CAUSAL ATTRIBUTIONS, ATTRIBUTIONAL DIMENSIONS, 
AND ACADEMIC PERFORMANCE IN A SCHOOL SETTING

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The attribution model of achievement motivation has been applied to academic achievement as a way of understanding underachievement and as a basis for developing intervention programs. There has been little applied research in this area, however, that supports the use of the model in school settings. The purpose of the present study was to test the applicability of the model to an actual school setting. Subjects were 149 tenth grade students in a large urban school district. In accordance with the model, specific attributions for success or failure were assessed, as well as subjects' perceptions of the locus, stability, and controllability of attributions.

Attribution patterns found in previous analog research were not found in a school setting. Immediate effort attributions were the most prevalent, regardless of performance level or outcome. Causal beliefs were found to relate to performance in ways predicted by the model but also in some ways not predicted. Relationships were generally stronger for high performers. Comparing subjects'
perceptions of the dimensional properties of attributions across outcomes showed a strong outcome bias. Attributions were perceived as more internal and stable following successes, consistent with previous research. In addition, a performance level bias was found. Low performers rated attributions as less internal, stable, and controllable following successes and more so following failures than did high performers. This bias, termed the underachievement bias, was discussed in terms of its detrimental effects on school performance. The differences between high and low performers regarding perceptions of dimensionalities were consistent with the predictions of the attribution model.

It was concluded that the attribution model is applicable to school settings. Suggestions were made that more applied research be conducted, that intervention programs based on this model should target subjects' perceptions of attributions rather than just the specific attributions themselves, and that because of the differences among subjects in perceptions of dimensional properties of attributions, researchers should obtain a direct measure of subjects' perceptions rather than assuming them.
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CHAPTER I

CAUSAL ATTRIBUTIONS, ATTRIBUTIONAL DIMENSIONS,
AND ACADEMIC PERFORMANCE IN A SCHOOL SETTING

Academic failure is a problem experienced by many students to one degree or another. In one large metropolitan school district, 41 percent of the high school student population failed at least one subject during the fourth six-week period of the 1986-1987 school year. Of those students, 21 percent failed two or more subjects. One outcome of chronic school failure is dropping out of school entirely. Current drop out rates range from as low as 20 percent to as high as 39 percent (Jones, 1977; Marcus, Olson, Malone, & Webster, 1982). The effects of school failure are extensive. Immediate effects can be loss of self-esteem and self-efficacy. Chronic school failure and/or dropping out of school greatly limit occupational choices. School dropouts are more likely to engage in delinquent and criminal behavior (Elliot & Voss, 1974).

There are certainly many factors that contribute to school failure. Factors that have been shown to significantly correlate with school failure include low socio-economic level, single-parent home, low ability, poor
attitude towards school, lack of motivation, low self-esteem, etc. (Poole & Low, 1982). Many of these factors, however, are not readily amenable to intervention (e.g., socio-economic level, intellectual ability). One component that is usually necessary for success and that is also subject to change through intervention is the amount of time and energy (effort) put into school work. If students consistently put forth academic effort through achievement-related behaviors, they are said to be motivated to achieve. Achievement motivation can be a major factor in school success or failure.

One model of achievement motivation applied to academic (school) achievement is the attribution theory of achievement motivation and emotion (Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971). The model is a cognitive/behavioral model in which behaviors are presumed to be mediated by cognitions. More specifically, some achievement-related behaviors are hypothesized to be affected by the beliefs individuals have regarding the reasons (attributions) that they succeed or fail. These causal attributions have certain properties or dimensions (e.g., internal-external, stable-unstable, controllable-uncontrollable) that provide the basis by which achievement-related behaviors are affected. The model predicts that, because of these properties, specific attributional patterns can either facilitate or inhibit
achievement. In mostly analog research, attributional patterns among high and low achievers have been found to follow the model's predictions.

Based on this research, attribution "retraining" programs have been conducted in an attempt to improve achievement-related behaviors such as task persistence by modifying "failure-oriented" attributions. These programs have been limited in scope, generally to experimental settings, but have almost consistently resulted in positive increases in task persistence.

Several questions need to be answered before attribution modification programs can be successfully implemented. Attribution research has been conducted almost exclusively in experimental, analog settings with artificial manipulation of success and failure on relatively meaningless tasks. Researchers have not examined what attributions are given for success and failure in an actual school setting on academic tasks. In addition, there is no literature reporting whether differences in attribution patterns found among high and low achievers in experimental settings actually occur in school settings.

Furthermore, certain dimensional properties of attributions have been shown to relate to specific achievement-related behaviors such as task persistence. Do these dimensional properties also relate to school
performance? For example, do students who perform well in school actually attribute success in school to factors that are stable? Moreover, recent research has begun to examine incongruencies between the theoretical placement of a given attribution along various dimensions (e.g., ability is considered to be relatively internal, stable, and uncontrollable) and individuals' subjective perceptions about the dimensional properties of that attribution. Patterns to these differences are emerging, but more research is needed to clarify differences.

The purpose of the present study was to address these questions. To accomplish this, the development of the attribution model of achievement motivation was discussed. This discussion included major assumptions of the model, occasions when causal attributions occur, bases for ascribing causality, and frequently given attributions. Dimensions of causal attributions, psychological consequences of causal dimensions, and measurement issues were also discussed. Then research examining differences in attribution patterns between high and low achievers was evaluated, including potential sex differences. Attribution retraining programs were examined. Finally, the discussion focused on the research questions of the present study, and a study was proposed to address these questions.
Basic Assumptions of The Attribution Model

The basic assumption underlying attribution theory is that human beings have a need for understanding cause/effect relationships that serves as a "basic spring of action," that is, a primary motivating force (Weiner, 1982, p. 223). Heider (1958), whose work guided Weiner, suggested that all people act as naive psychologists, attempting to discover cause-and-effect relationships in the world around them and especially regarding their own behavior. In this search for understanding, people ask "why" questions. These questions are attempts to make attributions of causality. White (1959) refers to the motivational search for understanding as the principle of mastery. Beyond obtaining feelings of mastery, the drive for understanding has functional or adaptive value, as well. If the outcome of goal-directed behavior is positive, attempts will be made to follow the same causal path. Conversely, an alternate causal path will likely be attempted if the prior outcome was not desirable. The more accurate one's understanding of a cause/effect relationship, the greater is the likelihood of replicating that effect (outcome). Attempts to achieve that same outcome will be more successful if the causes perceived by the individual actually contributed to the outcome. A second major assumption implicit in this reasoning is that cognitions (attributions) mediate much behavior.
Occasions On Which Causal Ascriptions Occur

One issue in attribution theory concerned the occasions on which causal attributions occur. Weiner (1982) discussed evidence showing that attributions are more likely to be given following failure than success, and following unexpected outcomes rather than expected ones. Some evidence exists (Diener & Dweck, 1978) that implies the existence of individual differences in the frequency in which causal attributions are made. Children who quickly "gave up" on tasks while experiencing failure (termed failure-oriented by these researchers) more often spontaneously offered attributions than did children who persisted on tasks following failure. Weiner (1982, p. 224) argues, however, that "attributional inferences often are quite retrospective, summarize a number of experiences, [and] take place below a level of immediate awareness . . ." This has not been an issue in attribution research. Attribution researchers either ask individuals to make causal statements, or provide them with alternatives from which to choose. Other than the above study, there has been little, if any, systematic observation of spontaneous attributions.

Bases for Causal Attributions

Attribution theory has been more concerned with how specific attributions affect emotion and behavior than with how these attributions are formed. Some researchers have
examined how or on what people base attributions about the behavior of others. (This is an important distinction between self attributions and attributions about the behavior of other people.) Kelly (1967) maintains the principle of covariation is important to individuals in ascribing causality. A given event is attributed to causes in which the event varies over time. There are three general causes that may be used to explain another's behavior: causes attributed to the actor (the person engaging in the behavior), the entity (the target person with whom the actor is interacting), and the circumstances (setting). There are three sources of variation that provide explanatory information regarding the influence of these three general causes. The three sources of covariance information include: consensus information (Do other actors behave differently in the same situation?), consistency information (Does the actor behave the same in similar situations), distinctiveness (Does the actor behave the same to other entities?). If each source of information is available, causal explanations should be predictable. Deaux and Wrightsman (1984) discuss research that supports these predictions.

Sources of covariation information, however, are typically not so clear cut. Moreover, even if information regarding patterns of covariation might reveal causes, this information is not often available to the observer.
Researchers have shown that individuals tend to overestimate causes within the actor when historical information is not available to the observer, regardless of whether or not the outcome was positive or negative. Ross (1977) termed this the fundamental attribution error. This has been shown to be a very pervasive phenomenon. Jellison and Green (1981) maintain that a societal norm for internality is at least partially responsible for this, that responsibility for one's own outcomes is valued over external causes.

The tendency, however, to overestimate dispositional factors does not occur when people make causal attributions about their own behavior (self attributions). According to some researchers (Jones and Nisbett, 1972), self attributions are much more situational in nature. Monson and Snyder (1977) explain these differences between self attributions and attributions about the behavior of others as due to differences in the information available to each. Observers do not have access to historical information about others, and thus focus on the present, often attributing too much causality to the actor. Conversely, actors do have access to their own histories, and thus attributions of causality are influenced through the kind of covariation information suggested by Kelly, above. If informational deficits were mainly responsible for differences in self versus others attributions, then outcome (positive or
negative) should not largely affect self attributions. A considerable amount of research has contradicted this.

Zuckerman (1979) reviewed several dozen studies that consistently showed individuals' self attributions are very much outcome specific. Dispositional factors tend to be given as causes of success. Situational factors are more often given for negative outcomes. These tendencies have been termed the self-serving attribution bias. Individual differences (e.g., between low and high achievers) have been found which suggest that this bias operates more strongly in some than others. This research will be discussed in detail, later. The present point is that systematic differences have been found regarding attributions about others versus attributions about one's own behavior. Yet attribution research, including experimental methodologies and measurement instruments, has largely ignored this. Research on achievement motivation should deal only with self-related attributions. It is likely that individuals do make use of covariation information in determining causes of their own behavior and/or its consequences, but the effects of other factors, such as the self-serving bias, on the attribution processes have not been empirically examined.

Causal Attributions Given for Success and Failure

Heider (1958), followed later by Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum (1971), postulated that there are
four main causes that people see as important to achievement outcomes. These are ability, effort, task difficulty, and luck. There have been several subsequent studies that have empirically examined perceived causes of success and failure in achievement contexts. Weiner (1985) reviewed this research, and a summary of perceived causes appears in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Common Perceived Causes of Success and Failure</th>
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<tr>
<td>Ability: Other persons</td>
</tr>
<tr>
<td>Effort: Attention</td>
</tr>
<tr>
<td>Task difficulty: Help from others</td>
</tr>
<tr>
<td>Luck: General knowledge</td>
</tr>
<tr>
<td>Stable effort: Concentration during study</td>
</tr>
<tr>
<td>Unstable effort: Concentration during exam</td>
</tr>
<tr>
<td>Mood: Fatigue</td>
</tr>
<tr>
<td>Interest: Habits</td>
</tr>
<tr>
<td>Preparation: Attention</td>
</tr>
<tr>
<td>Teacher's ability: Maturity</td>
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<tr>
<td>Self-confidence: Physical Condition</td>
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It is apparent that there are many causes seen by people as important to success and failure. Weiner maintains that high ability and strong effort are seen as most important in successes and lack of ability and effort in failures. However, this conclusion may be accurate in a general sense,
that these factors are most prevalent, but in specific settings or situations, other attributions may be seen as more important. For example, Huffine (1985) asked students in an alternative high school for drop-outs to rate the relative importance of eight possible causes in their academic successes and failures. Of relevance here, mood was rated as important as ability in successes and more important in academic failures.

While ability and effort may be the most common attributions given across studies, this does not mean that they are always the most salient. Weiner acknowledges this, but many researchers in attribution theory have not, employing research methodologies or developing instruments which only allow subjects to choose from among only the "most salient" attributions. In some cases this was done for "pragmatic" reasons (Marsh, Cairns, Relich, Barnes, & Debus, 1984, p. 18). Forcing subjects to choose perceived causes from even a "comprehensive" list may bias and invalidate results.

Furthermore, researchers examining perceived causes of success and failure have used a variety of methodologies. Subjects have been asked to state perceived causes of success and failure regarding the hypothetical performance of others, their own hypothetical performance, their performance on non-academic tasks, and their performance on real academic
tasks. Findings have reportedly been similar across situations which supports the generality of causes given. Unfortunately, these factors have not been separated out. Results have been confounded regarding self versus other, and real versus imagined situations.

Attribution theory of achievement motivation is concerned with the relationships between people's attributions regarding their own performance in actual achievement contexts. Research should focus on perceived causes of individual's own achievement, not others, and in real life situations, not hypothetical ones or on meaningless tasks. Questions still exist regarding the specific attributions given in actual achievement contexts.

Dimensions of Causality

Beginning with Heider (1958), researchers have attempted to distinguish among attributions based on their inclusion on an underlying dimension. Weiner (1971) suggested a need to develop a taxonomy or classification system of causal attributions as part of the scientific process in order "to go beyond mere phenomenology" (1982, p. 225). Weiner hypothesized that certain behavioral and emotional responses would occur to certain types of attributions, and that these attributions that produced similar consequences must share some property that leads to similar behavioral and emotional responses. Several dimensions have been hypothesized, based
on deductive reasoning and empirical evidence. Each dimension will be discussed followed by existing empirical evidence.

Internal-External Dimension. Heider (1958) originally distinguished between factors within the person and factors within the environment. Reviewing the list of attributions in Table 2, placement at either end of this dimension is relatively straightforward. Factors such as ability, effort, mood, attention, etc. are seen as internal; task difficulty, luck, teacher's ability, etc. are seen as external factors. Rotter (1966) was instrumental in conducting research and developing a theory based on individual differences in attributional style, that is, people's tendency to be more "internal" or "external" in their basic attributions of causality concerning events in their lives. Rotter labeled this dimension locus of control.

Locus of control has been a pervasive concept in psychology. It is seen in the research literature on learned helplessness (e.g., Seligman, 1975) and perceived control (Wortman and Brehm, 1975). In these areas, motivational deficits and negative emotional responses are hypothesized to occur when negative reinforcement is perceived as not within one's personal control. Locus of control has also been widely applied in educational settings (Crandall, Katkovsky, and Crandall, 1965; Rotter, 1975). It is hypothesized that
individuals who have a generalized belief that reinforcement is contingent upon their own behavior (internals) generally perform better and/or achieve more than individuals who generally believe that reinforcement is contingent upon factors in the environment (externals).

Some problems may occur in the intuitive designation of an attribution as internal or external. Individual differences may exist in the subjective meaning assigned to a given attribution. For example, luck may be seen as external ("I had a lucky day.") or internal ("I'm just an unlucky person."). Similarly, physical condition might be seen as external ("I caught a bad cold.") or internal ("I always get sick before an exam."). Problems of classification are not specific to the internal-external dimension.

The internal-external dimension continues to be widely used in understanding and explaining behavior. Within attributional theory, however, classifying attributions of causality along a single dimension failed to capture major differences among attributions classified as only internal or external.

**Stable-Unstable Dimension.** Heider (1958) foresaw these differences, distinguishing between those causes that were relatively fixed, versus those that fluctuated over time. Weiner et al. (1971) recognized this distinction as well. They reasoned that two attributions might both be
internal, but have very different implications in terms of their respective impact on emotional and behavioral responses. For example, an individual might attribute failure on an exam to lack of ability in that area or to not having studied enough. Both are internal attributions, factors within the person. However, assuming that ability is perceived to be something that is relatively unchangeable, the implications for future performance are much different than if the individual attributes failure to lack of preparation, something that he or she can change.

Thus, Weiner and his associates felt the relative permanence of an attribution to be important not only for classification purposes, but also because of the psychological consequences. They labeled this dimension stable vs. unstable. Attributions such as mood, effort, physical condition, luck, attention, etc. were seen to vary over time, and placed at the unstable end of the continuum. Ability, task difficulty, "typical" effort, etc. were viewed as invariant over time, placing those attributions at the stable end.

Classifying attributions along the internal-external and stable-unstable dimensions produced a two-by-two matrix, with each cell containing one of the four "major" attributions (see Table 2).
Table 2

Classification of Causal Attributions Based on Dimensions of Internality and Stability

<table>
<thead>
<tr>
<th></th>
<th>Stable</th>
<th>Unstable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Ability</td>
<td>Effort</td>
</tr>
<tr>
<td>External</td>
<td>Task Difficulty</td>
<td>Luck</td>
</tr>
</tbody>
</table>

As with conceptualizing attributions along a single dimension, however, placement of a given attribution within a particular category on intuitive grounds may or may not be in agreement with an individual's subjective perception of that attribution along a given dimension. Ability, formally classified as internal and stable, may be perceived as subject to change through practice, hence, perceived as unstable. Effort, classified as unstable, may be perceived as a stable trait of a person (e.g., "He is lazy"; "I never try hard"). Thus, coding an attribution on a deductive basis may be erroneous. Weiner (1983) acknowledged this, suggesting less ambiguous terminology; aptitude, rather than ability; temporary exertion, rather than effort. This may prove beneficial, but problems with semantics might still occur. Some researchers have begun to develop measurement instruments in which attributions are classified by subjects.
Other researchers found a two-dimensional taxonomy of attributions to inadequately distinguish among attributions. Rosenbaum (1972) suggested that factors such as temporary effort, mood, and physical state were distinguishable from each other, even though all might be classified as internal, unstable attributions. He theorized that effort is something under the volitional control of an individual, while mood and physical condition are not, pointing towards the need for conceptualizing attributions along a third dimension.

**Controllable vs. Uncontrollable Dimension.**

Rosenbaum labeled this dimension intentionality. Weiner (1979) labeled it controllability. Weiner felt this term captured the distinctions Rosenbaum made regarding the degree of intent implied by a given attribution, but better reflected the phenomenology of the attribution. For example, if an individual attributes failure to lack of effort, this implies that failure was intended. As Weiner pointed out, intention implies a desire or want, and, presumably, few people want to fail. He felt that attributions, whether internal or external, stable or unstable, could be perceived as either within the control of an individual or outside their personal control. Factors such as ability, mood, task difficulty, and luck have been classified as uncontrollable; those factors such as effort, both typical and immediate, teacher bias, and unusual help from others have been
classified as controllable. The integration of the controllability dimension into Weiner's taxonomic system may be seen in Table 3.

In this 2 x 2 x 2 classification scheme, there are eight categories, as a product of the three dimensions, locus, stability, and controllability. Weiner et al. (1971) preferred to label the internal-external dimension locus of causality as opposed to locus of control. This was done to differentiate the concept of Rotter's locus of control as discussed earlier. With the addition of the control dimension to the attribution model, the controllability of the cause could be accounted for apart from the locus, i.e., internal or external.

Table 3

Classification of Attributions Based on Dimensions of Locus, Stability, and Controllability

<table>
<thead>
<tr>
<th></th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stable Unstable</td>
<td>Stable Unstable</td>
</tr>
<tr>
<td>Uncontrollable</td>
<td>Ability Mood</td>
<td>Task Luck</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Difficulty</td>
</tr>
<tr>
<td>Controllable</td>
<td>Typical Immediate</td>
<td>Teacher Help</td>
</tr>
<tr>
<td></td>
<td>Effort Effort</td>
<td>Bias Help from</td>
</tr>
<tr>
<td></td>
<td></td>
<td>others</td>
</tr>
</tbody>
</table>
Other Dimensions. Some researchers have hypothesized the existence of other functional dimensions of causal attributions. Abramson, Seligman, and Teasdale (1978), in their work on learned helplessness and depression, maintained that the dimension of globality should be considered when examining causal attributions. According to Abramson et al., a given attribution may be rather global, or specific. Their work examined emotional and behavioral responses to uncontrollable aversive events as mediated by causal attributions. Extending this to achievement settings, a student might attribute failure in math class to low ability in math (specific), or might consider himself generally poor at schoolwork (global). Such a distinction might be relevant in settings where abilities may actually be relatively independent (e.g., academic, athletic). However, results have been inconclusive. Some findings have shown attributions to be specific to academic content (e.g., Marsh et al., 1984), while others (e.g., Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982) found attributions to be consistent across content areas.

Weiner (1979) stated that the dimension of controllability better accounted for the properties of causal attributions that Rosenbaum (1972) described as intentional. Weiner (1985) more recently discussed the possibility of a dimension of intentionality. He cited the legal system's
distinction between control and intent (i.e., manslaughter vs. murder). Other examples in which Weiner saw it appropriate to distinguish between control and intent involved instances of individuals' wanting (intent) to perform a behavior, e.g., study, but not able to make themselves (control) do it. As Weiner points out, however, this can quickly become a philosophical issue involving volition. Moreover, while certain attributions may fit into a dimension of intentionality (such as effort), others clearly do not. If someone attributes failure on a task to lack of ability, it is unclear how ability could be conceptualized as intentional or unintentional.

Empirical Evidence. There have been several studies that have empirically examined the existence of causal dimensions using various techniques including factor analysis, multidimensional scaling, and correlation with a priori schema using concept formation tasks. Weiner (1985) reviewed 10 such studies. The locus dimension was consistently found to be a salient dimension. There was less consistency among studies in demonstrating the existence of other dimensions, but dimensions of stability and control were most often found. Studies cited examined attributions of causality in various domains, including achievement (academic and athletic), marital conflict, and loneliness, supporting the generality of the attribution model.
Some research on causal dimensions not included in Weiner's review has produced different conclusions. Lee and Lee (1983) developed a scale that employed twelve hypothetical situations about the performance of others in which children were required to choose causes for a specific outcome. Each situation occurred four times in the instrument, with a combination of two of the possible four (ability, effort, task difficulty, and luck) attributions given to choose from for a given situation. In other words, the four causal attributions were paired in all possible combinations for each situation, giving six paired comparisons for each of the twelve situations. Data matrices were subjected to a multidimensional preference scaling method to analyze those dimensions that were differentially used by subjects. Results confirmed the existence of only two of the proposed dimensions, locus and stability.

Marsh et al. (1984) developed an attributional measurement scale that required children to rate the relative importance of ability, effort, or external causes to hypothetical academic outcomes about their own performance. Factor analysis of results identified seven factors: failure due to effort, failure due to ability, failure due to external causes, success due to effort, success due to external causes, and two other factors that were content specific (i.e., ability in reading and ability in math).
Other studies (Fennema, Wolleat, & Pedro, 1979; Relich, 1983) have produced findings inconsistent with the three dimensions proposed by Weiner. However, in all of these studies, including the two discussed here, subjects were limited in the attributions from which to choose, as few as three in the Marsh et al. study. To even attempt to make conclusions based on this data is dubious at best, since the full range of causal attributions was not available to subjects. It is unlikely if not impossible that subsequent factor analysis would reveal dimensions in which causal attributions were not adequately represented.

Thus, while there has been some empirical support for the existence of the causal dimensions intuitively deduced by Weiner and others, some evidence has contradicted the existence of the three basic dimensions. As with previous areas of attribution research, methodologies across studies have varied, making conclusions difficult. Nonetheless, the dimensions of locus, stability, and control do appear to be qualities of attributions that have been the most consistently perceived.

Questions remain regarding the validity of current attribution measurement techniques (to be discussed below). Some researchers have questioned the theoretical orthogonality of causal dimensions (see Stipek and Weisz, 1981). These issues need to be resolved before statistical
analysis of results from current instruments can be meaningfully interpreted in relation to dimensions of causality.

**Psychological Consequences of Causal Dimensions**

Weiner's (1985) current description of the attribution model included these three dimensions (locus, stability, and controllability). As discussed earlier, causal attributions are believed to mediate behavioral and affective responses to success and failure. The theory predicts specific primary and secondary behavioral and emotional responses, depending on the placement of a given attribution within one of these dimensions. Effects on self-esteem are also postulated. Support for these predictions has come from various areas of research, however, not all involving academic achievement (e.g., social achievement).

**Locus Dimension.** The attribution model predicts that self-esteem related emotions are impacted following academic success or failure by the placement of a given attribution within the locus dimension. Weiner (1985) discussed several studies in which emotional reactions to success or failure were differentially related to internal vs. external attributions. In one study (Weiner, Russell, & Lerman, 1978) subjects were given a scenario with a specific academic outcome of a hypothetical person and a specific attribution for that outcome, then asked to state emotions
that might be experienced in that situation and rate the intensity of the affect. Some emotional responses were found to be outcome-dependent. Generally positive emotions (happiness, pride, satisfaction, etc.) and generally negative emotions (upset, displeased, etc.) were reported regardless of the attribution given. In addition, these outcome-dependent emotions were also rated the most intense. However, there were also emotional responses reported that were not outcome-dependent, that related to the locus of the attribution. In success scenarios, feelings of competence and confidence were reported for ability attributions, relaxation for typical effort, activation for immediate effort, gratitude for help from others, conceit for personality, and surprise for luck attributions. When the outcome was failure, feelings of incompetence were associated with attributions of low ability, guilt and shame for lack of effort, resignation for personality, aggression for the hindrance/lack of help from others, and surprise when failure was ascribed to luck. The authors did not analyze the data by causal dimensions, but the attributions intuitively internal produced stated emotions consistently different from attributions assumed to be external.

In the second study (Weiner, Russell, & Lerman, 1979) the data were analyzed as a function of the causal dimension of locus. Findings were consistent with the first study, but
showed empirically that the placement of an attribution within the locus dimension does differentially affect the emotional response to academic success or failure. Subjects were asked to imagine themselves in a past situation in which they succeeded on or failed an exam as a result of a given attribution. Again, some affective responses were found to be dependent on the outcome itself, but results also showed that self-esteem related responses depended on the locus of the attribution. Given success, internal attributions resulted in reports of pride, confidence, and competence more often than did external attributions. Given failure and internal attributions, guilt and resignation were more often reported.

Similarly, Nichols (1975) found that subjects reported feeling more "pleased" (with themselves) who attributed success to internal causes than did those who attributed success to external causes. Marsh et al. (1984) compared childrens' attributions to imagined success and failure with self-concept measures. Children with positive self-concepts were found to more often give internal attributions for success but not for failure, providing further support for the linkage between the locus dimension and self-esteem.

A great deal of research relating to the locus dimension of causality has been found in the area of social learning. Rotter (1966, 1975) conceptualized this causal dimension as
locus of control, and did not recognize other dimensions. As discussed earlier, locus of causality seems to be a more appropriate label, to differentiate attributions by locus (internal vs. external) and controllability (controllable vs. uncontrollable). Nonetheless, much research has been conducted regarding the relationship of internal vs. external attributions and their affects on academic achievement.

Social learning theorists have maintained that to the degree that an individual perceives academic success to be dependent upon his own behavior, there is a greater probability of instrumental, achievement related behaviors occurring in the future. If there is no perceived relationship between academic outcomes and one's own behavior, success is not predicted to increase the probability of such behaviors. Those measured to be "internals," who do take personal responsibility for academic outcomes, would be expected to be higher achievers than "externals," who tend to attribute success or failure to external causes.

Stipek and Weisz (1981) reviewed 34 studies that examined the relationship between locus on control (causality) and academic achievement. The great majority of studies showed a significant relationship between achievement and locus of control measures. Stipek and Weisz discussed the problem of inferring causal direction from these
correlational studies but did cite several studies which employed cross-lagged panel correlation analysis. Most studies found locus of control to better predict achievement than did achievement predict locus of control, thus providing support for the hypothesis that causal attributions within the locus dimension do differentially impact learning.

Social learning theorists, however, did not recognize the existence of other causal dimensions and have developed measurement instruments that did not separate out attributions along these dimensions. Results have been confounded regarding causal dimensions. Moreover, it could not be determined whether achievement (or lack of achievement) resulted from the affects of self-esteem related emotions elicited by properties of the locus dimension. It may be that for those who take more responsibility for academic outcomes (internals), success would produce greater pride than for those who attribute success to external factors, and therefore there would be more "motivation" to achieve. However, by the same reasoning, taking more personal responsibility for failures would produce greater negative feelings towards one's self, which would seem to inhibit achievement motivation. In 17 of the studies cited in the above study, locus of control was examined in relation to positive vs. negative outcomes. Correlations were usually significant and in the same direction for both positive
and negative outcomes. The significant positive correlations between achievement and internal attributions for failure seem to contradict the attribution model, but these correlations may actually reflect the effects of a given attribution's placement on another dimension, namely, the stability dimension.

**Stability Dimension.** In the attribution model, the primary psychological effect of the stability of an attribution regarding success or failure on a given task is presumed to relate to changes (or the lack of changes) in expectations of future success or failure and subsequent persistence on that task. For example, following success on an exam, an individual attributes success to high ability ("I'm good in biology"), or to the low level of difficulty of the task ("I'm taking fundamental math because it's easy"), or to teacher bias ("Miss Long likes me"). All these attributions might be classified as relatively stable. Thus, a similar outcome, success, would be expected in the future. Similarly, if the individual had failed the exam and given similar attributions ("I've always been poor in science", "This teacher is real hard", or "The teacher doesn't like me"), expectations of future performance would not be expected to change. Whether the outcome was success or failure, if attributions given were unstable, such as lack of effort, mood, etc., then there should be some doubt regarding
future outcomes.

Research has well documented the relationship between causal attributions and expectancy of success. Weiner (1985) reviewed 12 studies that examined this relationship, and a consistent finding was that attributions to relatively stable causes resulted in "high expectancies of success following goal attainment and . . . low expectancies of success following failure" (p.557).

The attribution model predicts that these expectations result in feelings of hopelessness (or hopefulness) and also affect achievement related behaviors, such as task persistence, task selection, performance intensity, etc. In the Weiner et al. (1978, 1979) studies discussed earlier, as self-related feelings were found to relate to the locus dimension, feelings of hopelessness most often accompanied attributions to stable causes following failure, and feelings of hopefulness following successes. Some research has shown attributions of low ability following failure result in greater negative affect than attributions to lack of effort (Covington & Omelich, 1979). More research is needed regarding the proposed affective responses to success or failure as mediated by causal attributions to stable and unstable causes.

Much more research has been conducted investigating the relationships between attributions within this dimension and
achievement-related behaviors. Attributing failure to stable causes has been shown to be negatively related to task persistence (Weiner et al., 1971, for review; Dweck & Repucci, 1973). Several studies have been conducted that have attempted to modify persistence on a task by changing subject's attributions about failing from stable (ability, task difficulty) to unstable (effort). These studies (e.g., Dweck, 1975; Andrews and Debus, 1978; Medway & Venio, 1982) have shown consistent positive results. Subjects increased task persistence and improved their performance following retraining programs in which effort attributions for failure were supplied or reinforced by experimenters. These programs have provided convincing evidence that causal attributions within the stability dimension do mediate persistence and achievement.

Control Dimension. The dimension of control is presumed by the attribution model to related to certain affective states, namely, shame, guilt, anger, gratitude, and pity. These relationships were discussed by Weiner (1985) in detail, and encompass attributions about the behavior of others and areas other than academic achievement. Weiner offered considerable evidence, both deductive and empirically derived, to support specific relationships, but little related to one's own perceptions about one's own performance. He did cite several studies that demonstrated the following
relationships: guilt related affects (guilt, regret, and/or remorse) were associated with failure due to factors that were within the subject's control. Other researchers (e.g., Seligman, 1975; Dweck & Wortman, 1982) working in the area of learned helplessness and depression, have postulated that motivational deficits occur following aversive events (e.g., failing an exam) whose causes are perceived as uncontrollable.

The specific psychological consequences of this dimension are difficult to separate from the locus and stability dimension. Research is consistently confounding these variables in methods of measurement. The interactions of the psychological consequences of these dimensions have rarely been examined. Moreover, there is some debate, as discussed earlier, about the independence of dimensions. If dimensions are not orthogonal, relationships thus established may be spurious. These issues need to be resolved with future research.

Measurement Issues

Format and Content. There are three issues in the measurement of attributions that may be discussed under this heading. How is the test item presented? The item may ask the subject to state, rate, or choose an attribution. If there is a choice of attributions, how limited are the choices? Previous instruments have provided from two choices
up to eight. How does the outcome relate to the subject? The item may ask the subject to state/rate/choose an attribution about another's hypothetical performance, about the subject's hypothetical performance, about the imagined performance of the subject, or about the real performance of the subject.

Elig and Frieze (1979) compared three types of formats commonly used in attribution research: open-ended responses, ipsative/ranking method, and rating scales. The open-ended format yielded the lowest correlations with other measures, although inter-coder reliability was high. Percentage ratings correlated highly with the scale method, but had the least face validity. Rating scales were seen by subjects as easy to respond to, correlated most highly with other scales, and allowed subjects to rate the contributions of various attributions. The authors concluded that the scale method is clearly the superior technique. Another format often used in attribution research, the forced choice, was not included in the study, because this format limits the number of choices to two, when perhaps neither would actually be given. This method also confounds causal dimensions, such that conclusions about theoretical dimensional relationships can not be made.

Despite findings such as these, researchers have developed instruments and other methods of assessing
attributions that have been shown to bias or confound results. Stipek and Weisz (1981) reviewed measurement instruments used in attribution research, but most of these were locus of control instruments designed to measure only one dimension. Of the thirteen reviewed, two employed open-ended formats, five used forced-choice formats, and six agree-disagree (essentially forced-choice). The Intellectual Achievement Responsibility Questionnaire, or IAR, (Crandall, Katkovsky, & Crandall, 1965) has been the most widely used, despite its forced-choice format. Researchers (e.g., Dweck, 1975; Dweck & Repucci, 1973) have used modified versions of the IAR, adding forced-choice items to increase the number of ability-effort pairings. Again, this forced subjects to state a preference for two possible causes, biasing results by not allowing subjects to state an alternate attribution.

A recent instrument developed by Lee and Lee (1983) employed a forced-choice format, but comparisons were made for each possible combination of the four attributions of ability, effort, luck, and task difficulty. This, at least, allowed for a preferred attribution to emerge, but still limited the subject to these four attributions. While early research has shown these to be the most salient, others (Elig & Frieze, 1979) warned against limiting attributions. Although certain relationships have emerged in artificial settings, it is not known how these findings will generalize
to actual academic settings. Moreover, the instrument asked the subject to choose an attribution about the hypothetical performance of another person, making its use questionable in research examining self-attributions.

Marsh et al. (1984) have recently developed an instrument that used a rating format, allowing subjects to rate the relative importance of ability, effort, and external factors in an imagined academic outcome. Subscales were developed for school, in general, and the specific academic areas of reading and math. The 180-item test must be read aloud, taking over thirty minutes to administer. The rating format has advantages discussed above, but limiting subjects responses to ability, effort, or a general external category was questionable.

A rating type format, with every possible attribution, with subjects assigning values to the relative importance of each attribution following a real (not imagined) academic outcome in which they were involved seems to be what is needed. However, this would obviously become unwieldly. In addition, supplying attributions also might bias results, as a particular attribution might not have been elicited without the visual stimulus. Another problem that plagues all measures discussed thus far is that of "coding" the specific attribution into a causal dimension. While theorists (e.g., Stipek & Weisz, 1981; Weiner, 1979) have consistently warned
against assuming, for example, that ability is perceived
by the subject to be stable, or effort to be unstable, this
has until recently been ignored by attribution researchers.

Subject Coding of Attributions Along Causal
Dimensions. Ronis, Hansen, and O'Leary (1983) clearly
demonstrated the problems in assuming the phenomenological
meaning of causal attributions. A series of experiments were
conducted, in which "indirect" methods of deriving locus and
stability scores were compared with "direct" methods.
Indirect measures of were obtained by having subjects rate
the degree to which luck, ability, effort, and task
difficulty were factors in the outcome of a hypothetical
achievement situation. These ratings were then used to
compute the indirect measures of locus and stability in the
following manner:

Indirect locus=(ability + effort)-(task difficulty +
luck).

Indirect stability=(ability + task difficulty)-(effort
+ luck).

Direct measures of locus and stability were derived by
explicitly asking subjects to rate the cause along these
dimensions. Subjects rated the degree to which an
achievement outcome was a result of "something inside the
person" and the degree to which it was a result of "something
outside the person". Subjects also rated the degree to which
the cause was "something unchanging and stable over time" and rated the degree to which the cause was "something changing and unstable over time" (p. 704). To make direct measures mathematically comparable to indirect ones, direct measures were derived in the following manner:

Direct locus = 2(something inside - something outside).

Direct stability = 2(something stable - something unstable).

In addition, subjects were asked to estimate future performance levels, based on the attributions stated.

In all three experiments, indirect measures of locus correlated positively with the direct measures. However, indirect measures of stability did not correlate with direct measures. These findings underscored the problems in assuming placement of specific attributions along causal dimensions. Furthermore, in the third experiment, measures of predicted future performance correlated positively with the direct stability measure but did not correlate with the indirect measures. The relationship between expectations of future performance and the stability dimension has been well documented. This study supported the relationship for the direct measure of stability only. The failure of the indirect measure of stability to correlate with expectations of future performance indicated that this method of measurement is of questionable validity, and that
individuals' subjective perceptions of the stability of an attribution do not match the taxonomical placement assumed by attributional researchers.

A seemingly simple answer to the problem of coding attributions along dimensions was accomplished by having individuals rate the locus, stability, etc. of a given attribution themselves. An instrument discussed earlier, The Attributional Style Questionnaire developed by Peterson et al. (1982), incorporated this in its format. Respondents were asked to state an attribution to each of twelve hypothetical events, which included good and bad outcomes in achievement and affiliative contexts. The stated attributions were then rated along the dimensions of locus, stability, and globality.

Initial research with this instrument has been with college undergraduates (N=130). Unfortunately, actual attributions given by subjects were not reported, such that comparisons between presumed placement along dimensions and subject rated placement along dimensions could not be made. In addition, no measures of subject's performances in achievement or affiliative contexts (i.e., success or failure) were made, thus, no conclusions could be made regarding whether or not high or low achievers (or those socially successful) differed in their attributional schema, as has been widely reported in attributional
research. It may be that high and low achievers differ not only in specific attributions given, but also in how they perceive these attributions in terms of locus, stability, etc.

Another issue raised by having subject's rate attributions along dimensions was what dimensions to include to be rated. The Ranis et al. (1983) study examined the locus and stability dimensions and found that attributions assumed to be internal (ability and effort) and external (task difficulty and luck) were generally perceived as such. Attributions assumed to be stable (ability and task difficulty) and unstable (effort and luck) were often not perceived as such, suggesting that attributions do need to be "self-coded" along the stability dimension. The Peterson et al. (1982) instrument had subjects rate attributions along the dimensions of locus, stability, and globality. Stated attributions were not reported, so presumed vs. self-coded placement of attributions could not be evaluated. However, ratings of attributions were not significantly different across content areas (i.e., achievement vs. affiliative), suggesting that individuals develop a generalized belief regarding perceived locus, stability, and globality of attributions, and also suggesting that the ratings of attributions along the global dimension are unnecessary. Others (e.g., Marsh et al., 1984), however, have shown
ability attributions to be content specific. The issue regarding whether causal schema are very general and cut across various areas has not been resolved. The dimension of controllability, an important component of the theoretical attributional model, was not examined in either study.

Russell (1982) examined how individuals perceived causes across all three dimensions proposed by the attribution model (i.e., locus, stability, and controllability), and constructed the Causal Dimension Scale. This scale was similar to the Peterson et al. scale discussed above, in that subjects rated attributions along specific dimensions. However, it differed in several important ways. Rather than using a single item to assess the degree to which an individual perceives a given attribution to be, for example, internal, three items were used (see Appendix A). Similarly, the dimensions of stability and controllability are assessed using three items each. Another difference was that the dimension of controllability was included rather than the dimension of globality. Evidence as to the relative importance of these two dimensions in terms of their relative salience in all situations has been inconclusive. The dimension of controllability has received the most support regarding its distinction by subjects and subsequent effects on behavioral and emotional responses. A third important difference between these two scales was that one was a
measure of dispositional tendencies, while the other was a measure of attributional perceptions in a given situation. The Attributional Style Questionnaire was designed to be a measure of a generalized style of attributing causes to outcomes across both affiliative and achievement domains. The Causal Dimension Scale was designed to be used with a specific attribution in a specific situation.

Initial research with the Causal Dimension Scale (Russell, 1982) provided subjects with hypothetical situations, each of which included one of the eight causal attributions seen by the attributional model as representative of the eight cells produced by the $2 \times 2 \times 2$ matrix of the three causal dimensions. As in the Ronis et al. and Peterson et al. studies that examined individual's ratings of attributions, theoretical placement of attributions did not consistently agree with subjective perceptions. Moreover, there was a clear tendency to bias perceptions of locus, stability, and controllability for the same attribution (e.g., ability) based on the outcome of success or failure. A given attribution tended to be seen as more internal, stable, and controllable following successes. Unfortunately, no measures of subjects' achievement levels were obtained. Thus, it could not be seen if differences existed between high and low achievers in how a specific attribution was perceived along these dimensions.
To test the validity of the individual semantic differential scales, Russell used separate analyses of variance on each item, reasoning that the main effect for a certain dimension should be very large if a given item assessed the causal dimension it was designed to measure. As an additional test of the validity, Russell stated that each item should have discriminant validity, that "an item designed to assess locus of causality should not also differentiate stable from unstable causes or controllable from uncontrollable causes" (Russell, 1982, p. 1139). Using these procedures, the Causal Dimension Scale was found to be valid in its ability to measure the locus, stability, and controllability of the eight attributions assessed. Main effects were largest for the dimension each item was designed to assess. The locus main effect accounted for 50-56 percent of the variance, stability for 14-19 percent, and controllability for 14-26 percent. In contrast, analyses of variance of each item showed very little variance accounted for by items measuring other dimensions.

Reliability was assessed by examining internal consistency among the three items of each subscale. Alpha coefficients obtained for the three subscales were .867, .837, and .730 for the locus, stability, and controllability subscale, respectively, indicating a high degree of internal consistency.
Thus, initial research with this instrument has been encouraging. Results have shown that the instrument could be used to have subjects essentially "code" experimenter stated attributions along the three major dimensions of the attribution model. More importantly, it seems that this instrument would be of considerable value in having students rate self-generated attributions regarding their own success or failure in an actual school setting. This would remove a major potential source of error that is prevalent in other attribution instrument instruments, that of assuming subjects' perceptions of the locus, stability, and controllability of attributions. In addition, having subjects generate their own attributions would also remove the potential biasing effect of providing subjects with a list of attributions from which to choose.

Summary of the Attributional Model

A pictoral representation of the complete (current) attributional theory of motivation and emotion model (Weiner, 1985) appears in Figure 1 through Figure 4. The basic premise of this model is that specific emotional and/or behavioral responses to success or failure (of goal attainment) are determined, in part, by the causal attributions people make regarding the factors that caused the particular outcome. This model is comprehensive, in that domains other than achievement (e.g., affiliative) are
outcome - dependent affect

If positive, happy

If negative, frustrated and sad

If unexpected, negative, or important

Specific information
Causal Rules
Actor versus observer
Hedonic biases
Etc.

Figure 1. A schematic representation of the attribution theory of motivation and emotion, showing outcome, outcome dependent affects, and causal antecedents.

included, and predicted psychological and behavioral consequences are not limited to causal evaluations of one's own behavior. The model makes predictions of individual's responses to the behavior of others, based on the individual's attributions of causality regarding other's behavior. Because the focus of the present study is the relationship between causal attributions and one's own achievement, a review/summary of this model will be limited to these components.

Figure 1 shows the relationships of outcome, outcome dependent affects, and causal antecedents. As seen in Figure 1, there are emotional responses that occur as a direct
result of an achievement outcome (1). Following goal attainment, positive emotions are experienced (e.g., happiness). Following failure to attain a desired goal, negative emotions are experienced (e.g., sadness, frustration). These outcome-dependent emotions are believed the most intense, but short-lived emotions experienced in achievement contexts.

If the outcome was negative, unexpected, or relatively important, the model predicts a causal search (2). Certain factors, such as specific information (e.g., "everyone else passed the test"), causal rules, hedonic bias, etc. influence what the specific attribution will be (3) (see Figure 2).

![Causal Ascriptions]

Figure 2. A schematic representation of the attribution theory of motivation and emotion, showing causal ascriptions.

Once an attribution of causality is made, it may elicit a
specific affective response (4) (see Figure 3). The cause also has consequences as a function of its dimensionality (5). Locus properties affect self-directed emotions of pride and self-esteem (7).

![Diagram](image)

**Figure 3.** A schematic representation of the attribution theory of motivation and emotion, showing causal dimensions and psychological consequences.

Stability properties affect expectancy of success (6), which impacts achievement behavior (11) and elicits feelings of
helplessness/hopefulness (8). Control dimension properties determine the self-directed feelings of shame and guilt (9) and the other-directed emotions of anger, gratitude, and pity (10). The dimensions of globality and intentionality are included, but research on the validity and properties of these dimensions has been inconclusive. Finally (see Figure 4), affective responses associated with causal dimensions (12), together with outcome dependent emotional responses (13), and expectancies of success (11), are presumed to stimulate behavioral responses in achievement settings, including specific behaviors as well as responses characteristics such as intensity, latency, persistence, etc.
Application of the Model to School Performance

The attribution model predicts academic achievement levels to be differentiated by causal attributions given for success and failure. High achievers would be expected to exhibit causal schema different from low achievers. Dweck and Repucci (1973) first demonstrated that indeed these differences exist in a laboratory setting. Fifth grade children were given solvable and unsolvable block design tasks by two respective experimenters. When the "failure" experimenter began giving solvable problems, two distinct groups of children were identified, one that persisted following failure, and another group that gave up quickly. The persistent subjects took more personal responsibility for their performance than non-persistent subjects regardless of outcome. Attributional differences, however, were analyzed under failure outcomes, and persistent subjects (termed mastery-oriented) tended to attribute failures to motivational factors (i.e., effort), while non-persistent subjects (termed "failure-oriented") placed blame for their failures on less controllable, and more stable factors such as ability. Diener and Dweck (1978) conducted a similar experiment, in which the responses to failure of children identified as failure or mastery oriented were closely monitored. Mastery-oriented children tended to maintain current strategies or use more sophisticated strategies when
confronted with failure, dividing attributions for failure among lack of effort, something to do with the experimenter, or an increase in task difficulty. Failure-oriented subjects showed no increase in more sophisticated strategies, but, rather, showed severe decrements in the use of legitimate strategies, often simply giving up. About 50% of these subjects attributed failure to lack of ability. None of the mastery-oriented children used this attribution. Attributional schema for successful outcomes have not been generally shown to be different between low and high achievers, although some researchers (e.g., Dweck, 1975) have reported a trend for high achievers to attribute success to their ability and low achievers to attribute success to effort or other unstable factors, as the attribution model would predict.

Some researchers (Dweck & Wortman, 1982) have found evidence suggesting that differences exist between males and females regarding attributions given for success and failure. They maintain that the performance-inhibiting patterns found in low achievers (i.e., effort attributions for success, ability attributions for failure) occur more frequently among females. These differences have been found to occur only in the presence of "adult evaluators" (p. 103).

Other researchers (Marsh, et al, 1984; Peterson, et al., 1982) have failed to find sex differences using group
administered, paper and pencil measures of attributions. The inconsistent findings in this area point towards the need for continued investigation of this factor.

A major problem with research examining attributional patterns and performance has been the complete lack of research in school settings. In the few studies that have examined this, researchers have failed to find predicted attribution patterns in underachieving students (Hill & Hill, 1982, learning disabled students; Huffine, 1985, students with histories of school failure). Nonetheless, results of laboratory research have been used to develop intervention programs.

**Attribution Retraining Programs**

Attribution retraining programs have been developed to modify attributions of low achievers, in an attempt to increase task persistence and achievement (Dweck, 1975; Chapin & Dyck, 1976; Andrews & Debus, 1978; Medway & Venino, 1982). Results have been consistently positive; those subjects identified as giving other than effort attributions for failure and/or giving up easily when confronted with failure have, through reinforcement of effort attributions, shown increases in task persistence. Although these studies provide substantial support for the attribution model and hold promise for educational interventions, caution must be exercised before accepting such cognitive retraining programs.
as validation of the attribution model and before making wide
generalizations about the use of such programs in educational
settings. There are several inconsistencies among these
studies that have both practical and theoretical
significance.

First, the procedures in most of the retraining programs
have not only involved the reinforcement of effort
attributions for failure, but also for success. The
attributional model clearly predicts that stable attributions
(ability) have more positive consequences for achievement
than do unstable attributions (effort), yet reinforcing
effort attributions for successes, as well as failures, has
resulted in increases in achievement-related behavior. In
addition, when increases in task persistence have occurred,
attributional instruments have failed to reflect changes in
attributional schema (Andrews & Debus, 1978; Dweck, 1975;
Medway & Venino, 1982).

Thus, while there has been some evidence of the
predicted relationships between causal schema and
achievement, there have been inconsistencies. Several
important questions exist in this area of research.

Questions in Attribution Research

The attribution theory of behavior and emotion is a
comprehensive theory. Its major premise is that both
emotional and behavioral responses to success and failure are
mediated by thoughts or cognitions. Cognitions hypothesized by the theory to be most relevant are those that attempt to address causality in relation to the outcome of success or failure. The theory proposes that depending on the locus, stability, and controllability of the perceived cause (and possibly, globality and intentionality), goal directed behavior is subsequently affected.

Most predictions of the model have received much empirical support. Internal attributions of causality have been shown to positively affect self-esteem following success and negatively following failure. Attributions made to stable causes have been shown to result in the expectation of a similar outcome, whether the outcome was success or failure. Stable attributions following failure have been shown to correlate negatively with task persistence. Based on this research, some researchers have concluded that it is systematic differences among individuals in causal attributions that facilitate or hinder academic performance. Some research has shown that, indeed, high achievers (termed "mastery oriented") attribute success to ability and failure to lack of effort. Low achievers ("failure oriented") have been shown to attribute success to effort and failure to lack of ability.

It is the contention of the present author that these conclusions are presumptuous at best, and that this is an
oversimplification of the attribution process. Research that has shown these dispositional differences has almost exclusively been conducted in artificial settings in which success and failure were artificially manipulated. Findings from these studies have been generalized to achievement settings where the importance of the outcome may greatly vary from that in the laboratory.

Research on sex differences in attribution patterns was discussed earlier. Findings have been inconsistent, and no specific hypotheses will be made regarding this factor. Statistical analyses will, however, include sex of subject as a separate factor to explore potential differences.

**Research Question I.** One purpose of the present study was to examine the relationships between attributions given to success and failure experiences and levels of academic performance in actual academic settings. Based on the limited research in applied settings, it was expected that attribution patterns found in the present study would not be consistent with the simply patterns found in experimental settings, following success or failures. However, hypotheses were made based on the considerable evidence found in experimental settings showing different patterns among high and low achievers. These hypotheses could then be confirmed or rejected, and the applicability of the model to applied settings would have been tested.
Attributions were assessed at a major occurrence of a success or failure. Rather than assuming which attributions would be most "salient" and thus limiting subjects in their choice, an open-ended statement was used to generate the actual attributions given for the outcome. Attributions were be coded by independent objective raters as one of the eight primary attributions (i.e., ability, mood, immediate effort, typical effort, task difficulty, teacher bias, help from others, luck), plus two others sometimes seen in the literature, physical state (e.g., "I was sick that day") and attitude (e.g., "I don't like history"). If the attribution could not clearly be defined as such, it was listed as "other". The distribution of attributions across performance levels was then examined. The following specific hypotheses related to this research question:

Hypothesis Ia. Following successes, ability attributions were predicted to be significantly more frequent among high achievers.

Hypothesis Ib. Following successes, effort attributions were predicted to be significantly more frequent among low achievers.

Hypothesis Ic. Following failures, effort attributions were predicted to be significantly more frequent among high achievers.

Hypothesis Id. Following failures, ability attributions
were predicted to be significantly more frequent among low achievers.

Hypothesis Ie. It was predicted that there would be no significant difference in the frequency of other attributions between high and low achievers.

Research Question II. A second purpose of the present study was to examine the relationships between academic performance and the dimensional properties of the attributions. Rather than assuming subjects' perceptions of their attributions along these dimensions, subjects were asked to rate the stated attribution along these dimensions using the Causal Dimension Scale items developed by Russell (1982).

Research has shown in experimental settings that the locus dimension affects self-esteem and does not directly affect performance. In addition, the attributional patterns predicted above included only internal attributions. Thus, the locus dimension was not expected to be related to academic performance. The following specific hypotheses were therefore made regarding the locus dimension:

Hypothesis IIa. Following successes, it was predicted that the correlation between the locus of the attribution and academic performance would not be significant.

Hypothesis IIb. Following failures, it was predicted that the correlation between the locus of the attribution and
academic performance would not be significant.

The stable-unstable dimension has been shown to directly affect task persistence in experimental settings. These findings have shown high achievers to give stable attributions to success and unstable attributions to failure. The reverse has been true of low achievers. Unstable attributions were most often given for successes and stable attributions for failure. If these findings were to hold true in applied settings, those students who performed well in school would be expected to follow the pattern of high achievers. Those who do poorly in school should follow the pattern of low achievers. The following specific hypotheses were made regarding the stable-unstable dimension:

Hypothesis IIc. Following successes, it was predicted that there would be a significant positive correlation between the stability of attributions and academic performance.

Hypothesis IIId. Following failures, it was predicted that there would be a significant negative correlation between the stability of the attribution and academic performance.

Predictions regarding the control dimension were less clear. The controllable-uncontrollable dimension has received less attention in attributional research. Emotional responses of guilt and shame have been shown to occur in response to controllable attributions following failure. It
is unclear how these emotional responses directly affect academic performance. Researchers in learned helplessness have postulated that motivational deficits result from aversive events whose causes are perceived as uncontrollable. In academic contexts, this implies that low performance would be maintained if failure attributions were perceived as uncontrollable. Little empirical research has been conducted, however, to support these contentions. Researchers in the area of locus of control have for several years consistently found that people measured as "internals" were higher achievers. As discussed earlier, however, measurement instruments did not separate attributions based on other dimensions. It could not be determined whether it was the locus of the attribution or, for example, the stability of the attribution that accounted for the differences across achievement levels.

Nonetheless, specific patterns of attributions have been postulated by the attribution model to either facilitate or inhibit performance. Some laboratory research has supported these relationships. The ability for success, effort for failure attributions have been reported in the literature most often for high achievers. The opposite has most often been reported for low achievers, i.e., putting forth effort for success and failing due to lack of ability. Each attribution has been classified within the model on the
control dimension. Ability has been considered uncontrollable and effort as controllable. It was therefore expected that a negative relationship would exist between academic performance and the controllability of attributions following successes. A positive relationship was expected to exist following failure. In practical terms, this meant that low achievers would believe they controlled their successes but not their failures. High achievers would believe the opposite, that successes were uncontrollable and failures were controllable. Therefore, the following specific hypotheses were made regarding this dimension:

Hypothesis IIe. Following successes, it was predicted that there would be a significant negative correlation between the controllability of attributions and academic performance.

Hypothesis IIIf. Following failures, it was predicted that there would be a significant positive correlation between the controllability of attributions and academic performance.

Research Question III. A third purpose of the present study was to examine subjects' perceptions of their attributions in terms of dimensional properties. Researchers in this area have assumed that specific attributions are always perceived in the same way by all individuals in terms of dimensional properties. Based on the taxonomy of the attribution model, the major attributions would be placed in
the following places in the three dimensions:
Locus--Internal (ability, mood, typical effort, immediate
effort), External (task difficulty, luck, teacher bias, help
from others); Stability--Stable (ability, typical effort,
task difficulty, teacher bias), Unstable (mood, immediate
effort, luck, help from others); Controllability--
Controllable (typical effort, immediate effort, teacher bias,
help from others), Uncontrollable (ability, mood, task
difficulty, luck). "Physical condition" and "attitude" have
received little discussion in the literature, but have been
classified as internal, unstable, and uncontrollable
(physical condition) and internal, unstable, and controllable
(attitude).

Recent research, however, has shown that individuals
tend to bias their perceptions. In general, a given
attribution has been perceived as more internal, stable, and
controllable following success than failure. This biasing
effect is much the same as the self-defensive bias discussed
earlier. Here, however, the bias is not the choice of
attribution. Subjects' perceptions of a given
attribution have been shown to vary as a function of the
outcome.

These findings have been of great importance to
attribution research. It has been the dimensional properties
of attributions that have been shown to directly affect
achievement-related behaviors. If individuals' perceptions systematically differed from those assumed, then the measurement of these perceptions may have been more valid and reliable than the actual attributions. In addition, attribution retraining programs, which attempt to modify attributions, may also need to modify individuals' perceptions of dimensional properties.

Unfortunately, there has been no research examining differences in how attributions might be differentially biased between high and low achievers. Thus specific predictions were not be made in this regard (although perceptions were examined between performance groups across outcomes). Predictions were made based on existing data. Subjects' perceptions were collapsed across academic performance levels. The following specific hypotheses were made regarding this research question:

Hypothesis IIIa. It was predicted that subject ratings of each attributional category would be significantly more internal following success than failure.

Hypothesis IIIb. It was predicted that subject ratings of each attributional category would be significantly more stable following success than failure.

Hypothesis IIIc. It was predicted that subject ratings of each attributional category would be significantly more controllable following success than failure.
CHAPTER II

METHOD

Subjects

There were 700 consent forms sent home to parents, requesting the participation of students in tenth grade history classes from a large metropolitan school district. Of these, 167 were returned. Students who had returned a signed notice of informed consent (see Appendix B) were scheduled to participate in the study. When the questionnaire was administered, 158 were actually completed.

Procedure

The Causal Dimension Scale (Russell, 1982) was administered in a slightly modified form (see Appendix C) following the graded return of a major test. Permission to use the Causal Dimension Scale was obtained from the original author (See Appendix D) and from the original publisher (see Appendix E). Students were first required to state whether the test was mostly a success or mostly a failure. They were then asked to write the major cause of that outcome. Then, students were required to rate the cause along the dimensions of locus, stability, and controllability, with three items used to assess each dimension.

Attributions were assessed in history classes, rather
than classes such as math or English. These latter classes were grouped by ability and also varied in difficulty, thus performance in these classes might have been unrepresentative. Achievement (or more appropriately, performance) was measured as the grade received on the exam.

Attributions were coded into one of the eight major causal categories of the attributional model or one of the two additional categories, physical state or attitude, (see Appendix F) by three independent raters. Raters were generally familiar with the attributional model. Each was trained for two one-hour sessions on categorization of attributions. If there was a discrepancy among the three raters, the coding of the two agreeing raters was used. If none of the raters were in agreement, one of the codes was randomly chosen. If all three raters assigned a code of "other" to the attribution, it was listed as such. The raters' coding of attributions was then used to evaluate differences in attributions across achievement levels.

Locus, stability, and controllability scores were derived from the Causal Dimension Scale items. There were three items for each dimension. The ratings for each item ranged from three to nine, with nine being the most internal, stable, and controllable. The scores for each dimension were obtained by simply summing the three ratings for a given dimension. Thus, scores for each dimension could have ranged
from three to twenty-seven.

**Statistical Analyses**

Once subjects' stated attributions were coded by raters, frequencies were tallied to observe the distribution of specific attributions in an academic setting. Inter-rater reliability was evaluated by measuring percent agreement among raters.

To evaluate differences in rater coded attributions across achievement levels, Chi-Square Tests were conducted. Subjects were divided into one of two categories, based on their test grade using a high/low median split. Certain attributions (i.e., ability and effort) were expected to be distributed unevenly, in the directions stated in the hypotheses above. Others were expected to be randomly distributed.

To evaluate the relationships between causal dimensions and academic performance, correlations between subjects ratings and test grades were obtained, then checked for significance.

To evaluate differences between subjects ratings of the locus, stability, and controllability of the stated attributions across outcomes, a multivariate analyses of variance was conducted, using sex (male or female) and outcome (success or failure) as the independent variables and locus, stability, and controllability of the stated
attributions as the dependent variables. This resulted in a 2 x 2 MANOVA with three dependent measures. Although specific hypotheses were not made regarding bias effects and performance level, this factor was evaluated using a 2 (sex) x 2 (outcome) x 2 (performance level) MANOVA. Using this same design, an additional MANOVA was conducted for each attributional category in which there were non-empty cells, to evaluate differences across attributions.
CHAPTER III

RESULTS

Descriptive Data.

The Cause of Academic Performance Questionnaire (CAPQ) was administered to 158 subjects. Of these, nine failed to complete the questionnaire appropriately. Thus, 149 questionnaires were used for statistical analyses.

Subjects were divided into groups of "High" and "Low" performers based on their performances on a major history test. The mean grade on the test was 85.34 with a standard deviation of 12.63. The median test score was 77.80. Subjects were categorized on the basis of the median. There were 75 subjects classified as high performers, 74 as low performers.

The first item on the CAPQ asked subjects to rate their performance on the history test as either "mostly a success" or "mostly a failure". There were 66 subjects who rated their performance as a success, 83 as a failure. The distribution of subjects across groups (outcome, sex, and performance level) can be seen in Table 4.
Table 4

Distribution of Subjects Across Outcomes, Sex, and Performance Levels (Totals in Parentheses)

<table>
<thead>
<tr>
<th>Success (66)</th>
<th>Failure (83)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (30)</td>
<td>Female (36)</td>
</tr>
<tr>
<td>High 25</td>
<td>High 30</td>
</tr>
<tr>
<td>Low 5</td>
<td>Low 6</td>
</tr>
<tr>
<td>Male (37)</td>
<td>Female (46)</td>
</tr>
<tr>
<td>High 11</td>
<td>High 26</td>
</tr>
<tr>
<td>Low 9</td>
<td>Low 37</td>
</tr>
</tbody>
</table>

There were more females than males in the sample and more perceived failures than successes. The number of males and females within the two outcome categories was proportional, however. The proportions of high and low performers within the outcome categories were not equivalent. There were many more high performers (55) than low performers (11) in the success category. Conversely, low performers (63) greatly outnumbered high performers (20) in the failure group.

Coding of Attributions.

A total of 149 attributions as to the main cause of a students' performances on the history test were used for statistical analysis. Three independent raters classified each attribution into one of ten categories, or as "other" if non-classifiable.

Inter-rater reliability was calculated as percent
agreement among raters. With three classifications of each attribution, there was a potential for two agreements per case. There were 149 cases, resulting in 298 total potential agreements. There were 116 cases in which there was total agreement among the three raters, yielding 232 agreements. There were 23 cases in which two raters agreed, producing 23 more agreements. Total disagreement among raters occurred on 10 cases. Thus, of the 298 potential agreements, there were 232 plus 23, or 255 agreements. Dividing 300 by 256 yields a quotient of .856. The inter-rater reliability was therefore approximately 86 percent.

The 10 cases in which there was zero agreement among raters are listed in Table 5, with the classifications given by each rater. The underlined attributional categories are those that were randomly chosen as the attributions to used for further analyses. Most of these attributions were ambiguously stated, leaving it difficult to classify them on objective criteria. There was a trend within coders, however, in disagreements. The attributions classified by the first coder (first column) were predominantly "ability". The second coder (middle column) differed from the other two by tending to classify most of these ambiguous attributions as "immediate effort". The bias of the third coder was
Table 5

Attributions In Which There Was No Agreement Among Coders; Coder's Classifications Of Attributions

<table>
<thead>
<tr>
<th>Attribution</th>
<th>Coder's Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>got answers mixed up</td>
<td>5 8 11</td>
</tr>
<tr>
<td>maybe I worked too hard</td>
<td>1 5 11</td>
</tr>
<tr>
<td>on something easy</td>
<td></td>
</tr>
<tr>
<td>had the people mixed up</td>
<td>1 8 11</td>
</tr>
<tr>
<td>got confused</td>
<td>1 5 11</td>
</tr>
<tr>
<td>I didn't remember everything</td>
<td>1 3 11</td>
</tr>
<tr>
<td>I studied</td>
<td></td>
</tr>
<tr>
<td>had good information</td>
<td>1 3 4</td>
</tr>
<tr>
<td>background</td>
<td></td>
</tr>
<tr>
<td>good information background</td>
<td>1 3 4</td>
</tr>
<tr>
<td>I found the material easily</td>
<td>1 3 5</td>
</tr>
<tr>
<td>good information background</td>
<td>1 3 4</td>
</tr>
<tr>
<td>did not know a lot of material for the test</td>
<td>1 3 11</td>
</tr>
</tbody>
</table>

Key: 1=Ability 3=Typical 4=Immediate 5=Task 8=Luck 11=Other

Note: (Underlined classifications are those randomly chosen as the designated classification).
towards classifications of "other".

The six cases in which at least two of the raters classified the attribution as "other" appear in Table 6.

<table>
<thead>
<tr>
<th>Attribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>cheating</td>
</tr>
<tr>
<td>ran out of time on essay</td>
</tr>
<tr>
<td>I didn't know the dates</td>
</tr>
<tr>
<td>not enough time</td>
</tr>
<tr>
<td>had person material in the test like worksheets</td>
</tr>
<tr>
<td>not completing the test</td>
</tr>
</tbody>
</table>

Many of these attributions were also ambiguous. "Ran out of time on essay", "not enough time", and "not completing the test" all resulted in failure to complete the exam. Yet it was not sufficiently stated by the subjects whether this was due to the test being too long (i.e., task difficulty), or themselves being slow workers (i.e., ability), etc.

Research Question I.

The distributions of coded attributions across outcomes
and performance levels may be seen in Table 7. Immediate

Table 7

Distribution of Attributions Across Outcomes and Performance Levels

<table>
<thead>
<tr>
<th>Attributions</th>
<th><em>S</em></th>
<th></th>
<th><em>F</em></th>
<th></th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Mood</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Immediate Effort</td>
<td>44</td>
<td>10</td>
<td>13</td>
<td>40</td>
<td>107</td>
</tr>
<tr>
<td>Typical Effort</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Task Difficulty</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Teacher Bias</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Help From Others</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Luck</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Physical State</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Attitude</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Totals</td>
<td>55</td>
<td>11</td>
<td>20</td>
<td>63</td>
<td>149</td>
</tr>
</tbody>
</table>

effort attributions occurred in 107 cases, 71.8 percent of the total sample. Ability and task difficulty each occurred in 6.7 percent of the cases. Nine of the cases, or 6 percent
were classified as "other". The remaining seven attributional categories included 13, or 8.7 percent of the sample.

Chi-square analyses were to be employed to test the differences between high and low performers in the frequencies of certain attributions within each outcome. Only the category of immediate effort, however, had sufficient \( n \) to provide the minimum expected cell frequency required to conduct chi-square. Following successes, the proportions of immediate effort attributions given by low and high performers (.80 and .91, respectively) were not significantly different, \( (1, N=54)=.004 \). Similarly, following failures, the proportions of immediate effort attributions (.65 for both groups) were not significantly different, \( (1, N=53)=.006 \). Thus, the pattern of attributions for success and failure were almost identical between high and low performers. There was a preponderance of immediate effort attributions for success and failure, regardless of performance level. Other attributions were relatively infrequent. Because of the low number of other attributions, real differences between groups could not be determined.

**Research Question II.**

The second set of research questions involved the relationship of performance in school with the locus,
stability, and controllability of causal attributions. These relationships were examined separately under success and failure outcomes (see Table 8).

Table 8
Pearson Product Moment Correlations Between Test Scores and the Locus, Stability, and Controllability of Attributions For Success and Failure

<table>
<thead>
<tr>
<th>Causal Dimension</th>
<th>Test Score</th>
<th>Success Locus</th>
<th>Success Stability</th>
<th>Success Controllability</th>
<th>Failure Locus</th>
<th>Failure Stability</th>
<th>Failure Controllability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus</td>
<td>.3125**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td>.3960***</td>
<td>.2665*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controllability</td>
<td>.3862***</td>
<td>.3640***</td>
<td>.3103**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*<i>p ≤ 0.05</i>  **<i>p ≤ 0.01</i>  ***<i>p ≤ 0.001</i>
Following successes, there were moderate positive correlations between academic performance and all three of the causal dimensions. The relationship between performance and locus was significant at the .01 level. Both stability and controllability were significantly related to performance at the .001 level. There were significant but low correlations among the three causal dimensions.

Following failures, only one causal dimension was significantly correlated with performance. There was a low negative correlation between the stability dimension and performance, significant at the .05 level. The three causal dimensions were not correlated with each other.

It can be seen from Table 8 that some dimensions that were correlated with performance following success, did not correlate following failure. Because the proportions of high and low performers in these groups were not equivalent, it was suspected that relationships between causal dimensions and performance might be different for high performers than low. If this were true, pooling high and low performers, as was done above, might have "hidden" relationships.

Computing correlations separately for high and low performers following perceived success (see Table 9) produced results similar to the pooled results, with one exception. All three causal dimensions had correlated significantly with test performance. After separating for performance level,
moderate correlations were found for all dimensions, for both groups. The exception occurred for the low performance group on the dimension of controllability. Although this dimension correlated with performance for high performers, it

Table 9
Pearson Product Moment Correlations Between Test Scores and the Locus, Stability, and Controllability of Attributions of High and Low Performers Following Perceived Success

<table>
<thead>
<tr>
<th>Causal Dimension</th>
<th>Test</th>
<th>Locus</th>
<th>Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Performers (n=55)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus</td>
<td>.2935*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td>.4085***</td>
<td>.2537*</td>
<td></td>
</tr>
<tr>
<td>Controllability</td>
<td>.3164**</td>
<td>.3227**</td>
<td>.3512**</td>
</tr>
<tr>
<td>Low Performers (n=11)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus</td>
<td>.4520</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td>.4108</td>
<td>-.3010</td>
<td></td>
</tr>
<tr>
<td>Controllability</td>
<td>.0021</td>
<td>.4750</td>
<td>-.0030</td>
</tr>
</tbody>
</table>

*p < .05  **p < .01  ***p < .001
had essentially a zero correlation for low performers.

Computing correlations separately for high and low

Table 10

Pearson Product Moment Correlations Between Test Scores and the Locus, Stability, and Controllability of Attributions of High and Low Performers Following Perceived Failure

<table>
<thead>
<tr>
<th>Causal Test Dimension</th>
<th>High Performers (n=20)</th>
<th>Low Performers (n=63)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score</td>
<td>Locus</td>
</tr>
<tr>
<td>Locus</td>
<td>.1565</td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td>-.0262</td>
<td>.0426</td>
</tr>
<tr>
<td>Controllability</td>
<td>.0164</td>
<td>.0815</td>
</tr>
</tbody>
</table>

performers following perceived failure (see Table 10) also produced results similar to the pooled results. The only difference was the reduction of the correlation between
stability and performance. This correlation subsequently was not statistically significant.

Research Question III.

A multivariate analysis of variance was conducted, with outcome (success and failure), sex (male and female), and performance level (high and low) as independent variables. Measures of perceived locus, stability, and controllability, derived from the CAPQ were used as dependent measures. This resulted in a $2 \times 2 \times 2 \times 3$ MANOVA. The main effects analysis appears in Table 11.

Table 11

Multivariate Tests of Significance for Main Effects of Outcome, Sex, and Performance Level on Subjects' Ratings of Causal Dimensions

<table>
<thead>
<tr>
<th>Effect</th>
<th>Groups</th>
<th>Approx. F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome</td>
<td>Success/Failure</td>
<td>12.465</td>
<td>.001</td>
</tr>
<tr>
<td>Sex</td>
<td>Male/Female</td>
<td>1.395</td>
<td>.247</td>
</tr>
<tr>
<td>Performance Level</td>
<td>High/Low</td>
<td>1.592</td>
<td>.194</td>
</tr>
</tbody>
</table>

Overall, the effect produced by outcome was significant at the .001 level. Differences between males and females, and
between high and low performers were not significant. To evaluate the main effects of outcome for specific causal dimensions, univariate F-tests were conducted (see Table 12).

Table 12

Univariate F-Tests of Outcome by Causal Dimensions with (1, 141) Degrees of Freedom; Group Means Are Also Shown

<table>
<thead>
<tr>
<th>Causal Dimensions</th>
<th>Success</th>
<th>Failure</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus</td>
<td>19.21</td>
<td>16.87</td>
<td>.019</td>
</tr>
<tr>
<td>Stability</td>
<td>16.21</td>
<td>8.90</td>
<td>.001</td>
</tr>
<tr>
<td>Controllability</td>
<td>20.27</td>
<td>18.74</td>
<td>.694</td>
</tr>
</tbody>
</table>

Note: Higher scores = more internal, stable, and controllable. Lower scores = more external, unstable, and uncontrollable.

Subjects who stated that their performance on the test was mostly a success perceived the reasons for their success as more internal than did subjects who stated that their performance was mostly a failure. The largest difference between outcome groups occurred on the stability dimension. Those who perceived their performance as a success rated the reasons for their performance much more stable than did those whose performance was perceived as a failure. On the controllability dimension, the difference between groups was
not significant, although the difference was in the same
direction.

Because of the statistical significance of the main
effect of outcome, this variable was evaluated for
interaction effects with sex and performance level (see Table
13). Both interactions were significant at the .05 level.

Table 13
Multivariate Tests of Significance for Interactions Between
Outcome and Performance, and Outcome and Sex

<table>
<thead>
<tr>
<th>Interactions</th>
<th>Approx. F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome by Performance Level</td>
<td>2.9363</td>
<td>.036</td>
</tr>
<tr>
<td>Outcome by Sex</td>
<td>3.4388</td>
<td>.019</td>
</tr>
</tbody>
</table>

To further examine the significant interaction between
outcome and performance level, univariate F-tests were
conducted for each causal dimension (see Table 14). The
interaction was significant at the .05 level for the locus
dimension. High performers rated attributions for success as
more internal than did low performers. Conversely, high
performers rated attributions for failure as less internal
than did low performers. The interaction between outcome and
performance was not significant for the stability dimension,
although the pattern of the interaction was identical to that of the locus dimension. There was a significant interaction

Table 14
Univariate F-Tests of Interactions Between Outcome and Performance Level by Causal Dimensions with (1, 141) Degrees of Freedom; Group Means Are Also Shown

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Success</th>
<th></th>
<th>Failure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Locus</td>
<td>19.44</td>
<td>17.73</td>
<td>14.35</td>
<td>17.71</td>
</tr>
<tr>
<td>Stability</td>
<td>16.58</td>
<td>14.36</td>
<td>7.95</td>
<td>9.19</td>
</tr>
<tr>
<td>Control</td>
<td>20.18</td>
<td>17.54</td>
<td>18.80</td>
<td>18.68</td>
</tr>
</tbody>
</table>

for the controllability dimension (p < .05). Within the success group, high performers rated attributions as more controllable than did low performers. Within the failure group, ratings of controllability were equivalent for high and low groups.

Univariate F-tests were also conducted to further examine the statistical interaction between outcome and sex on causal dimensions (see Table 15). The only significant interaction between these two variables occurred for the locus dimension (p < .05). There was no difference
between males and females in their ratings of locus

Table 15
Univariate F-Tests of Interactions Between Outcome and Sex by Causal Dimensions with (1, 141) Degrees of Freedom; Group Means Are Also Shown

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Success Male</th>
<th>Success Female</th>
<th>Failure Male</th>
<th>Failure Female</th>
<th>F Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus</td>
<td>19.17</td>
<td>19.14</td>
<td>15.08</td>
<td>18.37</td>
<td>.015</td>
</tr>
<tr>
<td>Control</td>
<td>20.57</td>
<td>20.03</td>
<td>19.38</td>
<td>18.17</td>
<td>.149</td>
</tr>
</tbody>
</table>

for success. There was a difference, however, under failure outcomes. Female subjects who perceived failure rated the reasons for their failure as more internal than did male subjects. This pattern was similar to that of low performers seen in the outcome by performance level interaction in Table 14. The group of low performers rated attributions for failure more internal than did high performers. Female subjects, likewise, rated attributions for failure more internal than did males. In other words, male subjects' locus ratings were more internal for success than failure; female subjects' ratings were not.
The interaction between outcome and performance level (Table 14) raised a question concerning the source(s) of this effect. Attributional categories had been collapsed for this analysis. Thus, it could not be determined to what degree the interaction resulted from subject biases of a given attribution. No differences were found regarding the frequency of immediate effort attributions across outcomes or performance levels, and immediate effort attributions comprised 72 percent of all attributions. This suggested that some of the outcome by performance level interaction may have been due to biasing effects for this attribution.

To examine this question, it was first necessary to examine the main effect of outcome on causal dimension ratings. As with pooled attributions, the main effect of outcome on subjects' ratings of immediate effort attributions was significant, $F(S=1, M=1/2, N=49 1/2) = 14.98, p < .001$. Subsequent univariate $F$-tests on each causal dimension showed only the ratings on the stability dimension to significantly differ across outcomes, $F(1,103) = 41.12, p < .001$. Subjects who perceived their performance as a success rated immediate effort attributions as more stable (mean = 16.04) than did subjects who perceived their performance as a failure (mean = 7.70).

After finding that, indeed, the outcome bias did occur for immediate effort attributions, a MANOVA was conducted to
evaluate the interaction between outcome and performance level for this attributional category. The interaction term was not significant, \( F(S=1, M=1/2, N=49 1/2) = 1.60, p = .193 \). Thus, a statistically significant difference was not found in the way high and low performers rated immediate effort attributions across success and failure outcomes. Despite this finding, univariate F-tests were conducted on individual dimensions for investigatory purposes (see Table 16).

Although no interactions were statistically significant, the interaction for the stability dimension did approach significance. The interaction pattern was identical to that found for pooled attributions (in Table 15). Following successes, high performers perceived immediate effort as more stable than did low performers. Following failures, the reverse was true. Low performers perceived immediate effort as more stable than did high performers.

The outcome by performance level interaction for the 107 immediate effort attributions was not statistically significant. The interaction pattern, however, was similar to that of the pooled attributions. This suggested that part of the overall outcome by performance interaction for the entire sample of attributions was a result of a performance-level related bias, but part of the interaction
Table 16

Univariate F-Tests of Interactions Between Outcome and Performance Level by Causal Dimensions for Immediate Effort Attributions with (1, 103) Degrees of Freedom; Group Means Are Also Shown

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Success</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Locus</td>
<td>19.05</td>
<td>18.00</td>
</tr>
<tr>
<td>Control</td>
<td>20.71</td>
<td>17.22</td>
</tr>
</tbody>
</table>

was due to ratings of attributions in other categories. The number of other attributions across outcomes and performance levels was not sufficient to report differences among groups.
CHAPTER IV

DISCUSSION

Rater Classification of Attributions.

The open-ended format of assessing attributions and subsequent classification of attributions by the three independent raters appear to be an appropriate method of attributional measurement in a school setting. Inter-rater reliability was adequately high and consistent with previous research. There were only 10 cases in which there was no agreement among raters. A close examination of these attributions may provide information that may help improve inter-rater reliability.

A problem with the open-ended format is that responses are worded by subjects. In several cases, the attributions are stated very ambiguously. With attributions like "got answers mixed up", it is not clear whether the subject meant that the test was hard, that the material was not well learned, or that some ability deficit existed. Other examples of ambiguous attributions given include "got confused", "maybe I worked too hard on something easy", "I didn't remember everything I studied", etc. To prevent wording of attributions like this, it might be helpful to provide examples of ambiguous statements in test
instructions. Care should be given, however, to not state examples of unclear attributions such that they suggest a specific attribution. The great advantage of the open-ended statement is the absence by biasing effects and unlimited of choices.

On the 10 cases in which there was no agreement among raters, there was a tendency for each rater to classify the ambiguous attributions into a particular category. In future research, it might be helpful if more time was spent training raters on these types of attributions. Classification specifications could be agreed upon which might produce greater consistency on ambiguously stated attributions, if not more accuracy.

Research Question I.

This research question examined differences in causal attribution patterns between high and low performers for success and failure in a school setting. The following is a summary of findings as they pertain to specific hypotheses.

Hypothesis 1a. There were insufficient numbers of ability attributions to conduct formal analyses of this attribution across performance levels. Examination of the frequencies showed that, as predicted, following perceived success, high performers gave more ability attributions than did low performers. However, the numbers were so low (four and zero, respectively) that it could not be determined if
this represented a trend.

_Hypothesis Ib._ Low performers gave more ability attributions for failure (four) than did high performers (two), as predicted. Again, however, because of the low frequency of these attributions, reliable conclusions could not be made. With a high N it may be that these differences would become significant.

_Hypothesis Ic._ The hypothesis that, following success, low performers would give more effort attributions than high performers was not supported. Both groups gave approximately the same proportions of effort attributions.

_Hypothesis Id._ The hypothesis that, following perceived failure, high performers would give more effort attributions than low performers was not supported. The proportions of effort attributions within each group were not significantly different.

_Hypothesis Ie._ There were insufficient numbers of other attributions to conduct formal statistical analyses. The frequencies for each attribution were low and there did not appear to be any trends. It may be that with a large sample, differences between groups might emerge.

**Discussion of Research Question I.** Hypotheses regarding attribution patterns across performance levels within outcomes were not supported. There were insufficient numbers of attributions, other than immediate effort, to
conduct formal analyses. By far, the most prevalent attribution for both high and low performers was immediate effort. This occurred for both success and failure outcomes. These results are not consistent with previous research, although the limited research in academic settings has also contradicted analog findings.

Previous laboratory research has shown that high performers (mastery-oriented, high achievers, etc.) most often give ability attributions for success and effort attributions for failure. Low performers most often give effort attributions for success, ability attributions for failure. There were two major differences between the current study and most research in this area that may account for the current results, the method of measurement and the school setting in which the study was conducted.

An open-ended statement was used on the CAPQ to obtain subjects' attributions. This allowed subjects to state the reason for their performance on a regularly scheduled history exam, without having to choose from alternatives. It may be that the attribution patterns found in previous research are partly a function of the method of measurement. Most researchers have utilized forced choice and/or rating scale methods of obtaining attributions and/or having subjects rate the relative importance of each. Both methods limit the range of responses. Some instruments limit choices to the
two major attributions, ability and effort. Between 10 and 20% of the attributions in the present study were attributions other than these two. In addition, the potential for demand characteristics of measurement instruments is greater when attributions are listed. The responses may be, in fact, more a measure of social desirability.

A second, more important, factor that may account for the current findings is the setting of the study. Tenth-grade high school students completed the CAPQ based on their performance on a regularly scheduled world history exam. In laboratory research, the tasks are somewhat novel, but also relatively meaningless (i.e., of little value) to the subject. School performance would be of a much higher value level for most students. It is one thing to admit to lack of ability on puzzle-solving tasks, quite another to acknowledge an inability to succeed in school. In addition, the current study was highly situational in nature. Other studies have made attempts for a more global measure of attributions. Moreover, analog research has used various problem-solving tasks on which to manipulate success and failure. The "ability" to succeed on these tasks may be perceived very differently from ability to succeed in school. An ability to solve puzzles may be seen as a necessary component to success. In an experimental setting, ability
may be considered important.

For most students in a school setting on a single exam, ability was not seen as important to success and failure. Immediate effort (i.e., "I studied", "I didn't study") was perceived by the large majority (72 percent) of students as most important. Whether high or low performer, it is recognized that success is directly related to the amount of time/energy/effort spent studying. It may be that, over time, ability is seen as an important component to success in school, but on a given academic task, high and low performers do not differ in reasons given for their performance. Ability is rarely given as a reason for success or failure.

These findings have important implications for intervention (e.g., attribution retraining) programs based on previously recognized attribution patterns of high and low performers. The goal of most attribution retraining programs is to change low performers lack of ability attributions for failure to lack of effort. Effort attributions for success are also typically reinforced. In a school setting, low performers do give mostly effort attributions for success and failure. Thus, these types of interventions do not seem appropriate for a school setting. It is apparent that, in a school setting, something other than the attributions themselves contributes to academic performance.

It is clear from these findings that future research
must focus on applied settings. Results obtained in the present study were quite different from laboratory research. Certainly analog research is necessary in the development of a model. However, at some point the model must be tested for its applicability in applied settings. If the attribution model is to be useful in developing intervention programs for school performance, it is important that these programs be based on information obtained from that setting. One problem in conducting this applied research is the lack of control over the frequencies of attributions. If researchers wish to examine other attributions, a large N study should be conducted.

Measurement of attributions should also include the use of an open-ended format. The potential bias produced by other formats should preclude their use. Inter-rater reliability for coding attributions was adequately high (86%). It could probably be higher if additional instructions to subjects emphasized specificity.

Research Question II.

This research question examined the relationships between academic performance and perceived locus, stability, and controllability of stated attributions by outcomes. The following is a summary of findings as they pertain to specific hypotheses.

Hypothesis IIa. Following perceived success, there
was a significant positive relationship between academic performance and locus of causality. The more internal an attribution was perceived to be, the higher the level of performance. It was predicted that no relationship would exist.

Hypothesis IIb. As predicted, there was not a significant relationship between locus of causality and academic performance.

Hypothesis IIc. It was predicted that, following successes, a positive significant relationship would exist between subjects' perceived stability of attributions and academic performance. The results supported the hypothesis. The more stable an attribution for success was perceived, the higher the academic performance.

Hypothesis IID. The hypothesis that, following failures, stability would be negatively related to academic performance was supported. The more stable an attribution was perceived, the lower the academic performance.

Hypothesis IIe. It was predicted that, following successes, there would be a significant negative correlation between performance and the perceived controllability of attributions. This hypothesis was not supported. In fact, there was a significant positive relationship. The more controllable attributions were perceived, the higher the academic performance.
Hypothesis IIIf. The hypothesis that the perceived controllability of attributions would be positively related to performance following failures was not supported. The correlation was essentially zero.

Discussion of Research Question II. Hypotheses regarding the relationships between causal dimensions and academic performance were based largely on findings in analog research. High and low performers had been shown to most often attribute success to high ability and effort, respectively, and to most often attribute failure to lack of effort and low ability, respectively. It was the presumed placement of attributions within the three causal dimensions upon which hypotheses were based. Results discussed above show that differences in actual attribution patterns do not exist between performance groups in school. Thus, even the significant relationships that were found could not be due to differences in attribution patterns.

The relationships between academic performance and causal dimensions present a confusing picture. Although three hypotheses were supported, three were not. Some relationships were found to exist following successful outcomes that did not exist following failure. Each dimension appears to have a different and separate relationship with academic performance.

To sort through this complicated topic, the present
discussion will focus on two issues in attempting to understand the results. One involves the potential reasons for significant relationships. The second issue involves the fact that some significant correlations found under success outcomes were not found under failure outcomes.

Following successful outcomes, a positive relationship was found between locus and performance. The attribution model does not provide for a specific linkage between locus and performance. No relationships were expected between these two variables. The significant positive correlation found following successes suggests that there should be provisions in the model to account for this relationship.

The finding that locus is positively related to success is consistent with the large body of research involving social learning theory and locus of control. Researchers in this area have shown high locus scores (internals) to predict high achievement. One question with this research had been whether relationships actually existed between performance and locus, or with some other dimension (e.g., stability). Measurement instruments used in this research did not separate out the various dimensions, confounding results on this variable. It appears now that, indeed, locus does relate to performance independent of other dimensions, if success was the outcome.

The exact mechanism(s) for this relationship is unclear.
Internal attributions for success have been shown to produce positive self-related feelings. Negative self-related feelings occur as a result of internal attributions for failure. It may be that those who perform well in school rate the reasons for their success as more internal because of the positive self-directed feelings associated with internal attributions for success. Alternatively, there may be a causal relationship in the other direction. Because internal attributions produce positive feelings following successes, those who believe successes are due to internal factors may be more "motivated" to achieve. They may feel better when they succeed than do those who do not believe that successes are due to internal factors. More research is needed to examine the mechanism underlying this relationship and to evaluate the possibility of a more direct linkage between the locus dimension and academic performance than the attribution model now contains.

Whatever the mechanism(s) involved in the locus/performance relationship, it would be expected that locus would also relate to performance following failures, but in a negative way. It did not. Following failures, there was no relationship between locus and academic performance.

It was thought that because there were many more low performers in the failure group, there might exist a
difference between performance groups that might account for this finding. Results were analyzed separately for performance groups. Although, following failures, neither correlation was significant, in the high performance group the correlation was positive (.16). This lends some support for the notion that it is of value (i.e., performance is facilitated) to believe reasons for outcomes are internal, regardless of outcome, to a point.

Below a certain performance level, factors other than attributional beliefs may negate any effects of differing beliefs. Overall ability (IQ) may be such a factor. In other words, the attribution model may not be applicable in total to all ability levels. It may be that because of limitations in ability, causal beliefs become inconsequential.

The relationships between perceived stability of attributions and academic performance are much more clear cut. The positive relationship between performance and stability following successes, and the negative relationship following failures were both hypothesized. These findings are consistent with previous research and predictions of the model. It is believed that stable attributions for success result in expectations of future success (all other factors being equal). Expectancy of success has been shown to facilitate task persistence which is presumed to be
prerequisite for success.

The same mechanism is believed to operate following failures. If failure is attributed to stable causes, failure is expected in the future and task persistence diminishes. Although the current results do not provide a test of these causal relationships, they do provide much needed support for the application of the model to actual academic settings. The attribution model makes explicit provisions for a direct linkage between this dimension and performance. Even though the predicted relationships did occur, it is not because of the assumed attribution patterns. Performance did not correlate with stability following successes because more high performers gave "stable" attributions (i.e., ability) and because more low performers gave "unstable" (i.e., effort) attributions. As discussed earlier, groups did not differ in attribution patterns. Thus, it seems that some type of bias is operating across performance levels to account for these relationships. This bias will be examined under Research Question III.

The findings regarding the controllability dimension are like that of the locus dimension. Predicted relationships did not occur, and controllability was correlated with performance following successes but not failures. The expected relationships (negative for success, positive for failure) were based on predicted differences in attributional
patterns across performance levels which did not occur. Moreover, as with the locus dimension, the attribution model does not provide for a direct link between the controllability dimension and performance. Thus, again, a relationship was found following success that the model does not account for, and that relationship did not exist following perceived failure.

The positive relationship between controllability and performance following success is very difficult to understand within the context of the attribution model. It would have been more understandable if a positive relationship had been found following failures. Even though the attribution model does not provide for a direct link between performance and controllability, it can be reasoned that the controllability dimension may affect performance indirectly. The model predicts that certain emotions result from perceiving failure as controllable. Shame and guilt have been shown to be greater when failures are perceived as more controllable. Thus, the more controllable an individual perceives attributions for failure to be, the worse that individual may feel when s/he fails. For this individual, there is more motivation to succeed than someone who believes that failures are uncontrollable because failure is more aversive. There is more motivation to avoid the negative feelings associated with failing by succeeding. However, performance did not
correlate with perceived controllability when failure was the outcome.

Researchers from the area of learned helplessness suggest that motivational deficits occur when aversive events (failing an exam) are perceived as uncontrollable. Based mostly on infra-human research, these researchers maintain that some individuals develop an overgeneralized belief that outcomes are not contingent on their behavior. Goal-directed behavior is subsequently reduced. This still would not explain how perceiving attributions as more controllable following success would either be more desirable or would actually facilitate performance.

The relationship between controllability and performance may be due to its correlation with the locus or stability dimension. Although the intercorrelations were low, they were significant. It may be that attributions perceived as more internal and stable are "automatically" perceived as more controllable, without a real relationship to performance.

The fact that controllability correlates with performance following successes but does not for failure is perplexing. To determine if controllability might be differentially related to performance within each performance level, separate correlations were computed by performance level and outcome. For both high and low performers, the
relationships remained insignificant following failures. Surprisingly, for low performers following perceived success, the positive relationship disappeared. Thus, there was really no relationship between controllability and performance for low performers, regardless of outcome. For high performers, there was a significant positive relationship following successes but not for failures. Even though there was no relationship between controllability and performance for high performers following perceived failure, these "high" performers were at the low end of their performance group. It may be that, as with the locus dimension, for the controllability dimension the attribution model may not be applicable below a certain performance level. Ability may affect performance to the extent that causal beliefs may be irrelevant.

To summarize the findings regarding Research Question II, each causal dimension appears to have a different type of relationship to academic performance in a school setting. The stability/performance relationships for both success and failure attributions are consistent with the attribution model and support its application to a high school setting. The locus and controllability dimensions, however, show positive relationships with performance for success attributions and no relationships with performance for failure attributions.
The attribution model does not provide for a direct link between these dimensions and performance. With the locus dimension, it is suggested that positive feelings associated with more internal attributions for success may serve to increase the value of success, thereby increasing motivation and performance. With the controllability dimension, it was unclear how perceiving success as more controllable could facilitate performance. Because research examining relationships between causal dimensions and school performance is such an ignored area of research, little is known. Research should examine these relationships further. The attribution model may need to be modified account for these relationships.

There was some indication that the attribution model may not be applicable to all ability levels in a school setting. The results were not clear on this issue, however. It does make sense that at some point ability must become a greater factor than causal beliefs. This is another important question that future research should address.

Research Question III.

This research question examined the biasing effects of outcome on subjects' perceptions of the locus, stability, and controllability of attributions. The effects of sex and performance level on subject ratings were also examined. The following is a summary of findings as they pertain to
specific hypotheses.

Hypothesis IIIa. It was predicted that subjects ratings of attributions along the locus dimension would be more internal following success than failures. Results supported this hypothesis.

Hypothesis IIIb. It was predicted that subjects ratings of attributions along the stability dimension would be more stable following success than failures. Results supported this hypothesis.

Hypothesis IIIc. It was predicted that subjects ratings of attributions along the controllability dimension would be more controllable following success than failures. Results did not support this hypothesis.

Discussion of Research Question III. The results regarding the locus and stability dimensions are consistent with the recent findings that subjects' perceptions of dimension qualities as a function of outcome. Attributions tend to be perceived as more internal and stable following successes, regardless of performance level. The difference across outcomes for the controllability dimension was not significant but was in the same direction.

This bias has also been shown to occur for specific attributions. There is a tendency for individuals to give attributions presumed to be internal, stable, and controllable for successes and attributions presumed to be
external, unstable, and uncontrollable for failures. This biasing effect has been termed the self-serving, or hedonic bias. Recent studies have shown that there is an outcome bias for a given attribution. Even though the attributions given by subjects were mostly immediate effort attributions, 28% were attributions other than this. Thus, by collapsing attributions within each outcome, it could not be determined if an outcome bias might occur for a specific attribution.

It was intended that each attributional category would be examined for this bias across outcomes. Because attributions other than immediate effort did not occur with sufficient frequency, however, analysis of this bias could only be conducted on the attribution of immediate effort. Subsequent analysis did, in fact, show the main effect of outcome does cause subjects to bias attributions.

Research in attribution theory has only recently shown that attributions may not be perceived along dimensions as has been assumed for several years. Unfortunately, many researchers continue to ignore these findings. Conceptualizations of how attributions affect performance are made assuming, for example, that immediate effort is considered to be unstable in all situations (i.e., across outcomes). The present results are consistent with the growing body of research that shows attributions are not
always perceived as presumed. These findings have more implications for methods of measurement in attribution research than for the attribution model itself.

The attribution model specifies a link between specific attributions and emotional responses. It also provides for an independent linkage between causal dimensions and emotional and behavioral responses. The links to causal dimensions are based on how subjects perceive attributions along the causal dimensions. The model itself does not actually specify what attributions should be considered internal, stable, etc. These have been assumed by researchers for some time, mostly on an intuitive basis. It is these assumptions that have likely resulted in some of the inconsistencies in attribution research.

Because of the biasing effect of outcome, an attribution (e.g., effort) may have very different meanings for an individual, psychologically, depending on the outcome. The effect of this attribution on performance will likely be very different as well. It is clear that researchers must consider this when conducting research. Valid interpretations of results can not be made unless subjects' perceptions of dimensional properties of attributions are assessed rather than guessed.

The present study went a step further in examining subject biasing of attributions. It was reasoned that if
subjects' bias attributions across outcomes, other biases might also exist. To examine this, the interaction between outcome and performance level on subjects' perceptions of causal dimensions was evaluated.

There was a significant overall interaction, due to significant specific interactions for the locus and controllability dimensions. Low performers perceived the reasons that they succeeded on the exam as less internal (or more external) than did high performers. Attributions for failure were perceived as more internal by low performers. On the controllability dimension, low performers perceived attributions for success as less controllable than did high performers. Although the interaction between outcome and performance level was not significant for the stability dimension, it was the same pattern as the locus dimension. Following successes, attributions tended to be seen as more stable by high performers, and more stable by low performers following failures.

This is an important finding in itself. However, as with the biasing effect of outcome, it was speculated that the performance level bias might have occurred for a given attribution. Only immediate effort attributions were of sufficient frequency to analyze. The overall interaction was not significant. Examination of interactions showed that interaction patterns were identical to the overall analysis.
(collapsed across attribution categories). The interaction for the stability dimension was nearly significant ($p = .055$). Thus there appears to be a potential for an outcome by performance level biasing effect for a specific attribution. However, the effect is stronger when attributions are collapsed across attribution categories.

These findings are highly important for the attribution model, especially in light of the findings under Research Question I, that predicted patterns of attributions across outcomes and performance levels do not exist in a school setting. Specific attributions did not differ across performance levels. However, even though predicted patterns did not occur, an "underachievement" bias appears to be operating in a way predicted by the model. Rather than being different from high performers in their attribution patterns across outcomes, low performers differ in their perceptions of causal dimensions across outcomes. Compared with high performers, low performers attributions for success are less internal, less controllable, and tend to be less stable. Low performers perceptions of attributions following failures are more internal and tend to be more stable than do high performers' perceptions.

Based on attribution research showing specific effects of causal dimensions, the following statements may be made as to the effect of this bias on performance. Even when low
performers do succeed, they do not feel as good about themselves as do high performers. They do not have as high an expectation for repeated success. They do not believe the outcome of success is as controllable as do high performers. When low performers fail an exam in school, they feel worse about themselves than do high performers, and they have a tendency to have a higher expectation of repeated failure. It can be seen how these factors might work together to keep some individuals, capable of succeeding, from consistently putting forth maximum effort. It is not that low performers do not know what it takes to be successful (i.e., effort). For them, the payoff for success is just not that good. In addition, putting forth a lot of effort is risky. Low performers already perceive attributions for failure as more internal than do high performers. If they do put forth a lot of effort and still fail, then the attribution "I didn't study" can not be made. If some "excuse" (e.g., external attribution) cannot be made, their already low perceptions of their abilities are subject to further decrements. Low performers are in a very real double bind. If they try and fail, their worst beliefs are confirmed. However, by not trying, failure is ultimately assured.

Differences in perceptions of causal dimensions were also examined by outcomes and sex of subjects. Researchers had previously found some evidence to show that "low
performance" attribution patterns are more prevalent among females. This analysis examined perceptions of causal dimensions rather than specific attributions. The overall interaction was significant, largely because of the significant interaction on the locus dimension. Female subjects did, in fact, show a low performer-like difference from males across outcomes. While males' attributions for successes were perceived as more internal than their attributions for failures, females' attributions were not. For failures, females' attributions were perceived as more internal than males. Because subjects' perceptions of attributions have not been examined by sex of subject, interpretations of these findings are difficult. These results imply that females may feel worse about themselves following failures than do males. Because males and females were equally represented in performance groups, it does not appear that the sex difference directly affects performance. Nonetheless, because of this and previous findings, sex differences in perceptions of causal dimensions merit further research.

The differences found between high and low performers in their perceptions of the reasons that they succeed or fail are consistent with the predictions of the attribution model of achievement motivation. Although conclusions regarding causal direction cannot be made, the results do support the
use of the attribution model to better understand academic performance in school and in developing effective intervention programs for those who apparently could perform well but do not.

Besides supporting the attribution model, these findings have important implications for intervention programs. Attribution retraining programs attempt to increase achievement related behavior (usually task persistence) by modifying attributions. Even though increases in task persistence have been achieved in most of these programs, changes in measured attribution patterns have rarely occurred. It may be that although changes in specific attributions did not occur, subjects' perceptions of causal dimensions may have changed, thereby increasing performance. Whether this is true or not, the findings of the current study regarding differences in perceptions of causal dimensions between performance groups across outcomes suggest that these intervention programs should, in addition to being concerned with specific attributions, also target subjects' perceptions of causal dimensions.

To summarize the findings regarding this research question, a strong outcome bias was found to occur, consistent with previous research. In addition, a bias termed the underachievement bias, was also found to occur. This bias involved the tendency of low performers to view
reasons for success as less internal, stable, and controllable than high performers, and to view reasons for failure as more internal and stable. The effects of this bias were discussed in terms of performance inhibition. These findings have important relevance for the attribution model, attribution research, and intervention programs based on the attribution model.

**Summary and Final Conclusions.**

The general purpose of the present study was to evaluate the applicability of the attribution model to a school setting. There were several specific questions to be addressed as part of this evaluation. Previous research had found that, in laboratory settings, relatively consistent differences in patterns of causal attributions for success and failure exist between those designated as high achievers and those designated as low achievers. One question of the current study was whether these patterns actually differ in an academic setting between those who do well in school (high performers) and those who do poorly (low performers). It was found that they do not differ. The preponderance of attributions given by both high and low achievers for both success and failure were immediate effort attributions. Thus, differences in actual school performance cannot be due to (even in part) differences in the reasons given for why an individual succeeds or fails. These findings are not
consistent with previous laboratory research, underscoring the need for more applied research in this area.

To the knowledge of this author, there has been no research in a school setting concerning the relationships between academic performance and the perceived locus, stability, and controllability of attributions for success and failure. The attribution model outlines these relationships. Much analog research has been conducted that supports these relationships. The second question that the present study attempted to address was whether, indeed, the model can be applied to a school setting. The relationships predicted by the model regarding the stability dimension were found to exist in a school setting. Following successes, the higher the performance level of students, the more stable attributions are perceived. Following failures, the lower the performance level the more stable attributions are perceived. In addition, positive relationships were found between academic performance and the locus and controllability of attributions for success. Previous research has been mixed regarding these dimensions. Moreover, although the attribution model does provide for indirect influences of these dimensions on achievement, it does not provide for a direct linkage between them. The current findings suggest that perceiving successes as more internal does facilitate performance. Perceiving attributions for
success as more controllable may also facilitate performance. It may be that the attribution model should be modified to account for a more direct linkage between these two dimensions and performance. More applied research is needed to clarify these issues.

There were some indications that the attribution model may not be applicable to those students who really do not have the ability to do well in school, academically. Causal beliefs did relate to performance for those students in the sample who received a score of 78 or higher on the exam. For these students, it does matter how they perceive the reasons they succeed. For the other students, it may be that causal beliefs are relatively irrelevant, that no matter how internal or controllable attributions for success are perceived, they can not do as well in school as those who have more abilities. However, because there has been a complete lack of applied research in this area, and the results of the present study are inconclusive, these conclusions should be considered tentative, at best. More applied research is needed to determine the point of ability level at which the attribution model may not be applicable and interventions based on the model may not be appropriate.

A third question that the present study attempted to address involved differences between the placement of attributions along causal dimensions assumed by researchers
in this area and subjects' perceived placement of attributions along these dimensions. Previous research had shown a strong outcome bias to exist. Reasons for success are perceived as more internal, stable, and controllable than reasons for failure. The findings of the present study were consistent with this. Because of this outcome bias, a given attribution may not have the same meaning to an individual for success as it does for failure. It is therefore a mistake to assume that a given attribution is perceived identically for success and failure, or that a given attribution is perceived the same as those conducting the research. It is important that subjects' perceptions be measured rather than assumed.

In investigating the outcome bias, it was discovered that another type of bias occurs in students' perceptions of attributions. Even though, in a school setting, high and low performing students do not differ in the specific attributions given for success and failure, they do differ in their perceptions of attributions. High performers tend to perceive attributions for success as more internal, stable, and controllable than do low performers. The opposite is true following failures. Low performers view reasons for failure as more internal, stable, and controllable than do high performers. Based on the attribution model and related findings, the effects of this bias (termed the
underachievement bias) would be to inhibit performance. To the knowledge of this author, this bias has never been researched. It is consistent with the predictions of the attribution model, not based on differences between attribution patterns across performance levels, but on systematic differences in perceptions of attributions across performance levels. As with the evidence regarding an outcome bias, the fact that all individuals do not perceive attributions identically makes it imperative to obtain a measure of subjects' perceptions of attributions when assessing specific attributions.

The results of the present study must be considered in relation to some of the limitations of the study. The study was conducted with tenth grade students from world history classes. The results may not generalize to other age levels or academic content areas. This was also a study of situational attributions. The results may only be relevant for a single exam and may differ across time. In addition, the present study was correlational in nature. Conclusions about whether perceptions of attributions effect performance or performance effects subjects' perceptions can not be made. The study did examine attributions in an applied setting, not in a laboratory, on a real academic task, not an hypothetical or puzzle-solving one, and attributions about one's own performance were measured rather than about the performance
of someone else. Thus, it seems that these results are more valid than much of the analog research conducted previously.

The findings of the present study have implications for future attribution research. It is clear that researchers must focus on applied settings. Differences between the findings of the present study and previous analog research have implications for the attribution model as well intervention programs based on the model. These differences need to be confirmed in additional applied studies. It is also clear that subjects' perceptions of the locus, stability, and controllability of attributions need to be measured rather than assumed. One question raised by the present study was the applicability of the attribution model to all ability levels. More research is needed to examine this issue.

The findings of the present study also have implications for educators and those developing intervention programs for underachievers. For those students that are not doing well in school but have limited ability, it may be necessary to find alternative curricula other than college preparatory. Continued frustration and failure cause many to leave school prematurely. For those students, it may be unrealistic and inappropriate to attempt to change their beliefs about their abilities. Their beliefs may be accurate. A more practical, skills based curriculum may be more helpful for them in terms
of future occupational success. For those students, however, who do appear to have adequate ability, yet who fail because of lack of effort, interventions based on the attribution model may have an impact on performance. If students do not see the importance of effort in academic outcomes, it must be demonstrated to them that altering strategies or increasing effort will improve performance. The findings of the present study suggest that this may not be enough, however. It may also be necessary to change student' beliefs about effort, that it is something that is because of them (internal), that it is something that they can do repeatedly over time (stable), and that it is something which they can control. However, schools and intervention programs must be structured so that success does occur. Students must be given an opportunity to succeed in some area; otherwise, it is going to be difficult to modify self-defeating beliefs that success is not possible.
APPENDIX A

The Final Causal Dimension Scale

Instructions: Think about the reason or reasons you have written above. The items below concern your impressions or opinions of this cause or causes of your outcome. Circle one number for each of the following scales.

1. Is the cause(s) something that:
   - Reflects an aspect of yourself
   - Reflects an aspect of the situation
   - Numbers 9, 8, 7, 6, 5, 4, 3, 2, 1

2. Is the cause(s):
   - Controllable by you or other people
   - Uncontrollable by you or other people
   - Numbers 9, 8, 7, 6, 5, 4, 3, 2, 1

3. Is the cause(s) something that is:
   - Permanent
   - Temporary
   - Numbers 9, 8, 7, 6, 5, 4, 3, 2, 1

4. Is the cause(s) something:
   - Intended by you or other people
   - Unintended by you or other people
   - Numbers 9, 8, 7, 6, 5, 4, 3, 2, 1

5. Is the cause(s) something that is:
   - Outside of you
   - Inside of you
   - Numbers 1, 2, 3, 4, 5, 6, 7, 8, 9

6. Is the cause(s) something that is:
   - Variable over time
   - Stable over time
   - Numbers 1, 2, 3, 4, 5, 6, 7, 8, 9

7. Is the cause(s):
   - Something about you
   - Something about others
   - Numbers 9, 8, 7, 6, 5, 4, 3, 2, 1

8. Is the cause(s) something that is:
   - Changeable
   - Unchanging
   - Numbers 1, 2, 3, 4, 5, 6, 7, 8, 9

9. Is the cause(s) something for which:
   - No one is responsible
   - Someone is responsible
   - Numbers 1, 2, 3, 4, 5, 6, 7, 8, 9

Note. A total score for each of the three subscales is arrived at by summing the responses to the individual items as follows: (1) locus of causality—Items 1, 5, and 7; (2) stability—Items 3, 6, and 8; (3) controllability—Items 2, 4, and 9. High scores on these subscales indicate that the cause is perceived as internal, stable, and controllable.

APPENDIX B

INFORMED CONSENT

NAME OF STUDENT:________________________________________

1. I hereby give consent to John H. Huffine, M.S., Associate School Psychologist, to perform or supervise the following investigational procedure:

   A. Each student will be asked to fill out a five-minute questionnaire at school, about his/her performance on a test and the factors that contributed to the performance.

   B. The questionnaire will be confidential. The student's name will not be used in any way.

   C. The results of this study will be used to provide a better understanding of academic achievement, which may help educators develop ways to better help each student reach his/her potential.

   D. The potential risks, if any, of a student completing the questionnaire, include causing the student to become more aware of the reasons for his/her performance at school. If the outcome was negative, certain reasons for it might produce negative feelings.

   E. Following the conclusion of the study, results will be made available to students and parents.

2. I have read the explanation above and understand the nature of the proposed study. I understand the potential benefits (to society) to be expected. I understand that the questionnaire to be administered is investigational and is not a school requirement.

   I further understand that Fort Worth I.S.D. has given approval to conduct this study. I understand that I or my son/daughter may withdraw my consent for his/her participation any time prior to the administration of the questionnaire.
With my understanding of this, and having received satisfactory answers to questions I asked, I voluntarily give consent for ________________________________ (student's name) to participate in the investigational procedure designated in Paragraph 1 above.

Date

Name of Parent/Guardian

Signature of Parent/Guardian
APPENDIX C

CAUSE OF ACADEMIC PERFORMANCE QUESTIONNAIRE

Confidential Questionnaire—Do Not Write Your Name On This Paper

SEX (circle one) MALE FEMALE

I. What was your number grade on this test?_____

II. Do you consider your performance on the test mostly a:
   (circle one)
   success or failure

III. What was the main cause of your performance?
   (write in the main reason that you made this grade)

IV. The following nine questions are about the cause you wrote above. Please circle one number in each question:

1. Is the cause(s) something that:
   Reflects an aspect of yourself
   Permanent
   Intended by you
   Variable over time
   Something about you
   Changeable
   For which no one is responsible
   Not
   Yes
   One
   Points

2. Is the cause(s) something that:
   Uncontrollable by you or other people
   Unintended by you or other people
   Inside of you
   Unchanging
   Someone is responsible

3. Is the cause(s) something that:
   Temporary
   Inside of you
   Stable over time
   Someone is responsible

4. Is the cause(s) something that:
   Reflects a situation
   Inside of you
   Unchanging
   Someone is responsible

5. Is the cause(s) something that:
   Reflects a situation
   Inside of you
   Unchanging
   Someone is responsible

6. Is the cause(s) something that:
   Temporary
   Stable over time
   Someone is responsible

7. Is the cause(s) something that:
   Reflects an aspect of the situation
   Inside of you
   Unchanging
   Someone is responsible

8. Is the cause(s) something that:
   Reflects an aspect of the situation
   Inside of you
   Unchanging
   Someone is responsible

9. Is the cause(s) something that:
   Reflects an aspect of the situation
   Inside of you
   Unchanging
   Someone is responsible
V. What was your six-week average in history last six weeks?

___________  (Write in the number grade.)

The University of Iowa
Iowa City, Iowa  52242

Graduate Program in Hospital and Health Administration &
Center for Health Services Research
College of Medicine and Graduate College
Program  (319) 335-0814
Center  (319) 335-8815

June 26, 1987

Jay Huffine
1906 Spring Branch Rd.
Arlington, TX  76006

Dear Mr. Huffine,

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sent a copy of the thesis as soon as it is completed. Your attention to
this matter would be much appreciated. Good luck with your future
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Sincerely,

Daniel Russell, Ph.D.
APPENDIX E

Jay Huffine, M.S.
1906 Springbranch Drive
Arlington, Texas 76006

Date: June 29, 1987
For: Dissertation

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Assign one of the following ten labels to the subject's attribution. If the attribution does not fit into one, assign an arbitrary label that best describes the attribution.

**CODE**

**DEFINITION**

**Ability**

talent; innate skill

Examples:

"I'm good (bad) at history/learning/schoolwork."
"It's something I can do well."
"I'm good at this".
"I don't do well on tests."

**Mood**

emotional state; feelings

Examples:

"I didn't (did) feel like taking a test."
"I was depressed that day".
"I was in a bad (good) mood."

**Immediate Effort**

amount of work/time/energy put into test preparation

Examples:

"I did (didn't) try/study hard for this test."
"I was prepared well."
"I had prepared good materials for the test."
"I listened in class."
Typical amount of work/time/energy put into schoolwork on a regular basis

Examples:

"I never (always) try/study to do well".
"I'm just lazy".
"I'm always working hard at schoolwork".

Task how hard (easy) the test was perceived to be

Examples:

"The test was easy (hard)."
"The essay questions got me."
"It was confusing."
"There were trick questions."
"It was hard (easy) to understand."

Teacher Bias perceived discrimination

Examples:

"The teacher doesn't (does) like me."
"The teacher graded mine harder."
"The teacher gave me a break."

Help From some type of assistance from another person, either before or during the test

Examples:

"A friend (nobody) helped me study."
"Tommy helped me."
"The teacher prepared us well."
"The teacher gave us review questions."
Luck       outcome due to chance

Examples:
"I was unlucky (lucky)."
"I lucked out."

Physical       physiological functioning
State

Examples:
"I felt sick (well) that day."
"I was sick and missed the review."

Attitude       beliefs/feelings expressed
towards the test/school

Examples:
"I really like (don't like) history."
"I don't care."
"Who cares?"

Others       can not classify in any category
References


