likely to

- (a) be more alert to those aspects of the environment which provide useful information for his future behavior;
- (b) take steps to improve his environmental condition;
- (c) place greater value on skill or achievement reinforcements and be generally more concerned with his ability, particularly his failures; and
- (d) be resistive to subtle attempts to influence him. (p.294)

Further, if a subject perceived a situation as under luck or chance or experimenter control, they were less likely to raise expectancies for future reinforcement as high, following a success, than if they perceived the reinforcement to be dependent upon their own skill or efforts. In *chance* tasks the "gambler's fallacy" was found. Subjects rated their future expectancies as better (up) after a failure, and as worse (down) after a success. Under *skill* conditions, the behavior of a subject follows what might be considered a more logical or commonsense model. Up after success and down after failure. It was also shown that given an ambiguous task, subjects defined it as skill or chance determined in correspondence to their general expectancy of internal or external control. Krovetz (1974) found support for this as well.

Using an ambiguous task, internals perceived the task as more skill controlled than externals did, while externals stressed the influence of chance more than internals did. Applying varying reinforcement conditions (10,30,50,70 and 90% reinf.) Krovetz found that internals vary their expectation of control within the bounds defined by the level of reinforcement while external subjects perceived the outcomes as chance influenced until the bounds were well exceeded, i.e. 90% level, at which point they attributed the outcomes to ability.

Karabenick & Srull (1978) also showed the influence of I-E on general expectancies. In their study, internals cheated more when a task was described as requiring skill, while externals cheated more when chance presumably determined performance outcomes. It was hypothesized by the authors that internals cheated to conform to their status on the internal dimension of ability and that externals were concerned with maintaining a belief in their status as fortunate individuals. These studies demonstrate a close relationship between generalized expectancies and task induced specific expectancies.

However, the skill/chance research did not support the hypothesis that an individual's general expectancy would override situational determinants in predicting reinforcement expectancies. The more clearly defined a situation, the lesser role such a generalized expectancy played (Rotter *et al.*, 1972). This finding was most prominent in achievement motivation research where it was predicted that internal people would show

more overt striving for achievement than those who felt they had little control over their environment (externals). (Rotter is careful to indicate that the value of the I-E scale and dimension is in indicating the generalized expectancy of the value placed on internal control not the preference for internal or external control.) In achievement settings, I-E did not predict the reinforcement expectancies. This was further compounded by the presence of "defensive externality" especially with males. Contrary to the construct "many such people still maintain striving behavior in clearly structured competitive situations but defensively account for failures by expressed external attitudes" (Rotter et al., 1972, p.288). It was also noted that a tendency to forget failures was related to scores on the internal end of the dimension. Rotter (in Rotter et al., 1972) proposes that in highly structured academic achievement situations there is more specificity determining the response and that I-E has less influence. Fanelli (1973) administered Rotter's I-E scale and Edwards Personal Preference schedule need for achievement items. He had 80 female subjects perform tasks to succeed and fail, and attribute to themselves the percent of responsibility for achievement in general and the outcome of the task. Self-ratings, performance scores and percentages of responsibility were related to need for achievement and locus of control. Significant interaction effects were found between measures of need for achievement and locus of control with regard to performance scores, but not with regard to the attribution of responsibility.

Although there was support for the I-E dimension in describing general expectancies, the utility of the construct in making predictions in clearly defined situations was now in question. Did this reduce the meaningfulness of the construct or did it simply define its limits? Phares (1976) examined this issue.

First, Phares points out that locus of control has been studied with a variety of methods and different operational definitions which may or may not be functionally equivalent. They include: lack of control, instability, lack of freedom, and unpredictability or complexity. Their equivalence is still to be determined empirically. Second, although this certainly is a component in the inconsistent findings, it may be more fruitful to place the research in the following perspective. If one conceives of I-E as a *motive* then individuals with a belief in internal locus of control would be expected to make an effort to exercise power or influence over their environment. This expectation must be qualified.

...an internal set of expectancies about the nature of control, while necessary, is not sufficient. People must also be motivated to achieve a given reward toward which their mastery efforts will be directed. And they must be reasonably confident of the success of their efforts.

(Phares, 1976, p.74)

Phares makes it clear that locus of control should not be abandoned. That it is a valuable construct and that it should not be surprising that as a generalized expectancy it can be

altered by a variety of environmental forces. What is the nature of the alteration and how is the control construct employed?

We have already seen that the tasks can be defined in such a way as to groom or influence expectancies. The skill/chance research modifies individuals initial (or general) expectancy often through task instructions. A second way in which expectancies are influenced is through precise patterning of success and failure outcomes. The effect of this manipulation is usually tested by asking the subjects to indicate their confidence in obtaining future success (Feather, 1968). In this manner, it is possible to predict shifts in expectancy from the stability of the causal attributions and secondarily from the locus of control. Predictions derive from knowledge of the consistency of reinforcements (outcomes) and the causal stability of attributions. Weiner (1974) contends that it is this aspect which exercises the greatest power in predicting expectancy shifts. He states:

the research findings indicate that ability and task difficulty (factors respectively classified as internal and external in locus of control) are both perceived as causes of personally consistent events, whereas effort and luck (also respectively classified as internal and external in control) are both perceived as causes of inconsistent events. It is therefore suggested that the increased expectancy of success following a positive outcome, i.e. the anticipation of consistent outcomes, results from attributions to what might be labeled as stable elements (high ability and/or easy task), regardless of the locus of control of the causal attribution.

Conversely, relatively smaller increments or actual decrements in the expectancy of success after goal attainment, i.e. the anticipation of inconsistent outcomes, may result from attributions to what might be labeled as unstable elements (unusual effort and/or good luck), regardless of the locus of control of the causal factor. In sum, explanations of the expectancy shift literature may be falsely attributing the differential probability changes in skill vs. luck situations to the locus of control dimension, when the prime determinant of expectancy shift may be the stability of the attributional dimension. (Weiner, 1974, p.80)

Weiner (1974), Lefcourt (1972), Rotter, Chance & Phares (1972), and Phares (1976), in reviews of the locus of control literature, have concluded that the predictive power of the I-E construct is increased considerably when it is combined with other constructs. In achievement motivation research, the construct that has recently received considerable attention and support is the dimension of stability and variability of causal attributions. This brings us to the third perspective in this chapter.

C. Beyond Locus of Control: Achievement Motivation, Stability of Causal Attributions, and Outcome Expectancy

Like the positions presented above, the perspective to be presented here also emphasizes an individual's perception of the inter-relation between his behavior and reinforcement. It does not emphasize the locus of an attribution in determining future expectations. For example, if one attributes an outcome to an internal cause, it is considered that this

allows for a sense of control and consequently should predict future expectations. But as we have seen, the certainty is not in this dimension. The perspective to be presented here emphasizes another dimension of personal perception: the stability of causal attributions. For example, if one accounts for an outcome as being the result of stable factors, then future outcomes can be predicted on the basis of this stability, regardless of the locus of the attribution. This was the dimension Bernard Weiner probed.

The foundation for the stability dimension is in the combined perspectives of Heider and Kelley. From Heider, Weiner *et al.* (1971) adopted the notion of enduring or *stable* characteristics in contrast to transient or *variable* characteristics. Weiner posited that the stability of causal attributions had more influence on expectations for future outcomes, than did locus of control. He further stipulated that stable causal attributions should result as logical inferences from the consistency of an outcome; and that variable causal attributions would be logically inferred from inconsistent outcomes. In this vein, he found support in Kelley (1971) who posited that man uses logical inferences to determine the usefulness of continued control attempts. Kelley also posited that alterations in the consistency of a task outcome could produce systematic attribution biases. Weiner was determined to demonstrate that the addition of the stability dimension greatly enhanced the predictive power in attribution research.

Exploration of this dimension was guided by the research in locus of control. Early reports by Weiner (1972) are quite adamant that locus of control has little predictive utility. However, in more recent works (1974) he attempts to combine locus of control with his information processing model to include an affective component in attributions. This recognition of the value of locus of control was no doubt sparked by the unpredicted findings with regard to females in achievement settings--a finding Weiner initially is content to ignore as "the theories under consideration do not make differential predictions regarding success versus failure outcomes" (Weiner, 1976, p.61). This is a brief historical perspective of the development of Weiner's model. Let us now consider precisely what form the model takes and what empirical support for this position exists.

An outcome which is attributed internally can more specifically be ascribed either to relatively stable properties of the self (the person's *ability*) or to relatively transient properties of the self which may or may not obtain on a subsequent trial (the amount of *effort* expended). Similarly, an external attribution may refer either to relatively stable properties of the environment (the *difficulty* of the task) or to fluctuating environmental characteristics (*luck*). (Kukla in Weiner, 1974, p.82)

By developing a two dimensional schema (see Figure 1), Weiner has eliminated the confound that is present in the skill versus chance literature--namely that skill is an internal and *stable* attribute; while chance is an external and *variable* attribute.

Stability	Locus of Control	
	Internal	External
Stable	Ability	Task Difficulty
Unstable	Effort	Luck

Figure 1: Weiner's Two-Dimensional Taxonomy

Studies have shown that attributions to the stability of causal factors, influence subsequent expectancy of a success, following a success or failure. For example: if success is attributed to stable high ability, the expectancy for future outcomes at the same task is for success. If failure is attributed to the stable difficulty of the task, the expectancy is for repeated failure (or little success) at that task. Attributions to unstable elements signify that future outcomes may differ from the prior outcome, for example, failure is perceived as possible after a success and vice versa--the gambler's fallacy (Deaux, White & Farris, 1974; Dweck & Goetz, 1978; Feather, 1968; Feather, 1969; Fontaine, 1975; Frieze & Weiner, 1971; Ickes & Layden, 1978; McCaughan, 1978; McMahan, 1973; Meyer, 1978; Valle, 1974; Valle & Frieze, 1976; Weiner, 1974; Weiner, 1972; Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971; Weiner, Heckhausen, Meyer & Cook, 1972; Weiner, Nierenberg & Goldstein, 1976). As we see here, there are several

key elements in the model: the subject's initial expectations, based on past experiences; the consistency of the outcome with past outcomes; and the stability of the causal attribution. What is the inter-relationship of these elements?

Weiner *et al.* (1971) employ an information processing model to define the interaction of these elements. A person develops an expectation for success or failure from their history of past success and failure, and it is this pattern of reinforcements which determines the subjective expectancy of the individual. The individual then evaluates the consistency of an outcome with respect to his/her expectations, and with respect to the pattern of reinforcement itself. If the outcome is consistent with expectations and repeated, an *inference* is made that the outcome be accounted for as due to stable (and internal) factors. If an outcome is inconsistent with expectations but is *repeated* over time (highly reinforced), then the inference is again made that the repeatable nature of the outcome is due to a stable factor possibly external to the subject. Stability is an inference, a judgment, derived from prior expectations and knowledge of the pattern of the outcomes.

A brief illustration of this relationship with respect to the four attributions will be presented here. It is excerpted from Frieze & Weiner (1971). A more complete presentation can be found in Appendix A.

...ability may be judged from the number, percentage, and pattern of past success experiences, both at the attempted task and at similar tasks; effort might be deduced from the persistence at an activity, perceived muscular tension during performance, etc.; luck can be inferred from the randomness of the outcomes or from the perceived nature of the task; and task difficulty may be determined by social norms indicating how others have performed at the task. (p.591)

The importance of the stability or variability of the attribution is in predicting future expectations for success or failure. It is suggested that:

the increased expectancy of success following a positive outcome, i.e. the anticipation of consistent outcomes, results from attributions to what might be labeled as stable elements (high ability and/or an easy task), regardless of the locus of control of the causal attribution. (Frieze & Weiner, 1971)

Complementarily, a decrement in the expectancy of success after goal attainment, i.e. anticipation of inconsistent outcomes, is due to attributions to variable elements such as effort or a change in luck. Consistency with one's own past performance is ascribed to ability and task difficulty, while inconsistent outcomes give rise to luck and effort attributions.

There is considerable empirical support for the model; a few of the studies which highlight some of that research will be presented here. McCaughan (1978) found support for the contention that the stability/instability dimension is the basis for influencing changes in expectancy. He found

that the predictive power of the dimension was enhanced provided repeated success or failure experiences are received. When random success or failure, or no external feedback is given, the magnitude of the expectancy shift is not as great. This suggests an imbalance in the model; that people's behavior is more predictable given consistent outcomes than inconsistent outcomes. However, McCaughan carefully uses the words "magnitude" and "enhance" which suggests that the predictions can still be made in a systematic fashion but that more certainty obtains from consistent and repeated outcomes. Valle (1974) explored the relation between initial expectation, causal attribution and predictions for future performance. She had business students evaluate a salesperson's profile and state their expectation for the person's sales performance. They were then told the salesperson had a very high record of sales. They were asked to make attributions to account for this outcome, and finally were asked to predict how this person would perform in the future. She found that when performance was consistent with the initial expectation, causal attributions tended to be made to stable characteristics and predictions for the future were consistent with the performance. When the performance was inconsistent with initial expectations, causal attributions tend to be made to unstable characteristics and predictions for the future were less like the performance and more like the initial expectancy. Valle & Frieze (1976) employed the same design in a subsequent study to determine

the mediating value of attributions. They found support for the following hypotheses:

- H₁ The stability of an attribution is a function of the difference between the person's initial expectation and the actual outcome.
- H₂ The more an outcome is attributed to stable causes, the greater weight that will be given to that outcome in determining predictions for the future.
- H₃ Change in expectations will be a function of the difference between initial expectations and actual performance.
- H₄ By manipulating causal attributions, it is possible to lessen or increase the amount of weight given to an outcome when making predictions for the future.

Both of these studies have implications for employer's expectations with respect to handicapped and other minorities.

We can now see the value of the stability dimension in Weiner's model. But what of locus of control? Weiner incorporates it in his model but redefines its function. He suggests that:

internal-external locus of control should perhaps be dislodged from the conceptual foundation of social learning theory and expectancy of reinforcement, which it does not predict, and be placed within a broader cognitive framework. (Weiner *et al.*, 1976, p.65)

In doing this, Weiner has explored the effect of cognitive attributions to internal or external "responsibility" for an outcome and its affective consequences. He found that high achievers take great pride in success and relatively little shame in failure (Weiner, 1974). Low achievers, however,

take little pride from success and great shame from failure.

It has been demonstrated that locus of control influences the affective reactions to an event, with internal ascriptions (ability and effort) magnifying emotional responses. Further, attributions to effort, which is perceived as distinctly subject to volitional control, maximize personal pride and shame for success and failure as well as the rewards and punishment given to others.

(Weiner, 1974, p.103)

It is suggested by Weiner (1974) that locus of control influences emotional reactions rather than goal expectancies. Again, empirical data indicates that perceptions of ability and effort expenditure influence the rewards and punishments dispensed for success and failure, as well as feelings of pride and shame.

Weiner has devised an attributional expression of Expectancy x Value theory which incorporates these findings.

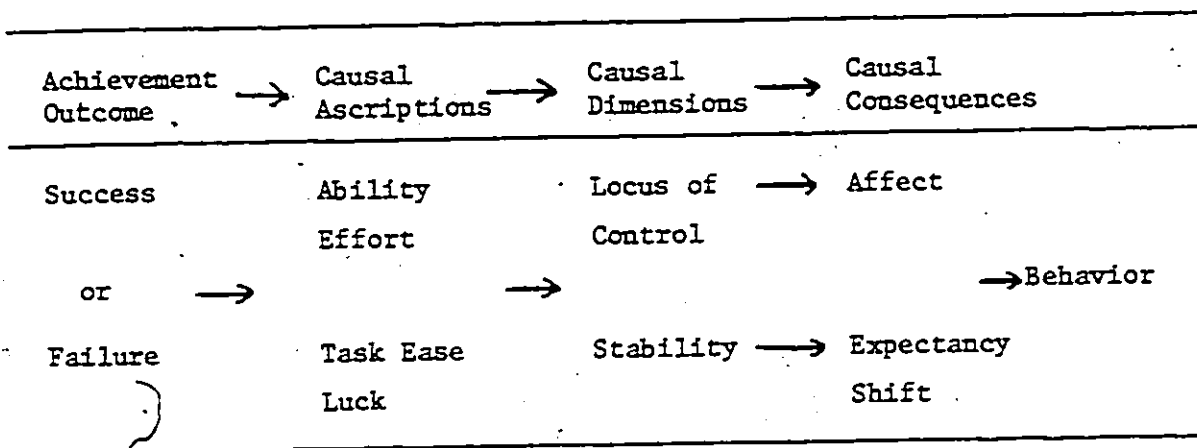


Figure 2: Expectancy x Value Theory of Action

The diagram specifies a temporal order of events; thoughts (attributions of causality) precede expectancy changes and affective reactions, and determine subsequent action. It is interesting to note that expectancy shifts and affective consequences are not in a one-to-one correspondence (see Appendix B). For example, one may have a decreased expectancy for future success for two reasons: (1) if one attributes the failure to the difficulty of the task, the affective consequence is little negative affect; (2) if one attributes failure to a lack of ability, then one experiences considerable negative affect. Studies manipulating causal attributions may make it possible to weigh independently the influence of expectancy and affect on subsequent behavior. (Weiner is employing the concept of locus of control from the perspective of responsible causal inference--a value judgment with potentially strong affective connotations.)

Sohn (1977) investigated the affect-laden qualities of attributions and pointed out that a drawback in the model was that by employing the affects of pride and shame the moral tone of the emotions demanded that an attribution with similar moral value be employed. This, Sohn states, is why effort attributions appear to be more affect laden. He clarified the issue by asking subjects to indicate the happiness or unhappiness they would experience if they received an A in their course due to ability and effort combinations, i.e. 80% effort and 20% ability vs. 50% effort and 50% ability. For this emotion,

Sohn found a closer relationship of ability to happiness. Weiner (1977), in a reply to Sohn, accepts the critique and elaborates the original conception to indicate that the range of emotions which can be displayed in an achievement context is very extensive. He concludes that even Sohn's expansion is now too restrictive.

The inclusion of an affective component increases the flexibility in the model. It allows for an exploration of attribution biases that are not systematic from the perspective of ego-enhancement or defense. Fontaine (1975) studied the circumstances in which people base their causal attributions over outcomes on logical inferences drawn from the temporal and inter-personal consistency of these outcomes, as opposed to less rational criteria such as ego-oriented considerations. In an "other-attribution" simulated design, the results conformed to the consistency model; in a self-attribution design, little support for the consistency model was found. Fontaine concludes that there are indications subjects relied on ego-oriented considerations to make their attributions. The difficulty with this study is the post hoc nature of the interpretations and secondly the use of bogus outcome feedback and inter-personal (as opposed to intra-personal) comparative standards. The "ego-investment" of the subjects is questionable, so why should they employ ego-defensive biases? Despite the problems with this study, there are other indications that some justification exists

for such motivational explanations. Gould & Sigall (1977) studied the relationship of empathy and outcomes on attributional judgments. When observers were instructed to be empathic, they made more situational allowances for an actor to fail to attract a female, than if they were instructed simply to observe. Observers made "dispositional" attributions for success and failures. These authors interpret their findings as demonstrating the effect of affect on differential information processing. (One could also speculate that these findings support an ego defensive motivational explanation as the empathic observers had more investment in the actions of the actor than did observers.) Weiner & Sierad (1975) investigated further whether cognitions pertaining to the causes of success and failure mediate achievement strivings. They found that when failure outcomes could be attributed to a placebo pill, high achievers saw the outcome as unchangeable and decreased their performance, while low achievers increased their performance. This does suggest a mediating influence of cognitions. The authors extrapolate from this finding and conclude:

Few psychologists would deny that individuals have self-concepts such as "neurotic," "dumb," "industrious," and so forth. These self-perceptions have motivational significance and are available to be invoked by an individual to explain his or her behavior. The instances in which an actor makes self-ascriptions may be as prevalent as the hypothesized bias toward situational attributions. Further, self-ascriptions are likely to be of greater clinical importance than external attributions. Internal

ascriptions magnify affect, and as Freud's internal stimuli, they may be perceived by the actor as causes "from which there is no flight" (p. 118, Freud, 1915). (p.420)

In summary, the achievement motivation research employing Weiner's model has concentrated on three major areas: (1) information processing and the effects on causal attributions; (2) types of causal attributions to explain events; and (3) the effects of various causal attributions on affect, expectancies, and subsequent achievement strivings. Some of the findings are that expectancy changes are related to the stability dimension of the two dimensional system. Outcomes attributed to internal factors are experienced with more pride or shame than outcomes seen as caused by external factors. Internal attributions are made for outcomes unique to the person. And actors are seen as more responsible for success than failure (Weiner, Heckhausen, Meyer & Cook, 1972).

Summary

In Section 1: A Theoretical Foundation, several perspectives on man's perception of contingency and causal responsibility were presented. Heider's "naive" psychology of man established the foundation from which the other perspectives developed. Kelley's contribution as a refinement of Heider's "striving for balance" to the "need for justification and continuation of control attempts" was shown. Rotter's test of the importance of valuing inner qualities, in the development and expansion of the construct of locus of control

was explored. Its value in defining personal characteristics and its limits in predicting an individual's expectations were examined. And finally, an achievement motivation model proposed by Weiner that incorporated the stability dimension proposed by Heider, the locus of control dimension proposed by Rotter, and the importance of consistency and logical inference as stressed by Kelley was presented.

This comprehensive model allows one to manipulate and explore the effect of consistent outcomes on attributions, and the expectancy for success, and to anticipate the affect which corresponds to the causal attributions. It allows for interpretation of attribution biases from a systematic outcome expectancy analysis, and from a self-serving locus of control analysis, with consideration of the affect and value placed on internal/external attributions.

This is the model adopted in this paper to comprehensively explore the issues involved in the sex differences identified with respect to failure experiences in achievement settings, as presented in the Introduction to this thesis.

It is now necessary to consider what documentation exists of the sex differences in attribution style and some of the current explanations for those differences.

Section II: Gender Differences in Attribution Style

In the Introduction to the thesis in Chapter I, several questions were raised regarding the finding of differential responses by males and females to failure outcomes in achievement settings. Some of these questions concerned:

(a) the apparent relationship of self-esteem to locus of control; (b) the impact of differential expectations on the behavior of males and females; and (c) the resultant effects of the externalizing of failure by males and internalizing of failure by females. In this section, each of these aspects of the problem will be considered.

A. Sex Differences in Self-esteem and Locus of Control

What is self-esteem? Coopersmith (1967) clarified the meaning of the term in the following manner:

By self-esteem we refer to the evaluation which the individual makes and customarily maintains with regard to himself; it expresses an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, successful, and worthy. In short, self-esteem is a *personal* judgment of worthiness that is expressed in the attitudes the individual holds toward himself. It is a subjective experience which the individual conveys to others by verbal reports and other overt expressive behavior. (pp.4-5)

Coopersmith identifies four major factors which contribute to the development of self-esteem. They are:

- (1) The amount of respectful, accepting, and concerned treatment that an individual receives from the significant others in his life;
- (2) our history of successes. These indices of success and approval will not necessarily be interpreted equally favorably by all persons;
- (3) the experiences are interpreted and modified in accord with the individual's values and inspirations; and
- (4) one's manner of responding to devaluation. Persons may minimize, distort, or entirely suppress demeaning actions by others as well as failures on their own part.

This ability to maintain self-esteem in the face of negative appraisals and discomfiture have been described by such concepts as controls and defenses. These terms refer to the individual's capacity to define an event filled with negative implications and consequences in such a way that it does not detract from his sense of worthiness, ability, or power. (p.37)

The relevance of these factors to the problem under consideration is quite apparent. If women show a pattern of accepting failure, then the implications with respect to Coopersmith's factors are that we should expect a concomitant detraction in their sense of worthiness, ability, and/or power. Ickes & Layden (1978) suggest that this may be so. That in achievement settings, females resemble low self-esteem subjects. They found that males in general, resembled high self-esteem subjects, in that after a positive outcome they rated *internal causes* as more probable than corresponding females rated them. Females resembled a low self-esteem group as they tended to give slightly higher ratings to internal causes after a *negative*

outcome than did males. (The differences are not large and may be confounded by initial differences in expectancy of success.) These authors conclude that "females in general--regardless of their attributional style and self-esteem--may be socialized to react to failure or frustration in an achievement situation by essentially giving up." (p.143) Debilitated task performance following a "failure" experience is related to differences in attributional style and gender but is not related to differences in self-esteem (Ickes & Layden, 1978). Although female subjects apparently have different levels of self-esteem, the pattern of responses is similar, in accordance with their gender. How is this possible?

Ryckman & Sherman (1973) contend that both men and women with higher self-esteem tend to be more internally oriented. If that is so, then why is there a difference in attribution style?

Lefcourt (1976a) demonstrated that internals employed humour more readily than externals under potentially stressful conditions. The humour, it is proposed, functions to preserve the sense of self by creating a healthy distance between one's self and the problem. Lefcourt is emphasizing the influence of locus of control in protecting the self. Should not this aspect override sex differences?

There is a sound rationale to support an inter-relationship between locus of control, self-esteem, and attribution. Why is it these patterns appear to hold for men but not for women?

Let us consider more closely just what are the differences.

B. Sex differences in Achievement Motivation and Expectation for Success

The relationship between achievement motivation and locus of control for successful events is undetermined (non-existent?) for females.² The relative weakness of the findings among female subjects is not entirely unexpected; prior studies of achievement behavior and locus of control also yield inconsistent results with females. (Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971.)

This statement, I believe, reflects more on these authors' eagerness to avoid contradictions than it does on their theoretical acumen. Surely a re-examination of the theory is warranted. To deny the inconsistency by simply stating that others, too, have found it, is unacceptable.

Feather (1966; 1967; 1968; 1969) in his empirical work, and Deaux (1975; 1976; 1977) in her theoretical and comprehensive research, shed some light on the mechanism which results in the inconsistent findings with women. They also entertain some hypothetical reasons for the operation of these mechanisms.

In a series of studies (1966-1969), Feather investigated this problem by manipulating the outcome of the tasks presented. Initially, this was accomplished through the suggestion

²Females have a tendency to attribute *success and failure* to luck more often than to any other causal attribute (Deaux, 1976).

of an expected peer level of performance; later, it was accomplished through the use of anagrams of varying level of difficulty. The subject would be introduced to either five success or five failure anagrams, before attempting ten anagrams of moderate difficulty. Feather required male and female subjects to determine the probability of success on each subsequent anagram,³ and to attribute their success or failure on the anagrams when the task was complete. This type of study has the advantage of exploring the sex difference regarding attribution in conjunction with the expected level of performance. In doing so, it takes into consideration a variable which may differ due to prior dispositions and may not be equivalent for all subjects at the onset of a trial. Feather has also incorporated feelings of satisfaction at the end of the experiment. He found that the mean performance on the final ten anagrams in a series of fifteen, was significantly lower after initial failure than after initial success. The probability of success rating shifted more after failure than after success, and performance scores on the final ten anagrams corresponded positively with the initial probability estimates in the high expectation--initial success group (1966). This finding was replicated in another study

³Anagrams are "neutral" tasks, without male or female sex-typing. In Feather's studies, the probability of success was considered to be a rating of self-confidence, but it does not consider the influence of affect (see Appendix B).

(1968) where confidence ratings were lower when there was initial failure than when there was initial success. The main effect of trials was highly significant as was a main effect for sex. Although trends were similar for both sexes, females changed (reduced) the confidence ratings more uniformly following failure than following success. That the shifts were not larger is likely due to the restricted range of I-E scores, and demand characteristics of the laboratory tasks (Feather, 1968). Feather also notes that:

The subject who either became a good deal more confident after initial success or a good deal less confident after initial failure tended to perform better subsequently than the subject who showed less change in confidence following uniform success or failure (Feather, 1968, p.44).

In a fourth study, Feather (1969) found that performance was related to initial confidence, that females were lower in initial confidence, higher in external attribution, and higher in feelings of inadequacy. Feather did not find a relationship between the general measures he employed of self-evaluation and self-esteem, to attribution choice. However, this may not be of too great import as Feather took only one sample of attributions for the outcome of the task at the completion of the ten anagrams. This does not allow for the possibility of investigating shifts in attributions in relation to the consistency of the success in solving each anagram. This study supports other research indicating sex differences in expectancy estimates, in which males tend

to overestimate their chance of success more than females underestimate their chance of success.

1. Achievement Motivation and Sex as a Stereotype

Why do females underestimate their chance of success?

Is it a motive to "avoid" success, or are they conforming to stereotypic expectations? A number of researchers have investigated these questions (Deaux, 1976; Feather, 1975; Feather & Raphelson, 1974; Horner, 1969; House & Perney, 1974; Lefcourt, 1976b; Midgley & Abrams, 1974; Teglas-Golubcow, 1975).

Matina Horner (1969) stimulated the research in this area with her study of the occurrence of fear of success themes to achievement stories. She presented female subjects with an incomplete story lead describing the success of a medical student at leading the class in mid-term exams. In one story the student was a female, Anne, in the other the student was a male, John. In a manner similar to the Thematic Apperception Test, subjects were requested to write what they considered the students' feelings were upon hearing the results and what the outcome would be. Horner found that 65% of the stories to the Anne story lead contained fear of success themes. She concluded that this indicated a *motive to avoid* success in competitive achievement settings, in order to prevent unpopularity and loss of femininity.

Midgley & Abrams (1974) found that subjects with high external control scores, also had a high level of motive to avoid success (fear of success imagery to Horner's incomplete story lead). This supported the contention that the motive to avoid success was related to a belief in external control of contingencies and indirectly supported the notion that high achievement motivation corresponded to internal locus of control. House & Perney (1974) found sex differences in expectations for success that could be related to the motive to avoid success. They conducted three studies with a mixed sample of male and female subjects employing a standard anagrams task. In experiments 1 and 2, no external performance levels were defined, and females reported higher expectancies than males in study 1, and no difference in expectancy in study 2. However, in study 3, in which performance levels were defined, the females reported lower expectancies than males. The authors suggest that it is the task characteristic of competition with males that elicits the motive to avoid success. Teglassi-Golubcow (1976) investigated this by employing a design with cooperative and competitive verbal production tasks, with subjects paired with same and opposite sexes. He found that *regardless* of sex of partner, expectancies of success for female subjects were higher in the cooperative than in the competitive condition. But, is reduced expectancy a "fear of success," and is fear of success a "motive to avoid success?"

Feather & Raphelson (1974) clarified this issue very nicely in a replication study of Horner's 1969 study. They improved the design by including male subjects, and had females and males respond to the Anne and John medical story leads. The study was conducted in Australia and America. They found that males in both countries, and Australian females, wrote a greater portion of fear of success themes to the Anne than to the John story. This was not true for American females. Another important finding was that all proportions of fear of success themes were less than those reported by Horner. They concluded that the "fear of success" themes are responses to social stereotypes. Feather (1975) found further support for this contention in a study evaluating sexual stereotypes in occupations. He points out that the motive to avoid success studies require subjects to write stories about a female character who succeeds in a male-dominated occupation. It is not unusual then that these studies should tap social stereotypes... "widely shared beliefs about the appropriate achievements for each sex in our society" (Feather, 1975, p.547).

This finding was further supported by Deaux (1976). She investigated whether individuals judged a female performance on the basis of a stereotyped image of the female as incompetent. Ratings by both men and women confirmed this in a number of laboratory tasks and in judging success in occupations. Male surgeons were successful due to their ability, and female surgeons were successful due to their effort. (It would be illogical to attribute success in surgery to luck!)

These studies indicate that one influence on women's expectancies for success/failure may be the commonly held stereotypes in our society. It is doubtful that fear of "loss of femininity" is motivating women to demonstrate differential expectancies. Another indication that a stereotype may be the primary influence is that American females in 1975 wrote fewer fear of success stories than did females in 1969 (Feather, 1975). One can speculate on the influence of the women's movement on attitudes and expectations.

2. *Sex as a Subject Characteristic*

In making self-attributions, women have a lower expectation for successful performance as compared to males. This has been reported for a variety of tasks and age groups (Deaux & Farris, 1977; Dweck & Goetz, 1978). If a woman has a low set of expectations and succeeds, the success is discrepant (out of balance) with the set; as a consequence, stable internal explanations would not seem appropriate, and explanations would rely on one or more temporary reasons. "Failure, if more consistent with the self-stereotype, should in turn be attributed to a stable internal attribute, most typically, a lack of ability." (Deaux, 1976, p.343)

3. *Sex as a Task Variable*

Deaux (1976) has demonstrated the usefulness of the concept of sex as a task variable. The nature of a task defines the range of attributions which will be reasonably used by

most people in explaining task performance. "Thus, for certain kinds of tasks, luck is a noncredible explanation, despite a wide divergence between a person's expectations and actual performance." (p.347). The reluctance of subjects to attribute a surgeon's success to luck is a good example. Defining the sex-linkage of a task appears to put a set of boundaries on the attributions which are used by subjects. Tasks labeled "feminine" are perceived by subjects to be easier tasks. Consequently, one might expect lower ratings of ability and/or effort to these tasks than to masculine tasks. In fact, it was found that "ratings of a woman's ability on a feminine task were lower than ratings of a man's ability on a masculine task. ...If masculine and feminine tasks are perceived to have different degrees of difficulty, then attributions for success and failure on these tasks should have different degrees of information for both actors and observers." (Deaux, 1976, p.349)

Deaux & Farris (1976) in addition discovered that success at a masculine task, by a woman, is attributed to a temporary attribute. Women used luck to explain failure as well as success. They also invoked an effort attribution more than men. Deaux comments:

A woman actor who is high in achievement strivings and/or has a successful career will also find luck an unrealistic cause of her success. However, these women still show a tendency to reject the stable attribute of ability and instead seek out an internal cause which lies on the temporary dimension. (1976, p.345)

In general, however, attributions to effort do not differentiate significantly for sex. Effort attributions are very high for both sexes as a demand characteristic of the experimental setting--subjects feel an obligation to try their best. Secondly, the subject has direct knowledge of how much effort has been exerted. (Weiner suggests effort attributions are inferred from outcomes, but it is reasonable to acknowledge an internal monitor as well (see Harvey & Enzle, 1978). Effort can be used to explain success with some confidence, but rarely is employed in laboratory settings to account for failure, especially if the actor was trying; consequently, another inference must be sought. For many women this other attribute is ability.

4. *Expectancy as a Moderator Variable*

Expectancy can be investigated from two designs. It can be manipulated in the task, ensuring success either through bogus feedback, or by presenting items of known ease. Secondly, one can categorize subjects on the basis of pretest expectancies. When the outcome of a task is *consistent* or in accord with the subject's expectancy, the most common attribute for success is ability, and the most common attribute for failure is also ability. When the outcome of a task is *inconsistent* or not in accord with the subject's expectancy, the most common attribute for success is luck, and for failure, bad luck (Deaux & Farris, 1977; Feather, 1969; McMahan, 1973).

It has been found that subjects who approach a task with a high degree of confidence attribute failure externally and success internally, while these trends are reversed for subjects initially low in confidence (Gilmour & Minton, 1974; McMahan, 1973).

That sex differences in attribution patterns will appear only when expectancies differ was nicely demonstrated by McMahan (1973). Expected outcomes were attributed to stable factors, unexpected outcomes were attributed to temporary factors. McMahan concluded that biases in attribution styles or strategies of self-attribution, can be interpreted as a logical information processing strategy rather than an ego-defensive mechanism. Given the expectancies men and women have, their subsequent attributions are logical products of the match between expectancy and performance (Deaux, 1976; Gilbert, 1978).

Further support for this expectancy difference was shown in a study by Deaux, White & Farris (1975). Females demonstrated a strong preference for games of chance and more persistence at these games, while men showed more preference and persistence at games of skill. The authors also found that women showed more extreme affective reactions to performance outcome, they were more satisfied with high scores and less satisfied with low scores. Good and bad luck appear to be more potent experiences for women than for men. The authors note that there is a complex relationship between

reward value, satisfaction, and pride-shame measures of affect.

Yet why are these expectancies held? These initial baseline differences suggest an ego-defensive strategy may be operating. Ego-enhancing expectations are different for males and females. While actual performance differences have not been found, men are more guilty of overestimation than women are of underestimation. The *logical* attributions are for males to expect success and for females to be unsurprised at failure (Deaux, 1976).

C. Explaining the Differences

There are two major theoretical interpretations of the sex difference in expectation and attribution style.

- (1) The sex difference could be valid and based on outcomes that the subject has experienced. For example, someone who really is inept and experiences repeated failure will make a logical *unbiased* inference as to his low ability. This explanation, however, is inadequate to account for the differences obtained for men and women, as actual performance outcomes in laboratory settings do not differ.
(Deaux, 1976; Feather, 1969)

- (2) These biases may be either:
 - (a) learned biases acquired through socialization; or
 - (b) motivated biases that derive from either
 - (i) the need to maintain a stable self-conception (Heider, 1958); or
 - (ii) from the need to maintain a feeling of control over one's outcomes.

(Kelley, 1971; Ickes & Layden, 1978)

It is important from a theoretical standpoint that these alternatives be viewed as conceptually distinct. Let us accept that the differences are invalid reality distorting biases and examine more closely their origin.

2a *Socialization and Attribution Biases*

Considering this possibility, Dweck & Goetz (1978) have demonstrated the role of solution specific failure contingencies in the development of ego-enhancing strategies⁴ with boys and girls in the classroom. Despite a very positive and encouraging school environment, girls show far greater evidence of helplessness than boys when they receive failure feedback from adult evaluators. They show decreased persistence or impaired performance when failure occurs, when the threat of failure is present, or when the evaluative pressure on a difficult task is increased. Dweck & Goetz then investigated the role of the adult evaluators in the classroom, particularly with respect to the use of negative feedback. They found that almost half of the criticism boys received for their work had nothing to do with intellectual adequacy; it referred to neatness, instruction-following, and style of response delivery (form rather than content). Teachers

⁴The pattern Dweck & Goetz (1978) discovered are readily accounted for in Weiner's expectancy outcome x causal attribution model. It is not necessary to view these attributions *solely* as ego-enhancing.)

attributed boys' failures to lack of motivation eight times more often than they did girls' failures. When girls did receive negative feedback, 88% of it referred specifically to intellectual aspects of their work (Dweck & Goetz, 1978). In a further examination of these findings, Dweck & Goetz created a teacher-boy, teacher-girl contingent paradigm. It was shown that regardless of sex, children who received failure feedback that was solution-specific were more likely to regard subsequent failure feedback from that agent as indicative of their ability than children who received failure feedback that was often solution irrelevant.

To the extent that one's perceived cause of failure or success remains in effect in a new situation, then one will view past outcomes as predictive of future ones.
(Dweck & Goetz, 1978, p.169)

From this it can be stated that (1) similar tasks may mediate generalization of effects of past failure; and (2) attribution of failure to ability discourages continued testing of the environment in the future because "it is unpleasant to conclude that one lacks ability despite renewed effort" (Dweck & Goetz, 1978, p.169). These learned patterns of attribution bias show that girls underestimate their chance of success, and when feedback is mixed or inconsistent, they tend to weigh the negative aspects while boys weigh the positive.

The significance of this research is that if one can successfully develop a general expectancy that is equal.

for men and women, then they should not show differing attribution patterns. What is the contribution of the affective component in attribution? Why do women over-react to failure and men under-react to failure? Is it in order to maintain a more competent self-image?

2b. *Motivated Attribution Biases*

(i) Self-serving biases

Attributions which serve to *enhance* or *maintain* one's perception of self-worth are known as *self-serving* biased attributions (see Glossary). Biased, because they are invoked differentially in response to success and failure outcomes. The simplest demonstration of this is in the self or internal attributions for successes, and external or other attributions for failures.

It has been speculated that this motive is engaged in tasks for which there is some ego-involvement, or in which a strong affective component is present. It has further been proposed that biases are more likely to be generated in the face of *repeated* failure and success (Weiner, 1974a). Even with the affective component engaged, an individual still has three basic alternatives:

- (a) invoke a self-serving attribution (Bradley, 1978; Lefcourt, 1976b; Miller, 1976; Miller & Ross, 1975; Prociuk & Breen, 1975);
- (b) terminate effort (Abramson, Seligman & Teasdale, 1978; Pittman & Pittman, 1979; Wortman, 1976; Wortman & Dintzer, 1978);

- (c) accept failure as a true indicator of ability and become depressed (Kuiper, 1978; Rizley, 1978).

The choice of the first alternative depends partly on prior learning and modeling that demonstrates the value of attribution biases. This can be illustrated with the example in Dweck & Goetz's study (1978). Given experience with solution-irrelevant negative feedback, boys are better able to respond to solution-specific negative feedback, than are girls. In children, however, this ability to externalize negative feedback is easily reversed by exposure to repeated solution-specific or -irrelevant (in the case of girls) feedback. In adults, the generalization to achievement and ability is seen in men's overestimation of their successes and consistent externalizing of negative outcomes. It is questionable whether this pattern is easily reversed. The same uncertainty obtains with regard to women's history of solution-specific negative feedback and internalizing of failure outcomes.

Miller & Ross (1975) examined whether self-serving biases really exist or whether alternative explanations such as an information processing model are more parsimonious. They conclude that existing data could be interpreted from an information processing perspective, and that some evidence exists for a self-enhancement but not self-protective motive. They suggest that this may be the result of three factors:

- (a) people in general intend and expect to succeed, and further, accept responsibility for expected outcomes;
- (b) people are more likely to perceive a relationship (covariation) between their behavior under successful outcomes than under conditions of constant failure; and
- (c) people have an erroneous conception of contingency in that control is associated primarily with the occurrence of a desired outcome.

In a later study, Miller (1976) conducted a test for the presence of a self-serving bias, controlling for the factors presented above, and manipulating the level of ego involvement in the task. In a test designed to measure "social-perceptiveness," Miller found that expected differences in response to success and failure emerged, and these differences were accentuated by high ego-involvement. Individuals engaged in more *self-protective* attributions under high--than low-- involvement failure conditions. Miller concludes that these findings support a motivational as opposed to an information processing explanation of the asymmetries in causal attribution.

Bradley (1978) re-examined Miller & Ross' (1975) article and reviewed experimental work since the publication of the original critique of the self-serving bias hypothesis. His first criticism is that recent research (including Miller's 1976 study) provides more conclusive evidence regarding the influence of motivational biases. Secondly, he makes a distinction between someone's intention to succeed and

expectation to succeed. One may have the best intention and expend effort accordingly, yet acknowledge that one may not know how to proceed effectively, and therefore not expect to succeed. Bradley suggests that by employing a broadened self-serving bias formulation, more evidence for a motivational theory is recognized. This broader formulation does not distinguish between self-enhancing and self-protective biases "since they are viewed as reflecting the same general motive to see oneself positively" (Bradley, 1978, p.57f). It is this writer's opinion that a very meaningful and potentially fruitful distinction has been lost in doing this. Anyone in a therapeutic setting who has tried to improve a depressed person's view of himself, well knows the biased perceptions which are steadfastly employed to protect and maintain the depressive's negative view of himself. This clearly demonstrates the need to distinguish self-enhancing and self-protective biases. This distinction may also be necessary to investigate the employment of these biases with women; as there is still a great deal of uncertainty regarding the origin of women's internal attributions to failure. Apart from this potentially misguided oversight, Bradley presents sufficient empirical support for a motivational bias. He also points out some of the drawbacks in Miller & Ross' (1975) three factors which they claim account non-motivationally for the attribution biases. The main criticism is that the alternatives themselves involve many psychological processes and counter



explanations and as a consequence do not really provide a "parsimonious" alternative. One final criticism which pertains even to recent research is that:

While the research discussed in this article involved data that seemed to be generally consistent with those that could be expected on the basis of esteem predictions, the existence of self-serving biases in causal attributions still has not been unequivocally demonstrated. None of the experiments offered data concerning the process or processes which were responsible for subjects' causal attributions. Most of the research discussed in the current review has assumed, at least implicitly, that success or failure on the experimental task represents affectively significant events for individuals, that is, that success results in increased positive affect... and failure results in increased negative affect.... In addition, researchers have implied that the positive and negative affective states produced by success and failure, respectively, mediate individuals' causal attributions for their performance outcomes. (Bradley, 1978, p.69)

Bradley concludes that attributions are most probably a result of a mix of cognitive and motivational psychological processes and that the affective component needs to be measured directly in future research.

If an individual does not choose to invoke a motivational bias (in order to sustain persistence at a task at which they are failing) he/she may simply terminate effort. It has been found that women tend to give up easier at skill tasks at which they are failing while men persist (Deaux, White & Farris, 1975; Dweck & Goetz, 1978). This could be due to differential expectations to succeed. If your expectation of failure is confirmed there is no need to "re-affirm" it in

expending further effort at the task. Another account for termination of effort has been formulated in the learned-helplessness literature (Abramson, Seligman & Teasdale, 1978; Pittman & Pittman, 1979; Wortman, 1976; Wortman & Dintzer, 1978). The relationship of locus of control to learned helplessness was investigated by Pittman & Pittman (1979). They found that internals exhibited greater performance decrements and reported greater depression under high helplessness than did externals. In contrast, in low helplessness conditions, internals performed better than control subjects, who in turn performed better than externals. The authors interpret their findings as supporting the contention that individuals who expect control (internals) will be affected more severely by helplessness training (acknowledging they truly do not have control) than externals who do not expect control.

The third alternative--depression--is all too evident, both experimentally and clinically (see Beck, 1976; Kuiper, 1978; Prociuk, Breen & Lussier, 1976; Rizley, 1978). Persistence in the face of failure is mediated by attributions to variable or external factors, if this is not possible the result can be depression (Weiner, Heckhausen, Meyer & Cook, 1972). Rizley (1978) investigated the relationship of depression and distortion in causal attributions. He evaluated the applicability of Seligman's Learned Helplessness model (L-H), Beck's Cognitive Schema model, and an attributional model

2

of motivation outlined by Weiner *et al.* (1971), to the results obtained in two experiments employing depressed subjects. He found that depressed individuals assigned ability and effort to failure outcomes more often than to success outcomes. However, they did not demonstrate that they perceived their behavior as causally unrelated to consequent events, in contradiction to the L-H model. With respect to an interpersonal task, depressives accepted causal responsibility for all outcomes both positive and negative. This finding supports Beck's theory that a key aspect in depression is a cognitive or thought disorder. This attribution pattern suggests a truly egocentric cognitive schema of causality. Rizley also suggests that the tendency to employ internal causes to account for failure more often, than to account for success, is readily understood from the attributional model. The model suggests that even given objectively balanced success and failure experiences, due to the greater responsibility accepted for failure, the depressive will experience, on the balance, more negative affect than positive affect. Do these results have retrospective implications? Given women's ready acceptance of failure outcomes, does this mean that only women who are highly successful can avoid depression?⁵ And, does the average woman experience affective changes of this magnitude?

⁵The rate of depression is estimated as being from 2 - 10 times higher in women than men (Abramson, Seligman & Teasdale, 1978).

(ii) Biases regarding future outcome control

Attribution biases regarding the amount of control an individual exercises in making predictions, can be understood and demonstrated systematically, from the perspective of expectancy theory.

An outcome that disconfirms a subject's prior expectancy tends more to be attributed to variable factors (effort and luck) than to fixed factors (ability and task difficulty), while an outcome that confirms the subject's prior expectancy tends more to be attributed to fixed factors than to variable factors.
(McMahan, 1973, p.108)

It has been shown that consistency with one's past performance is ascribed to ability and task difficulty, while inconsistent outcomes give rise to effort and luck attributions. It can be hypothesized that outcomes which disconfirm a prior expectancy are attributed more to variable factors than to fixed factors; outcomes that confirm a prior expectancy are attributed more to fixed factors than to variable factors. It can also be hypothesized that the relationship of attributions to fixed factors to expectancy is positive following success and negative following failure; that attributions to variable factors are either unrelated to subsequent expectancy or show a negative relationship following success, and positive following failure. McMahan (1973) found that subjects were more likely to say they succeeded because a task was easy, than to say they had failed because a task was hard. However, males in several achievement

studies employ the task difficulty attribution in failure situations (especially on a feminine task) (Deaux & Farris, 1976.) This finding demonstrates very nicely the utility of investigating both "control" biases and "self-serving" biases.

A major research question from these findings is the extent to which expectancies can be altered. "A consistent set of success or failure experiences over some duration of time should allow the reformulation of expectancies to reflect past experience more accurately" (Deaux, 1976, p.347). Or will it?

Summary

In Section II: Gender Differences in Attribution Style, a number of empirical studies were reviewed. They were grouped under the headings:

- A. Sex differences in self-esteem and locus of control
- B. Sex differences in achievement motivation and expectation for success
- C. Explaining the differences

The review was presented in this manner to respond to three issues which have direct relevance to this topic.. They are:

- (a) the relationship of self-esteem to locus of control;
- (b) the impact of differential expectancies on the behavior of males and females; and

- (c) the resultant effects of externalization of failure by males and internalization of failure by females.

The findings are summarized below.

1. Females resemble low self-esteem subjects by internalizing failures.
2. Women in general have lower expectations for success and their performance is related to these initial expectations.
3. It is a commonly held stereotype to expect lower performance in women. Females expect success more in cooperative than competitive settings. There is insufficient empirical support for a "motive to avoid" success. There is evidence that prior socialization influences attribution styles, and that these patterns are reversible. Given the lower expectancies, internal attributions to failure outcomes are logical systematic responses. In the same vein, unexpected success is systematically accounted for by employing attributions on the temporary dimension.
4. The internal attributions women employ in failure outcomes are biased, as actual performance outcomes between males and females do not differ.
5. Asymmetries in causal attributions can be accounted for by a self-enhancing and to some extent self-protective motive.
- 6.— The effect of failure is: termination of effort, females give up sooner on skill tasks than males; internal locus subjects show a significant decrease in performance given helplessness training; and attributions mediate in depression, depressives demonstrate egocentric responsibility for all outcomes.

It is apparent that many of these findings raise more questions than they answer. They also put into question basic assumptions of the construct of locus of control and achievement motivation that go beyond the variable of sex.

In the third and final section of this Chapter, these questions will be brought into focus and a proposal will be formulated to address them.

Section III: Proposal

This section will be presented in three parts. The first part will identify the extant theoretical and practical dilemmas which are of interest in this research proposal. The second part will present the predictions which follow given the theoretical and methodological constraints. The final part will indicate how the predictions will be tested.

A. The Problem Reconsidered

Women employ attributions in a manner initially not predicted by achievement motivation nor the locus of control construct. With the introduction of the concept of "outcome expectancy," early problems in achievement motivation were clarified. Women were employing temporary attributes to explain success because they did not expect it. Any inconsistency should systematically infer an attribute on a temporary dimension. Conversely, in expecting failure it was logical to employ a stable attribute. The question which remains is whether expectancy is the crucial factor in causal attribution theory, and whether this expectancy can be altered.

PROPOSAL 1:

To determine (a) whether women will develop an expectation to succeed given success outcomes; and (b) whether they will then employ causal attributions in a predictable and systematic manner, as is presently obtained for men.

The problems in predictive utility for locus of control have also been clarified with the introduction of a two-dimensional model which controlled for the variability and stability of attributions. However, the significance of self-serving biases cannot be dismissed, especially since the empirical data indicates females have lower expectations and assume responsibility for failure. It is important to determine whether the concept of internal responsibility for outcomes (internal locus of control) versus external responsibility (external locus of control) has predictive utility with respect to the employment of self-serving attribution biases.

PROPOSAL 2:

Given the control for consistency of outcome, internals and externals should demonstrate different shifts in attribution style, when the outcome creates a high level of uncomfortable affect.

This research has several unique contributions. First, it could develop support for the outcome expectancy cum

causal attribution theory, unbounded by a sex variable. Second, it could demonstrate the value of locus of control, as a major factor in the affective component in Weiner's model, and as a contributing influence to motivational interpretations of attribution biases, given a control for the interpretative component of expectancy outcome theory. And third, from a practical perspective, this research could determine whether experience with successful outcomes is useful in altering prior expectancies.

An elaboration of these points is in order to allow the reader to fully comprehend the hypothetical predictions which follow. First, the theories of causal attribution and outcome expectancy do not, in themselves, provide differential predictions on the basis of sex or gender identity. There is empirical support that sex differences exist, but the expectancies are held also to differ. Consequently, the theory can account for the results. Outcome expectancy states that when outcomes are expected, one employs internal attributions, and when outcomes are not expected, one employs external attributions. The two internal attribution choices are ability and effort, the two external choices are luck and task difficulty. Causal attribution theory emphasizes the repeatability of outcomes. Regardless of gender, if an outcome is repeated, attributions are made to stable causes, either ability or task difficulty. If outcomes are not repeated but are "variable," attributions are made to variable

causes, either effort or luck. When these theories are combined, as in the model adopted for this thesis, there is only one possible attribution for a given condition, e.g. when an outcome is expected and repeated, the choice is an internal, stable attribution: ability.

The important question to be answered here is whether these theories really do predict accurately, unbounded by a sex variable. In previous research, the majority of females did not expect to succeed, and consequently, all results were re-interpreted in light of this expectation. The real test of the adequacy of these theories then, will only come when the expectation to succeed is controlled, with female subjects. Consequently, in this study a controlled success and failure outcome will be induced.

The second point refers to the contribution of locus of control to the model. As it is employed here, the value of locus of control is in identifying motivational biases. Given affective discomfort, e.g., developed through failure experiences, normal persons will employ self-protective biased attributions. The locus of control literature suggests that given a failure outcome, externals will employ self-protective attributions, e.g., effort and luck; while internals will employ self-protective attributions that are also enhancing, e.g., task difficulty. It is evident that locus of control is not as precise as outcome expectancy cum causal attribution theory. The major premise is that individuals are motivated to protect

their self-image--three of the four attributions serve this purpose. The one attribute which should differentiate internals and externals due to its enhancing nature is: task difficulty.

The question to be answered here is whether locus of control really has some utility in attribution theory, or whether outcome expectancy cum causal attribution theory will fully account for the attributions. To fully test this, a condition that creates failure only, will be presented. Given that the failure is repeated and is the only outcome, the subjects should employ an internal (expected) and stable (repeated) attribution: ability. Ability is precisely the single attribution not predicted by the locus of control literature. Therefore, if any other attribution is employed, it lends support to the locus of control construct. Given an undetermined level of affective discomfort, that which occurs as a result of failing after succeeding; locus of control would not differentiate internals and externals, as it is a high degree of affective discomfort which motivates the self-serving biases. Thus, in a success-failure condition outcome expectancy cum causal attribution theory will take precedence. Locus of control will support all self-protective attributions in this condition, consequently, its contribution cannot really be assessed.

The third point is in response to the prior empirical work which indicates that the generalized expectancy of females is not to succeed. The question to be answered is whether success

outcomes will alter their expectations. Ratings of probability of future success should increase over trials of successful outcomes, in sharp contrast to trials of failure outcomes.

B. The Design

The model adopted to develop the hypotheses blends the components of outcome expectancy and causal attribution theory with the locus of control construct. The addition of locus of control complicates the generation of predictions as it is not as precise as outcome expectancy cum causal attribution theory. To un-encumber the complementary and contradictory predictions this blending of theories yields, an arbitrary but systematic method of assigning theoretical weights was employed. This maximizes the contribution of each component theory and enhances the flexibility of the total model. For example, in this way we can consider attributions which are supported by outcome expectancy and locus of control but not by causal attribution. The use of weights is meant to add clarity to the presentation of the predictions and does not preclude the adoption of rational or logical explanations for the attributions. In fact, it is for this reason that all secondary attributions (those with lesser support) are discussed in Appendix C. Secondary attributions can result from exploratory combinations such as outcome expectancy with locus of control, a combination not highly supported in empirical research. The support of empirical studies will aid in the differentiation of attributions with equivalent theoretical support. The assignment of weights occurred in the following manner.

A weight of 0 was chosen to indicate non-support. This meant that under a specified condition there would not be any support for that attribution given the theoretical rationale. A weight of 0 would also indicate non-support in empirical studies.

A weight of 1 was chosen to indicate complete support from each component of the theory given the specified conditions and rationale. It would also indicate strong empirical support as judged by this author's study of the current literature.

A weight of $\frac{1}{2}$ was chosen to indicate support from one component of a theory under consideration. It would also indicate partial support from empirical studies.

Outcome Expectancy and Causal Attribution are integral components of Weiner's information processing model. Together they combine to yield a unitary theory. However, as demonstrated in the last section, each component can be considered separately. This was done here by assigning a weight of $\frac{1}{2}$ for support from Outcome Expectancy theory, and a weight of $\frac{1}{2}$ for support from Causal Attribution theory. If support was obtained from both components the sum would be 1.

Locus of Control, as it has been employed here, should distinguish internal and external subjects with regard to their employment of self-protective and enhancing attributions.

Accordingly, a weight of $\frac{1}{2}$ was assigned for self-protective attributions, and a weight of $\frac{1}{2}$ for self-enhancing attributions. Given the condition of failure, internals should employ self-enhancing attributions, externals should not.

If a predicted attribution received full support from each component in the model, the weights would be assigned such that the maximum theoretical weight would sum to "2", and the empirical support would equal "1". The emphasis in the model is on theoretical weight. Only if two attributions had an equivalent theoretical sum, through support from different theories, was priority then given to the attribution with the most current empirical support. Given maximum support, the weights would be assigned as shown below:

	OE	CA	LC	e
Attribution	$\frac{1}{2}$	$\frac{1}{2}$	1	1

Key: OE Outcome Expectancy

CA Causal Attribution

LC Locus of Control

e empirical data.

The hypotheses to be presented below pertain to the final 5 trials in the treatment condition: failure outcome.

- H₁ Given failure outcomes, female subjects with a prior expectation to succeed will have higher expectancy of future success than female subjects without such prior expectation.

This hypothesis is derived from outcome expectancy theory and empirical studies which manipulate expectancies (Feather, 1969; 1968; 1966).

- H_{2a} In the initial success--subsequent failure (S-F) condition--both internal and external subjects will demonstrate systematic causal attribution biases toward *Task Difficulty*.

This hypothesis is derived from: (i) Outcome Expectancy theory which predicts that when outcomes are unexpected, the subject employs attributions external to themselves in a biased self-serving manner; (ii) Causal Attribution theory which predicts logical stable causal attributions as the failure outcome is repeatedly presented; and (iii) Locus of Control construct which predicts self-protective attributions given the change from success to failure outcomes. There is no distinction with regard to internal and external subjects as the degree of affective discomfort is undetermined in this condition.

The attribution *Task Difficulty* is predicted from each of the three theories as it is a systematic external attribution, it is stable and a logical cause for repeated failure, and it is self-protective and enhancing. At present, there is empirical data to indicate this occurs in research with males

(Deaux & Farris, 1976; Deaux, White & Farris, 1975; McMahan, 1973; Weiner *et al.*, 1971).

The obtained sum of the theoretical weights for predictions to *Task Difficulty* and the alternative attributions are shown in Table 1. For a brief discussion of the alternative attributions to each hypothesis see Appendix C.

Table 1
Theoretical Weights for Predicted
Attributions

Hypothesis 2	Success-Failure (Internals and Externals)				
Attribution	OE	CA	LC	e	
1. TD	$\frac{1}{2}$	$\frac{1}{2}$	1	$\frac{1}{2}$	Key: OE Outcome Expectancy CA Causal Attribution LC Locus of Control e empirical data
2. Luck	$\frac{1}{2}$	0	1	1	
3. Effort	0	0	1	0	
4. Ability	0	$\frac{1}{2}$	0	1	

H_{2b} In the initial success--subsequent failure condition--the difference between internals and externals with respect to the attributions employed will be non-significant.

This hypothesis is derived from Weiner's conceptualization of locus of control which states that it is a discriminating predictor given a strong affective discomfort. Due to the manipulation of expectancy in this condition, it is not known whether that discomfort is present or to what degree, consequently, no difference for internals or externals has been predicted.

H_{3a} In the initial failure--subsequent failure (F-F) condition--for internals, the most probable self-enhancing attribution is *Task Difficulty*.

This hypothesis is derived from: (i) Causal Attribution which states that as the outcome is repeated, a stable attribution should be employed; and (ii) Locus of Control construct which states that internals are motivated to protect and enhance their self-image, therefore, an attribution which accomplishes both protection and enhancement should be employed.

Task Difficulty is supported by causal attribution and locus of control theories but not by outcome expectancy. It is external to the subject, minimizes the negative affect, is stable, and is self-protective and enhancing. This outcome has not been obtained to date (Deaux & Farris, 1977; McMahan, 1973; Weiner et al., 1971).

The obtained theoretical weights for Internal Failure-Failure attributions are shown in Table 2.

Table 2

Theoretical Weights Treatment:
Failure-Failure, Internals

Internals					
Attribution	OE	CA	LC	e	
1. TD	0	$\frac{1}{2}$	1	0	Key: OE Outcome Expectancy CA Causal Attribution LC Locus of Control e empirical data
2. Ability	$\frac{1}{2}$	$\frac{1}{2}$	0	1	
3. Effort	$\frac{1}{2}$	0	$\frac{1}{2}$	0	
4. Luck	0	0	$\frac{1}{2}$	0	

H_{3b} In the initial failure--subsequent failure (F-F) condition--for externals, the most probable self-protective attribution is *Effort*.

This hypothesis is derived from: (i) Outcome Expectancy which states that, as the outcome is expected, unbiased internal attributions should be employed; (ii) Locus of Control states that externals do not derive confidence from personal skills but derive it through good fortune in external circumstances (Joe, 1971; Lefcourt, 1966a). It is highly improbable then that they should engage in self-enhancing internalized attributions, however, given persistently negative outcomes, it can be expected that to prevent drastic alteration in self-image (these are *normal* subjects) a self-protective attribution will be employed (Miller & Ross, 1978; Phares, 1976; Kuiper, 1978), to tolerate an uncomfortable situation.

The attribution *Effort* is therefore supported by outcome expectancy theory but *not* causal attribution theory as it is a variable attribute. It is also supported by Locus of Control as it is self-protective but not enhancing. This outcome has not been obtained to date.

See Table 3 for the obtained weights for Externals, Failure-Failure outcome.

Table 3.

Theoretical Weights Treatment:
Failure-Failure, Externals

Externals						
Attribution	OE	CA	LC	e		
1. Effort	$\frac{1}{2}$	0	1	0	Key:	OE Outcome Expectancy
2. Luck	0	0	1*	1		CA Causal Attribution
3. Ability	$\frac{1}{2}$	$\frac{1}{2}$	0	1		LC Locus of Control.
4. TD	0	$\frac{1}{2}$	$\frac{1}{2}$	0		e empirical data

*In this case priority was established for that attribution which conformed to the hypothesis that females are motivated to engage in self-protective biased attributions, as opposed to the expectation that females accept and internalize failure.

C. Tests of Hypotheses

Given the above hypotheses, the following experimental predictions are made:

1. Self-ratings of probability of future success in solving anagrams, will be statistically higher for those subjects in the success-failure condition than for those subjects in the failure-failure condition.
- 2a. The frequency with which all subjects in the success-failure condition attribute their performance to *Task Difficulty* will be significantly higher than the frequency to which they attribute their performance to each of the alternative attributions.

- 2b. The frequency with which Internals and Externals prefer *Task Difficulty* will be non-significant in the success-failure condition.
- 3a. (i) The frequency of the attribution *Task Difficulty* will be significantly higher than the frequency of choice of alternative attributions for Internal Failure-Failure subjects.
- (ii) The frequency with which *Task Difficulty* is chosen will be statistically higher for Internals than for Externals in the Failure-Failure condition.
- 3b. (i) The frequency of the attribution *Effort* will be significantly higher than the frequency of choice to alternative attributions for External Failure-Failure subjects.
- (ii) The frequency with which *Effort* is chosen will be statistically higher for Externals than Internals in the Failure-Failure condition.

CHAPTER II

M E T H O D

The Design

The issues and hypotheses presented can best be explored using female subjects in a failure paradigm. The variables to be manipulated are: expectation for success (success vs. failure prior to failure trials), and locus of control (internal vs. external), in a complete 2 x 2 factorial design. See Figure 3.

Treatment Expectancy	Locus of Control	
	Internal Success	External Success
	Internal Failure	External Failure

Figure 3: Factorial Design

Independent Variables

Locus of control is employed here in a sense that is particular to the original work of Heider, the present conceptualization found in Weiner (1974) and broader social learning theory as it relates to personality characteristics. It does not conform to the theory of prediction of control

over outcome found in Rotter's work. However, it does consider the implications and broader applications of his theory. Internal locus of control will refer to those individuals who score in the bottom third of their group on the Rotter I-E Locus of Control Scale. They are posited to have a stable self-concept: *judge*⁶ themselves from an internal standard; and take *personal responsibility* for their performance outcomes. External locus of control will refer to those individuals who score in the top third of their group on the Rotter I-E Locus of Control Scale. They are posited to have a variable self-concept: *judge* themselves from an external standard; and do not take *personal responsibility* for outcomes.

Expectancy for success will be manipulated through task outcomes.

Subjects

The subjects will be females only, as the theories under consideration accurately predict and account for empirical findings with males. The attribution pattern for males is well-documented and replicable and there is no reason to expect that they should respond differently in this paradigm, therefore, males have been excluded from this investigation. A final consideration is that much of the expectancy research

⁶Words in italics have a strong affective component and are value-laden.

involves comparative statements between males and females. It will be valuable to investigate within sex differences given a successful manipulation of expectancy.

The Paradigm

A failure paradigm will be employed as it is expected that stronger affective reactions will ensue, given a failure outcome. This in turn should have a strong impact on self-esteem, and if there are differential performance effects related to self-esteem, they should now occur in relation to given locus of control. The outcomes prior to the common experience of failure will be manipulated to create success for one group and failure for the other group. The advantage in doing this is that comparisons can be collapsed across locus to investigate the effect of systematic expectancies on attributions; and comparisons can be made within conditions of expectancy, such that any performance differences can only be interpreted with respect to locus of control.

Task Stimuli

Standard anagrams will be employed as the task stimuli to create the success and failure outcomes. In an experimental performance setting, anagrams have a number of distinct advantages:

1. They are often perceived by subjects as tests of intelligence and consequently elicit a high level of involvement and motivation.

2. They are easily administered on a trial by trial basis.
3. Dependent measures of both speed and errors can be readily obtained.
4. Perceived success and failure can be controlled by the presentation of solvable versus insolvable anagrams, and it is not readily apparent to the subject that the experimenter is controlling the outcome.

(Ickes & Layden, 1978)

To further ensure the level of involvement, the author has chosen to significantly expand the time limit to solve each anagram. A standard time allowance is 30 seconds (Feather, 1969; McMahan, 1973): it has been decided to allow 120 seconds. This should prevent subjects from feeling constrained by the time allowance, and in the failure set of anagrams result in as much as 30 minutes exposure to an uncomfortable task (attempting anagrams which are extremely difficult or insolvable). The number of insolvable anagrams in the first 10 trials has also been limited as research has shown they often provide fewer combinations than solvable words, and consequently, subjects may suspect the manipulations if they are employed too freely.

Finally, there will be 15 trials with attributions made after each trial. The final 5 trials will constitute the failure set for all subjects. It has been decided to use 10 trials of success outcomes to ensure a successful manipulation of expectancy.

Dependent Measures

Attributions will be made in a forced choice format following McMahan (1973). In this manner, a value of 1 can be assigned to an attribute each time it is checkmarked by the subject; these weights can then be summed across trials to indicate the influence of trial by trial expectancies on causal attributions. The sum over the final 5 trials for each attribution will serve as a test of the hypotheses.

Subjects will also rate their probability of succeeding on the next anagram, on a continuum from 0 - 10. This has shown to be a reliable indicator of expectancy manipulations (Feather, 1968; 1969).

Finally, at the completion of the 15 trials, subjects will be asked to report on their feelings with respect to the task. This will serve to identify any subjects seriously disturbed by the task and can provide additional information as to the affective component in the attributional process. This will be an open format type question so precise predictions will not be made. It will serve as a potentially valuable post hoc measure (Bradley, 1978).

The Research

The research was conducted in five distinct stages. Each stage satisfied a requirement in the overall design of the study. Each stage will be presented separately with consideration given to: the purpose of that stage of the research.

the subjects who participated, the materials used, the procedure involved, and the results obtained. The fifth stage concerns the experiment proper. (See Figure 4: Flow Chart of the Stages in Research.)

Stage 1: Anagram Selection

The first requirement to be satisfied was to select a series of anagrams of sufficient ease and difficulty to create a success and failure experience respectively. This was the purpose of the first stage.

Subjects

The subjects were 48 male and female undergraduate Developmental Psychology students.⁷

Materials

The anagrams were chosen from a list published by Feather (1966, p.290) and Feather & Saville (1967, p.227). Seventeen anagrams listed as being of 40-60% difficulty⁸ plus three anagrams made up by the author, were divided into two lists of 10 anagrams each. Each anagram was typed on a separate page to yield a 10-page pamphlet. The anagrams are shown in Appendix D.

⁷The ability to solve anagrams is *not* sex-linked thus at this preliminary screening stage both male and female subjects were used (Ickes & Layden, 1978).

⁸This means that 40-60% of the people who attempt the anagram do not solve it.

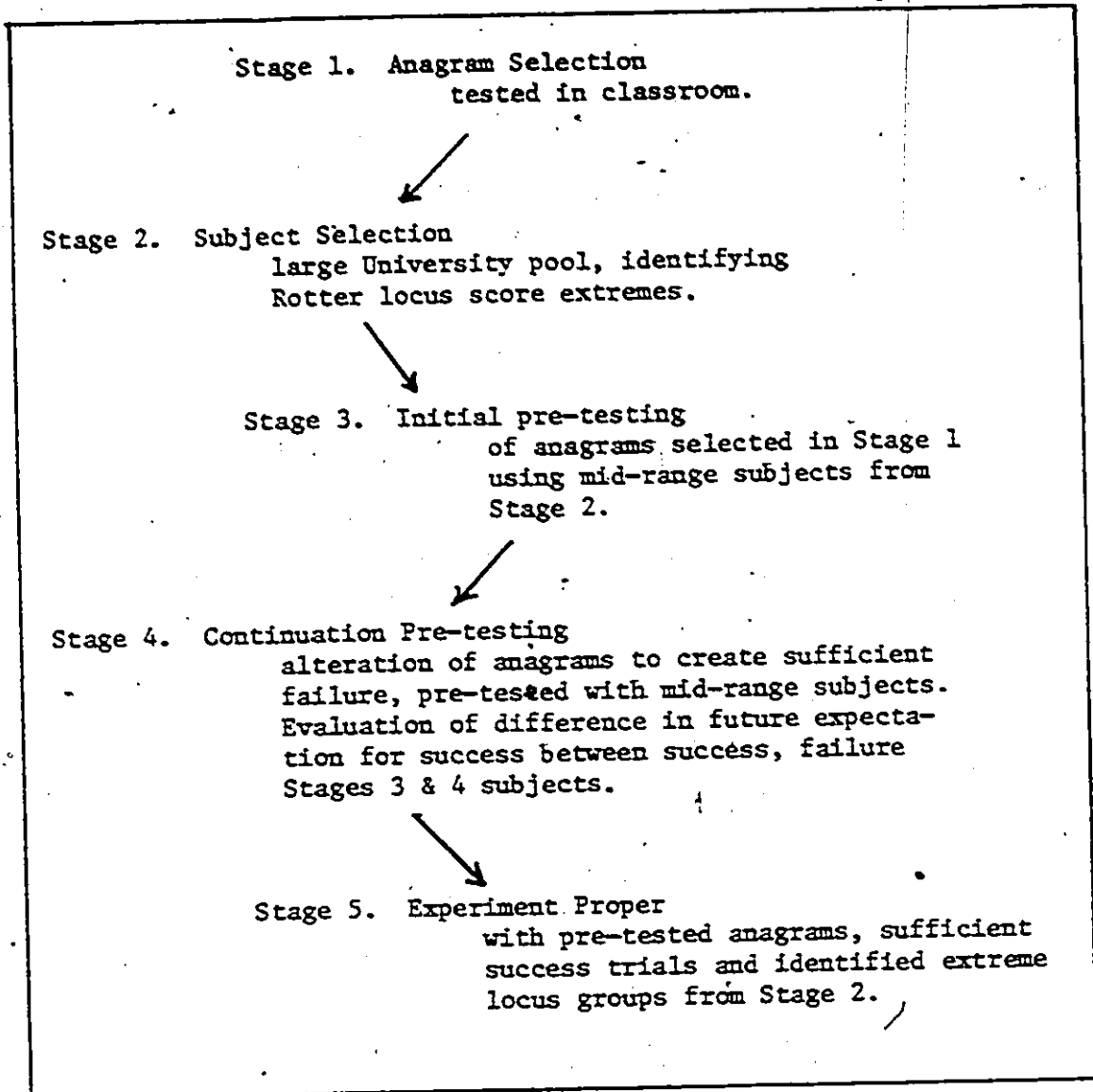


Figure 4: Flow Chart of Stages in Research

Procedure

The pamphlets were stacked alternately in one pile, such that as they were distributed to the class, one half of the students received list one, one half of the students received list two. The pamphlets were distributed face down and the students were instructed not to turn them over until told to do so. General instructions with examples of anagram solutions were given at the front of the class. The students were given 120 seconds to solve each anagram. The time was indicated on the board at 30-second intervals. The students were to work independently and record the last time shown on the board as they solved the anagram. If not solved, they would record 120 seconds.

Results

The anagrams were scored according to a pass-fail criterion. A pass consisted of a correct solution to the anagram within the allowed time (120 sec.). A fail consisted of no solution in the time allowed, or a bogus solution (i.e. a word that does not exist or is misspelled, even though the letters given have all been used). The percentage of subjects failing to solve each anagram are shown in Appendix D.

From these results, two lists of anagrams emerged. A success list with 5 anagrams of low failure rate plus 5 anagrams of known ease (Feather, 1966, p.290); and a failure list of 10 anagrams with moderate to high failure rates.

Stage 2: Subject Selection

The second requirement to be satisfied was to identify subjects who were Internal or External with respect to locus of control. Subjects scoring in the mid-range would serve as a pre-test sample.

Subjects

The subjects were 249 female undergraduate students enrolled at the University of Ottawa. They were selected from four Introductory Psychology classrooms,⁹ three Introductory Economics classrooms, two Developmental Psychology classrooms, and one Introductory Chemistry classroom. 201 of the 249 students who completed the questionnaire distributed in class volunteered to participate.

Table 4 indicates the distribution of subjects with respect to Rotter Internal-External locus of Control score, age, Faculty affiliation, and major subject of interest.

Materials

The Rotter Internal-External Locus of Control Scale was distributed to the students in class. Attached to the questionnaire was a time-table for students who volunteered to participate to indicate times they would be available and a map indicating the location of the research laboratory.

(See Appendix E)

⁹Subjects in Intro Psych earned extra credit toward their final course grade by participation in the experiment.

Table 4
Overall Subject Pool Characteristics

Characteristic	Frequency	Range	Mean
I-E Score			
Internal	75	1 - 7	4.8
Midrange	108	8 - 12	10.0
External	66	13 - 19	14.7
Age		17 - 71	23.3
20 or less	147		
21 to 25	65		
26 to 35	17		
36 to 45	9		
46 to 71	3		
not stated	8		
Faculty			
Science and Eng.	43		
Social Sciences	39		
Health Sciences	58		
Other*	109		
Subject			
Biology	32		
Psychology	28		
Nursing	29		
Physed	23		
Other*	137		

*This category includes no stated Faculty or Subject

Procedure

The author went to each classroom and spoke to the students, outlined the focus of the research, and asked for their assistance. (See Appendix E for the introductory comments.) The questionnaires were then distributed to the female students who remained in class. It required approximately 20 minutes to complete.

Results

The questionnaires were scored by assigning a value of 1 to each statement that was marked in the same manner as the key (See Appendix E). These values were then summed. A low score indicated Internal Locus of Control, a high score indicated External Locus of Control. From the scores obtained, the subjects were divided into three groups. An Internal locus group, a mid-range pre-test group, and an External locus group. The cut-off scores were determined from previous research with college populations (Rotter *et al.*, 1972) and from the data obtained on the 249 subjects who completed the questionnaire. The criterion was to exclude all subjects within one standard deviation of the 50th percentile in either direction in the mid-range group. Thus Internal subjects would fall -1.0 to -3.0 standard deviations from the mid-point and External subjects would fall +1.0 to +3.0 standard deviations from the mid-point. The cumulative frequency distributions obtained are in Appendix F.

The Internal cut-off maximum score was adjusted to 7 as more subjects completed the questionnaire. The minimum score was 0. The mid-range was adjusted to 8-12. The External minimum score was set at 13, the maximum was 23. The distribution of the 201 subjects who volunteered to participate is shown in Table 5.

Table 5

Locus of Control Categories

	Score	N
Internal	0 - 7	62
Mid-range	8 - 12	84
External	13 - 23	<u>55</u>
Total N		201

Stage 3: Initial Pre-Test

The purpose of the initial pre-test was two-fold:

1. to determine the difficulty level of the anagrams selected from *Stage 1* in individual administration; and
2. to determine whether 10 success trials was sufficient to create an expectation for future success.

This second aspect was very crucial as it has been a confounding factor in achievement research with women.

Subjects

The subjects were 43 female undergraduate students with I-E scores from 7 - 12, drawn from the larger subject pool of 201 subjects (See Table 4).

Materials

The research laboratory was a large room divided into cubicles by movable wall units approximately 7' in height. (See Appendix G Study Room Arrangement.) Each subject was supplied with a stop-watch and pencil. Each subject was presented a pamphlet consisting of: an introductory page, 30 pages alternating a page with a single anagram, and a page with 6 attribution statements, followed by a final page for comments. The 6 attribution statements included all possible pairings of the four attributions: ability, luck, task difficulty, and effort. The forced choice sentence format was modeled after McMahan (1973). Care was taken to ensure:

1. that the order of pairing of the attributions was equivalent (e.g. ability first vs. luck second);
2. that the frequency of pairing, for example of luck with ability regardless of order, was equivalent to the frequency of pairing of luck with effort.

The ordering of the attribution pairs, plus the frequency of occurrence are shown in Appendix H. A sample of the study pamphlet is in Appendix I. There were two sets of pamphlets: one set with 10 "success" anagrams followed by 5 insoluble anagrams, and a second set with 10 "failure" anagrams followed

by the same 5 insoluble anagrams. The attribution statement pages were identical. (See Appendix D *Stage 3* for the anagram lists.)

Procedure

The subjects were divided into a success-failure (S-F or success) treatment and a Failure-failure (F-F or failure) treatment. The assignment to groups was conducted by ordering the subjects according to locus of control score (from 7 to 12) and systematically placing the first subject into S-F, the second into F-F, the third into S-F, and so on till all subjects were assigned. This was done to ensure that variation in locus of control score was equally balanced between the two treatment groups. The subjects were then contacted by telephone for an individual appointment.

The subjects were directed to a cubicle and supplied with a stop-watch, pencil, and the study pamphlet that was assigned to them. Brief verbal instructions were given with a demonstration on how to use the stop-watch. The subject then worked independently and attempted to solve the series of anagrams. The subject was to stop working when a solution was found or 2 minutes had elapsed,¹⁰ whichever came first. After each anagram, the subject answered 6 statements as to

¹⁰Two minutes is a generous time allotment. Most studies have restricted the time factor to such a degree that it dictates the attribution which subjects prefer to explain the outcome--insufficient time. By allowing 2 minutes, very few subjects complained of insufficient time to solve the anagrams. (Ref. McMahan, 1973; Feather & Saville, 1967.)

the reason for the success or failure, and circled a number on a continuum from 0 - 10 at the bottom of the page, predicting the probability of success on the next anagram. In the success treatment, subjects attempted 10 easy anagrams and then 5 insoluble anagrams. In the failure treatment, subjects attempted 10 very difficult anagrams and then the same 5 insoluble anagrams as the success group. The subjects then responded to the questions about mood and enjoyment of the task at the end of the pamphlet.

Upon completing the pamphlet, the subject returned it to the author. The subject's comments were read immediately to identify anyone who was seriously disturbed by the experience. The subject was then taken to another room down the hall that was comfortably furnished, for the debriefing. The subject was informed that some anagrams were insoluble and that the difficulty level of the anagrams was pre-determined. A statement was then read describing the nature of the research (see Appendix I), questions were responded to and discussion encouraged.

Results

Two measures were of interest in the initial pre-test:

1. the probability of success ratings from 0 - 10 for each anagram, yielding 15 ratings; and
2. the failure rates for the anagram.

The percentage of subjects who failed to solve each anagram are shown in Appendix D *Stage 3*.

For the subject to be included in the data analysis several criteria had to be met:

- a. each subject was allowed 2 made-up-words over 15 trials, including misspellings such as SNIFLE, a common error. Each anagram attempted constituted one trial. If a subject had 3 or more made-up-words, they were excluded from data analysis as they would have a false sense of achievement;
- b. subjects in the success treatment had to solve 6 or more of the first 10 anagrams to meet the criterion of having a success experience;
- c. subjects in the failure treatment had to fail 5 or more anagrams in the first 10 anagrams to meet the criterion of having a failure experience.

The results of the initial pre-test are shown in Table 6.

Table 6
Frequency of Subjects Who Met
the Criterion

Treatment	Total N	Succeeded	Failed	Made-up-words
Success-Failure	21	20	0	1
Failure-Failure	22	10	9	3

From this table, it can be seen that the "failure anagrams" were not sufficiently difficult. Therefore, before a comparison of probability of subsequent success ratings could be made, it was necessary to re-select anagrams in the failure list and pre-test them. If they yielded a sufficient failure (≥ 5 over 10 trials) then the comparison could proceed to determine

whether the 20 subjects with a success experience in the S-F treatment had maintained a high expectation for success throughout the 5 final trials with insoluble anagrams.

Stage 4: Continuation Pre-Test

This pre-test was necessary to determine that the failure rate of the substitute anagrams was sufficient to ensure a failure experience in the F-F treatment group.

Subjects

The subjects were 23 female undergraduate students at the University of Ottawa with I-E scores ranging from 8 - 12.
(See Table 4)

Materials

The subjects all received the failure study pamphlet. The anagrams selected are shown in Appendix D *Stage 4*. The format of the pamphlet was identical to that in *Stage 3*.

Procedure

All subjects were assigned to the failure-failure treatment group. The remainder of the procedure was identical to that in *Stage 3*.

Results

The percentage of failure for each anagram is shown in Appendix D *Stage 4*. Where applicable, combined percentages of *Stages 3 and 4* are also shown. The frequency of subjects who met the criterion are shown in Table 7.

Table 7
Frequency of Subjects Who Met Criterion:
Failure Only

Treatment	Total N	Succeeded	Failed	Made-up-words
Failure-Failure	23	6	13	4

Combined Results - Stages 3 and 4 Pre-Tests

From evaluation of the percentage of subjects who failed the anagrams in Stages 3 and 4 two final lists of anagrams were prepared to be used in the experiment proper. (See Appendix D Stage 5).

A t-test comparison of the success-failure treatment group N=20 and the failure-failure treatment group N=22 (9 in Stage 3 plus 13 in Stage 4) was conducted with respect to their probability of success ratings.

The ratings for the 15 trials, and the t-test of the mean rating over trials 11-15, are shown in Table 8.

Table 8

Pre-test Probability of Success Ratings*

	Trials										Insoluble					11 - 15**	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	$\bar{X}$	s.d.
Treatment																	
Success-F	7.6	7.9	7.5	7.7	8.0	7.8	8.0	7.9	7.8	7.8	7.4	6.9	6.3	6.0	5.0	6.3	1.9
Failure-F	6.0	5.6	5.3	5.1	4.9	4.7	4.5	4.5	4.7	4.2	3.9	3.6	3.5	3.1	2.9	3.4	1.8

* the rating can range from 0.0 to 10.0

** $t = 4.88$ p 0.0001 D.F. 40

From the results of this test, it was concluded that 10 success trials was sufficient to create an expectation for future success in the S-F treatment group which was significantly different than the expectation of the failure group. It was now possible to proceed with the experiment proper.

Stage 5: The Experiment Proper

This final stage of the research was conducted to evaluate the hypotheses generated in the previous section of this thesis.

Subjects

The subjects were 89 female undergraduate students at the University of Ottawa. They were drawn from a larger subject pool of 201 subjects. There were 45 Internal locus subjects with scores from 1 - 7, and 44 External locus subjects with scores from 13 - 19. Table 9 indicates the distribution of subjects with respect to: Rotter Internal-External Locus of Control Score, age, Faculty affiliation, and major subject of interest. 5

Materials

The study pamphlet had an identical format to the pamphlet used in Stages 3 and 4. The only alterations were:

1. three anagrams in the success list were changed (two of which had not been pre-tested); and
2. the anagrams in the failure set were re-ordered such that the most difficult anagrams were presented first.

Table 9
Subject Characteristics Selected Sample

Characteristic	f*	Range	Mean	Characteristic	f
<u>I-R Score</u>				<u>Faculty</u>	
Internal	38	1-7	4.8	Science & Eng.	8
External	38	13-19	14.7	Social Sciences	9
		17-71	22.25	Health Sciences	29
<u>Age</u>				Other	30
20 or less	51			<u>Subject</u>	
21 to 25	14			Biology	6
26 to 35	6			Psychology	8
36 to 45	3			Nursing	17
over 45	2			Physed	11
				Other	34

*the characteristics are shown for 76 subjects as 13 subjects were excluded from final data analysis. See RESULTS.

Research has shown that not being able to solve initial anagrams hinders the solution of subsequent anagrams.

(Feather & Saville, 1967.) This was desired to ensure that most subjects in the F-F treatment would meet the failure criterion of 5 or more failures in the first 10 anagrams. (See Appendix D *Stages 5* for anagram lists and solutions.)

The remainder of the materials, stop-watches, and cubicles, were identical to those used in *Stages 3 and 4*.

Procedure

The first step in the procedure was the assignment of subjects to the treatment group. That was accomplished in the following manner.

The time-table sheets with the subjects' names and locus of control score on them were first grouped according to the days subjects had indicated they could participate. Numbers were then assigned to the subjects in sequential order so that a subject with a 9:00 a.m. appointment preference for Monday was #100, and a subject who could come on Wednesday at 4:30 p.m. would be #130. A list of the subjects' names and assigned code numbers was made. The time-table sheets were then regrouped according to locus of control score in sequential order lowest to highest--creating two piles; one of Internal locus and one of External locus. Each of these piles was then systematically subdivided into a success-failure treatment group and a failure-failure treatment group. by placing the lowest locus score into S-F, the next score

into F-F, the third into S-F, and so on till all subjects were assigned. At completion, this yielded four groups:

Internal	Success-Failure	N=22
	Failure-Failure	N=23
External	Success-Failure	N=22
	Failure-Failure	N=22

Four lists were drawn up, one list for each treatment group by locus category, indicating the names of the subjects, their assigned code numbers and their locus of control score. Using these sheets, the subjects' code numbers were assigned to two piles of study pamphlets which corresponded to their treatment group either S-F or F-F. The time-table sheets were then regrouped according to the days of the week to facilitate telephone contacts to establish appointment times. All of the pamphlets were then grouped to number sequentially thus masking the treatment or locus assignment. The four lists with the subject's code number, treatment group, and locus category were submitted to M. McCarrey for safekeeping. At the time of the study, the author knew only the subjects' name and code number as indicated in a large appointment book. Thus, the author was blind to both treatment group and locus category.

The remainder of the procedure was identical to that outlined in *Stage 3*. The subject was directed to a cubicle and provided with the study pamphlet with her code number on it, a pencil, and a stop-watch. Brief verbal instructions were given with a demonstration on how to use the stop-watch. The

subject then worked independently and attempted to solve the series of anagrams, responded to the attribution statements, estimated their future success, and completed the comments page at the end of the pamphlet (see Appendix G, Study Pamphlet).

Upon completing the Study Pamphlet, within 25 to 45 minutes, the subject returned it to the author at which point the comments were read. The subject was then taken to a room down the hall, that was comfortably furnished, for the de-briefing. (See Appendix G). The de-briefing followed the format described in Stage 3.

All of the Study Pamphlets were stacked together as they were completed. No tabulations were done until all subjects had participated.

CHAPTER III

RESULTS

The results will be presented in three sections. The first section will present the rate of failure and success with respect to the anagram solutions. This will indicate the effectiveness of the S-F, and F-F treatment manipulation. This section will also present the probability of success ratings to demonstrate further the effectiveness of the treatment manipulation in creating an expectation for success in the success-failure treatment group, and a very low expectation for success in the failure-failure treatment group.

The second section will present the results of the attribution statements with respect to the four locus by treatment groups. These results constitute the major focus of the research.

The third and final section will present results from post hoc exploration of subjects' comments and feelings which were recorded upon completion of the study task.

Section 1: Treatment Manipulation

The first measure of interest was to record whether the anagram had been solved or not, or whether a word had been made up. This was noted as a + for solved, a - for unsolved, and a ⁺ for a made-up-word indicating an unacceptable solution

perceived by the subject as correct. Success treatment subjects had to solve 6 or more anagrams in the first 10 anagrams. Failure treatment subjects had to fail or not solve 5 or more anagrams in the first 10 anagrams. If subjects did not meet these criteria, their data was excluded from analysis. All subjects were allowed 2 made-up words over the 15 anagram trials. With 3 or more made-up words, the subject's data was excluded from analysis.

The results of these criteria are shown in Table 10.

Table 10

Frequency of Subjects Who Met Criteria

Treatment		Total N	Succeeded	Failed	Made-up-words	Other
Internal	Success	22	22*	0	0	0
	Failure	23	3	16*	3	1
External	Success	22	22*	0	0	0
	Failure	22	4	16*	2	0

* met criteria

Almost all subjects made up one or two words over 15 trials. The number of subjects who created 3 or more words is greater in the F-F treatment as solutions in the S-F treatment were often readily recognized and success subjects rarely derived more than 5 working solutions or needed the 120" to reach a solution to each anagram. In the F-F treatment, however, it was common to derive 15 or more working solutions for each

anagram and to need the 120" to reach a solution or stop working. The five subjects who made up words created: 3, 4, 7, 7, and 9 words each. It is questionable whether the three subjects who created 7+ words fully understood the task, the English language, or were properly motivated. It is probable that their poor judgement is not solely a result of the treatment condition. The one subject in the "other" category did not complete all of the attribution statements and clearly misunderstood the task.

The remainder of the data analysis in the thesis is from the subjects who met the above criteria. The group frequencies are shown in Table 11.

Table 11
Final Subject Frequencies

		TREATMENT		Totals
		S-F	F-F	
LOCUS	Internal	22	16	38
	External	22	16	38
		44	32	76

Table 12 indicates the effectiveness of the difficulty level of the anagrams in creating a failure or success experience. The data include simply the number of clear fails or passes in the first 10 trials. The results indicate that the anagrams which were chosen were able to separate the two groups significantly.

Table 12
Anagram Solutions

TREATMENT	FAILS			PASSES				
	$\bar{X}$	Range	S.D.	$\bar{X}$	Range	S.D.		
10 success trials	0.9	0 - 4	1.0	-20.99*	8.9	6 - 10	1.2	21.62* N=44
10 failure trials	6.6	5 - 9	1.3		2.8	0 - 5	1.3	N=32

* p .01

Both t comparisons were drawn between treatment groups within the single categories of fails and passes.

The second measure of interest was the probability of success ratings. Upon completion of each anagram, the subjects rated what they thought their probability of success on the next anagram would be. They circled a number on a continuum from 0 to 10; 0 was a low probability, 5 a moderate probability, and 9-10 a high probability (see Appendix I, Study Pamphlet).

The ratings of the success-failure treatment group (N=44) and the failure-failure treatment group (N=32) are shown in Table 13.

These results indicate that during the final 5 trials, the success treatment group maintained an expectation for success which was significantly higher than the failure treatment group which had a very low expectancy for success. (See Figure 5; Mean Probability of Success Ratings.)

These results indicate that the treatment manipulation was effective and that further analysis of attribution statements could proceed.

Table 13.

Mean Probability of Success Ratings

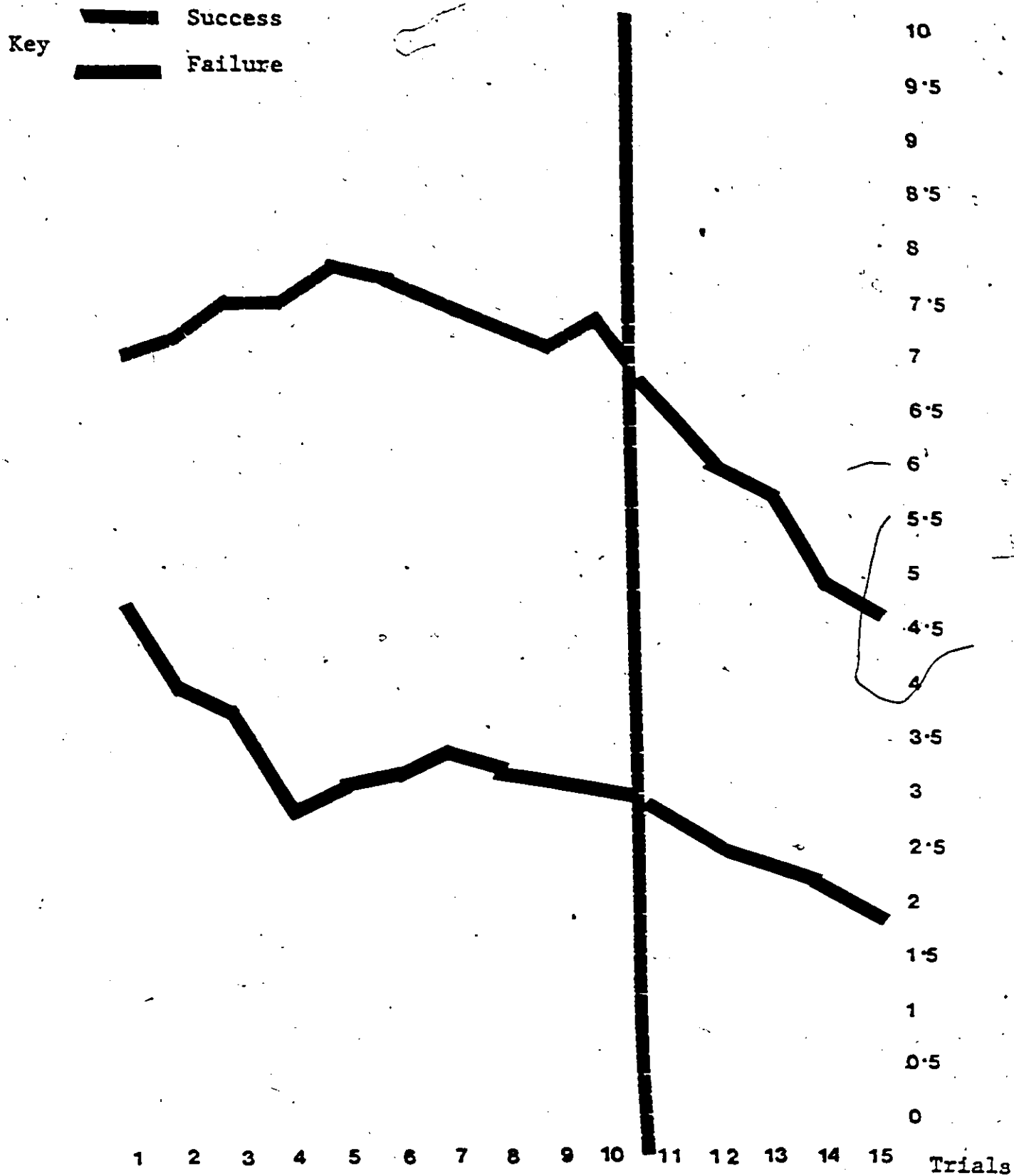
TREATMENT	T R I A L S										I N S O L U B L E				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Success-F	7.1	7.3	7.6	7.6	7.9	7.8	7.5	7.3	7.2	7.3	6.6	6.0	5.7	4.9	4.6
Failure-F	4.9	4.1	3.7	2.9	3.1	3.2	3.4	3.2	3.1	3.0	2.8	2.5	2.3	2.0	1.9

Trials 11 - 15

TREATMENT	$\bar{X}$	Range	S.D.	t
Success-F	5.6	0.2-9.4	2.27	6.29
Failure-F	2.3	0.0-8.0	2.17	

p .0001

Figure 5: Mean Probability of Success Ratings



Section II: Attribution Statement Analysis

Before a comprehensive analysis begins, it is necessary to know how attributions were made by the subjects in the four locus cum treatment groups: Internal Success (INTSUC), External Success (EXTSUC), Internal Failure (INTFAIL), External Failure (EXTFAIL). Table 14 presents the attributions employed by the subjects during failure trials 11 - 15. The numerical values represent a mean value of the sum of weights for each attribution. The minimum value is 0, the maximum value is 15. To evaluate whether the attribution with the highest weight was indeed statistically the most often cited within each condition, a t test comparison involving the four attributions was performed within each treatment cell.¹¹ The t comparisons which are shown are with respect to the attribution immediately below the given attribution. Consequently, if attribution 2 is significantly different from attribution 3, it is automatically significantly different from attribution 4 as well. See Table 14 - Attributions for Trials 11 - 15, Outcome: Failure. For a visual presentation of these means, see Figure 6. Histogram of Causal Attributions Outcome: Failure.

¹¹All analyses were computed with programs in BMDP - 77; Biomedical Computer Programs P-Series, Health Sciences Computing Facility, UCLA, 1977.

Table 14

Attributions for Trials 11 - 15
Outcome: Failure

TREATMENT	L O C U S									
	I N T E R N A L					E X T E R N A L				
	Attribution	$\bar{X}$	t	p		Attribution	$\bar{X}$	t	p	
Success	1. TD	12.86	-4.76	0.000***	1. TD	11.95	-4.90	0.000***		
	2. Ability	7.81	2.46	0.01**	2. Luck	7.68	-0.12	0.9*		
	3. Effort	4.72	-0.11	0.9	3. Ability	7.54	4.10	0.000*		
	4. Luck	4.59			4. Effort	2.81				
Failure	1. TD	11.18	-0.39	0.70**	1. TD	10.93	-1.16	0.25**		
	2. Ability	10.75	4.94	0.00**	2. Ability	9.37	2.35	0.02**		
	3. Effort	5.00	-1.56	0.13	3. Luck	5.93	1.48	0.14		
	4. Luck	3.06			4. Effort	3.75				

* Indicates the attribution is only significantly different from the attribution with the lowest mean value, #4.

** The attribution is significantly different from attributions #4 and #3.

*** The attribution is significantly different from all other attributions.

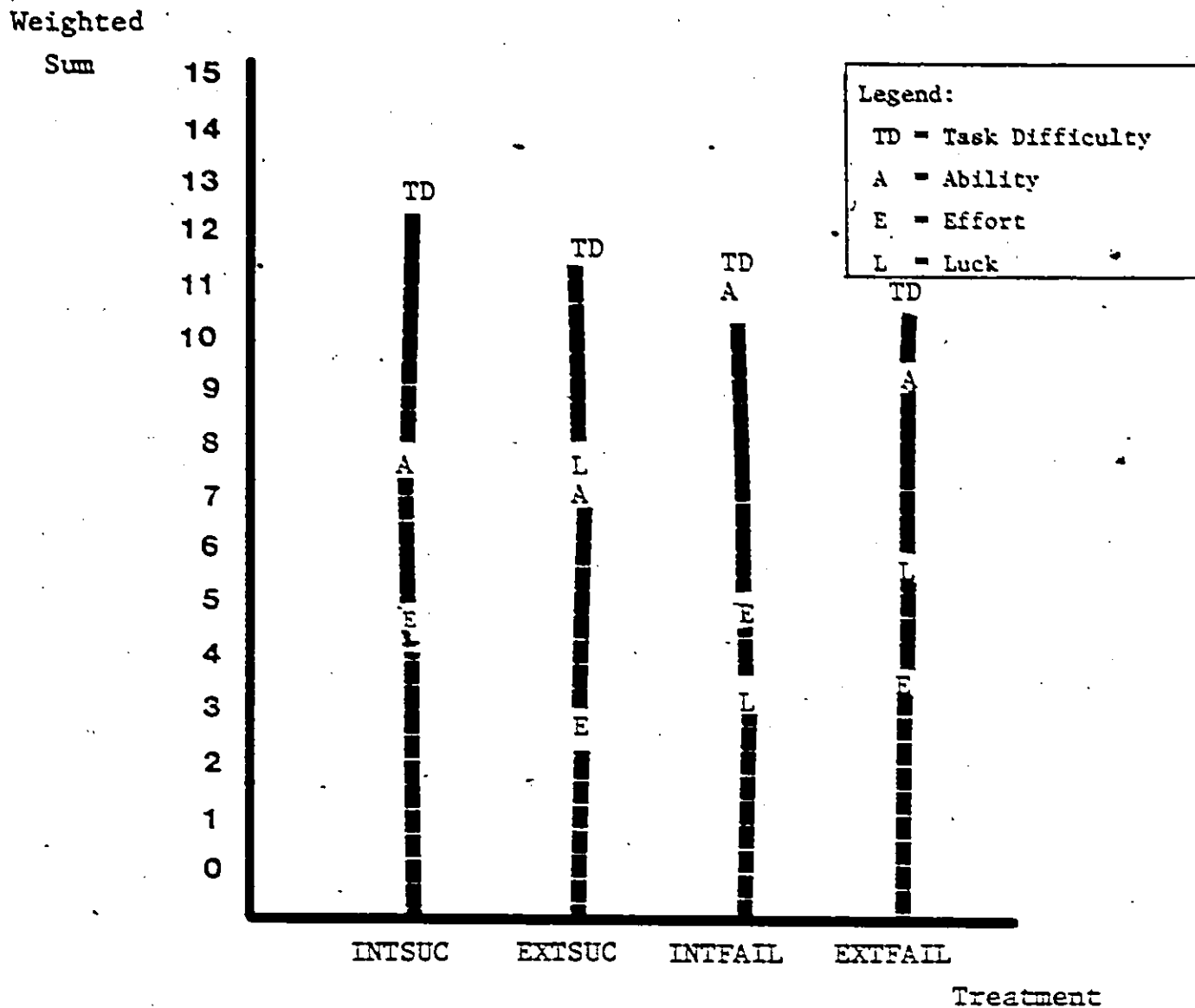


Figure 6: Histogram of Causal Attributions
Outcome: Failure

The values plotted are means of each attribution. Each mean represents the total sum of the weights assigned to that attribution in trials 11 - 15.

In the same manner as in Table 14, attributions for the first ten trials are shown in Table 15. The numerical values again represent a mean of the value of the sum of weights for each attribution. However, as there are 10 trials, the minimum value is 0 but the maximum value is now 30. The t comparisons were conducted in the same manner as in Table 14. For a visual presentation of these means see Figure 7: Histogram of Causal Attributions During Experimental Manipulation.

From Table 14 and Table 15 it is evident that there was differential employment of the attributions by the subjects within a given treatment group. During failure trials (11-15) Success Internal and External subjects both employed the Task Difficulty attribution significantly more often than any other attribution. Failure Internal and External subjects both employed Task Difficulty and Ability attributions in a similar manner. However these two attributions were employed significantly more often than the alternative attributions (luck or effort) by both the internal and the external, failure subjects. During pre-treatment trials (1-10) we note (Table 15) that the attribution Task Difficulty was the one attribution of significance for all groups. It is now necessary to determine whether a particular causal attribution was employed differentially in response to the treatment cum locus manipulation. To determine this, repeated measures analyses of

variance¹² were conducted for each attribution, with respect to the final treatment manipulation, Outcome: Failure (Trials 11-15); and with respect to the Initial Pre-Treatment Manipulation (Trials 1-10). Each analysis contains a test for main effects in the upper portion of the Table with a test of the equality of means; and a test of the interaction between grouping and trial factors in the lower portion. (Each trial is analysed separately, then the sum of squares is pooled, see EMDP-77, p.552.) See Table 16 for repeated measures analysis of attributions for trials 11-15; and Table 17 for repeated measures analysis of attributions for trials 1-10.

¹²EMDP 2V program, revised November, 1978.

Table 15
 Attributions for Initial Pre-Treatment Manipulation Trials
 (1 - 10)

TREATMENT	L O C U S					
	I N T E R N A L			E X T E R N A L		
	Attribution	$\bar{X}$	t	p	Attribution	$\bar{X}$ t p
Success	1. TD	25.54	7.48	0.000***	1. TD	22.68 5.08 0.000***
	2. Effort	16.40	-1.62	0.113*	2. Effort	14.45 -0.04 0.96*
	3. Ability	13.72	5.47	0.000*	3. Ability	14.36 2.74 0.009*
	4. Luck	4.31			4. Luck	8.50
Failure	1. TD	20.74	-2.37	0.02***	1. TD	21.99 -3.51 0.001***
	2. Ability	17.06	1.73	0.09*	2. Ability	15.31 0.82 0.41*
	3. Effort	13.18	-0.62	0.54	3. Luck	13.43 1.94 0.06
	4. Luck	11.25			4. Effort	9.25

* Indicates the attribution is only significantly different from the attribution with the lowest mean value, #4.

** The attribution is significantly different from attributions #4 and #3.

*** The attribution is significantly different from all other attributions.

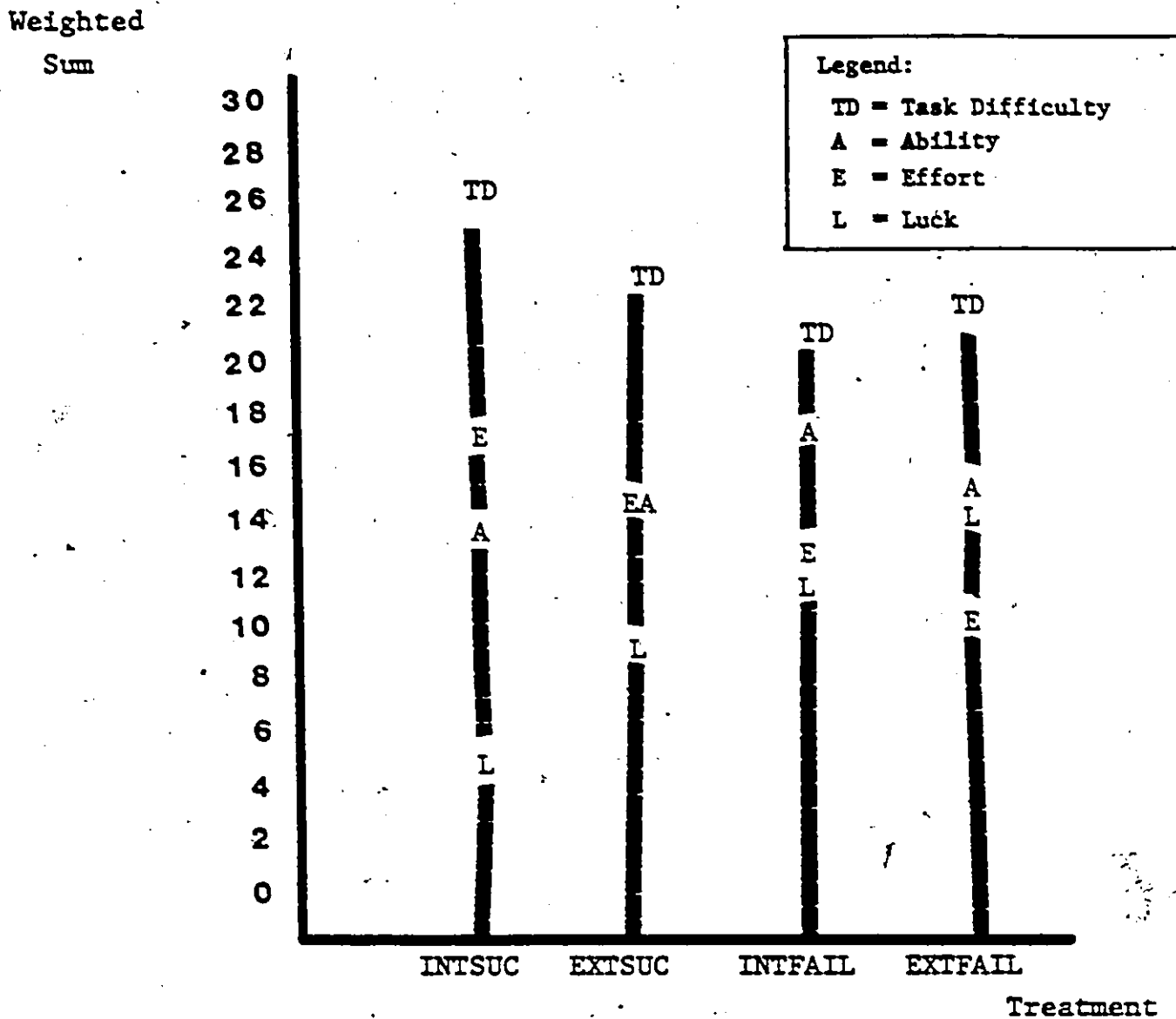


Figure 7: Histogram of Causal Attributions During Experimental Manipulation

The values plotted are means of each attribution. Each mean represents the total sum of the weights assigned to that attribution in trials 1 - 10.

Table 16

Summary Table of Repeated Measures Analysis
of Variance, Final Outcome: Failure

(Trials 11 - 15)

1. Attribution: TASK DIFFICULTY

SOURCE	SS	df	MS	F	P
L	1.24	1	1.24	0.61	0.43
T	6.71	1	6.71	3.29	0.07
LT	0.40	1	0.40	0.20	0.65
Error	146.98	72	2.04		
A	0.78	4	0.19	0.58	0.67
AL	0.67	4	0.16	0.50	0.73
AT	3.82	4	0.95	2.85	0.02
Error	96.70	288	0.33		

2. Attribution: ABILITY

SOURCE	SS	df	MS	F	P
L	2.51	1	2.51	0.81	0.37
T	21.00	1	21.00	6.73	0.01*
LT	1.12	1	1.12	0.36	0.55
Error	224.69	72	3.12		
A	0.88	4	0.22	0.65	0.62
AL	3.18	4	0.79	2.35	0.05*
AT	0.62	4	0.15	0.46	0.76
ALT	3.31	4	0.82	2.44	0.04*
Error	97.65	288	0.33		

KEY TO SYMBOLS:

- L = Locus (Internal or External)
- T = Treatment (Success or Failure)
- A = Attribution over Trials

Table 16 (Cont'd)

3. Attribution: LUCK

SOURCE	SS	df	MS	F	p
L	32.96	1	32.96	13.19	0.0005*
T	9.92	1	9.92	3.97	0.05*
LT	0.04	1	0.04	0.02	0.89
Error	179.99	72	2.49		
A	2.69	4	0.67	2.63	0.03*
AL	0.14	4	0.03	0.14	0.96
AT	0.11	4	0.02	0.11	0.97
ALT	0.27	4	0.06	0.27	0.89
Error	73.59	288	0.25		

4. Attribution: EFFORT

SOURCE	SS	df	MS	F	p
L	9.24	1	9.24	3.06	0.08
T	1.34	1	1.34	0.44	0.50
LT	0.40	1	0.40	0.13	0.71
Error	217.72	72			
A	2.45	4	0.61	1.28	0.27
AL	3.51	4	0.87	1.83	0.12
AT	4.66	4	1.16	2.42	0.04*
ALT	1.41	4	0.35	0.74	0.56
Error	138.50	288	0.48		

Table 17

Summary Table of Repeated Measures Analysis
of Variance, Pre-Treatment Manipulation

(Trials 1 - 10)

1. Attribution: TASK DIFFICULTY

SOURCE	SS	df	MS	F	P
L	1.20	1	1.20	0.90	0.34
T	13.89	1	13.89	10.41	0.001*
LT	7.83	1	7.83	5.87	0.01*
Error	96.12	72	1.33		
A	33.02	9	3.66	6.86	0.001*
AE	4.17	9	0.46	0.87	0.55
AT	30.57	9	3.39	6.35	0.001*
ALT	2.65	9	0.29	0.55	0.83
Error	346.46	648	0.53		

2. Attribution: EFFORT

SOURCE	SS	df	MS	F	P
L	16.07	1	16.07	3.99	0.001*
T	32.88	1	32.88	8.16	0.04*
LT	1.82	1	1.82	0.45	0.001*
Error	290.02	72	4.02		
A	27.09	9	3.01	4.15	0.001*
AL	10.22	9	1.13	1.57	0.12
AT	20.89	9	2.32	3.20	0.001*
ALT	5.85	9	0.65	0.90	0.52
Error	470.47	648	0.72		

Table 17 (Cont'd)

3. Attribution: ABILITY

SOURCE	SS	df	MS	F	p
L	0.57	1	0.57	0.14	0.70
T	8.50	1	8.50	2.13	0.14
LT	2.63	1	2.63	0.66	0.41
Error	287.18	72	3.98		
A	48.87	9	5.43	7.16	0.001*
AL	12.10	9	1.34	1.77	0.06
AT	67.68	9	7.52	9.92	0.001*
ALT	8.09	9	0.89	1.19	0.30
Error	491.21	648	0.75		

4. Attribution: LUCK

SOURCE	SS	df	MS	F	p
L	34.40	1	34.40	9.12	0.001*
T	42.85	1	42.85	11.36	0.001*
LT	0.03	1	0.03	0.01	0.92
Error	271.62	72	3.77		
A	27.19	9	3.02	8.16	0.001*
AL	4.66	9	0.51	1.40	0.18
AT	2.76	9	0.30	0.83	0.59
ALT	2.52	9	0.28	0.76	0.65
Error	240.07	648	0.37		

A final test of the predictive utility of the attribution Ability to discriminate success from failure subjects, involved a t-test comparison of the success and failure groups collapsing for locus. (See Table 19.)

Table 19
t-test Comparison of Ability
 Success vs. Failure
 collapsed for Locus

TREATMENT	N	Mean	SD	Max	Min	t	df	p
Success	44	7.68	4.21	15	0.0	-2.61	74	0.01*
Failure	32	10.06	3.47	15	1.0			

From Table 19 we now know that the accurate classification of failure subjects at the 75% level, was due to a significant differential employment of the Ability attribution by success and failure subjects, irrespective of locus of control. Returning now to the attribution *Luck*, it is evident from Table 16 that there are two main effects, one for locus, one for treatment, and an interaction of the attribution over trials. To determine whether luck would discriminate subjects with respect to locus of control, irrespective of treatment; and locus of control, combined with treatment, two discriminant analyses were conducted. (See Tables 20(a) and 20(b).)

Table 20(a)

Discriminant Analysis of Locus
of ControlVariable entered: *Luck*F df
13.32 1 74

Experimental Condition	CLASSIFICATION MATRIX		
	% Correct	Internal	External
Internal	73.7	28	10
External	<u>55.3</u>	<u>17</u>	<u>21</u>
Total	64.5	45	31

Table 20(b)

Discriminant Analysis of Locus
cum TreatmentVariable entered: *Luck*F df
5.88 3 72

Experimental Condition	CLASSIFICATION MATRIX				
	% Correct	INTSUC	EXTSUC	INTFAIL	EXTFAIL
INTSUC	27.3	6	7	8	1
EXTSUC	59.1	8	13	0	1
INTFAIL	50.1	6	2	8	0
EXTFAIL	<u>0.0</u>	<u>4</u>	<u>7</u>	<u>5</u>	<u>0</u>
TOTAL	35.5	24	29	21	2

From the discriminant analysis, it is apparent that Luck discriminates best given the locus of control irrespective of treatment manipulation. In Table 20(a) the classification for Internal subjects is quite accurate (73.7%). We know from Table 14 that the mean values are lower for the Luck attribution, and this may be why Luck discriminates so well for Internals. The discrimination for Externals is not accurate (obtaining only 55.3% correct classifications). By referring to Table 20(b) we see that the poor classification is due to differential employment of Luck by external subjects in success *versus* failure treatments. None of the external failure subjects could be correctly identified using the discriminating score for Luck. Only the classification of external success subjects approaches a reasonable level of accuracy (59.1%). This suggests that this group employed the Luck attribution in distinction to all other subjects. To test the significance of this finding, t-test comparisons were drawn between internal vs. external locus of control subjects irrespective of treatment; and with locus *cum* treatment combinations, controlling for locus and treatment respectively. (See Tables 21(a) and 21(b).)

Table 21 (a)

t-test Comparison of *Luck* Internal vs. External
Collapsed for Treatment

LOCUS	N	Mean	SD	Max	Min	t	df	p
Internal	38	3.94	3.59	12	0	-3.65	74	0.0001*
External	38	6.94	3.57	12	0			

Table 21 (b)

t-test Comparison of *Luck*

(i) Controlling for Treatment								
GROUPING	N	Mean	SD	Max	Min	t	df	p
INTSUC	22	4.59	3.89	12	0.0	-2.92	42	0.006*
EXTSUC	22	7.68	3.07	12	4.0			
INTFAIL	16	3.06	3.02	10	0.0	-2.28	30	0.003*
EXTFAIL	16	5.93	4.04	12	0.0			
(ii) Controlling for Locus								
GROUPING	N	Mean	SD	Max	Min	t	df	p
EXTSUC	22	7.68	3.07	12	4.0	1.51	36	0.13
EXTFAIL	16	5.93	4.04	12	0.0			
INTSUC	22	4.59	3.89	12	0.0	1.31	36	0.20
INTFAIL	16	3.06	3.02	10	0.0			

From Table 21(a) we note that the reluctance by Internals to employ the Luck attribution is significant in contrast to its employment by Externals. This distinction continues to hold within each treatment condition of success and failure. Therefore the classification of external failure subjects at 0.0%, (see Table 20(b)), is counterbalanced by the distinction of the internal failure subject's reluctance to employ the Luck attribution. Internal failure and success subjects cannot be distinguished from one another to a significant degree by their employment of the Luck attribution. Nor can external failure or success subjects be distinguished for luck, even though the prior classification (Table 20(b)) may have led us to believe it would.

This brings us to the completion of the attribution statement analysis. The final section to be considered includes an analysis of subjects' comments and feelings which were recorded upon completion of the study task.

SECTION III: Affective Responses

The comments generated by the task and recorded on the final page of the task pamphlet are not central yet provide valuable supplemental information. An evaluation of the subjects' comments in relation to treatment cum locus, and to the subjects' characteristics of faculty membership, major subject of interest, and age, was undertaken.

First, the subjects' comments in response to Item #3 "How do you feel right now?" were roughly grouped into three categories:

1. those individuals who were hard on themselves (H-O-S) or expressed alteration in mood, producing comments such as "depressed" or "disappointed," "stupid," "dumb," "let down";
2. those individuals who were relatively uninfluenced one way or another by their participation whose comments typically were: "OK," "tired," or "I enjoyed it";
3. those individuals who expressed dislike for the task, typically commenting "frustrated" or "annoyed."

A chi square analysis of the relationship of locus and treatment to the feeling categories was conducted. The number of subjects in each category is shown in Table 22.

Table 22

Chi Square Analysis of Feeling
Categories

LOCUS	TREATMENT	H-O-S		Uninfluenced		Frustr.		Totals
		O	E	O	E	O	E	
Internal	S-F	6	6.95	7	4.63	9	10.42	22
	F-F	6	5.05	1	3.37	9	7.58	16
External	S-F	8	7.53	4	5.79	10	8.68	22
	F-F	5	5.47	6	4.21	5	6.32	16
TOTALS		25		18		33		86

	chi	df	p
Internal S vs. F.	3.643	2	0.16
External S vs. F.	1.858	2	0.39

Key: O = Observed
E = Expected

Neither of the p values obtained indicate a significant relationship between either locus and/or treatment to the feelings of the participants. It was necessary to determine then whether any subject characteristics showed a systematic relationship to the feeling categories. The following statistics were generated from chi square analysis of each variable to the three feeling categories. See Table 23.

Table 23

Subject Characteristics
and Feelings

VARIABLE	PEARSON CHI SQ.	df	p
Locus of Control	0.535	2	0.76
Treatment	0.115	2	0.94
Age	11.211	8	0.19*
Faculty	6.518	8	0.58
Subject	10.542	8	0.22
I-E Score	0.535	2	0.76

None of the variables show a systematic relationship to the feeling categories. The one category which may be fruitful is age, with the lowest probability of occurrence. Looking closer at the data (see Table 24), it is difficult to even speculate on what trend may be fruitful apart from younger women having a slight tendency to be hard on themselves as opposed to being uninfluenced.

In order to determine whether there was any possibility that this might be a fruitful avenue for further exploration, a discriminant analysis was conducted using the only interval data available: age and I-E scores. Neither of these characteristics was powerful enough to be entered as a discriminating variable.

Table 24
Chi Square Analysis of Age to
Feeling Categories

A G E	H-O-S		Uninfluenced		Frustrated	
	O	E	O	E	O	E
20 or less	19	16.7	15	12.0	17	22.1
21 - 25	2	4.6	2	3.3	10	6.0
26 - 35	3	1.9	1	1.4	2	2.6
36 - 45	1	0.9	0	0.7	2	1.3
over 45	<u>0</u>	0.6	<u>0</u>	0.4	<u>2</u>	0.8
	25		18		33	

This completes the analysis of the Results. The implications of these results with respect to the questions under study will now be considered.

CHAPTER IV

DISCUSSION

Introduction

The intent of this thesis has been to determine whether women will develop an expectation to succeed given success outcomes, and if so, employ causal attributions in a predictable and systematic manner different from those who do not develop such an expectation; secondly to determine whether locus of control has predictive utility in demonstrating the use of motivational attribution biases, given control for consistency of the outcome.

The hypotheses were generated from outcome expectancy cum causal attribution theory, the locus of control construct, and prior empirical research. A brief review of these concepts will be presented here to enable the reader to understand clearly their import to the data about to be discussed.

Outcome expectancy and causal attribution are integral components of a unitary theory. The constructs were separated in applying theoretical weights, as outcome expectancy lends itself to motivational explanations of attribution biases while causal attribution does not. It is important to note that this separation is artificial as the model (employed by Weiner *et al.*, 1971) considers both components

before making any predictions. The result of this can be seen quite clearly in Tables 1, 2 and 3: Theoretical Weights for Predicted Attributions. Under each condition, only one attribution of the four receives a weight from each concept. The value in separating the concepts is to maximize predictions for systematic and motivational biases unbounded by causal attribution theory. An equivalent total weight was assigned to locus of control theory. This in effect gave the "benefit of the doubt" to locus of control. To assign it an equal weight in predicting attributions was a necessary step to maximize its potential in predicting motivational attribution biases.

The particular contribution of each theory in the predictive mold is as follows:

Outcome expectancy refers to the individual's generalized expectation to succeed (or fail) as well as the individual's specific expectation to succeed, which can be manipulated by exposure to success or failure outcomes. It can be measured by having subjects indicate before each trial what their probability of success will be on a continuum from 0 to 10. Expectancy can predict whether or not a person will employ systematic attribution biases. If the expectation is for success, and one fails, the bias is to attribute the outcome to something external to the self. Conversely, if one expects to fail, and does, the unbiased response is to attribute the outcome internally. This is the manner in which outcome

expectancy has been employed in this thesis. Whether the attributions will fall on the temporary or stable dimension is better predicted by causal attribution theory, and it is this component which contributes to the "systematic" aspect of the bias.

Causal Attribution predicts the stability or variability of attributions from knowledge of the consistency and repeatability of reinforcements. Consequently, even if failure is unexpected, but is suddenly and repeatedly presented, the attribution should be to a stable factor. This was shown by McCaughan (1978) who found that "provided repeated success or failure experiences are received, the magnitude of expectancy shift is influenced by the stability/instability dimension" (p.224). From this theory then, all attributions in this study would be attributed to stable factors. This prediction is modified by outcome expectancy which predicts that those who expect failure (F-F treatment) will employ an internal attribution (*ability*) while those who do not expect failure (S-F treatment) will employ an external attribution (*task difficulty*):

Locus of Control posits that given an expected outcome with negative affective consequences, subjects will employ motivational attribution biases. These should be self-protective and enhancing for internals, and simply self-protective for externals. A number of attributions serve this purpose in a failure paradigm. However, the one

attribute which is not self-protective and is therefore not predicted by locus of control is ability. Precisely the attribution predicted by outcome expectancy cum causal attribution theory in the failure-failure treatment condition. It is valuable then to independently combine locus of control with outcome expectancy and causal attribution to determine which alternative attribution (to ability) receives the most support. For internals, it was task difficulty, for externals it was effort.

The results will now be considered keeping these perspectives in mind.

Examination of Results

The first hypothesis predicted that if the treatment manipulation was successful, success subjects would have higher probability of success ratings than failure subjects, throughout the final 5 failure trials. This hypothesis was supported in a comparison of the probability of success (Ps) ratings in Table 13 and Figure 5 of Section I: Results. This suggests that 10 success experiences are sufficient to sustain female subjects through 5 failure trials, and that the expectation to succeed is still moderately high. The failure subjects on the other hand should be "unsurprised" at failure.

To consider Hypotheses 2 and 3 it will be useful to directly compare the predicted attributions with the obtained

attributions. Only the two most theoretically probable of the four possible attributions will be considered. See Table 25 for the comparison of predicted and obtained attributions.

Table 25
Comparison of Attributions

TREATMENT	L O C U S			
	Internal		External	
	Predicted	Obtained	Predicted	Obtained
SUCCESS	1. TD	TD	1. TD	TD
	2. Luck	Ability	2. Luck	Luck, Ability*
FAILURE	1. TD	TD, Ability*	1. Effort	TD, Ability*
	2. Ability		2. Luck	

* The difference with respect to these attributions did not reach significance.

Hypothesis 2 predicted that given a success experience, internals and externals would employ the same systematic biased attribution: *Task Difficulty*, during failure trials. The prediction is confirmed. Task Difficulty is significantly the most probable attribution for internal and external success subjects (see Table 14). This is further supported by a repeated measures analysis of variance (see Table 16) which reports non-significance for the interaction of locus of control and task difficulty. The only effect of significance is an interaction effect for trials of treatment and task difficulty. We can conclude that when female subjects are given an expectation to succeed and are then exposed to

repeated failure, that they employ systematic biased attributions in a manner similar to that found in current research with men.

Hypothesis 3 makes predictions with respect to a motivational bias of locus of control and an expected failure outcome. With regard to Internals, it too appears correct.

However, support for this hypothesis is not as strong as that for hypothesis 2. Task Difficulty and Ability are the most probable attributions occurring in equivalent frequency (see Table 14). From the repeated measures analysis of variance, there is no significant interaction effect of locus, as predicted. The use of this attribution then cannot be ascribed to a self-enhancing motivational bias related to locus of control.

The final hypothesis was that, given a motivational bias, externals given a failure experience will employ only a *self-protective* attribution: *Effort*. This prediction was not supported. The repeated measures analysis of variance for Effort (Table 16) shows only one significant effect, an effect of trials with an interaction of treatment and effort. This simply indicates an emergent systematic pattern as failure continues. Again we must conclude that a self-protective motivational bias with respect to locus of control did not take precedence.

Summary

In sum, hypotheses 1 and 2 are supported. Female subjects developed an expectation to succeed and, given that expectation, employed systematic biased attributions to account for failure. Hypothesis 3, that a motivational self-serving bias would be employed *differentially* by internal and external locus subjects, was not supported.

Alternative Explanations

Reconsideration of hypothesis 3, which pertains to subjects who expect and experience failure, will be useful to examine the obtained attributions with regard to the original theoretical predictions for those attributions. This will allow determination of which theory took precedence. What this exploration may ultimately lead to is a re-alignment of theoretical weights, as the prediction for Internal Failure was correct, but not for the reason expected. See Table 26.

Table 26

Obtained Attributions Re-considered
Failure - Failure

I N T E R N A L					E X T E R N A L				
Attribution	OE	CA	LC	e	Attribution	OE	CA	LC	e
1a. TD	0	$\frac{1}{2}$	1	0	1a. TD	0	$\frac{1}{2}$	$\frac{1}{2}$	0
b. Ability	$\frac{1}{2}$	$\frac{1}{2}$	0	1	b. Ability	$\frac{1}{2}$	$\frac{1}{2}$	0	1

KEY: OE = Outcome Expectancy
CA = Causal Attribution
LC = Locus of Control

e = empirical data
TD = Task Difficulty

Two findings emerge from this Table. First, if we ignore the lack of a difference between TD and Ability, and consider TD only, it is apparent that it was predicted from causal attribution theory and a self-serving bias hypothesis from the locus of control construct. The only inadequacy of locus of control was in *discriminating* self-enhancement and protection, given an expectation for failure. This finding supports Weiner's contention that strong, negative affective reactions are mediated by locus of control in a self-serving manner. This attribution is not predicted from outcome expectancy and cannot be interpreted as a systematic biased attribution. It is quite simply self-serving. Second, when one considers the attribution ability, it is evident that internals employed it more often than externals (see Figure 6: Results). This preference is significant (see Table 16: Repeated Measures ANOVA), and implies some locus of control difference in the readiness to employ (or not employ) self-serving attributions. The interaction of ability cum locus cum treatment was further tested by discriminant analysis and t comparisons. From those analyses (see Tables 18, 19), it emerged that the attribution ability was only employed differentially with respect to treatment condition (failure subjects employed it more than success subjects). We can conclude then that there is a distinction in the preferential employment of self-serving attributions with respect to locus of control but this distinction is not found in all tests

conducted. Internal locus of control subjects, given a failure outcome, employed an ability attribution more readily than external locus subjects. This was not, however, a major discriminating characteristic of locus of control subjects.

A final consideration which will be given to the obtained predictions concerns the use of the attribution of luck by success external subjects (see Table 25). The use of this attribution to such an extent lends further support to a self-serving hypothesis, as this attribute is predicted from Outcome Expectancy and Locus of Control, but not from causal attribution theory. Repeated measures analysis of variance (see Table 18) indicates significant main effects for locus and for treatment, and an interaction of the attribution over trials. In a discriminant analysis for locus, luck discriminates to a high degree for internals (they do not employ it). In a test of its discriminating power in locus cum treatment, it only discriminates moderately well for external success subjects. In t test comparisons involving luck, it was further shown that this attribute is employed differentially, to a significant degree, in relation to locus of control but not with respect to treatment. We can conclude then that, again there is a tendency for external locus of control subjects to employ self-serving attribution biases more than internal locus subjects. Once more, this motivation does not take precedence. Given a success expectation and a failure outcome, systematic causal attributions are employed first,

and secondly, self-serving biases are employed preferentially by external locus of control subjects.

Summary

This re-examination of the obtained attributions clarifies the non-support for hypothesis 3 regarding differential employment of self-enhancing and self-protective attribution biases. What emerges is the recognition that locus of control does not differentiate self-enhancement from self-protection under failure conditions (it may do so under success only conditions). What is apparent is that locus of control has a low magnitude (second order) but significant contribution in predicting the use of self-serving biased attributions. External locus subjects are more likely to employ them than internal locus subjects, in that they are less likely to accept responsibility for failure (attribute to ability) and prefer to externalize failure outcomes by employing attributions to task difficulty, and secondly, bad luck.

The other major consideration of this re-examination is the recognition of the predictive power of causal attribution theory. The repeatability of the outcomes predicts stable attributions, and apart from the external success subjects employment of luck, all remaining significant attributions are on the stability dimension. This suggests that if theoretical weights are applied in future that causal attribution be given a greater consideration. The model could be reformulated such that given conditions with limited affective

discomfort (success-failure) locus of control is not critical and predictions from outcome expectancy and causal attribution hold. Given affective discomfort, failure only, causal attribution must be a predictor with specification from locus of control first and outcome expectancy second. In sum, causal attribution identifies the attributions of choice in success and failure conditions as either stable or variable. Under conditions with limited affective discomfort, outcome expectancy will determine which of the two attributions will occur, thus adding precision to causal attribution. Given conditions with considerable affective discomfort, it is locus of control which adds more clarity to causal attribution, as a better predictor than outcome expectancy. (Though this distinction is not strong enough to yield significance.)

Do these findings take on a different meaning if we consider the attributions generated during the pre-treatment manipulation?

Examination of Pre-Treatment Results

In discussing the attributions obtained in trials 1 - 10, it is important to keep in mind several considerations. First, the outcome for the subjects is different. Success subjects are succeeding and attributions are positive statements: I'm good at these, I tried hard. Failure subjects are failing and attributions are negative statements: I'm not good at these, I didn't try hard. Comparisons of the employment of each attribution must be made with this in mind. Second, the

general expectancy the subject brings with her to the laboratory will be operating and influence her attribution choice. Some speculation of this level of expectancy can be made from an analysis of the attributions, but it is just that: speculation.

If we refer to Table 15, which indicates the obtained attributions, we note that *Task Difficulty* was the most significantly employed attribution for all locus cum treatment combinations. *Effort* is second for success subjects, and *Ability* is second for failure subjects, but these preferences are not significant. (see Figure 7 for a visual comparison). If we take them at face value, we know that: (1) success subjects credited their success to the ease of the task and that they had "tried hard"; and (2) failure subjects credited their failure to the difficulty of the task and their lack of ability: "I'm not very good at these." The reluctance of success subjects to credit success to their ability, and preference to use the *variable* attribute, effort, suggests that the *general* expectation for subjects was *not* to succeed. However, we do know they maintained moderately high probability of success ratings *after* failure began, and that external subjects employed a self-serving attribution: luck. It is possible that the task difficulty was obvious in both success and failure conditions, that motivation or systematic biases had no part, and that the attributions were simple, logical explanations: the task either *really* was too easy or too hard.

If this is accepted, it limits quite strictly the previous interpretations. However, there are three qualifications of this parsimonious account of the findings.

1. There is little reason to expect any subjects to employ a variable attribute. The failure outcome after success, is repeated often enough to generate stable attributions. Bad luck, then, is a self-serving attribution, not a logical unbiased response.
2. Traditional empirical findings have suggested that women make internal failure judgements regardless of the task employed. This study refutes that. Given tasks of recognizable difficulty, female subjects do not "look to themselves" first to explain failure. This is encouraging because it indicates that given greater certainty, women respond in as logical a manner as men.
3. During the debriefing of subjects, there were as many subjects certain of the insolvability of the anagrams as subjects relieved to know why they failed.

Summary

Consideration of the pre-treatment manipulation trials (1-10) alters the perspective of the post treatment (trials 11-15) obtained results. It takes into account subjects' general expectancy in coming to the task, and the possibility that attributions to task difficulty are simple, logical, unbiased attributions. Prior interpretations, however, are not totally unwarranted, as even this parsimonious explanation cannot account for all the significant attributions. Further, this critical account still bodes well for stereotypic expectancies of women, as it *refutes* prior empirical support of women's ready employment of ability attributions for failure outcomes.

How did the women respond to this experience?

Feelings? Frustrated!

Final consideration will be given to the feelings which subjects reported at the termination of the task. This served to identify anyone seriously disturbed by the task (and there were a few), and to allow for an exploration of the affective response to negative outcomes. A chi square analysis of three identifiable groupings of feelings did not indicate a significant relationship between either locus and/or treatment to the feelings of the participants. A further analysis of the feeling categories to subject characteristics was also non-significant. Although there is not a systematic nor discriminating relationship between treatment conditions or the subject characteristics with regard to the categorized feelings, this result need not be discouraging. On the contrary, is it not desirable that the moods of the subjects and tendency to self-blame are equally distributed regardless of locus or treatment? The implications of this finding is that any systematic differences in attribution style will be equivalently influenced across locus and group by the idiosyncratic characteristics of personal mood. It is beyond the scope of this thesis, but it may be of value in future considerations to determine whether Weiner's affective dimension of "great pride" or "great shame" (see Appendix B), bears any relationship to the feeling categories identified here.

Further analysis of the attributions (pre-dictive, not post-dictive) is necessary before this aspect can be evaluated.

Concluding Statements

It can now be said with some certainty that, given clearly defined task outcomes, and an expectation to succeed, young college women respond to failure outcomes in a manner similar to college men. They employ logical attributions and demonstrate systematic and to a lesser extent, self-serving biases. Exposure to successful outcomes does provide a sustained expectancy for success given failure outcomes. The theoretical uncertainties which were present in previous research have been clarified. The obtained findings can be accounted for readily by causal attribution theory, and are enhanced by the contribution of outcome expectancy and locus of control in the manner described previously. The locus of control construct was found to influence the use of self-serving biases but did not discriminate self-enhancing from self-protective attributions as originally anticipated.

The implications of this research are that young college women respond in a predictable manner when the uncertainty regarding a task outcome is reduced. These average women are able to persist for a lengthy period of time (30-45 minutes) at a frustrating and unrewarding task, and not become either helpless or depressed.

The conflict between theoretical predictions and findings generated by previous empirical work on sex differences in attribution style, has been clarified. The theories appear sound, as attributions not supported by prior empirical work were obtained in failure trials.

This research does not deny that a sex difference in the employment of attributions exists. It was undertaken with the acceptance that an expectation to succeed would have to be experimentally manipulated. This research suggests that the sex difference identified in prior research can be accounted for by the different expectations males and females entertain regarding task outcomes. There is no need for a "feminine" motivational interpretation of previous research, as the careful assignment of proper controls and knowledgeable application of theoretical expectancies indicated that female subjects can and do respond in a predictable manner. It is not known however, whether the clarity of the demands of the task in this study are what distinguishes these findings from previous research. It is possible that women need greater certainty to avoid personal responsibility for failure. A study which varies the difficulty level of tasks in a systematic manner, employing moderate levels, as well as the easy and difficult levels which were used here, could clarify this influence on the attribution process in women. What this research does demonstrate is that if women's expectancies are to be altered they will need exposure to

successful outcomes and clear indications that they can be accountable for those successes.

This thesis has directed its attention to failure, as that has been an area which required theoretical clarification and empirical refutation. The question now remains as to how women would respond to less clearly defined tasks and/or to successful outcomes without failure. What manipulation will produce personal responsibility for success? It will be valuable to continue to investigate women's attitudes toward achievement, as these attitudes reflect our sense of well-being and influence our active contributions to society.

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APPENDIX A
ATTRIBUTION CONCEPTS

FOUR CAUSAL ATTRIBUTIONS

Below is an excerpt from "The Role of Information Processing in Making Causal Attributions for Success and Failure" by Irene Hanson Frieze.* It presents the four attributions used in attribution research and the characteristics which increase the probability of that attribution being employed.

In general, more internal attributions are made for outcomes unique to the person (Ajzen, 1971; Fontaine, 1974; Frieze & Weiner, 1971; McArthur, 1972). People also see actors as more responsible for success events than for failure events (Chaikin, 1971; Fontaine, 1974; Frieze & Weiner, 1971; Streufert & Streufert, 1969; Weiner & Kukla, 1970). Interpersonally stable attributions such as task difficulty, are made for outcomes shared by others, whereas causal elements varying across people (personal characteristics, luck, etc.) are utilized when the actor experiences different outcomes than others (Fontaine, 1974; Frieze & Weiner, 1971). As may be further expected, attributions that are more stable over time are made for situations that are considered with the past, especially if the immediate outcome is expected (Feather & Simon, 1971a,b; Frieze & Weiner, 1971; McArthur, 1972).

ABILITY

When specific causal attributions are considered ability attributions are most common when the available information implies consistency over time (Chaikin, 1971; Feather & Simon, 1971a,b; Frieze & Weiner, 1971) and, although there is some discrepancy here, when there is high initial success (Beckman, 1970; Feather, 1967; Jones, Rock, Shover, Goethels & Ward, 1968). Ability attributions are also commonly made for outcomes unique to the person, for outcomes that generalize over similar tasks, and for tasks on

*in John Carroll & John Payne (Ed.'s) Cognition and Social Behavior, Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers, 1976, p.100.

which a long time has been spent (Frieze & Weiner, 1971). However, outcomes shared with highly similar other people also lead to ability attributions (Fontaine, 1974).

EFFORT

Effort attributions result from outcomes unique to the person, outcomes inconsistent with past outcomes, and outcomes consistent with their level of importance to the person (Fontaine, 1974; Frieze & Weiner, 1971). Also, success after spending a long time working on the task (Frieze & Weiner, 1971) and low initial success followed by an increasing proportion of successes tend to be attributed to effort (Beckman, 1970; Jones *et al.*, 1968).

LUCK

Luck, mood, or unique circumstances attributions are most common with outcomes not shared with others or inconsistent with the past (Fontaine, 1974; Frieze & Weiner, 1971; McArthur, 1972; Orvis, Cunningham & Kelley, 1975).

TASK DIFFICULTY

Antecedents of task attribution are outcomes shared with others and high consistency over time and situation for the person (Frieze & Weiner, 1971; Fontaine, 1974; Orvis, Cunningham & Kelley, 1975). Failure after working a long time is also attributed to task difficulty (Frieze & Weiner, 1971).

APPENDIX B

DISTINGUISHING AFFECT AND EXPECTANCY
OF SUCCESS

APPENDIX B

Distinguishing between affect and expectancy of success

	External Stable	Internal Stable	External Variable	Internal Variable
Attribution Outcome*	Task Ease F	Ability F	Luck F	Effort F
Expectancy of Success	decrease	decrease	increase	increase
Affect	little shame	great shame	little shame	great shame
Attribution Outcome*	Task Ease S	Ability S	Luck S	Effort S
Expectancy of Success	increase	increase	not increase	moderate increase
Affect	little pride	great pride	little pride	great pride

* F represents Failure and S represents Success

APPENDIX C

· ALTERNATIVE ATTRIBUTIONS TO
HYPOTHETICAL PREDICTIONS

APPENDIX C

ALTERNATIVE ATTRIBUTIONS TO HYPOTHETICAL PREDICTIONS

This appendix presents the attributions which are alternative responses to the attributions predicted in the hypotheses section of the thesis.

Hypothesis 2a: Internals and externals will engage in systematic attribution biases given failure outcomes and an expectancy to succeed.

Outcome:	Failure, Unexpected, Repeated
Treatment:	Success - Failure
Locus:	Internal and External

1. Task Difficulty - external, stable.

Alternative Attributions

2. Luck - external, variable.

It is predicted from Outcome Expectancy and Locus of Control theories but not Causal Attribution as the outcome is repeated and only stable attributions correspond to repeated outcomes. It would be predicted from Locus of Control theory as it reduces negative affect, it is self-protective but not enhancing. Empirical findings show strong support for its occurrence in research with males and females (Deaux, 1976; Deaux & Farris, 1976, 1977; Feather, 1969; McMahan, 1973).

3. Effort - internal, variable.

Not predicted from Outcome Expectancy x Causal Attribution theory as it does not conform to the requirement to be external and stable. It would be predicted from Locus of Control theory as it is self-protective. It is not expected based on empirical data (Deaux & Farris, 1976).

4. Ability - internal, stable.

Not predicted from Outcome Expectancy, but conforms to Causal Attribution in being stable. Not predicted from Locus of Control as it has maximal negative affective consequences and is neither self-protective nor enhancing. There is data to indicate it would occur (Page, 1973).

Hypothesis 3a: That failure-failure internal subjects will employ a motivational bias.

Outcome: Failure, Expected, Repeated

Treatment: Failure-Failure

Locus: Internal

1. Task Difficulty - external, stable.

Alternative Attributions

2. Ability - internal, stable.

Predicted from Outcome Expectancy x Causal Attribution theory. Not predicted from Locus of Control as it is neither self-protective nor enhancing. It is likely to occur based on research (Deaux & Farris, 1977; Feather, 1969; McMahan, 1973).

3. Effort - internal, variable.

Predicted from Outcome Expectancy but not from Causal Attribution theory. Partially predicted from Locus of Control as the affective consequences are still negative, it is self-protective but not enhancing. Nor has this outcome been obtained to date (Deaux & Farris, 1976).

4. Luck - external, variable.

Not predicted from Outcome Expectancy x Causal Attribution theory. Partially predicted from Locus of Control theory as it minimizes the negative affect, is self-protective but not enhancing. It is likely to occur based on current research (Deaux, 1976; Deaux & Farris, 1976).

Hypothesis 3b: That failure-failure external subjects will employ a motivational bias.

Outcome: Failure, Expected, Repeated
Treatment: Failure-Failure
Locus: External

1. Effort.- internal, variable..

Alternative Attributions

2. Luck - external, variable.

Not predicted from Outcome Expectancy x Causal Attribution theory. It would be predicted from Locus of Control theory as it is self-protective but not enhancing. It is highly probable from current research (Deaux, 1976).

3. Ability - internal, stable.

Predicted from Outcome Expectancy x Causal Attribution theory. It is not self-protective and therefore is not predicted from Locus of Control theory. It is highly probable based on the literature (Deaux & Farris, 1977; Feather, 1969; McMahan, 1973).

4. Task Difficulty - external, stable.

Not predicted from Outcome Expectancy, is expected from Causal Attribution theory. Only partially predicted from Locus of Control as it is a self-enhancing form of self-protective bias. This outcome has not been obtained to date (McMahan, 1973; Weiner *et al.*, 1971).

APPENDIX D

ANAGRAM LISTS

Stages 1, 3, 4 p.163

Stage 5 p.164

4/CONTINUATION
PRE-TEST

3/INITIAL PRE-TEST

1/ANAGRAM SELECTION

Stage No.	Anagrams	N	FZ	Stage No.	Anagrams	N	FZ	Stage No.	Anagrams	N	FZ	Combined N	FZ
1	CNEGAH	24	20	3	REATHE	21	5						
	WOELLY		20		NIDDEL		5						
	ONEASS		21		VERBLA		33						
	UFTRUE		20		INNERD		5						
	ONERSP		16		SECNOD		0						
	SPRUUE		36		ONERSP		14						
	OOLRUC		21		AFILYM		5						
	MNEGAA		44		UFTRUE		28						
	MEEALF		40		GERIDB		14						
	AFTERR		20		WOELLY		33						
	GERIDB	24	8		ERROPP	22	14		4	SPRUUE	23	39	45
	ONERNND		64		SPRUUE		41			MNEGAA		39	40
	ERROPP		21		MEEALF		36			+ NARCEN		74	
	OCRSEU		44		MNEGAA		41			+ HITCKN		26	
	UESNLI		52		OCRSEU		32			+ MORBEP		87	
	LEIRCC		16		TACCSU		36			+ OANTAM		61	
	AFILYM		16		OCCSRU		50			OCCSRU		22	35
	* NEREIM		80		UESNLI		64			UESNLI		26	44
	* OCCSRU		48		ONERNND		59			ONERNND		30	44
	* TACCSU		48		NEREIM		95			NEREIM		65	80
TOTAL N		48			ALSEGT	43	91			ALSEGT	22	91	66
					OPUSGN		95			OPUSGN		100	98
					EMAGLE		95			EMAGLE		91	93
					FEISNI		81			FEISNI		87	84
					UPSLON		91			UPSLON		100	96

All anagrams from Feather, 1966, p.290; and Feather & Saville, 1967, p.227, unless otherwise noted.

* These anagrams were generated by the author.

+ These anagrams are from Deaux & Farris, 1977, p.61.

FZ refers to the percentage of subjects who failed to solve the anagram.

FINAL ANAGRAM LIST STAGE 5 - EXPERIMENT PROPER

Previous F%	Anagrams	N	Accepted Solutions
5	RFATHE	44	father
5	MIDDEL		middle
/	TMOMEN*		moment
5	INNERD		dinner
0	SECNOD		second
14	ONERSP		person
5	AFILYM		family
14	ERROPP		proper
14	GERIDB		bridge
/	BUNMER**		number
87	MORBEP	45	/
80	NEREIM		ermine
74	NARCEN		canner
61	GANTAM		tagman
44	UESSNL		unless
40	MNEGAA		manage
44	OMERNB		modern
35	OCCSRU		crocus, occurs, succor
36	TACCSU		cactus
40	SPRUUE		pursue
	ALSEGT	89	
	OPUSGN		
	EMAGLE		
	FELSNI		
	UPSLON		

** Anagram from Feather, (1966) not pre-tested

* Anagram generated by this author not pre-tested

APPENDIX E

ROTTER'S INTERNAL/EXTERNAL
LOCUS OF CONTROL SCALE*

with key statements marked

Includes: Introductory comments, and map
as distributed in class

*from Rotter, 1966.

Hello! My name is Verna Semkow. I'm a doctoral candidate in the Clinical Psychology programme. The final step in my programme is my dissertation research. I hope that you can be of some assistance to me in completing this project. As you may know, in Psychology research it is common to use subjects of only one sex. And that is the case with my research. I will not require males in my research and the fellows are free to leave at this point if they wish.

There are two reasons I have chosen to work with ladies only. One reason is that it makes the study simpler if the participants are the same sex, and secondly, I am interested in exploring the area of women's self-perceptions in an achievement context. I'm concerned with what women think of themselves in a variety of settings, more specifically work and academic settings. The research I have planned has both theoretical and practical significance. The nature of the particular theories and the practical applications of the research will be explained fully once you have had the opportunity to participate.

Your participation in this project will help me; it will add to our knowledge of women's self-perceptions; and it may just possibly, tell you something about yourself as I will meet personally with each participant at the end of the experimental session.

If you choose to participate, I will require you to complete a 15-minute questionnaire in class, and to attend one 30-45 minute session outside class for 2 course credits.

If you cannot participate, I would still appreciate if you would complete the questionnaire as that information will be helpful to me.

Please complete in full

Name: _____ Student Number: _____

Age: _____ Number of years of education: _____

Faculty: _____ Major Subject: _____

Home Telephone: _____

Time when you can be reached at home: _____

Please blacken the timetable for periods in which you would be free to participate in the experiment (requires 30 mins.) Please blacken as many times as possible. You will be contacted by phone for an appointment time.

The time at left indicates the beginning of the session.

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9 a.m.					
9:30					
10					
10:30					
11					
11:30					
12					
12:30					
1 p.m.					
1:30					
2					
2:30					
3					
3:30					
4					
4:30 ^a					
5					

Social Reaction Inventory

This is a questionnaire to find out the way in which certain important events in our society affect different people.

Each item consists of a pair of alternatives lettered a or b. Please select the one statement you actually believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief; obviously there are no right or wrong answers.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. For each numbered question, make an X in the box beside either the a or b, whichever you choose as the statement most true.

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

GO TO NEXT PAGE

REMEMBER

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

I more strongly believe that:

1. ☐ a. Children get into trouble because their parents punish them too much.
- ☐ b. The trouble with most children nowadays is that their parents are too easy with them.
2. ☒ a. Many of the unhappy things in people's lives are partly due to bad luck.
- ☐ b. People's misfortunes result from the mistakes they make.
3. ☐ a. One of the major reasons why we have wars is because people don't take enough interest in politics.
- ☒ b. There will always be wars, no matter how hard people try to prevent them.
4. ☐ a. In the long run, people get the respect they deserve in this world.
- ☒ b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. ☐ a. The idea that teachers are unfair to students is nonsense.
- ☐ b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. ☒ a. Without the right breaks, one cannot be an effective leader.
- ☐ b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. ☒ a. No matter how hard you try, some people just don't like you.
- ☐ b. People who can't get others to like them don't understand how to get along with others.

GO TO NEXT PAGE

8. [] a. Heredity plays the major role in determining one's personality.
- [] b. It is one's experiences in life which determines what they're like.
9. [X] a. I have often found that what is going to happen will happen.
- [] b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. [] a. In the case of the well-prepared student, there is rarely, if ever, such a thing as an unfair test.
- [X] b. Many times, exam questions tend to be so unrelated to course work that studying is really useless.
11. [] a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
- [X] b. Getting a good job depends mainly on being in the right place at the right time.
12. [] a. The average citizen can have an influence in government decisions.
- [X] b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. [] a. When I make plans, I am almost certain that I can make them work.
- [X] b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. [] a. There are certain people who are just no good.
- [] b. There is some good in everybody.
15. [] a. In my case, getting what I want has little or nothing to do with luck.
- [X] b. Many times we might just as well decide what to do by flipping a coin.

GO TO NEXT PAGE

16. [X]a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
- []b. Getting people to do the right thing depends upon ability: luck has little or nothing to do with it.
17. [X]a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
- []b. By taking an active part in political and social affairs the people can control world events.
18. [X]a. Most people can't realize the extent to which their lives are controlled by accidental happenings.
- []b. There really is no such thing as "luck".
19. []a. One should always be willing to admit his mistakes.
- []b. It is usually best to cover up one's mistakes.
20. [X]a. It is hard to know whether or not a person really likes you.
- []b. How many friends you have depends upon how nice a person you are.
21. [X]a. In the long run the bad things that happen to us are balanced by the good ones.
- []b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. []a. With enough effort we can wipe out political corruption.
- [X]b. It is difficult for people to have much control over the things politicians do in office.
23. [X]a. Sometimes I can't understand how teachers arrive at the grades they give.
- []b. There is a direct connection between how hard I study and the grades I get.
24. []a. A good leader expects people to decide for themselves what they should do.
- []b. A good leader makes it clear to everybody what their jobs are.

GO TO NEXT PAGE

25. ☒ a. Many times I feel that I have little influence over the things that happen to me.

☐ b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. ☐ a. People are lonely because they don't try to be friendly.

☒ b. There's not much use in trying too hard to please people, if they like you, they like you.

27. ☐ a. There is too much emphasis on athletics in high school.

☐ b. Team sports are an excellent way to build character.

28. ☐ a. What happens to me is my own doing.

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

29. ☒ a. Most of the time I can't understand why politicians behave the way they do.

☐ b. In the long run the people are responsible for bad government on a national as well as on a local level.

GO TO NEXT PAGE

Please remove this sheet after completing the questionnaire and keep for future reference.

I have chosen to participate in the research on:

"Women's Self-Perceptions".

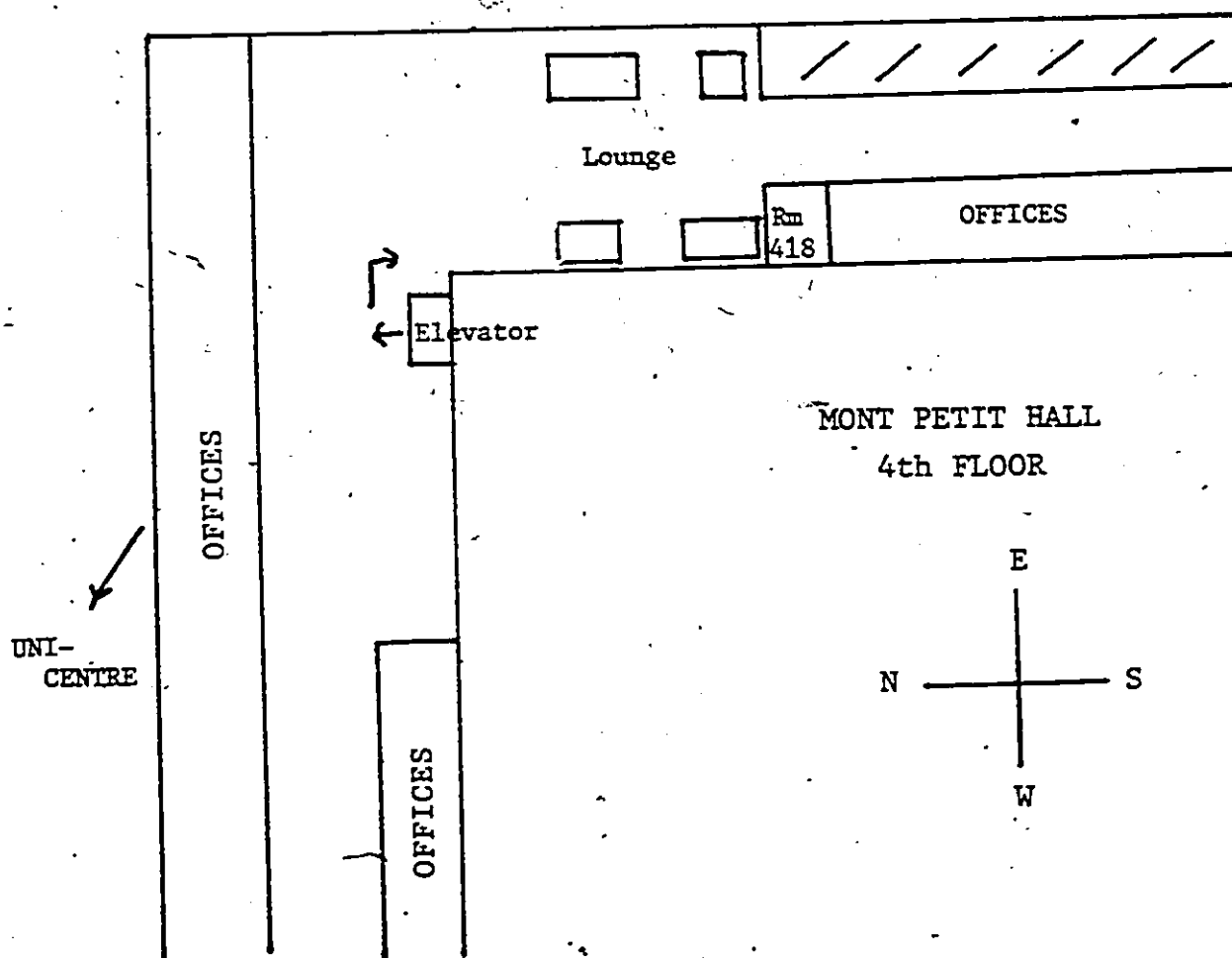
The researcher is: Verna-Jean Amell Semkow ph.746-1195

The time is: _____
(fill in when appt. time is determined)

The date is: _____

The place is: Rm. 418 Mont Petit Hall

Go to Mont Petit Hall (the physed building adjacent to the Uni-Centre). Take the elevator to the fourth floor. Turn right and wait in the lounge area to be called.



APPENDIX F
LOCUS OF CONTROL SCORE
DISTRIBUTIONS

APPENDIX F

Reported Values of Rotter Scores for College Populations*

College	N	Sex	Mean	S.D.	Range
Ohio State	605	F	8.42	4.06	
	1180	combined	8.29	3.97	
Kansas	68	F	7.75	3.79	
	113	combined	7.73	3.82	
Connecticut	169	F	9.62	4.07	
	303	combined	9.22	3.88	
Purdue	1000	combined	8.50	3.74	

*from Rotter *et al.*, (1972)

University of Ottawa	249	F	9.91	3.16	1 - 21
-------------------------	-----	---	------	------	--------

Internal Score cf		Mid-range Score cf		External Score cf	
0	0	8	86	13	202
1	1	9	113	14	213
2	5	10	138	15	225
3	9	11	162	16	231
4	16	12	180	17	239
5	34			18	241
6	52			19	243
7	73			20	244
				21	245
				22	245
				23	245
				INC	249

Proportions:

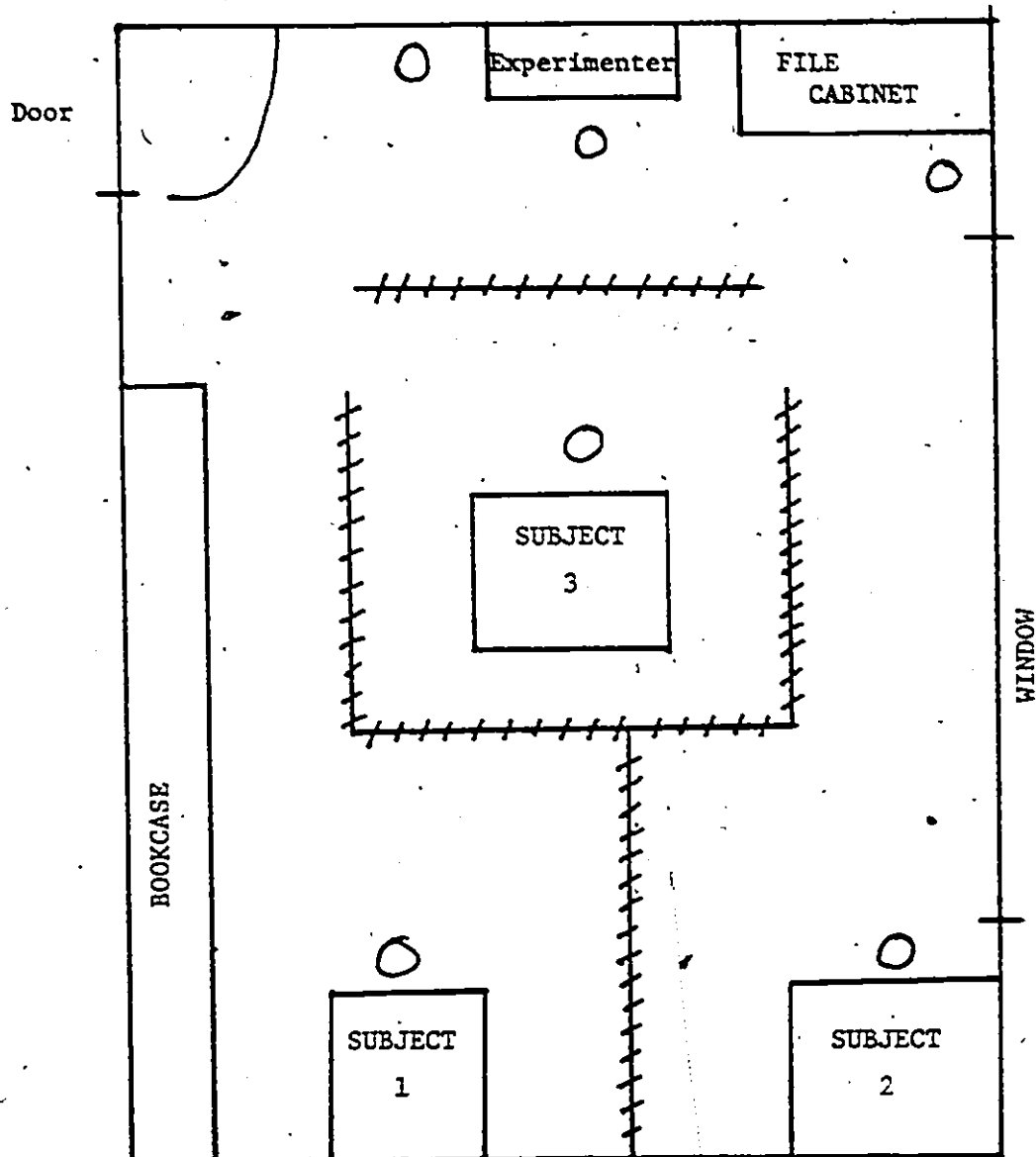
30.12% 43.37% 26.50% = 99.99%

APPENDIX G

DIAGRAM OF STUDY ROOM ARRANGEMENT

APPENDIX G

STUDY ROOM ARRANGEMENT



○ = chairs .

++++ = movable dividers

APPENDIX H

LIST OF ATTRIBUTION
STATEMENT PAIRINGS

ATTRIBUTION PAIRS

1. TD - Effort
Ability - TD
Luck - Effort
Effort - Ability
Luck - Ability
TD - Luck
2. Luck - Ability
TD - Effort
Luck - TD
TD - Ability
Effort - Ability
Luck - Effort
3. TD - Luck
Effort - Ability
TD - Effort
Ability - Luck
Effort - Luck
TD - Ability
4. Effort - TD
Ability - Luck
Effort - Ability
Luck - TD
Ability - TD
Effort - Luck
5. Ability - TD
Luck - Effort
Ability - Luck
TD - Effort
Luck - TD
Ability - Effort
6. TD - Luck
Ability - TD
Effort - Luck
Luck - Ability
TD - Effort
Effort - Ability
7. Effort - Ability
TD - Luck
Ability - Effort
Luck - Ability
Effort - TD
Ability - TD
8. Luck - Ability
TD - Effort
Effort - Ability
Ability - TD
Luck - TD
Effort - Luck

9. TD - Luck
 Effort - TD
 Ability - Effort
 Luck - Effort
 Ability - Luck
 TD - Ability

11. Ability - Effort
 Luck - Ability
 Effort - Luck
 Luck - TD
 TD - Effort
 Ability - TD

13.. TD - Effort
 Effort - Ability
 TD - Ability
 Luck - Effort
 TD - Luck
 Ability - Luck

15. Effort - Ability
 Ability - TD
 Effort - TD
 Luck - Ability
 Effort - Luck
 TD - Luck

10.. Luck - Ability
 Effort - TD
 TD - Ability
 Ability - Effort
 TD - Luck
 Luck - Effort

12. Luck - Ability
 Effort - TD
 Luck - Effort
 TD - Ability
 Luck - TD
 Ability - Effort

14. Ability - Luck
 Luck - Effort
 Ability - TD
 TD - Luck
 Ability - Effort
 Effort - TD

Frequency of Ordered Pairs			Overall Frequency of Pairings Without Regard to Order		
First	Second	f			f
Ability	- Effort	7	Ability	- Effort	16
	TD	9	Ability	- TD	15
	Luck	6	Ability	- Luck	15
Effort	- Ability	9	Effort	- Luck	14
	Luck	6	Effort	- TD	15
	TD	7	TD	- Luck	15
TD	- Ability	6			
	Luck	9			
	Effort	8			
Luck	- Ability	9			
	Effort	8			
	TD	6			

APPENDIX I

STUDY PAMPHLET

1. Introductory page (179)
2. Anagram (180)
3. Attribution Statements (181)
30. Anagram (183)
31. Attribution Statements (184)
32. Final Page (186)
2. Debriefing Statement. (187)

PLEASE READ CAREFULLY BEFORE YOU BEGIN:

You are about to participate in a study which is investigating women's self-perceptions. You will be required to attempt to solve a series of anagrams. An anagram is a common word with the letters scrambled. Your task is to unscramble the letters to discover the original word. After each anagram are a number of statements. You must answer six statements after each anagram regardless of whether you solved or could not solve the anagram. You are then required to estimate how likely you think you are to solve the subsequent anagram, by circling a number on the line presented at the bottom of the page.

Below is a sample of the procedure.

Sample 1

Print the solution to the following anagram in the space at the right. Start the watch and record the time you require to solve the anagram.

FRTUI

Time elapsed

Please choose one statement from each pair that you feel best completes the picture.

I solved the anagram mainly because:

[] It is my lucky day OR [] It was easy

Please circle a number on the line below that indicates how likely it is that you are going to solve the next anagram.

0-----1-----2-----3-----4-----5-----6

low moderate high

Solution LIRUF

REMEMBER:

Be sure not to spend too much time on any one anagram. Ninety (90) to 120 seconds is sufficient. A stop watch is provided for you to keep track of the time. Record the time in the space provided. Do not persist beyond two minutes. You may not be able to solve all the anagrams. Be sure to answer the statements on the subsequent page whether or not you solved the anagram in the two-minute period.

ANY QUESTIONS?

GO TO NEXT PAGE

Print the solution to the following anagram in the space at the right. You may use the rest of the page to work out the solution. Start the watch and stop working when you arrive at a solution or 120 seconds have elapsed. Record the time in the space provided.

RFATHE

Time elapsed

If you solved the anagram on the last page please answer statements 1 - 6. If you did not solve the anagram answer statements 7 - 12.

Please choose one statement from each pair that you feel best completes the sentence. Mark an X beside the appropriate statement.

1. I solved the last word mainly because:
☐ It was easy OR ☐ I really tried
2. I solved the last word mainly because:
☐ I'm good at these OR ☐ It was easy
3. I solved the last word mainly because:
☐ I was lucky OR ☐ I really tried
4. I solved the last word mainly because:
☐ I really tried OR ☐ I'm good at these
5. I solved the last word mainly because:
☐ I was lucky OR ☐ I'm good at these
6. I solved the last word mainly because:
☐ It was easy OR ☐ I was lucky

GO TO BOTTOM OF PAGE*

Please choose one statement from each pair that you feel best completes the sentence. Mark an X beside the appropriate statement.

7. I didn't solve the last word mainly because:
☐ It was too hard OR ☐ I didn't really try
8. I didn't solve the last word mainly because:
☐ I'm not very good at these OR ☐ It was too hard
9. I didn't solve the last word mainly because:
☐ I was unlucky OR ☐ I didn't really try
10. I didn't solve the last word mainly because:
☐ I didn't really try OR ☐ I'm not very good at these
11. I didn't solve the last word mainly because:
☐ I was unlucky OR ☐ I'm not very good at these
12. I didn't solve the last word mainly because:
☐ It was too hard OR ☐ I was unlucky

* The original presentation was on 8 x 14 paper so that the ratings were on the same page as the above statements.

Please circle the number on the line below that indicates how likely it is that you are going to solve the next anagram.

0-----1-----2-----3-----4-----5-----6-----7-----8-----9-----10

low
probability

moderate
probability

high
probability

GO TO NEXT PAGE

Print the solution to the following anagram in the space at the right. You may use the rest of the page to work out the solution. Start the watch and stop working when you arrive at a solution or 120 seconds have elapsed. Record the time in the space provided.

UPSLON

Time elapsed

If you solved the anagram on the last page please answer statements 1 - 6. If you did not solve the anagram answer statements 7 - 12.

Please choose one statement from each pair that you feel best completes the sentence. Mark an X beside the appropriate statement.

1. I solved the last word mainly because:
☐ I really tried OR ☐ I'm good at these
2. I solved the last word mainly because:
☐ I'm good at these OR ☐ It was easy
3. I solved the last word mainly because:
☐ I really tried OR ☐ It was easy
4. I solved the last word mainly because:
☐ I was lucky OR ☐ I'm good at these
5. I solved the last word mainly because:
☐ I really tried OR ☐ I was lucky
6. I solved the last word mainly because:
☐ It was easy OR ☐ I was lucky

GO TO BOTTOM OF PAGE*

Please choose one statement from each pair that you feel best completes the sentence. Mark an X beside the appropriate statement.

7. I didn't solve the last word mainly because:
☐ I didn't really try OR ☐ I'm not very good at these
8. I didn't solve the last word mainly because:
☐ I'm not very good at these OR ☐ It was too hard
9. I didn't solve the last word mainly because:
☐ I didn't really try OR ☐ It was too hard
10. I didn't solve the last word mainly because:
☐ I was unlucky OR ☐ I'm not very good at these
11. I didn't solve the last word mainly because:
☐ I didn't really try OR ☐ I was unlucky
12. I didn't solve the last word mainly because:
☐ It was too hard OR ☒ I was unlucky

*The original presentation was on 8 x 14 paper so that the ratings were on the same page as the above statements.

Please circle the number on the line below that indicates how likely it is that you are going to solve the next anagram.

7

0-----1-----2-----3-----4-----5-----6-----7-----8-----9-----10

low
probability

moderate
probability

high
probability

GO TO NEXT PAGE

Please answer the following questions. Please give your honest opinion.

1. Did you enjoy participating in this experiment?
Why or why not?
2. Would you participate again in a similar experiment if you knew the outcome beforehand?
3. How do you feel right now?
4. Any other comments?

Debriefing Statement

This experiment is investigating women's self-perceptions, but particularly the way in which they view themselves after a success or failure experience. The statements you answered tell me whether women attribute that failure or success to themselves, to the amount of effort they expend, to the difficulty of the task or to fate. The type of attribution you make has several consequences. (1) It may help you get over a failure experience. For example, if you decide that you just did not try, you may be willing to "try again". (2) It may prevent you from taking further risks; if you decide the task was too difficult, you may never go near something like that again. (3) It may make you feel miserable about yourself, especially if you decide that the failure tells you something about your ability. I am concerned about how resilient women are to failure. Whether by building in an expectation to succeed they will then persist in the face of failure; or, if given only failure, whether women know how to protect themselves or save face. Current research suggests that women do not do this, but that men do. This research may also have implications for therapeutic approaches to depression in women.

Are there any questions?

Please do not disclose the nature of the study to your friends for three weeks.

GLOSSARY OF TERMS

GLOSSARY OF TERMS

- A. Self-image is the collage of attributes and repeated patterns of action seen by you as being yourself.
- B. Self-worth is the value in which you hold the qualities of yourself (one's auto-evaluation).
- C. Self-confidence "reflects the expectancy held regarding one's ability to determine his fate through the use of personal skills." (Lefcourt, 1976, p.94)
- D. Self-enhancing attributions include that set of accumulated feelings and evaluations about yourself that heighten your sense of self-worth.
- E. Self-protective attributions include that set of accumulated feelings and evaluations about yourself that main-
tain your sense of self-image.*

*All self-enhancing attributions are by definition self-protective while the reverse does not hold. An attribution may be self-protective and not result in self-enhancement. For example, the depressed individual who steadfastly refuses to accept objective, positive evaluations of himself, in order to maintain a perception of himself as an ineffectual or unworthy person, is engaging in a self-protective but not enhancing evaluation.