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THE EFFECTS OF SEX LINKAGE OF AREA OF ACHIEVEMENT ON MEN'S AND WOMEN'S EXPECTATIONS FOR SUCCESS AND CAUSAL ATTRIBUTIONS FOR OUTCOME

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ABSTRACT

THE EFFECTS OF SEX LINKAGE OF AREA OF ACHIEVEMENT ON MEN'S AND WOMEN'S EXPECTATIONS FOR SUCCESS AND CAUSAL ATTRIBUTIONS FOR OUTCOME

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Previous research has led to the conclusion that women have achievement inhibiting patterns of expectancy and causal attribution relative to men. The purpose of this investigation was to determine whether this conclusion is valid outside traditionally masculine achievement situations. Eighty-one female and sixty-five male undergraduate volunteers were tested in mixed-sex groups. Task-specific expectancies and attributions were measured regarding tests in traditionally feminine and masculine ability areas, interpersonal and academic skill. General attributions for academic and interpersonal outcome were assessed using the Multidimensional-Multiattributional Causality Scale (MMCS). The results revealed few sex differences in expectancy and attributions within area of achievement. Differences across sex in interpersonal and academic MMCS attribution patters were discussed in terms of the applicability of the conceptual models to an interpersonal context. The possible influence of methodological and situation variables on expectancy and attribution patterns found among men and women were discussed.

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INTRODUCTION

A growing body of research indicates that cognitive variables are important in understanding a wide range of human behavior, including achievement behavior. People's beliefs about why they succeed or fail have been shown to have significant implications for their affective responses to outcome, future expectations and behavior (Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971). While attribution theory has contributed to our understanding of achievement-related behavior, it has also raised some serious concerns. Though there have been some ambiguities in the data, self-derogatory patterns of attribution and expectancy that have negative implications for the fulfillment of intellectual and occupational potential have frequently been found among women. Such dysfunctional patterns have not generally been reported among men.

Though these sex differences in the perception of causality have been found among subjects of many ages on a variety of tasks (Frieze, 1975), our picture of patterns of attribution and expectancy among males and females is incomplete. Attribution research has primarily been conducted in traditionally masculine areas of achievement. We may have accurate data on the typical attributions and

expectancies of men and women in areas in which men are encouraged to develop independent mastery, but the picture could be unrepresentative of cognitions about achievement in domains culturally defined as feminine.

The purpose of the present study was to contribute to a more broadly based understanding of achievement attributions and expectancy of success by comparing patterns among males and females in an area culturally defined as feminine to patterns in an area culturally defined as masculine. The study was intended to help assess the degree to which the debilitating attribution patterns and low expectancies of success reported among females generalize to areas of behavior outside traditionally masculine areas of achievement. Obtaining a more inclusive picture of the process of assigning causality is seen as a preliminary step in developing attributional retraining programs to alter self-derogatory and achievement-inhibiting patterns of attribution and expectancy.

REVIEW OF THE LITERATURE

Construct of Locus of Control

The study of the process of assigning causality developed from a social learning theory framework. Rotter (1966) conceptualized locus of control as the individual's generalized perception of the causal connection between personal characteristics or personal behavior and reinforcement. He theorized that people considered outcomes to be due to causes originating within them, such as ability or effort, or to causes external to them, such as luck or task difficulty. The development by Rotter (1966) of a measure of generalized expectancy of internal or external control gave rise to a proliferation of research on the construct, primarily considering locus of control as an individual difference variable. Summaries of a variety of experimental, survey and life situation studies of internal-external locus of control (Lefcourt, 1976; Phares, 1976) indicate that individuals who characteristically make internal attributions are more likely to pursue and use information related to their own well-being, show a higher level of coping and activity in a variety of situations and are more likely to express affects indicative of life satisfaction than individuals who characteristically make external

attributions. The perception of internal control has also been reported by a number of researchers to be positively correlated with academic achievement (Crandall, Katkovsky & Crandall, 1965; McGhee & Crandall, 1968; Messer, 1972), though there have been some contradictory findings (Butterfield, 1964; Hjelle, 1970). The importance of locus of control as a mediator of life situations is documented in such research as the work of Langer and Rodin (1976) in which perceived control of availability of reinforcements was found to be positively related to activity, happiness and length of life among nursing home residents.

Despite the generally more positive consequences of an internal orientation, these favorable implications of internal perception of control are modulated by contextual variables. While internal attributions generally produce more positive feelings in response to success than external attributions, they also produce more negative affect in response to failure (Weiner, Heckhausen, Meyer & Cook, 1972). Among individuals who experience frequent success, internal locus of control would lead to positive feelings about self and a high level of activity in most situations. For individuals in milieus in which they actually possess little control, or individuals who experience frequent failure, perceptions of internal control could lead to negative feelings or resignation (Lefcourt, 1980). Separate consideration of success and failure situations, which was

not included in Rotter's (1966) measure of locus of control, is necessary to understand the specific implications of locus of control.

The Weiner Model of Causal Attribution

While the Rotter (1966) concept of the perception of causality deals only with whether causes originate within the individual or in the environment, Weiner and his associates (1971) have developed a more differentiated model. The schema formulated by Weiner incorporates the dimension of stability versus instability in addition to the internal-external dimension, and considers attributions for success and failure separately. The four causal categories of the model are (a) internal stable, (b) external stable, (c) internal unstable, and (d) external unstable. Though a diversity of causes may be employed to explain outcome, the attributions usually cited which correspond to the categories above are (a) ability or lack of ability, (b) effort or lack of effort, (c) contextual variables such as task ease or task difficulty, and (d) good or bad luck. While the one dimensional locus of control model has import for affect in response to outcome, the addition of the stability dimension generates implications for expectancy of future outcome as well. Stable attributions for success and failure produce expectations of the same outcome in future attempts at a given task,

while unstable attributions present the possibility of different outcomes in the future (Weiner, et al., 1972).

Weiner's two-dimensional model for classifying attributions for success and failure affords a much clearer understanding and prediction of behavior based on the perception of causality than the one-dimensional model. Within Weiner's conceptual framework, various causal attributions have specific implications for affect, perceived control, expectancy and future behavior. Attributions of success to the stable, internal factor of ability would maximize pride, certainty of future success and feelings of personal control. Success ascribed to the unstable cause of effort would evoke pride, but no security about future success. The effort attribution would carry the implication of control over future outcome through continued effort. Imputed to external factors, success produces little pride and no perception of personal control. While success due to task ease would lead to expectancy of continuing success at the same task, the external unstable attribution of luck would provide no certainty of future outcome.

In response to a failure experience, internal causal attributions would be hypothesized to generate more negative affect than external attributions. The stable attribution of lack of ability, in specific, would be most negative because the individual would perceive her/himself

as having no control over the situation and would expect continued failure. Ascription of failure to the unstable factor of lack of effort would produce less shame. It implies control over future outcome and the possibility of success despite current failure. Though failure due to external factors of bad luck or task difficulty would produce little negative affect because of the absence of personal responsibility, the attributions assume no control over the situation on the part of the individual. While the expectancy of different outcome on a task in the future is precluded by the stable task difficulty attribution, expectancy of success on a task at another time may accompany a luck attribution for failure, since luck could change (Frieze, 1975).

Causal attributions also have consequences for the individual's tendency to reapproach an activity or similar activities in the future. The ascription of failure to lack of ability would be most likely to preclude future attempts at an activity, due to the shame associated with the failure and the expectancy of future failure. However, any attribution minimizing the perceived control would be expected to inhibit reapproaching an activity after failure, to some degree. The degree of constraint would depend upon the stability of the cause. While an individual attributing failure to task difficulty would be unlikely to attempt the task again, another attempt might be considered

if the failure was imputed to luck. It seems that the probability of an individual reapproaching an activity would be maximized by attributions of ability and effort for success, which enhance pride and carry the implication of future control and the expectancy of success. The attribution of failure to lack of effort would also be likely to promote reapproaching a task. Despite associated negative affect, the effort attribution assumes control of future outcome, and the expectancy of success if effort is increased.

Empirical support for the Weiner model. Hypotheses about the relationships of expectancy, affect and future behavior to attributions have been widely investigated and generally supported. Research by Weiner, Heckenhaus, Meyer and Cook (1972) substantiated the theoretical relationship defined above between stability of causal attribution and expectancy in achievement situations. Supplementing evidence of greater intensity of affect associated with internal than external attributions (Weiner, 1972) was a study conducted by Weiner, Russel and Lerman (1976). Subjects were asked to rate the intensity of a variety of emotional responses of a story character to success or failure, given various attributions. Support was provided for the relationship predicted by Weiner's two-dimensional model of causality between attribution and the duration, intensity and type of affect. In an earlier study, Fitch

(1970) also found a relationship between enduring affect and attributional tendency consistent with Weiner's theory. Fitch reported that males low in self-esteem were more likely to attribute failure internally, a causal attribution maximizing shame, while males with high self-esteem generally ascribed success to internal causes.

The achievement motivation research with males generally corroborates the predictions of Weiner's model for the relationship between attribution and the tendency to reapproach an activity or to approach a new activity (Weiner, 1970; 1972). The application of the two-dimensional model to the achievement literature clarified the apparently contradictory findings regarding the relationship of locus of control to achievement. Kukla (1972) reported that men with high achievement motivation tend to attribute success to both high ability and effort, and to ascribe failure to lack of effort. Failure appears to increase motivation to succeed in high achievement males (Weiner, 1972). Thus motivation to achieve excellence in challenging tasks is facilitated by attributions that maximize pride for success and personal control over future outcome following failure. Low achievement males are less likely to attribute success to internal causes and they frequently ascribe failure to low ability (Weiner & Kukla, 1970; Weiner & Potepan, 1970). Such attributions produce little positive affect with success and no expectancy of change after failure, creating

minimal motivation to approach challenging tasks. Thus internal attributions can have very different implications for affect, expectancy and achievement behavior, depending upon whether they are used to explain success or failure and whether they are stable or unstable.

In studies with children doing math problems, Dweck and her colleagues (Deiner & Dweck, 1973; Dweck & Reppuci, 1973) observed relationships between causal ascription and response to failure fairly consistent with the findings among adult males. Children whose performance deteriorated most or who were less persistent in the face of failure were inclined to blame their failure primarily on uncontrollable, external factors, or on lack of ability. In contrast, children who persisted and maintained or surpassed their previous levels of sophistication in problem solving following failure emphasized internal, controllable factors such as effort.

Clearly, there is substantial empirical support for the theoretical relationships between attribution and affect, expectancy and future goal-directed behavior derived from the two-dimensional model of causality developed by Weiner. While Weiner (1972) hypothesizes that achievement motivation results from learned patterns of attribution, it should be noted that the direction of the relationship has not yet been established (Frieze, 1975).

Sex Differences in Expectancy and the Perception of Causality

The study of the process of assigning causality has proven a particularly useful approach to understanding the well-documented lower level of achievement among women than among men. Though causal directions have not been established between achievement and attribution, there is evidence of attributional and expectancy patterns among women that would have very negative implications for achievement and for feelings of self-worth. Such patterns are not as typically found among men. Sex differences in three elements of the attributional process contribute to the understanding of the relatively low achievement found among women: (a) personal expectancies for success, (b) evaluations and attributions regarding the performance of others based on sex, and (c) categories of causal attribution typically employed (Frieze, 1975).

Among subjects of a wide range of ages in studies employing a variety of achievement tasks and methodologies, males have been shown to hold higher expectancies for success than females. Crandall (1969) found females to make lower estimates of their future performance than males among grade school children regarding novel intellectual task, among college students regarding grades and among young adults regarding recall tasks. Such sex differences on academic and intellectual tasks have been

substantiated by other researchers (Frieze, 1975; Lenney, 1977). Higher anticipation of success in males than in females has also been reported on manual dexterity tasks (Montarelli & Hill, 1969; Rychlak & Eacker, 1962; Rychlak & Lerner, 1965) and in imagining success in seven different professions (Feldman-Summers & Kiesler, 1974). Relative to their actual level of ability or performance history, females tend to underestimate their future success while males tend to overestimate their future success. The underestimation of their future performance by females seems particularly inappropriate in academic situations, when girls on the average are far more successful than boys in elementary school grades and reading achievement, receive less criticism from teachers and believe that they are more highly regarded by teachers than boys (Dweck, Goetz & Strauss, 1977).

From a reanalysis of the achievement literature, Lenney (1977) concluded that females do not display lower self-confidence than males in all achievement settings. There is evidence that at least three situational variables determine women's self-confidence in achievement situations: (a) the nature of the task, (b) the availability of performance feedback, and (c) the emphasis on social comparison. The expectancies of females for their performance have been found to be equal to the expectancies of males, or higher, on tasks that are labeled feminine. Girls and

women also display higher self-confidence in an activity when performance is presented as being unimportant than when it is presented as being important (Nicholls, 1975). Though women consistently expect to do less well than men if minimal or ambiguous feedback on a task is given, Lenney points out that sex differences have not been reported when unambiguous feedback is given. Females' expectancies for their performance appear to be lower when the situation emphasizes the presence of the social environment, such as when a socially defined standard of performance is given, or when there is direct competition with another individual (Lenney, 1977). While Lenney's reevaluation of the literature suggests that sex differences in expectancy do not exist in all situations, the preponderance of the achievement research indicates that females hold lower expectancies for success than males.

Differences between males and females in personal expectancies for success could easily derive from more general expectations based on prevalent sex-role stereotypes. People appear to hold expectancies founded on male and female stereotypes that influence their perception and evaluation of the performance of others. Women are perceived by a large variety of people as less competent, active, self-confident, independent, logical and objective than men (Rosenkrantz, Vogel, Bee, Broverman & Broverman, 1968). In apparent acceptance of this stereotype, female

subjects have been found to evaluate written articles and paintings lower when they are attributed to women than when the same articles and paintings are attributed to men (Goldberg, 1968; Pheterson, Kiesler & Goldberg, 1971). Deaux and Emswiller (1974) found that subjects of both sexes attributed a man's success on a masculine task to skill, while a woman's success on the same task was ascribed to luck. Frieze (1975) suggested that some evidence of women giving higher ratings to competent women than to competent men (Deaux & Taynor, 1971) and higher ratings to female-written articles than to male-written articles (Morris, 1970) may reflect increased supportiveness of women for women fostered by the Women's Movement. At this point, there is little evidence in the literature of change in male perception of women's competence (Frieze, 1975). The stereotype-based devaluation of female abilities appears to be internalized by females and reflected in low success expectancies on many tasks.

A third area of sex difference is the categories of causality that males and females habitually assign to explain their successses and failures. Several studies have indicated that women use luck as a causal ascription for both success and failure in traditionally masculine achievement areas more than men do (Bar-Tal & Frieze, 1973; Feather, 1969; McMahan, 1972, cited in Frieze, 1975; Simon & Feather, 1973). Women have been found to be less

likely than men to attribute success in academic achievement to their ability (Frieze, 1973; McMahan, 1971, cited in Frieze, 1975). When considering only the internal-external dimension of causality, Rotter and Hochreich (1973, cited in Frieze, 1975) reported that college women, unlike college men, are consistently more external than internal in their perception of causality.

There also are data contradicting the generalization that women are inclined to make external attributions. Crandall and associates (1965) found women to be more internal than external for failure. McMahan (1971; 1972, cited in Frieze, 1975) and Lefcourt, Von Baeyer, Ware and Cox (1979) have also reported that women are more likely than men to attribute failure in academic achievement to lack of ability. Feather (1969) and Frieze (1973) failed to replicate findings of greater internality for failure among females. Evidence from work by Dweck and Reppucci (1973) that grade school girls are more likely than boys to attribute failure both to lack of ability and to external factors suggests that the contradictory findings may merely reflect the fact that females use both types of attribution to explain failure. It seems probable that the situational variables specified by Lenney (1977) as determinants of expectancy may also influence whether lack of ability or external ascriptions for failure are made. In contrasts to females, there is evidence that males most

frequently attribute failure to task difficulty (Deaux, 1976).

Such patterns of expectancy and causal attribution appear to be tailored to interfere with women's fulfillment of their intellectual and professional potential. Research indicates that individuals who expect to do better on achievement tasks actually evidence superior performance to individuals who hold lower expectations (Battle, 1965; Feather, 1966; Tyler, 1958). Thus females' lower self-expectations based on stereotypes are likely to be fulfilled. Frieze (1978) and Deaux (1976) hypothesize that expectancy influences the individual's interpretation of the causes for outcome. Deaux cites a number of studies in which subjects with high expectancies for success ascribed success internally and failure externally, while subjects with low expectations for success did the opposite. The assumption of a relationship between expectancy and the perception of causality leads to a number of predictions about the influence of the characteristically low expectancies of females on the attribution process and achievement behavior (Deaux, 1976; Frieze, 1978). If a woman has low expectations for success based on internalized stereotypes of female incompetence, success would probably be attributed to temporary causes because it is inconsistent with expectations. Therefore the success experience would not increase expectancy of future success, nor would it enhance

the tendency to reapproach the task to the degree that it would if success were ascribed to stable or controllable factors. If the expectancy of success is high, as has generally been reported with males, the pride and expectancy-enhancing attribution of success to ability is likely to be made, because it is consistent with expectations.

When a woman with low expectancy of success fails on a task, it confirms her expectations and reaffirms her belief in low ability or lack of control over outcome. The lack of ability ascription for failure frequently employed by females would give rise to negative feelings about self and low expectancy of future success. Though luck, the other category of attribution reportedly used by women to account for failure, would not produce much negative affect, it would not enhance the expectancy of future success either. Despite the possibility that luck will change, failure ascribed to luck would not greatly motivate reapproaching the activity because there is no perception of control over future outcome, unlike when failure is attributed to lack of effort. Thus patterns found among women of assigning low ability or luck as the cause of failure could be expected to result in resignation rather than accelerated effort in response to failure.

Given the difference in evaluations and attributions about the performance of others that people tend to make on the basis of sex, women's low expectancies for success

and their self-derogatory attributions, the negative feelings of women about themselves and their competence are not surprising. These internal barriers to achievement are reinforced by the frequent adverse social consequences of achievement for females (Donelson & Gullahorn, 1977). The low level of achievement of most women compared to men is not difficult to understand.

Consideration of Achievement from a Feminine Perspective

These conclusions about the negative implications of the findings of attribution theory research for achievement among women are limited in that they consider achievement only from a masculine perspective. Achievement has conventionally been defined in the psychological literature as, "...the competition with a standard of excellence, or the desire to accomplish something difficult, to master objects, people or ideas, and to do so as rapidly and independently as possible." (Donelson & Gullahorn, 1977). However, this has been translated to mean the pursuit of excellence in areas such as academics and career. While males are encouraged and rewarded for mastery in such areas, independent striving for competence in such domains is frequently discouraged in females. Achievement motivation has been operationalized as a masculine characteristic which, despite the impact of the Women's Movement, has limited applicability for many women (Stein & Bailey, 1975).

Theories and research which attempt to define the essential psychological dimensions distinguishing between women and men suggest that achievement may be more appropriately assessed in women within the domain of interpersonal behavior.

Dominance of the interpersonal orientation among females. Bakan (1966) proposed that two fundamental orientations characterize all living organisms: a sense of communion and a sense of agency. Communion reflects selflessness, a concern with others and a desire to be at one with others. Agency describes a sense of self, manifest in self-assertion, self-protection and self-expansion. While Bakan (1966) postulates that both modalities are in all human beings, he identifies agency with masculinity and communion with femininity. A number of other writers have proposed similar principles of masculinity and femininity (Block, 1973; Carlson, 1971; Donelson & Gullahorn, 1977; Spence & Helmreich, 1978).

Empirical investigations indicate that despite marked changes in the past 15 years in traditional sex role patterns, there continues to exist across sex, religion, marital status and educational level, a strong consensus about the psychological attributes distinguishing between males and females that is very consistent with Bakan's formulation (Bem, 1974; Ellman, Press & Rosenkrantz, 1974; Rosenkrantz, Vogel, Bee, Broverman & Broverman, 1968;

Spence, Helmreich & Stapp, 1974). The ideal man is perceived as high in competence, independence, activity and dominance, characteristics subsumed under Bakan's sense of agency. The attributes of the ideal woman, emotional warmth, expressiveness and sensitivity to the feelings of others, are quite congruent with Bakan's communal orientation. The anthropological literature indicates that the majority of cultures produce women who evidence more communal characteristics than agential characteristics, and men who evidence more agential attributes (Spence & Helmreich, 1978).

The encouragement of females to develop a communal orientation, frequently at the expense of the development of agential attributes, begins early in the socialization process. Parents appear to have clearly defined notions of what is typical and appropriate behavior for boys and girls from when their child is very young. For example, interviews of the parents of four-year-old boys and girls revealed that parents expected girls to have a greater interest in people than boys (Lambert, Yackley & Hein, 1971; Parsons, Frieze & Ruble, 1976). When mothers were asked when they would expect or permit certain behaviors of their child, mothers of girls responded with significantly later ages for independence granting than mothers of boys, and showed a similar nonsignificant trend for achievement induction (Collard, 1974; Hoffman, 1975).

Research findings that girls are more obedient, cooperative, responsible and generally better socialized than boys of the same age (Donelson & Gullahorn, 1977) reflect the greater emphasis on the development of socially pleasing, other-oriented behavior in girls. Bronfenbrenner (1961) theorizes that girls may receive more love-oriented discipline that would discourage attempts at independence and mastery and lead to an interpersonal orientation.

Hoffman (1975) postulates that while little boys are developing mastery and confidence in coping with the environment, and learning instrumental independence, little girls are learning to use their interpersonal relationships in an instrumental way. Parental stereotype-based expectations may result in greater protection and insufficient independence training, significantly limiting the girl's development of a sense of personal competence. Findings of Crandall and Rabson (1960) that, in free play, grade school girls are more likely than boys to withdraw from threatening situations and to seek help from adults or peers, supports the hypothesis that girls learn to be effective through eliciting the help and protection of others. The previously discussed evidence that females underestimate their ability and hold much lower expectations for success in conventional achievement areas than males (Frieze, 1975) is congruent with the proposition

that girls develop a limited sense of personal competence in many areas of activity.

Research indicates that, from grade school on, females become increasingly communally oriented. By adolescence, their focal concerns are very different from the focal concerns of boys (Carlson, 1965; Rosenberg, 1965). Adolescent girls are more people-oriented and assign top value to traits of being well-liked and maintaining interpersonal harmony, while boys are more concerned with personal achievement and competence (Douvan & Adelson, 1966; Rosenberg, 1965; Rosenberg & Simmons, 1975). Research indicates that while male ego-identity formation can generally be explained in terms of crisis and committment in the areas of occupation and ideology, female ego-identity formation focuses on issues of interpersonal relationships (Constantinople, 1969; Hodgson, 1971; Marcia, 1980). The self-images of college women are primarily interpersonal and the self-images of college men are largely impersonal and individualistic (Carlson, 1971). In a cross-cultural study, Block (1973) found that women valued communal traits more highly for themselves while men valued agential traits more highly.

Application of male-based concepts of achievement to females. Despite such a contrast in the general importance of agential and communal domains for males and females, constructs of achievement motivation derived from the

observation of males performing agential tasks have been extended to females. This has resulted in some confusing findings. While most data indicates that achievement motivation is positively correlated with academic performance, competitiveness and independence in white middle class males (McClelland, Atkinson, Clark & Lowell, 1953), traditional measures of achievement motivation do not correlate well with actual achievement or competitiveness in females in academic settings (Entwhistle, 1972). Arousal techniques which stress intelligence and leadership do not result in increased achievement imagery with women (Veroff, Wilcox & Crandall, 1953). The inapplicability of traditional achievement motivation measures to females has led some theorists to conclude that women are not motivated to achieve. Veroff (1969) proposed a developmental theory of achievement motivation, attempting to account for the ultimately lower level of achievement by women than by men. He postulated that although both sexes are externally motivated to achieve when young, males progress to a stage of internal motivation, but females do not. Similarly, Crandall (1963) hypothesized that the apparent achievement behavior that females do manifest is motivated by the social approval it will bring, not by intrinsic pleasure in mastery.

Interpersonal skill as the expression of achievement. Stein and Bailey (1975) question the validity of such

conclusions about achievement. They postulate that the attempt to apply male-based constructs and measures of achievement motivation to females has led to misinterpretations of female behavior. Stein and Bailey (1975) hypothesize that because of cultural definitions of "feminine," women and girls express their motivation to achieve in different activities than males express their motivation, in activities socially prescribed for females. Hoffman (1975) assumes that female use of interpersonal behavior in an instrumental manner interferes with the development of skills for independent mastery of the environment which characterizes achievement behavior. However, Stein and Bailey (1975) define interpersonal interaction as the primary traditional area of feminine skill and achievement. A number of other authors have postulated that women frequently translate their achievement strivings into conventionally feminine areas such as social skill or homemaking because they are discouraged from achieving in traditionally masculine domains (Frieze, 1975; Hoffman, 1972; Horner, 1972; Tangri, 1972).

There is some empirical support for the hypothesis that females express achievement motivation in areas culturally defined as feminine. Social skill arousal has been shown to increase motivation in women with traditional values (French & Lesser, 1964). Friedrich and Harding (1968) reported feminine role achievement to be positively

correlated with grade average and measures of efforts on a test of social skill. In addition, Stein and Bailey's perspective on the expression of achievement motivation offers a viable reinterpretation of some earlier work on achievement. Stein and Bailey postulate that because the primary area of feminine skill has traditionally been social skill, what Crandall (1963) and others have labeled affiliation motivation or affiliative needs may be more accurately conceptualized as achievement within the feminine role. The authors interpret findings that social arousal techniques with women lead to achievement imagery as evidence that achievement, not affiliation, is the motivating factor. If female achievement efforts were based on the desire for social approval rather than the desire for the attainment of a standard of excellence, one would expect social reinforcement or the absence of social reinforcement to influence sex differences on experimental task performance, but it does not (Lenney, 1977; Stein & Bailey, 1975).

Evidence that nursery school girls who attempt to obtain recognition for achievement also make more attempts to gain love and affiliation has been interpreted by some to mean that girls use achievement as a means of obtaining love and affection (Tyler, Rafferty & Tyler, 1962). An alternate explanation is that both the efforts to obtain recognition for achievement and to obtain affiliation were

manifestations of achievement motivation. With age, the more masculine expressions of achievement motivation by girls may be eliminated by socialization, while the expression of achievement through interpersonal skill continues. Though increasing freedom to participate in fields of endeavor previously restricted primarily to men makes it possible for women and girls to manifest achievement motivation by altering or abandoning the traditional concepts of femininity, achievement through conventionally feminine channels gives rise to much less conflict.

While Stein and Bailey's (1975) conceptualization of interpersonal interaction as the traditional primary area of feminine skill and achievement is very useful, the construct of achievement must be applied to the interpersonal domain with care. Though the definition previously cited specified accomplishments with people as an aspect of achievement, achievement as it is conventionally defined and interpreted would carry agential implications of mastery or power over people. Interpersonal achievement from a communal orientation, in contrast, would suggest a striving for excellence in interpersonal skill without implications of dominance over others.

Attribution and Expectancy in Traditionally Feminine Areas

In light of Stein and Bailey's reinterpretation of the achievement data as indicating that motivational

patterns for females and males are similar, but are expressed in different contexts, it seems likely that both men and women might evidence different attributions and expectancies in traditionally feminine domains than they have shown in masculine domains. The conclusions drawn by Lenney (1977) in her reanalysis of the achievement literature cited earlier support this hypothesis with regard to expectancy. Sex-linking of the task is one of the situational variables determining the self-expectations of women for their performance in achievement situations. Stein, Pohly and Mueller (1971) reported that sixth grade girls expected to perform best on tests that would predict future performance in "girl's school subjects," while boys held the opposite expectation. Deaux and Farris (1974, cited in Lenney, 1977) found no sex difference in expectancy when an anagram task was labeled feminine, though women's expectations were lower than men's when the anagram task was sex-linked as masculine. Thus there is some evidence that when tasks are labeled feminine, expectancies of females for performance seem to be as high or higher than the expectancies of males.

The results of the few studies in which attributions have been assessed in traditionally feminine areas lend support to the hypothesis that males and females tend to have different beliefs about causality in feminine domains than have been reported in masculine domains. Goetz and

Dweck (1979) examined the attributions of grade school children in the face of social rejection. They failed to find a significant sex difference in attributions. Lefcourt and his associates (1979) investigated attributions of college students with regard to affiliation outcome and academic achievement outcome, using a scale on which subjects endorsed causes for outcomes in hypothetical situations. In contrast with the sex differences typically reported in masculine domains, Lefcourt found males significantly more likely than females to attribute affiliation outcome to luck and to ascribe success in affiliation to external causes. Lefcourt noted that his findings must be replicated before reliability of male and female patterns on his scales can be assumed because of the large number of comparisons made in the analysis from which these results were obtained, and the small number of items in the subscales representing each category of attribution.

Lefcourt (et al., 1979) also examined the relationship of attributional patterns for affiliation and academic achievement in college students to specific behavior in interpersonal situations and in an academic achievement related situation. He found significant correlations for college males between attributional patterns regarding academic achievement and behavior during the academic task. Fidget-like motions indicating distress while doing anagrams of intermediate difficulty were negatively correlated with

externality for academic achievement. With more difficult anagrams, the negative correlations were stronger. Significant correlations between these variables were not found among females.

In interpersonal situations, Lefcourt et al. (1979) found different behaviors and self-ratings to be correlated with patterns of affiliation attribution for men and women. Among females, attribution of affiliation outcome in general to effort, and attribution of success in affiliation situations to internal causes, were positively correlated with self-disclosure in dyadic discussions between same-sexed strangers. There were no significant relationships between attributions and behavior in the dyadic interaction among males, though the results were in the same direction as with females. In another study using dyads of same-sexed subjects, Lefcourt and his colleagues (1979) measured head nodding while listening, speech duration when speaking and a number of ratings of comfort and intimacy made by subjects after the interaction. Among males, nodding while listening was positively correlated with attributions of affiliation outcome to ability. Speech duration of the other member of the dyad was positively associated with the listener's endorsement of affiliation effort attribution and negatively related to affiliation context attributions. The speaker's rating of intimacy of interaction was positively related to the

listener's endorsement of effort attributions for affiliation. No significant relationships between affiliation attributions and the behaviors and self-ratings assessed in the second study were found among females.

The work by Lefcourt reveals some interesting sex differences both in typical perceptions of causality and in behaviors that might be predicted for males and females from their attributional patterns. The findings suggest that attributions may have differing relevance for the behavior of men and women. It is particularly interesting that no relationship was found between attributional patterns and behaviors measured in the academic situation for females. It would be useful to know whether the perceptions of causality indicated by subjects in the hypothetical situations on the paper and pencil measure would be replicated in actual academic and affiliation achievement situations.

Need for Goal-specific Measures of Attribution

In approaching research in the area of locus of control/attribution theory, a methodological problem in the way the concept has been operationalized in the literature needs to be considered. A good deal of the research is based on a generalized measure of locus of control, Rotter's I-E Scale (1966), with an assumption

that the perception of personal control over outcome is a unitary factor rather than multidimensional. Rotter's measure is a 24-item scale which samples beliefs about personal control in achievement, affiliation, business and world affairs. Factor analyses of the scale have failed to reveal clusters of items around reinforcement concerns (Lefcourt et al., 1979). Though the Rotter I-E Scale was designed as a general measure of locus of control, investigators have attempted to predict a diversity of specific behaviors and personality attributes in both males and females based on this measure.

The Rotter measure has been found to have little predictive utility for females (Lefcourt et al., 1979). Perhaps items tapping such areas as business, world affairs and traditional achievement were not meaningful for most women, so that internality or externality on these items had few implications for women's generalized expectancy of personal control. The scale does appear to be fairly robust in reflecting a generalized sense of personal control in males. The majority of the items of Rotter's scale appear to be concerned with agential values. Despite the difficulty in predicting women's behavior from the scale, such conclusions regarding women as the statement that college women are consistently more external than college men (Rotter & Hochreich, 1973, cited in Frieze, 1975) have been drawn from research using the Rotter I-E Scale.

In his early work, Rotter (1954) made it explicit that his formula for behavior potential referred to specifics. When he discussed behavior potential as a function of expectancy and value of reinforcement, he defined expectancy as, "...the probability held by the individual that a particular reinforcement will occur as a function of a single specific behavior on his part in a specific situation or situations," (p. 165). It is only in situations in which the individual has not had some prior experience that more generalized expectancies will take precedence. Following Rotter's original formulation, Lefcourt and his colleagues (1979) make the point that if one wishes to investigate the relationship of locus of control to a specific criterion, the optimal strategy would be to develop a locus of control measure for the particular criterion. Some strong support for the use of goal-specific measures of locus of control derives from research with the attribution measure developed by Lefcourt et al. (1979) and employed in the studies by Lefcourt cited earlier, the Multidimensional-Multiattributional Causality Scale (MMCS). The MMCS incorporates the dimensions of internal-external and stable-unstable, assessing attributions for both success and failure. There are two subscales, one pertaining to academic achievement and the other to affiliation.

The discriminant validity of Lefcourt's (et al., 1979) goal-specific measure has been established. Items from the academic scale have an average correlation of r=.31 (N=241) with the total academic scale, but an average correlation of r=.10 with the total affiliation scale. The average correlation between affiliation items and the total affiliation scale was r=.31. The same items correlated r=.09 on the average with the total academic scale. The academic achievement locus of control scale was found to be related to behavior indicating discomfort during an achievement task, while the affiliation scale was unrelated. The affiliation locus of control scale made possible the prediction of a number of social interaction criteria. There was no significant relationship of the academic scale to the criteria.

A few other investigators have employed goal-specific measures of locus of control. Crandall, Katkovsky and Crandall (1965) developed the first scale designed to assess the perception of control in a specific area. Their research with the Intellectual Achievement Responsibility scale for children demonstrated the usefulness of a goal-specific measure in predicting academic achievement behavior. It also pointed to the need to distinguish attributions for success from attributions for failure. The discriminant validity of a goal-specific locus of control measure in contrast to Rotter's general I-E scale

was supported by work on a health-related locus of control measure devised by Wallston, Maides and Wallston (1976) and Wallston, Wallston, Kaplan and Maides (1976). Individuals expressing some measure of personal control over health were found to be more likely to seek out health related information and to show more preference for self-directed weight reduction programs over group plans than individuals with the perception of less personal control over health. Rotter's scale was unrelated to the criterion. Reid and Ziegler (1977) found that the perception of personal control over daily events which elderly people believed were important determinants of their happiness, contentment and adjustment was, in interaction with value of these satisfactions, highly related to measures of life satisfaction and ratings made by others of zest for life and assertiveness.

Though the majority of work on locus of control has been carried out with a generalized measure, the available literature demonstrates the value of using goal-specific measures of the personal perception of causality to make predictions about behavior associated with a specific goal area.

The Problem

Weiner's two-dimensional model of causal attribution would predict that high expectancies of success and

attributions of failure to lack of effort and success to ability and effort would maximize achievement. The attributional patterns and expectancies of women typically reported in the literature have negative implications for achievement. Frequently reported among women are low expectancies of success, attributions of success to external factors, and attributions of failure to lack of ability or external factors. However, generalizations in the literature about the perception of causality in males and females seem to have been made with little consideration of their different socialization toward agential and communal values. The attribution theory research has primarily been conducted in traditionally masculine domains, such as academics. While conclusions about typical patterns of attribution among females and males may be valid for traditionally masculine areas of achievement, the patterns may be unrepresentative of the attributional process for the full range of human behaviors.

Research on socialization and identity formation among females and the theoretical work of Stein and Bailey (1975) indicate that interpersonal behavior is the primary area in which women learn to express their personal competence and motivation to achieve in our society, while achievement in masculine domains is frequently inhibited. Given the differences in the socialization of females and males, the findings that males hold higher expectancies for success

and make more achievement promoting attributions than females in the conventionally masculine domains in which most of the attribution theory research has been conducted are predictable. The perception of causality in traditionally feminine areas has not been well assessed (Stein & Bailey, 1975), but one might predict that women would be more likely to make achievement promoting attributions in domains culturally sanctioned for women. The small amount of research available suggests that the patterns of attribution and expectancy for both males and females may be quite different in the context of feminine activities and interests than the patterns reported in masculine domains. In order to obtain a more representative picture of the process of assigning causality among males and females, and of the negative or positive implications of this process for them, expectations and causal attributions for success and failure must be assessed in conventionally feminine areas of mastery.

The objectives of the present study were:

(1) To compare the expectancies and the use of achievement-related attributions among females in a traditionally masculine area to the expectancies and the use of achievement-related attributions among females in a traditionally feminine area.

(2) To compare the expectancies and the use of achievement-related attributions among males in a

traditionally masculine area to the expectancies and the use of achievement-related attributions among males in a traditionally feminine area.

(3) To determine whether past findings of sex differences in expectancy and attribution in traditionally masculine areas of achievement will be replicated.

(4) To determine whether males and females differ significantly in their expectancies and attributional patterns in a traditionally feminine area of achievement.

Attributions of primary interest in this research were attributions theorized to facilitate achievement: attributions of success to effort and ability and attribution of failure to effort. On the basis of the work of Stein and Bailey (1975), interpersonal behavior was chosen as the conventionally feminine area of achievement in which to assess the perception of causality. Academic achievement was chosen as the conventionally masculine area in which to measure attributions and expectancy, since the pursuit of excellence in academics fits the common operationalization of achievement in agential terms, and because the patterns of sex differences in the attribution process reported in the literature have frequently been based on research with academic or intellectual tasks.

To accomplish the specified objectives, the attributions of male and female college students regarding outcome in hypothetical academic and affiliative situations were assessed, using Lefcourt's Multidimensional-Multiattributional Causality Scale (Lefcourt et al., 1979). This phase of the experiment was designed to replicate Lefcourt's research on patterns of attribution among males and females using the MMCS. The attributions and expectancies of subjects with regard to two tasks in which they participated were also measured. One task was linked to interpersonal success. The other task was linked to academic success. Because of the possibility of order effects, the order of administration of the two experimental tasks was counterbalanced. In Condition 1, the interpersonal task occurred first. In Condition 2, the academic task occurred first.

Hypotheses

H_1: Females will hold higher expectancies for success and employ achievement promoting attributions more frequently in a traditionally feminine area of achievement than in a traditionally masculine area of achievement.

Specific predictions:

(1) Females will endorse promoting attributions more on the interpersonal scale of the MMCS than on the academic scale of the MMCS.

(2) Females will hold higher expectancies for success and employ achievement promoting attributions to account for a greater percentage of outcome on the interpersonal task (Interpersonal Sensitivity Test) than on the academic task (Matching Parts and Figures Test).

H_2: Males will hold higher expectancies for success and employ achievement promoting attributions more frequently in a traditionally masculine area of achievement than in a traditionally feminine area of achievement.

Specific predictions:

(1) Males will endorse achievement promoting attributions more on the academic scale of the MMCS than on the interpersonal scale of the MMCS.

(2) Males will hold higher expectancies for success and employ achievement promoting attributions to account for a greater percentage of outcome on the academic task than on the interpersonal task.

H_3: Males will hold higher expectancies for success and employ achievement promoting attributions more frequently than females in a traditionally masculine area of achievement.

Specific predictions:

(1) Males will endorse achievement promoting attributions more than females on the academic scale of the MMCS.

(2) Males will hold higher expectancies for success and employ achievement promoting attributions to account for a greater percentage of outcome on the academic task than females.

H_4: Females will hold as high, or higher, expectancies for success and employ achievement promoting attributions as frequently, or more frequently, than males in a traditionally feminine area of achievement.

(1) Females will endorse achievement promoting attributions as much as, or more than, males on the interpersonal scale of the MMCS.

(2) Females will hold as high, or higher, expectancies for success and employ achievement promoting attributions to account for as great, or a greater, percentage of outcome on the interpersonal task than males.

Definition of Terms

Achievement promoting attributions:

(1) The attribution of success to effort or ability

(2) The attribution of failure to effort

Independent Variables

(1) Sex

(2) Area of achievement

    (a) Traditionally feminine, interpersonal

    (b) Traditionally masculine, academic

(3) Condition: order of administration of the experimental tasks

    (a) Condition 1: interpersonal task (Interpersonal Sensitivity Test) first

    (b) Condition 2: academic task (Matching Parts and Figures Test) first

Dependent Variables

(1) Expectancy for success

    (a) Expectancy for success on the Interpersonal Sensitivity Test: response to the Expectations Questionnaire item, "What percent of the items on the following test do you expect to get correct?" on a scale from 0 to 100% with 10-point intervals.

    (b) Expectancy for success on the Matching Parts and Figures Test: operationalized as for the Interpersonal Sensitivity Test.

(2) Use of achievement promoting attributions for outcome

    (a) In the feminine area of achievement

1. Scores on the success ability, success effort and failure effort subscales of the interpersonal scale of the MMCS.
2. Percent of outcome on the Interpersonal Sensitivity Test attributed to ability and percent of outcome attributed to effort, as indicated by response to item 4 on the Posttest Questionnaire (Appendix E).

(b) In the masculine area of achievement

1. Scores on the success ability, success effort and failure effort subscales of the academic scale of the MMCS.
2. Percent of outcome on the Matching Parts and Figures Test attributed to ability and percent of outcome attributed to effort, as indicated by the response to item 4 on the Posttest Questionnaire (Appendix E).

METHOD

Overview of Study

A 2 (Sex of Subject) x 2 (Area of Achievement, a repeated measure) x 2 (Condition, order of tests) factorial design was employed in this study. Table 1 presents an outline of the experimental procedure. Data were collected from mixed-sex groups of undergraduate volunteers. Expectancy for success and task-specific and general causal attributions for outcome in a traditionally masculine and a traditionally feminine area were assessed. Academics was designated as the traditionally masculine area. Interpersonal skills was designated as the traditionally feminine area. In order to assess task-specific attributions and expectancies, subjects were asked to participate in a test of interpersonal sensitivity (Interpersonal Sensitivity Test, IPS) and in a test of understanding of spatial relations (Matching Parts and Figures Test, MPF). The order of administration of the two tests was counterbalanced to rule out order effects. Subjects in Condition 1 engaged in the IPS before doing the MPF. In Condition 2, subjects participated in the MPF first. Conditions 1 and 2 differed only in the order of administration of the interpersonal and academic tasks.

Table 1

Outline of Procedure in Condition 1 and Condition 2

Condition 1	Condition 2
1. Preliminary Questionnaire	1. Preliminary Questionnaire
2. Interpersonal task Introduction to IPS[a] Expectations Questionnaire IPS performance Posttest Questionnaire	2. Academic task Introduction to MPF[b] Expectations Questionnaire MPF performance Posttest Questionnaire
3. Academic task Introduction to MPF Expectations Questionnaire MPF performance Posttest Questionnaire	3. Interpersonal task Introduction to IPS Expectations Questionnaire IPS performance Posttest Questionnaire
4. Personal Beliefs Measure[c]	4. Personal Beliefs Measure
5. Personal Characteristics Form	5. Personal Characteristics Form
6. Debriefing	6. Debriefing

[a]Interpersonal Sensitivity Test, a test in the traditionally feminine ability area of interpersonal skill

[b]Matching Parts and Figures Test, a test in the traditionally masculine ability area of intellectual skill

[c]The title under which the Multidimensional-Multiattributional Causality Scale was presented to subjects: a measure of general attributions for academic and interpersonal outcome

Expectancies for success for each task were measured on the Expectations Questionnaire before subjects began the task. Subsequent to the administration of each task, data on self-estimates of success, attribution for outcome, and effectiveness of the sex linkage manipulation were gathered using the Posttest Questionnaire. In order to assess general attributions regarding outcome in academic and interpersonal situations, subjects were asked to respond to the Multidimensional-Multiattributional Causality Scale (MMCS, Lefcourt et al., 1979). The MMCS was presented to subjects as the "Personal Beliefs Measure." Table 2 presents definitions of the variables derived from each experimental measure which was used in the present study.

As a first step in both conditions, subjects completed a Preliminary Questionnaire about their academic record and social interactions. The Personal Characteristics Form, designed to obtain data on parents' educational and occupational backgrounds, parents' achievement expectations for the subject and the subject's career aspirations, was administered last. Data from the Preliminary Questionnaire and the Personal Characteristics Form were not used in this phase of the research.

Subjects

The subjects were 146 undergraduate student volunteers, 81 females and 65 males, recruited in spring quarter of

Table 2

Definition of Variables Derived from Each Experimental Measure

EXPECTATIONS QUESTIONNAIRE

Expectancy of success Percentage of items which subject expected to answer correctly, on a scale from 1 to 100 with 10 point intervals.

POSTTEST QUESTIONNAIRE

Task attribution scores Percentage of outcome which subject attributed to ability, effort, task difficulty and luck for each task.

Task success score Sum of scores on three items: a) self-ratings of success compared to expectations on a scale of 1 to 7, b) self-ratings of success compared to other college students on a scale of 1 to 7, and c) subject's estimate of percent of items answered correctly. Composite success score was the criteria for success or failure classification for each task.

Manipulation checks

a) Estimate of the percent of task items which female college students answered correctly on the average.
b) Estimate of the percent of task items which male college students answered correctly on the average.
c) Rating of the task as masculine or feminine on a scale of 1 to 7.

PERSONAL BELIEFS MEASURE (Multidimensional-Multiattributional Causality Scale, MMCS)

MMCS attribution scale scores Scores on eight Likert scales concerning general attributions for academic outcome and eight Likert scales concerning general attributions for interpersonal outcome. There were separate scales for success and failure for four categories of attribution: success ability, failure ability, success effort, failure effort, success context, failure context, success luck and failure luck.

1980 from an introductory psychology course at Michigan State University. Though 157 subjects were run, the responses of 11 people were discarded because of missing data. Subjects were called and asked to participate in the experiment under the title, "Personal Beliefs and Success." Extra course credit was given for participation.

Experimenters

Each session was jointly conducted by one female and one male experimenter. The experimenters alternated in reading the instructions within each session.

Procedure

A description of each instrument employed in the study will be provided following the discussion of experimental procedure. Copies of the instruments can be found in Appendices B through J.

The subjects were tested in mixed sex-groups. They were randomly assigned to Condition 1 or 2. There were five sessions of each condition. Upon their arrival, subjects were told that the experiment was designed to examine the relationship of personality characteristics and personal beliefs to the likelihood of success in two different kinds of skills (see Instructions, Appendix A). After the activities involved in the experiment were briefly described, subjects were asked to read and sign a statement of informed consent.

The first experimental task in both conditions was to complete the Preliminary Questionnaire (see Appendix B). In Condition 1, subjects were then prepared for the Interpersonal Sensitivity Test (see Appendix D). The IPS was defined as being related to probable success in the area of interpersonal skills. Subjects were told that there is some reason to believe that women as a group are generally better than men in some interpersonal skills, such as sensitivity to the feelings of others. Subjects were informed that the purpose of the IPS was to assess interpersonal sensitivity in identifying the feelings of other people on the basis of facial cues. The Interpersonal Sensitivity Test consisted of 32 pictures of faces, one of which was a sample. For each picture, subjects were asked to respond by writing the name of one, or more than one, emotion that they though the person was feeling. After reading the instructions for the test aloud, one of the experimenters went through the example aloud, suggesting a possible answer. After being told that they would have five minutes to respond to the 31 items once the test began, subjects were asked to fill out the Expectations Questionnaire (see Appendix C) before taking the IPS.

When everyone had completed the Expectations Questionnaire, subjects were instructed to begin the IPS. As designed, few subjects were able to complete the IPS in

the time allotted. When time was up, the Posttest Questionnaire, Form 1 (see Appendix F), was administered.

In Condition 2, the Matching Parts and Figures Test (MPF, see Appendix E), was administered following the Preliminary Questionnaire. The MPF was presented as being related to probable success in some areas of academic skill. Subjects were told that there is some reason to believe that men as a group are generally better than women in academic subjects which require an understanding of spatial relations, such as mechanical engineering. Subjects were informed that the purpose of the MPF was to assess their understanding of spatial relations. The Matching Parts and Figures Test consisted of 21 multiple-choice problems, the solution of which required understanding of spatial relations. As one of the experimenters read the instructions aloud, subjects were given time to consider four example problems. The solution to one of the examples was given. After being told that they would have five minutes to solve the 21 problems once the test began, subjects were asked to fill out an Expectation Questionnaire identical to the questionnaire administered in Condition 1 prior to the IPS.

When everyone had completed the Expectations Questionnaire, subjects were instructed to begin the MPF. As designed, few subjects were able to complete the task in the time allotted. When time was up, the Posttest Questionnaire, Form 2 (see Appendix F), was administered.

Procedures for Conditions 1 and 2 were identical, with the exception of order of administration of the IPS and MPF and accompanying Expectations and Posttest Questionnaires. After completing the Posttest Questionnaire following the first behavioral task, subjects in both conditions were prepared for the second behavioral task. In Condition 1, the MPF was the second task. In Condition 2, the IPS was the second task.

In both conditions, after the Posttest Questionnaire following the second task had been completed, the Personal Beliefs Measure (see Appendix G) was administered. "Personal Beliefs Measure" was the name under which the Multidimensional-Multiattributional Causality Scale (Lefcourt et al., 1979) was presented to subjects in this study. The MMCS is a 48-item questionnaire on which subjects are asked to give Likert scale ratings to a variety of attributions about success and failure in situations of academic achievement and in situations of affiliation. Finally, the Personal Characteristics Form, a 13-item questionnaire designed to gather background information (see Appendix H), was administered. Subjects were allowed as much time as they wished to complete the Personal Beliefs Measure and the Personal Characteristics Form. After all instruments had been completed, subjects were debriefed and the experimenters answered any questions.

Instruments

The Preliminary Questionnaire (see Appendix B) is a four-item questionnaire designed as a lead in to the present study, to establish a focus on the academic and interpersonal domains. Subjects were asked to indicate the number of people they consider close friends and their preferences for one-to-one, small group or large group interactions. Subjects were also asked for their high school and college grade point averages. Data from the Preliminary Questionnaire were not used in this phase of the research.

The Expectations Questionnaire (see Appendix C) is a four-item questionnaire designed for this study. On a scale from 0 to 100% of items correct, with 10% intervals, subjects were asked to indicate their criteria for themselves for success, their expectancy for success, and their expectations for the average performance of other college students. Subjects were also asked to indicate on a Likert scale from 1 to 7 the importance to them of success on the test. The Expectations Questionnaire was administered before subjects took the Interpersonal Sensitivity Test and before subjects took the Matching Parts and Figures Test. The measure of expectancy for success is the only item on the Expectations Questionnaire to be used in the analysis of data for the present study.

The Posttest Questionnaire (see Appendix F) is a 10-item questionnaire designed for this study. Of the items on

the questionnaire, the item assessing attributions for outcome was of primary interest to this research. Subjects were asked to indicate what percent of their performance they thought was due to each of four causes: effort, ability, luck and task difficulty. Test instructions indicated that the sum of the percentages assigned to the four causes should total 100%. The four causes are the categories of attribution most frequently employed in Weiner's two-dimensional model of causality. Effort is considered an internal, unstable cause, ability an internal, stable cause, luck an external, unstable cause and task difficulty an external, stable cause of outcome on the specific task. The four categories of causality parallel the four categories of causality included in the MMCSIV, though the equivalent to task difficulty on the MMCSIV is the broader category of "context."

Other items on the Posttest Questionnaire of particular interest to this study were three self-evaluations of performance. There was one seven-point scale on which to indicate self-evaluation of success relative to one's expectations. On another seven-point scale, subjects were to indicate their perception of their success relative to the success of other college students. A third item assessed subjects' estimates of the percent of items they answered correctly, on a scale from 0 to 100%, with 10% intervals.

Other items on the Posttest Questionnaire assessed perceptions of the sex-linkage of the behavioral tasks. Estimates of the performance of female college students and male college students on the task were measured on a scale of 0 to 100% of items answered correctly. Subjects' perception of the task as masculine or feminine and perception of the relatedness of performance on the task to success in the designated area of achievement were also assessed, using 7-point scales. Two items on the Posttest Questionnaire paralleled items on the Expectations Questionnaire. Subjects were asked to indicate the expectancies of success they had held before the task and the importance of success on 7-point scales. The data from these two items were not analyzed in this phase of the research.

Two parallel forms of the Posttest Questionnaire were administered, one after the Interpersonal Sensitivity Test and one after the Matching Parts and Figures Test. The two forms were identical except for item 9. On the IPS Posttest Questionnaire, item 9 measured subjects' perception of the relatedness of their performance on the IPS to probable success in interpersonal relationships. Item 9 on the MPF Posttest Questionnaire measured perceptions of the relatedness of performance on the MPF to probable success in academic subjects related to engineering.

The Interpersonal Sensitivity Test (IPS; see Appendix D) was designed for this study as a task around which to

measure expectancy and attribution about performance in a traditionally feminine area of achievement. The IPS consists of 16 pictures of the face of one man and 16 pictures of the face of one woman. The pictures are photocopied photographs (Coleman, 1949). In each picture of the two sets, the model has a different facial expression. For each picture, the task was to indicate what emotion or emotions the model's facial expression was revealing. Subjects were asked to identify the dominant emotion expressed by the model and any secondary emotions expressed. There were lines for three responses for each picture on the answer sheet. A list of 60 emotions was provided on the answer form, though subjects were told that they were free to use any emotion they wished. One of the experimenters went through one sample item aloud before the test was administered, suggesting possible responses for the first picture. Five minues were allowed for completing the 31 test items. Subjects were informed that many of them would not be able to complete the test in the time alloted.

There were no criteria for correctness of responses on the IPS. Scores were obtained for the number of pictures for which there was at least one response, and for the total number of responses made. For the purpose of this study, responses regarding the IPS made on the Expectations Questionnaire and the Posttest Questionnaire were of interest rather than performance on the IPS, per se.

The Matching Parts and Figures Test (MPF; see Appendix E) was employed in this study as a task around which to measure expectancy and attributions about performance in a traditionally masculine area of achievement. The MPF consists of 21 paper and pencil items taken from a test of understanding of spatial relations, such as might be employed in an aptitude test for engineering (Arco Editorial Board, 1947). For 13 of the items, there were two or three-dimensional drawings of some parts and three drawings of figures. The task was to decide which figure the parts could be assembled to make. For each of the remaining eight items, there was one two-dimensional figure and a choice of three sets of parts to choose from, one set of which could be assembled to make the figure. In addition to the 21 test items, there were four sample items which subjects were allowed to consider before beginning the test. The solution was given for only one sample item. Five minutes were allowed for the test. Subjects were informed that many of them would not be able to complete the test in the time alloted.

Though scores of the number of items answered and the number of items answered correctly on the MPF were available, responses to the Expectations Questionnaire and the Posttest Questionnaire regarding the MPF were of interest, rather than performance on the MPF, per se.

The Multidimensional-Multiattributional Causality Scale (Lefcourt et al., 1979; see Appendix G) was presented to subjects as the "Personal Beliefs Measure" in the present study. The MMCS consists of two 24-item Likert scales, one concerning academic achievement and one concerning affiliation. As the instrument was employed, the Likert scale for each item was from 1 to 5. Each scale is composed of 12 items pertaining to success and 12 items pertaining to failure. The items of both scales are divided into four categories of attribution, based on Weiner's (1971) model of causal attribution with internal-external and stable-unstable dimensions. Thus for each scale there are six stable external items related to contextual characteristics, six unstable external items relating to luck, six stable internal items relating to ability and six unstable internal items relating to effort and motivation. A variety of measures can be derived from each scale, including total internality and externality scores, internality and externality for success and failure separately and scores for six or three item scales concerning specific attributions.

With a population of male and female college undergraduate students, Lefcourt et al. (1979) found Cronbach's alpha to range from .58 to .80 for the academic scale and from .58 to .81 for the affiliation scale. Correlated Spearman-Brown split-half correlations range from .67 to

.76 for academics and from .61 to .68 for affiliation. Test-retest correlations for the affiliation locus of control scale range from .50 to .70 and for the academic scale from .51 to .62. The average correlation between the achievement and affiliation scales for the groups of students whom Lefcourt et al. tested was significant but low, in the mid 20's. Adequate discriminant validity of the items for each scale was indicated by an average correlation of affiliation items with the affiliation scale of r=.31, but an average correlation of r=.09 with the academic scale. Similarly, academic items correlated .31 on the average with the achievement locus of control scale, while academic items correlated only .10 on the average with the affiliation scale.

Lefcourt and his associates (1979) evaluated the influence of social desirability on MMCS scores using the Crowne-Marlowe (1964) need for approval measure. The need for approval was significantly correlated with the academic scale ($r=.33$, $p < .01$), but not with the affiliation scale. The negative relationship between academic achievement externality and need approval ($r=-.30$, $p < .02$) primarily accounted for the academic-need approval correlation. The MMCS affiliation scale has been found to correlate from .37 to .55 with the Rotter I-E scale (1966). The academic scale has been found to correlate from .23 to .60 with the Rotter measure (Lefcourt et al., 1978).

The Personal Characteristics Form (see Appendix H) is a 14-item questionnaire designed for this study. Some of the items on the questionnaire pertain to demographics such as the age, sex and educational level of the subject. Other items were designed to obtain information about the subject's parents. Respondents were asked to indicate the occupations and educational background of their parents. One item asked what level of academic achievement the subject perceived her/his parents to expect of her/him. The questionnaire also asked whether subjects thought that their parents' achievement expectations for them were related to their sex. Responses to the remaining items on the questionnaire provided data on the subject's college major and occupational and marriage plans. Data from the Personal Characteristics Form were not used in this phase of the research.

RESULTS

Experimental Design and Statistical Analysis

Design

The design of this experiment was a 2 x (Sex of Subject) x 2 (Area of Achievement, a repeated measure within each subject) x 2 (Condition, order of administration of the IPS and MPF) factorial design. After the responses of all subjects had been discarded because of missing data, there were 34 males and 46 females in Condition 1 and 31 males and 35 females in Condition 2.

Classification of Subjects According to Success or Failure on Tasks

Subjects were classified for success and failure on the IPS and MPF on the basis of self-evaluations of performance on the Posttest Questionnaire. A composite success score for each task was computed by summing scores on three Posttest items: (a) self-ratings of success compared to expectations (success expectations score), (b) self-ratings of success compared to other college students (success comparison score), and (c) self-estimate of the percent of items answered correctly (percent correct score). The three items contributing to the success score were highly

correlated for each task. For the Interpersonal Sensitivity Test, the correlation of success expectations and success comparison was .62 (n = 146; $p < .001$). For success comparison and percent correct, r = .69 (n = 146; $p < .001$). IPS success expectations and IPS percent correct scores correlated .51 (n = 146; $p < .001$). For the Matching Parts and Figures Test, the correlation between success expectations and success comparison was .62 (n = 146; $p < .001$). Success comparison and percent correct correlated .71 (n = 146; $p < .001$). The correlation between success expectations and percent correct was .63 (n = 146; $p < .001$). Medians were computed for the IPS success score and the MPF success score. Subjects who scored above the median on the success score for each task were classified as success subjects for the area of achievement. Subjects whose scores fell below the median were classified as failure subjects.

Subjects were divided into four groups on the basis of their IPS and MPF success scores. Group 1 included subjects who were classified as failures on both tasks. Subjects of Group 2 scored below the median on the IPS success score and above the median on the MPF success score. Group 3 comprised subjects classified for success on the IPS and failure on the MPF. Subjects with success scores above the median for both tasks made up Group 4.

Overview of Statistical Analysis

Expectancy and attribution data were subjected to a 2 x 2 x 2 (Sex x Area of Achievement x Condition) multivariate analysis of variance. Multivariate tests of the main effect of the repeated measure, area of achievement, were not available because of limitations of the computer statistical package. Univariate comparisons were obtained. When multivariate *F* ratios exceeded a confidence level of .05, associated univariate results were examined. Findings were reported for univariate results which were significant at the .05 level. Tests of simple effects were calculated where appropriate.

There were two phases of data analysis, the hypothesis testing phase and the post hoc phase. The results of the hypothesis testing analyses were of primary interest. The MMCS data were analyzed independently of the IPS and MPF data. Dependent variables for the 2 x 2 x 2 hypothesis testing analysis of MMCS data were success ability, success effort and failure effort attribution scores. Dependent variables for the 2 x 2 x 2 hypothesis testing analysis of behavioral task data were expectancy, ability and effort scores. The data for all subjects were pooled for one analysis of IPS and MPF data. The data of each of the four success-failure subgroups were also subjected to an independent analysis.

Of secondary interest were the results of the post hoc 2 x 2 x 2 (Sex x Area of Achievement x Condition) multivariate analyses of scores for attributions not defined as achievement promoting. The post hoc analyses were conducted to assess the effects of sex, area of achievement and condition on the use of all categories of attribution generated by the Weiner two-dimensional model of causality. Dependent variables for post hoc analysis of the MMCS data were the failure ability, success context, failure context, success luck and failure luck scale scores. Dependent variables for the post hoc analyses of the IPS and MPF data were task difficulty and luck attribution scores. As with the hypothesis testing analyses, a post hoc anlaysis of the behavioral task data was conducted on the pooled data for all subjects and on the data for each of the four subgroups.

In order to obtain descriptive information about attribution patterns, the category of highest attribution score per subject was cross-tabulated with sex within each area of achievement and across sex with area of achievement. Chi square analyses were computed to determine whether the use of particular categories of attribution within each area of achievement were associated with sex.

Hypothesis Testing Multivariate Analyses of Variance

A summary of the significant multivariate results of hypothesis testing analyses will be presented, followed by

a discussion of the results as they apply to each of the four hypotheses. Unpredicted findings will then be discussed. All multivariate F ratios for the hypothesis testing analyses of MMCS data and behavioral task data are presented in Tables 13 through 18 in Appendix I. No significant multivariate effects were obtained in the MANOVA on the MMCS data. Table 3 presents significant multivariate results for the hypothesis testing analyses of the task data. The analyses of the task data from Group 1 and Group 4 produced no significant multivariate results. Significant sex x area of achievement and area of achievement x condition interactions were obtained in the MANOVA on the IPS and MPF data for all subjects. The analysis of Group 2 data produced a significant condition effect. An area of achievement x condition interaction was obtained in the analysis of data from Group 3 subjects.

As noted earlier, the 2 x 2 x 2 multivariate analysis did not assess main effects of area of achievement. Univariate F tests produced significant area of achievement effects for success ability score (F (1,142) = 4.93; $p < .05$) and failure effort score (F (1,142) = 9.24; $p < .005$) on the MMCS. Tests for simple effects of area of achievement for achievement promoting attribution scores on the behavioral task yielded no significant results. Table 19 through 36 in Appendix J present all F ratios for tests of simple effects of area of achievement on MMCS and task data.

Table 3

Summary of Significant Multivariate Results for the 2 (Sex) x 2 (Area of Achievement) x 2 (Condition) Analysis of Expectancy, Ability and Effort Scores for the Behavioral Tasks

Source of Variance	df	Multivariate *F*	*p*
All Subjects (df for Error = 140)			
Sex x Area of Achievement	3	4.46	.005**
Area of Achievement x Condition	3	4.29	.006**
Group 2: IPS Failure-MPF Success (df for Error = 16)			
Condition	3	3.33	.046*
Group 3: IPS Success-MPF Failure (df for Error = 31)			
Area of Achievement x Condition	3	4.11	.015*

*$p < .05$; **$p < .01$

Tables 4 and 5 present the significant univariate F ratios associated with multivariate effects for the hypothesis testing MANOVAS. Following is a discussion of the results as they apply to each hypothesis, including simple effects analyses and individual comparisons where appropriate.

Table 4

Summary of Significant F ratios for the Expectancy, Ability and Effort Scores for the Behavioral Tasks for All Subjects

Source	F	p
1. Sex x Area of Achievement (df = 1/142)		
Expectancy	9.04	.003**
2. Area of Achievement x Condition (df = 1/142)		
Expectancy	4.95	.028*
Effort	6.05	.015*

*p <.05; **p < .01

Table 5

Summary of Significant F Ratios for the Expectancy, Ability and Effort Scores for the Behavioral Tasks of Group 3, IPS Success-MPF Failure Subjects

Source	F	p
1. Area of Achievement x Condition (df = 1/33)		
Expectancy	9.29	.005**
Ability	4.77	.036*

*p < .05; **p <.01

Hypothesis One

Hypothesis One stated that females would hold higher expectancies of success and more frequently employ achievement promoting attributions in the traditionally feminine area of achievement, interpersonal relations, than in the traditionally masculine area of achievement, academics. This hypothesis was not supported. Tests for a main effect of area of achievement for the MMCS data within females produced a significant effect for failure effort attribution (F)1,142) = 7.49; $p < .01$), but in the opposite direction predicted. Women were more likely to attribute academic failure to lack of effort than interpersonal failure. Mean expectancy and attribution scores for women for each area of achievement are presented in Table 6.

The predicted main effect of area of achievement for expectancy, ability attribution and effort attribution was found neither for the IPS and MPF data for all subjects, nor for any of the four subgroups. Tables 25 through 30 in Appendix J present the F ratios for the tests of simple effects of area of achievement for MMCS scores and behavioral task scores within women subjects. Area of achievement did produce some significant results in interaction with other variables. The significant multivariate sex by area of achievement interaction for the pooled task data reflects a univariate effect on expectancy (F (1,142) = 9.04; $p < .004$). Tests of simple effects indicated that

Table 6

Mean Expectancy and Attribution Scores for Interpersonal and Academic Outcome Within Sex

Variable	Female Subjects		Male Subjects	
	Area of Achievement		Area of Achievement	
	Interpersonal	Academic	Interpersonal	Academic
Success, MMCS				
Ability	8.05	9.53	7.66	9.45
Effort	8.56	9.47	7.61	9.28
Context	8.15	5.28	7.92	4.92
Luck	2.62	6.14	2.38	5.63
Failure, MMCS				
Ability	5.89	5.68	5.57	4.08
Effort	6.37	9.39	6.23	9.77
Context	5.74	5.97	5.35	6.32
Luck	4.00	4.99	4.23	4.72
Across Success and Failure, Behavioral Tasks				
Expectancy	70.74	71.23	62.00	72.15
Ability	26.91	36.62	28.54	34.54
Effort	31.73	33.31	29.91	32.69
Task Difficulty	31.36	23.72	28.17	26.40
Luck	10.30	6.21	12.81	7.28

F ratios for tests of area of achievement effects are presented in Tables 19, 20, 25, 26, 31 and 32 in Appendix J.

individual comparisons were appropriate. Contrary to the hypothesis, the comparison of mean expectancy scores for the IPS and for the MPF within females produced no significant differences. Women did not have higher expectancies of success for the interpersonal task. The area of achievement by condition effect in the analysis of task data for all subjects reflects univariate effects for expectancy (F (1,142) = 4.95; $p < .028$) and effort (F (1,142) = 6.05; $p < .016$). In the absence of significant simple effects, individual comparisons of mean expectancy scores were computed. The comparisons yielded no significant results relevant to Hypothesis One.

The analysis of task data for the subjects classified as success subjects on the interpersonal task and as failure subjects on the academic task, Group 3, produced a significant effect of area of achievement by condition on expectancy (F (1,33) = 9.29; $p < .005$) and ability (F (1,33) = 4.77; $p < .037$). Tests for main effects indicated that individual comparisons were appropriate. The comparisons yielded no significant differences for expectancy of ability mean scores among females.

The results indicate that the use of achievement-promoting attributions by females did not vary as a function of area of achievement, except the use of lack of effort to account for failure on the MMCS. Contrary to predictions, effort was endorsed more as cause for academic

than interpersonal failure. Expectancy for success among women did not vary as a function of area of achievement.

Hypothesis Two

Hypothesis Two stated that males will hold higher expectancies of success and more frequently employ achievement promoting attributions in a traditionally masculine area of achievement, academics, than in a traditionally feminine area of achievement, interpersonal relations. Tests of simple effects and individual means were computed for the same MMCS and behavioral task data as with females. Results produced some support for Hypothesis Two. Mean expectancy and attribution scores for men for each area of achievement are presented in Table 6. Tests of a main effect of area of achievement on the MMCS data within males yielded a significant effect on failure effort attribution (F (1,142) = 6.71; $p < .01$). As predicted, males were more likely to attribute failure in academics to lack of effort than failure in interpersonal relations. There were trends for an area of achievement effect for success ability (F (1,142) = 3.88; $p < .10$) and success effort (F (1,142) = 3.23; $p < .10$) in the predicted direction. When the pooled behavioral task data was analyzed, the results also provided support for the predictions of Hypothesis Two regarding effort attributions, though there were no significant effects for ability attribution. Males were significantly

more likely to attribute outcome on the academic task to effort than outcome on the interpersonal task (F (1,142) = 7.49; $p < .01$). The analyses of task data for each of the four success-failure groups produced no main effects for area of achievement. F ratios for area of achievement effects for the MMCS data and task data for males are summarized in Tables 31 through 36 in Appendix J.

The results for the analysis of task data for all subjects also supported the predictions of Hypothesis Two regarding expectancy. Expectancy showed a significant effect for sex x area of achievement (F (1,142) = 9.04; $p < .004$). Individual comparisons of mean expectancy scores indicated that males held higher expectancies for success on the academic task than on the interpersonal task (F (1,142) = 9.01; $p < .005$). For the pooled task data, a significant area of achievement x condition effect for expectancy and effort in the absence of simple effects indicated that individual comparisons were appropriate. Within male subjects, comparisons between the mean effort scores for the two areas of achievement within each condition produced no significant results. Parallel comparisons of expectancy mean scores yielded a significant difference as a function of area of achievement within Condition 2 (F (1,142) = 6.59; $p < .025$). Males who participated in the academic task first held significantly higher expectancies for success on

the academic task than on the interpersonal task. There was no significant difference for males in Condition 1.

None of the analyses of task data of the four success-failure groups produced support for Hypothesis Two. Though the analysis of Group 3 data yielded a significant effect of area of achievement x condition for expectancy and ability, individual comparisons produced no significant differences as a function of area of achievement in either condition.

The results provide some support for the hypothesis that men are more likely to have achievement promoting cognitions in a traditionally masculine area of achievement than in a traditionally feminine area of achievement. The MMCS data indicated that men were more likely to attribute academic failure to lack of effort than interpersonal failure. Men were also more likely to attribute outcome across success and failure to effort on the MPF than on the IPS. There was a trend in the MMCS data for male subjects to endorse ability and effort more as causes for academic success than as causes for interpersonal success. The predicted higher expectancies for success for the academic task were found only when the academic task was done first.

Hypothesis Three

Hypothesis Three stated that in the traditionally masculine area of achievement, academics, males would hold higher expectancies for success than females and employ achievement promoting attributions more frequently than females. No support was obtained for this hypothesis. Table 7 presents a comparison between men and women's mean attribution and expectancy scores for academic outcome. A significant sex x area of achievement interaction reflecting a significant univariate effect on expectancy (F (1,142) = 9.04; p < .004) was obtained for the analysis of the behavioral task data for all subjects. Individual comparisons between sexes of mean expectancy scores yielded no significant differences. No other significant interaction of sex x area of achievement was obtained in any of the MANOVAS.

Hypothesis Four

Hypothesis Four stated that in the traditionally feminine area of achievement, interpersonal relations, females would hold as high or higher expectancies for success than males and employ achievement related attributions as frequently or more frequently than males. Results of the analyses support Hypothesis Four. Means are presented in Table 7. None of the analyses yielded a significant multivariate effect of sex or sex x area of

Table 7

Mean Expectancy and Attribution Scores for Men and Women within Area of Achievement

	Area of Achievement			
	Interpersonal		Academic	
Variable	Females	Males	Females	Males
Success, MMCS				
Ability	8.05	7.66	9.35	9.45
Effort	8.56	7.61	9.47	9.28
Context	8.15	7.92	5.28	4.92
Luck	2.62	2.38	6.14	5.63
Failure, MMCS				
Ability	5.89	9.45	5.68	4.08
Effort	6.37	9.28	9.39	9.77
Context	5.74	4.92	5.97	6.32
Luck	4.00	5.63	4.99	4.72
Across Success and Failure, Behavioral Tasks				
Expectancy	70.74	62.00	71.23	72.15
Ability	26.91	28.54	36.62	34.54
Effort	31.73	29.91	33.31	26.40
Task Difficulty	31.36	28.17	23.72	32.69
Luck	10.30	12.81	6.21	7.28

Results of multivariate analyses of variance are presented in Tables 14 and 15 in Appendix I and in Tables 37 and 38 in Appendix K.

achievement, except the analysis of pooled behavioral task data. This analysis yielded a significant multivariate effect of sex x area of achievement, reflecting a significant univariate effect for expectancy. Individual comparisons of male and female expectancy scores for the pooled task data indicated, as predicted, that women held significantly higher expectancies of success than men on the interpersonal task (F (1,284) = 8.38; $p < .005$). Thus, in support of Hypothesis Four, women held higher expectancies of success than men and employed achievement promoting attributions as frequently as men in the interpersonal domain. Though not associated with a significant multivariate effect, there was a tendency for women to be more likely to attribute success to effort across area of achievement for the MMCS data (F (1,142) = 4.00; $p < .05$).

Unpredicted Effects Across Sex for the Hypothesis Testing Analyses

For the MMCS data, an unpredicted main effect of area of achievement across sex for success ability attribution (F (1,142) = 4.93; $p < .05$) and failure effort attribution (F (1,142) = 9.29; $p < .005$) was obtained. Scores on the academic success ability and failure effort subscales were significantly higher than scores on the parallel affiliation subscales. There was a trend for subjects to attribute success in academics more to effort than success in interpersonal relations (F (1,142) = 3.63; $p < .10$). Thus,

contrary to predictions, subjects of both sexes were more likely to make achievement promoting attributions regarding academic outcome than regarding interpersonal outcome.

There was no effect of area of achievement across sex for any of the five hypothesis testing analyses of the behavioral task data. Some of the analyses did produce unpredicted condition or area of achievement x condition effects. The analysis of task data for all subjects produced an effect for area of achievement x condition on expectancy (F (1,142) = 4.95; $p < .028$) and effort (F (1,142) = 6.05; $p < .016$). Tests of simple effects for each of the variables indicated that individual comparisons were appropriate. Comparisons between mean expectancy scores for each area of achievement within condition yielded a significant difference within Condition 2 (F (1,142) = 7.08; $p < .01$). Subjects held higher expectancies of success on the academic task than on the interpersonal task when they engaged in the academic task first. The difference between the mean expectancy score for the academic task in Condition 1 and Condition 2 reached significance (F (1,284) = 7.64; $p < .01$). Individual comparisons between mean effort scores in the two areas of achievement were also significant only within Condition 2 (F (1,142) = 4.02; $p < .05$). Regardless of sex, subjects were more likely to attribute academic task outcome to effort than interpersonal task outcome, if the academic

task was done first. Among subjects who engaged in the academic task secondly, there was no significant difference in expectancy or effort as a function of area of achievement.

When the task data was broken down into the four success-failure groups, a significant multivariate effect for area of achievement x condition was obtained only for Group 3 (F (3,31) = 4.11; $p < .015$). Expectancy (F (1,33) = 9.29; $p < .005$) and ability (F (1,33) = 4.77; $p < .037$) showed a significant effect for area of achievement x condition. While tests of simple effects indicated that individual comparisons were appropriate, the comparisons produced no significant area of achievement differences in either condition. However, subjects did hold significantly higher expectancies for the academic task when they engaged in the academic task first than when they engaged in the academic task after doing the IPS (F (1,66) = 6.60; $p < .025$). This finding for the subjects rated as successful on the interpersonal task and failing on the academic task parallels the results for the analysis of the task data for all subjects pooled. While a significant multivariate effect for condition was produced in the analysis of Group 2 data, it reflected no significant univariate comparisons.

The hypothesis testing analyses produced an unpredicted area of achievement main effect for the MMCS data

and an unpredicted area of achievement x condition effect for the behavioral task data. Subjects of both sexes were more likely to endorse achievement promoting attributions for academic outcome than for interpersonal outcome for the MMCS. Area of achievement and order of administration of the behavioral tasks interacted to produce higher expectancies for success and more attributions of outcome to effort for the MPF than for the IPS when subjects participated in the MPF first.

Post Hoc Multivariate Analyses of Variance

The 2 x 2 x 2 (Sex x Area of Achievement x Condition) analysis of variance for the MMCS data with failure ability, success context, failure context, success luck and failure luck as dependent variables yielded no significant multivariate results. Table 37 in Appendix K presents the multivariate F ratios. Significant univariate comparisons for area of achievement across sex and condition were obtained for success context (F (1,142) = 5.46; $p < .025$) and success luck (F (1,142) = 10.10; $p < .005$). Subjects were more likely to attribute interpersonal success to contextual variables than academic success. They were more likely to attribute academic success to luck. When the data was tested for a main effect of area of achievement for males and females separately, the success context and success luck attribution scores showed significant differences in

the same direction as the data for both sexes combined (Success context: males, F (1,142) = 5.69; $p < .025$; females, F (1,142) = 6.07; $p < .025$; success luck: males, F (1,142) = 6.44; $p < .025$; females, F (1,142) = 6.67; $p < .025$). Thus patterns of endorsing different attributions for outcome as a function of area of achievement were similar for males and females. Tables 19, 25 and 31 in Appendix J present all F ratios for tests of area of achievement effects for the MMCS data.

Though not associated with significant multivariate results, a strong sex difference in failure ability attribution score on the MMCS at the univariate level should be mentioned because of its consistency with several earlier studies. A main effect of sex for failure ability attribution across area of achievement (F (1,142) = 8.38; $p < .005$) is qualified by a significant sex by area of achievement effect for failure ability (F (1,142) = 4.29; $p < .05$). Individual comparisons revealed that women were significantly more likely to attribute failure to lack of ability than men only in the academic area (F (1,284) = 8.50; $p < .005$).

Results for the five 2 x 2 x 2 multivariate analyses of behavioral task data with luck and task difficulty as dependent variables are summarized in Tables 38 through 42 in Appendix K. There were no multivariate effects for sex or condition. No main effects of area of achievement

were obtained (see Tables 20 through 24 in Appendix J). Three of the multivariate analyses showed a significant interaction of area of achievement x condition: the analysis of the pooled data (F (2,193) = 4.53; $p < .013$), the analysis of Group 1 data (F (2,26) = 5.78; $p < .009$) and the analysis of Group 3 data (F (2,32) = 3.81; $p < .033$). The significant multivariate interaction reflects a univariate effect on luck for each analysis. For the pooled data, F (1,142) = 6.45; $p < .013$. For Group 1, F (1,27) = 11.30; $p < .003$. For Group 3, F (1,33) = 6.03; $p < .020$). Tests for simple effects indicated that individual comparisons were appropriate. For the data from all subjects, individual comparisons of mean luck scores showed a significant effect for area of achievement within Condition 2 (F (1,142) = 13.13; $p < .001$). Subjects who participated in the academic task first were significantly more likely to attribute outcome on the interpersonal task to luck than outcome on the academic task. Luck attribution mean score for the interpersonal task was significantly higher in Condition 2 than in Condition 1 (F (1,284) = 6.81; $p < .01$). Individual comparisons of luck scores for the Group 1 subjects produced results parallel to the results for all subjects. Among subjects who rated themselves below the median for success on both tasks, outcome on the interpersonal task was attributed to luck significantly more than outcome on the academic task when the academic task was done first (F

(1,27) = 11.09; $p < .005$). The IPS luck attribution score was significantly higher in Condition 2 than in Condition 1 among Group 1 subjects (F (1,54) = 10.59; $p < .005$). Individual comparisons of mean luck scores for the area of achievement x condition interaction for Group 3 results in no significant differences.

In summary, the post hoc analyses of variance yielded no sex differences in attribution patterns significant at the multivariate level. At the univariate level, the MMCS results revealed that women were significantly more likely than men to attribute academic failure to lack of ability. Subjects were more likely to attribute interpersonal than academic success to context on the MMCS. Academic success was more likely than interpersonal success to be attributed to luck. For the behavioral task data, subjects in Condition 2 attributed outcome on the interpersonal task to luck more than outcome on the academic task.

Distribution of High Attribution Scores

To obtain descriptive information about patterns of most frequently used attributions, the category of highest attribution score per subject was cross-tabulated with area of achievement within each sex. The 2 x 4 (Area of Achievement x Specific attribution category) and 2 x 2 (Area of achievement x Internal-external attribution category) contingency tables are presented in Tables 8 and 9.

Table 8

Percentage of Men and Women with Highest Attribution Score in Each Attribution Category within Area of Achievement

Attribution Category	Female Subjects		Male Subjects	
	Area of Achievement		Area of Achievement	
	Interpersonal	Academic	Interpersonal	Academic
Success, MMCS				
Ability	20.37	43.83	31.54	50.26*
Effort	41.36*	44.44*	27.69	38.20
Context	38.27	.62	40.77*	.51
Luck	0	11.11	0	11.03
Failure, MMCS				
Ability	24.07	14.40	20.77	3.85
Effort	43.62*	70.78*	39.23*	83.58*
Context	25.72	7.82	28.46	12.05
Luck	6.58	7.00	11.54	.51
Across Success and Failure, MMCS				
Ability	25.10	15.74	26.15	11.54
Effort	41.15*	78.09*	40.00*	82.31*
Context	33.74	1.54	31.54	.77
Luck	0	4.63	2.31	5.38
Across Success and Failure, Behavioral Task				
Ability	29.53	41.56*	30.00	36.10*
Effort	32.00	37.24	26.15	35.38
Task Difficulty	34.05*	20.57	34.62*	27.69
Luck	4.42	.62	9.23	.78

*Modal high attribution score within sex within area of achievement

Within Sex Patterns

From Table 8 it can be seen that effort was the attribution which the highest percentage of women endorsed most for both success and failure, regardless of area of achievement. While a substantial percentage of women endorsed the external factor of context most as a cause for interpersonal outcome, they were least likely to attribute affiliation outcome to luck. Context and luck were most endorsed by few women as attributions for academic outcome. Women were much more likely to score highest in the attribution of academic success to ability (43.83%) than in the attribution of academic failure (14.40%) to ability. Patterns of relative frequency of use of attributions by women were somewhat different for the behavioral tasks. Effort was not the modal high attribution score for either area of achievement. The greatest percentage of women attributed outcome on the IPS most to task difficulty (34.05%). Ability was most endorsed as a cause for outcome on the MPF by the greatest percentage of women (41.56%). Task difficulty was the high attribution score for the academic task outcome for many more women (20.51%) than context was for the MMCS academic outcome (1.54%). As Table 9 indicates, women consistently endorsed internal attributions more than external attributions in both the masculine and feminine areas of achievement. The percentage

Table 9

Percentage of Men and Women with Higher Attribution Score in the Internal or External Attribution Category within Area of Achievement

Attribution Category	Female Subjects		Male Subjects	
	Area of Achievement		Area of Achievement	
	Interpersonal	Academic	Interpersonal	Academic
Success, MMCS				
Internal	89.51*	93.83*	91.54*	93.08*
External	10.49	6.17	8.46	6.92
Failure, MMCS				
Internal	65.43*	74.69*	65.38*	76.92*
External	34.57	25.31	34.61	23.08
Across Success and Failure, MMCS				
Internal	85.18*	92.59*	80.00*	90.00*
External	14.81	7.41	20.00	10.00
Across Success and Failure, Behavioral Task				
Internal	64.20*	75.93*	66.92*	86.92*
External	35.80	24.07	33.08	13.08

*Modal high attribution score within sex within area of achievement

of subjects who endorsed external attributions more than internal attributions was somewhat higher for the interpersonal domain than for the academic domain.

While effort was the category of attribution which men endorsed most for failure and for outcome across success and failure on the MMCS, this pattern did not hold with attributions for success. The greatest percentage of males used ability most to account for academic success (50.26%), with effort being the second most frequent high score (38.20%). In contrast to academic success, academic failure and outcome across success and failure were attributed most to ability only by a small percentage of men. In the interpersonal domain, the external factor of context was employed most as an attribution for success by the greatest percentage of subjects (40.77%). Luck was the highest attribution score for MMCS interpersonal outcome for the fewest men. Neither context nor luck were used most by many men on the MMCS to account for academic outcome.

The patterns of attribution among men regarding the behavioral task were similar to the MMCS attribution patterns for success. Task difficulty was the modal high attribution score for the IPS (34.62%). Ability was the high attribution score for the MPF (36.15%). On the academic task, men were almost as likely to attribute outcome most to effort (35.38%) as to attribute it most to ability. Unlike on the MMCS, a substantial percentage of male subjects attributed

outcome on the academic task most to the external stable cause of task difficulty (27.69%). As can be seen from Table 9, the greatest percentage of men were more internal than external in their attributions for outcome in both areas of achievement. The tendency to ascribe outcome more to internal causes was not as strong for failure as for success. With the exception of MMCS attributions for success, the tendency for men to make internal attributions more than external attributions was stronger in the traditionally masculine domain than in the traditionally feminine domain.

Between Sex Patterns

In order to test whether the category of attribution used most to account for outcome was related to sex of subject, chi square analyses were performed on the 2 x 4 (Sex x Specific attribution category) and 2 x 2 (Sex x Internal-external attribution category) contingency tables containing the number of subjects of each sex with highest attribution scale score in each attribution category. MMCS attribution scale scores for success and failure were analyzed separately. Scores for attribution scales across success and failure were also analyzed. Chi square values are presented in Tables 43 through 46 in Appendix L. The chi square

analysis provided some support for Hypothesis Four. There was no support for Hypothesis Three. The analyses revealed a significant association between sex and category of highest attribution score only for MMCS academic failure attributions ($X^2(3) = 9.14$; $p < .05$). Individual chi squares were computed on the MMCS academic failure data for each attribution category separately versus the other categories combined by sex. The association of sex and category of attribution most endorsed was significant for ability ($X^2(1) = 4.59$; $p < .05$) and luck ($X^2(1) = 3.85$; $p < .05$). Only 3.8% of males were most likely to attribute academic failure to lack of ability. Women (14.4%) were more likely than men to attribute academic failure most to lack of ability. Women (5.47%) were also more likely than men (.51%) to attribute academic failure most to luck. The chi square analyses produced no evidence of an association between sex and the use of internal or external attributions in either area of achievement.

Differences Between Area of Achievement Across Sex

Tables 10 and 11 present the 2 x 4 (Area of achievement x Specific attribution category) and 2 x 2 (Area of achievement x Internal-external attribution category) contingency tables for the percentage of subjects across sex with highest attribution scale scores in each category by area of achievement. As noted before, only MMCS attributions for

Table 10

Percentage of Subjects with Highest Attribution Score in Each Attribution Category within Area of Achievement

Attribution Category	Area of Achievement	
	Interpersonal	Academic
	Success, MMCS	
Ability	25.34	46.69*
Effort	35.27	41.67
Context	39.38*	.57
Luck	0	11.07
	Failure, MMCS	
Ability	22.60	9.70
Effort	41.67*	76.48*
Context	26.94	9.70
Luck	8.79	4.11
	Across Success and Failure, MMCS	
Ability	25.57	13.87
Effort	40.64*	79.97*
Context	32.76	1.20
Luck	1.03	4.97
	Across Success and Failure, Behavioral Tasks	
Ability	29.74	39.15*
Effort	29.39	36.41
Task Difficulty	34.30*	23.74
Luck	6.56	.68

*Modal high attribution score within area of achievement

academic failure showed a significant relationship to sex. For both the MMCS and the behavioral task, a greater percentage of subjects were likely to account for academic outcome most by effort than interpersonal outcome. The external stable attribution category of context/task difficulty was consistently used more by subjects to account for interpersonal outcome than academic outcome. Context was the modal high attribution score for interpersonal success on the MMCS (39.38%) and task difficulty was the modal high score for outcome on the IPS (34.34%). Ability was modal high attribution score for parallel academic outcome measures (MMCS success, ability: 46.69; MPF outcome, ability: 39.15%). Though the greatest percentage of subjects were most likely to attribute failure and outcome across success and failure to effort on both the academic and interpersonal scales of the MMCS, the percentage of subjects with effort as their highest attribution score was almost twice as great for academics. Ability and context were employed most by more subjects to account for interpersonal success or interpersonal outcome in general than to account for academic success or academic outcome in general on the MMCS. While context was the high choice MMCS attribution category for academic outcome for few subjects, 23.74% of subjects attributed outcome on the MPF most to task difficulty. Very few subjects used luck most to account for outcome in either area of achievement.

Table 11

Percentage of Subjects with Higher Attribution Score in the Internal or External Attribution Category within Area of Achievement

Attribution Category	Area of Achievement	
	Interpersonal	Academic
	Success, MMCS	
Internal	90.41*	93.49*
External	9.59	6.51
	Failure, MMCS	
Internal	65.41*	75.68*
External	34.59	24.31
	Across Success and Failure, MMCS	
Internal	82.88*	91.10*
External	17.12	8.56
	Across Success and Failure, Behavioral Tasks	
Internal	65.41*	80.82*
External	34.59	19.18

*Modal high attribution score within area of achievement

Subjects were much more likely to endorse internal attributions for outcome than external attributions in both areas of achievement. The tendency was somewhat stronger for the academic domain. The tendency to endorse more internal than external attributions was not as strong in accounting for failure as in accounting for success on the MMCS. External attributions were used more to account for outcome across success and failure on the behavioral tasks than on the MMCS.

Summary of Results

Hypothesis Testing MANOVAS

The multivariate analyses provided no support for Hypothesis One or Hypothesis Three. Females did not hold higher expectancies of success or endorse more achievement promoting attributions in the interpersonal area than in the academic area. No sex differences between expectancies and attributions in the traditionally masculine area of achievement were found. The analyses produced some support for Hypothesis Two. For the MMCS data, males were more likely to attribute academic failure to lack of effort than interpersonal failure. Men also endorsed effort attributions more for academic outcome on the behavioral task. A trend toward significance in the predicted direction was obtained for the other MMCS attributions. No difference in ability attributions for behavioral task outcome as a

function of area of achievement was found among men. Only men in Condition 2 held higher expectancies of success for the academic task than for the interpersonal task.

Hypothesis Four was fully supported. All analyses indicated that women employed achievement promoting attributions as frequently as men to account for outcome in the interpersonal area. Women also held higher expectancies of success than men for the interpersonal task.

Post Hoc MANOVAs

There were no sex differences in attributions significant at the multivariate level. The MMCS data revealed a greater tendency for women to attribute academic failure to lack of ability than for men, a difference that was highly significant at the univariate level. Within sex differences in the use of attributions were obtained for the MMCS data. Both males and females were more likely to attribute academic success to luck and interpersonal success to contextual variables. No differences in the use of luck and task difficulty attributions for outcome on the behavioral tasks were found as a function of area of achievement.

Area of Achievement Effects Across Sex

Significantly different patterns of attribution for outcome in the two areas of achievement emerged across sex for the MMCS data. Subjects were more likely to attribute

academic success to ability and luck than interpersonal success. Context was employed as an attribution for success significantly more frequently on the interpersonal scale than on the academic scale. Subjects endorsed lack of effort more as a cause for failure in academics. The finding of different attribution patterns as a function of area of achievement on the MMCS was not congruent with results from the behavioral task data, in which no simple effects for area of achievement were found.

Area of Achievement by Condition Interaction

The analyses of the IPS and MPF data produced unpredicted effects for area of achievement x condition. Subjects who participated in the MPF first held lower expectancies of success for the IPS than for the MPF and they attributed outcome on the IPS to luck more than outcome on the MPF. Condition 2 subjects also attributed a significantly higher proportion of outcome on the academic task to effort than outcome on the interpersonal task. When the task data was analyzed separately for each of the four success-failure groups, the area of achievement x condition effect was not as strong. Subjects in Group 3 were found to hold higher expectancies of success on the MPF in Condition 2 than in Condition 1. Of subjects classified as failures for both tasks, those in Condition 2 were more

likely to attribute outcome to luck for the interpersonal task than for the academic task.

Distribution of High Attribution Scores

Chi square analyses of the MMCS data revealed that women were more likely than men to attribute academic failure to luck and to lack of ability. Patterns of high attribution scores were otherwise found to be independent of sex. The majority of men and women were more likely to make internal than external attributions in both areas of achievement. Effort was employed more to account for academic outcome than interpersonal outcome. The external, stable attribution category of context/task difficulty was consistently used more as an attribution in the interpersonal domain than in the academic domain.

DISCUSSION

The focus of this study was to investigate the influence of the stereotypic masculinity or femininity of an area of achievement on the perceptions of causality held by women and men. Though there are some ambiguities in the data, the literature generally indicates that the expectancies and attributions of women in conventionally masculine areas of achievement have negative implications for achievement. Few studies of self-confidence and the perception of causality have been conducted in contexts in which achievement has been socially sanctioned for women. It was hypothesized that the achievement inhibiting cognitions found among women could be limited to traditionally masculine areas of achievement. It was also hypothesized that individuals would be most likely to hold achievement promoting beliefs in areas in which achievement by members of their sex is encouraged by society. Two primary questions were investigated in this study. Do men and women differ in their expectancy of success and their use of achievement promoting attributions in conventionally masculine and feminine domains? Are individuals more likely to hold achievement promoting cognitions in areas in which achievement has traditionally been sanctioned for their

sex than in areas in which achievement has traditionally been sanctioned for the opposite sex?

To address these questions, college men and women were asked to engage in a test of interpersonal skill, sex-linked as feminine, and in a test of intellectual skill, sex-linked as masculine. Expectancy for success and attributions for outcome on the tasks were assessed. General attributions regarding outcome in academic and interpersonal situations were also measured.

Differences as a Function of Area of Achievement

Hypotheses One and Two

Though the results are not consistent for the behavioral task and the Multidimensional Multiattributional Causality Scale, the present study provides some support for the hypothesis that the typical patterns of attribution for men and women in traditionally masculine areas of achievement are not representative of attributional patterns for the full range of human activities. Subjects within each sex had different attributional patterns on the MMCS for academic and interpersonal outcome. The behavioral task data revealed a few differences in attribution and expectancy as a function of area of achievement for male subjects only. Contrary to predictions, subjects of each sex did not hold more achievement promoting beliefs in domains in which they have been socialized to achieve. The perception of the

cause of outcome in the traditionally masculine domain differed from the perception of the cause of outcome in the traditionally feminine domain in the same direction across sex.

The results revealed no support for Hypothesis One. Women did not hold higher expectancies for success or endorse achievement-promoting attributions more frequently in the interpersonal area than in the academic area on the MMCS or on the behavioral task posttests. The area of achievement differences within males predicted in Hypothesis Two received some support. Men were significantly more likely to endorse lack of effort attributions for failure on the academic scale of the MMCS than on the interpersonal scale. There were trends ($p < .10$) for men to attribute academic success more than interpersonal success to effort and ability on the MMCS. Men were more likely to attribute outcome to effort on the MPF than on the IPS. Men held higher expectancies of success for the academic task than for the interpersonal task only when they engaged in the academic task first.

Though more pervasive among male subjects than among female subjects, there was a tendency across sex to hold more achievement promoting beliefs about outcome in the masculine domain than in the feminine domain. Women were significantly more likely to endorse lack of effort attributions for academic failure than for interpersonal

failure on the MMCS. There was a trend ($p < .10$) for women to attribute academic success to ability more than interpersonal success on the MMCS. Significant area of achievement effects for the MMCS data were also found across sex. Subjects were more likely to attribute success to ability and failure to lack of effort on the academic scale than on the interpersonal scale. There was a trend ($p < .10$) for MMCS academic success to be attributed to effort more than interpersonal success. Though no significant area of achievement effects within female subjects or across sex were obtained for the behavioral task attributions, there was a trend across sex for academic outcome to be attributed to ability more than interpersonal outcome.

Valuation of Achievement in Masculine and Feminine Areas

The greater use of achievement promoting attributions regarding academic outcome than regarding interpersonal outcome on the MMCS may reflect a higher value placed on achievement in the traditionally masculine domain. The endorsement of ability and effort to account for success, and effort to account for failure, in academics more than in affiliation suggests a greater need to maintain self-esteem around outcome and a belief in personal control over future outcome in the academic domain than in the interpersonal domain. The only MMCS attribution scale score which was significantly higher for interpersonal

outcome than academic outcome was the success context score. The attribution of success to the external factor of context implies that the individual can take little personal credit for success. In contrast, the greater endorsement on the academic scale of ability and effort to account for success, and effort to account for failure, suggests a perception that academic achievement requires more of the individual than interpersonal achievement. Such attributions may also reflect a greater need to maintain one's self-esteem around outcome in a more valued area. The different valuing of the two areas of achievement is congruent with the findings of Lefcourt et al. (1979) with regard to the relationship of MMCS scores to social desirability. Lefcourt and his associates found that the need for approval was correlated with the academic scale of the MMCS but not with the interpersonal scale. Subjects scoring high in need for approval were more likely to deny external causes for academic outcome. The greater use of luck on the MMCS to account for academic success than interpersonal success is the only significant area of achievement difference which is not congruent with the concept of subjects placing higher value on academic outcome.

One may ask why, despite their socialization toward communal values, women might perceive achievement in a masculine domain as more demanding and more valuable than —

achievement within an interpersonal context, and make more achievement promoting attributions about it. It seems likely that the undergraduate women who served as subjects for this study, influenced by the women's movement, may have incorporated academic achievement into their concepts of themselves as women. It may be that as women learn to incorporate agential values and involvement in traditionally masculine areas into their self concepts, they are learning to devalue achievement within a communal context. It seems likely, however, that the different valuing of communal and agential achievement suggested by the MMCS attribution patterns is an extension of the devaluing of the competency of women relative to the competency of men that has been documented by past research. Female college students have been found to evaluate written articles and paintings lower when they are attributed to women than when they are attributed to men (Goldberg, 1968; Pheterson, Kiesler & Goldberg, 1971). Men have been found to rate very competent men higher in intelligence and competence than comparable women (Deaux & Taynor, 1973) and to rate the same articles higher when attributed to male authors than when attributed to female authors (Morris, 1970). Observers have also been reported to have different perceptions of the cause of outcome as a function of the sex of the actor. Deaux and Emswiller (1974) found that subjects were more likely to attribute a woman's success at a task to luck. A man's

success at the same task was more likely to be ascribed to ability. Other researchers report similar findings (Feather & Simon, 1975; Feldman-Summers & Kiesler, 1974).

In light of the evidence of societal devaluation of the competence of women, it is not surprising that people would perceive success in an area socially designated as feminine as requiring less ability and effort than success in an area socially designated as masculine. It is also not surprising that although women are socialized to have communal values, they may regard achievement more highly and be more likely to make achievement promoting attributions in a masculine sphere than in a feminine sphere. Though there is evidence that women are beginning to evaluate the competence of other women more highly (Deaux & Taynor, 1973; Morris, 1970), the devaluation of "women's work" may be more subtle than the direct deprecation of women and therefore slower to change.

Applicability of the Model of Causality to the Communal Context

The area of achievement differences for the MMCS in the use of attributions defined as achievement promoting may also be a function of the relative applicability of the conventional concepts of achievement and the categories of attribution employed to the agential and communal spheres. The MMCS is based on the Weiner et al. (1971) two-

dimensional model of causality which has largely been developed and applied in research in traditionally masculine areas of achievement. A substantial amount of research has supported the importance of Weiner's four causal elements, ability, effort, task difficulty and luck, in explaining outcome in traditionally defined achievement situations (e.g., Weiner & Kukla, 1970; Weiner et al., 1972). However, research by Elig and Frieze (1975) and McHugh (cited in Elig & Frieze, 1979) indicates that other attributions may be important in explaining outcome, particularly in nonacademic situations. Some of the other causal ascriptions found to be frequently employed seem to be very applicable to outcome in interpersonal situations: the personality and mood of the actor and the effort, motivation and personality of others. Context, the stable, external attribution category employed on the MMCS rather than task difficulty, is the only category of the MMCS which incorporates some of these other attributions which have good face validity as attributions for interpersonal outcome. Success context is the only MMCS category which subjects were significantly more likely to use to account for interpersonal outcome than for academic outcome. The MMCS attribution categories other than context may be somewhat more applicable to academic outcome than to interpersonal outcome. It seems that the area of achievement differences for the behavioral task attributions may not

have been obtained because situation variables made the IPS somewhat academic and therefore the categories of attribution employed may have been more applicable to the IPS than to the purely interpersonal situations described on the MMCS.

It might be questioned whether the causal attributions which theory and research designate as likely to promote achievement as it is conventionally defined and applied are the causal attributions which promote the attainment of excellence in interpersonal relations. Context, in terms of other people, is inherently a more important causal factor in the communal sphere than in a traditionally masculine area of achievement. Regardless of the individual's interpersonal competence, causes outside their control are necessarily important because the response of another person is the criteria for success, not the individual's performance relative to an objective standard. The ascription of failure to lack of effort and success to ability and effort in the interpersonal domain without consideration of contextual factors such as the personality of others could interfere with the development of excellence in interpersonal skills.

The area of achievement differences in MMCS attribution scores suggest that the study of achievement within a communal context may require the use of conceptual models and causal attributions specific to a communal context.

The constructs and methodology developed in the study of achievement as it has been defined in a conventionally masculine sense are not necessarily directly transferable to conventionally feminine areas of skill. The use of open-ended response measures to assess attributions for outcome spontaneously generated in interpersonal situations (e.g., Elig & Frieze, 1975) could provide a good starting point for the study of causal attributions for achievement within a communal context.

Sex Differences: Hypotheses Three and Four

The results of the present study support Hypothesis Four, but not Hypothesis Three. While women did not hold low expectancies of success or make few achievement-promoting attributions relative to men in an area in which achievement is socially sanctioned for women, they did not reveal these achievement inhibiting cognitions in a traditionally masculine area either. The only significant sex difference in achievement promoting attributions, a difference significant only at the .05 level and not associated with significant multivariate results, was in a direction that would promote academic achievement more among women than among men. Women attributed success to effort more than men across area of achievement.

Traditionallly Masculine Area of Achievement

The hypothesis testing would lead to the conclusion that the cognitions of women are not greater internal barriers to achievement in a traditionally masculine domain than the cognitions of men. This conclusion is tempered by a sex difference found in the post hoc analysis. Though not associated with significant multivariate results, there was a highly significant difference ($p < .005$) for the MMCS data in the use of lack of ability attributions to account for academic failure as a function of sex. Failure attributed to lack of ability would maximize negative feelings about oneself and one's competence, lowering future expectancy of success. The stable attribution would minimize motivation to reattempt the failed task. Women's greater tendency to account for failure by lack of ability would make them less likely than men to persevere after failure, or to attempt increasingly challenging tasks in which initial failure could be expected. Thus despite patterns of using achievement promoting attributions as much as men and holding equivalent expectancies of success, a tendency to make lack of ability attributions for failure would interfere with achievement behavior among women. The sex difference in ability attribution was not found for the task data of subjects who rated themselves as failures on the academic task.

When within sex patterns of attribution are examined, the influence of the lack of ability attribution among women seems less significant. Only 14.4% of the women subjects endorsed lack of ability most as a cause for failure on the MMCS. While women were almost equally likely to attribute academic success most to ability (43.83%) and effort (44.44%), effort was the high attribution score for academic failure for the great majority of women (70.78%) on the MMCS. Ability (41.56%) and effort (37.24%) were also employed most by the greatest percentage of females to account for outcome on the Matching Parts and Figures Test. Though the greater use of failure ability attributions could have negative consequences for the achievement of women, the majority of women were most likely to use achievement promoting attributions to explain academic outcome.

Comparisons with past findings. The patterns of attribution and expectancy for outcome in the traditionally masculine area of achievement found in the present study are consistent with some findings relative to sex differences reported in the literature, but not with others. The finding that women held as high expectancies of success in academics as men was contradictory with the majority of the research on expectancy of success in achievement situations. Past findings that males were more likely than females to ascribe success in academics to ability (Frieze,

1975; McMahan, 1971) and to ascribe failure at an academic task to lack of effort (Dweck & Reppucci, 1973) were not replicated. A difference in the attribution of success to effort as a function of sex has not been previously reported.

The results of the present study add to the contradictory data relating to sex differences in the attribution of failure to lack of ability in conventionally masculine areas. The MMCS results are consistent with the majority of the data (Dweck & Reppucci, 1973; Lefcourt et al., 1979; McMahan, 1971; 1972; Nicholls, 1975). The failure to find women more likely than men to attribute failure on the MPF to lack of ability is congruent with the findings of Feather (1969) and Frieze (1973).

Women have fairly consistently been shown to attribute both success and failure to luck more than men in traditionally masculine areas of achievement (Bar-Tal & Frieze, 1973; Deaux & Farris, 1977; Feather, 1969; McMahan, 1972; Simon & Feather, 1973). The MANOVAs for this study revealed no sex differences in the use of luck as an attribution for academic outcome. Chi square analysis did indicate that women were significantly more likely than men to endorse luck most and to endorse lack of ability most as causes for academic failure on the MMCS. These differences in attribution as a function of sex parallel the finding of Dweck and Reppucci (1973) that grade school girls were

more likely than grade school boys to attribute academic failure to lack of ability and to external factors. The results of the present study are consistent with the findings by Lefcourt and his associates (1979) on sex differences in attribution patterns in the academic area of achievement.

In contrast to past research employing Rotter's global measure of locus of control (Rotter & Hochreich, cited in Frieze, 1975) and past research employing goal-specific measures of attribution (Bar-Tal & Frieze, 1973; Feather, 1969; McMahan, 1972; Simon & Feather, 1973), there was no evidence of women making more external attributions than men in the traditionally masculine domain. The few sex differences found were in the direction of women being more internal than men for academic outcome. The distribution of highest attribution score per subject within sex (see Table 8) also reveals that women were more likely to endorse internal causes most to explain academic outcome rather than external causes. The only finding of the present study which is consistent with the picture from past research of women having achievement inhibiting cognitions about outcome in a conventionally defined achievement situation is the tendency of women to account for academic failure by lack of ability more than men do.

Traditionally Feminine Area of Achievement

Women were not found to have achievement inhibiting cognitions about outcome in interpersonal situations relative to men. Women held significantly higher expectancies of success on the interpersonal task than men. This difference primarily reflects low expectancies of success among men in the traditionally feminine area. The expectancies of men were significantly higher on the academic task than on the interpersonal task. The expectancy of success among women did not vary as a function of area of achievement. The expectancy data suggests that in recent years women have expanded their self-concepts to include competence in some areas conventionally defined as areas of competence for members of the other sex, while men have not.

The only sex difference in attributions for interpersonal outcome is the weak finding that women attribute success to effort more than men across area of achievement. There was no evidence of a greater tendency among women to attribute failure to lack of ability, as has been frequently reported in conventionally masculine areas of competence. Thus the data from the present study indicate that the beliefs of women in their competence and control over outcome are at least as positive as the beliefs of men in the primary area of achievement socially sanctioned for women. Though men differed little from women in their

perception of causality in an interpersonal area, their lower expectancies of success on the IPS could have negative implications for striving for excellence in the interpersonal domain.

Comparisons with past findings. As with results for the masculine area of achievement, results for the feminine area of achievement are consistent with only some of the findings reported by other researchers. The higher expectancy of success among women than among men is consistent with sex differences reported by McHugh, Fisher and Frieze (cited in Lenney, 1977) in a study using a design matching task presented as involving social skills. Other researchers have found no difference in the expectancies of male and female subjects on tasks implicitly or explicitly sex-linked as feminine (Deaux & Farris, 1974; Lenney, 1977; Stein, Pohly & Mueller, 1971). The absence of sex differences in attributions for interpersonal failure is consistent with the failure of Goetz and Dweck (1979) to find differences between grade school boys and girls in attributions for social rejection. The findings of Lefcourt and his associates (1979) that college men were more likely to attribute interpersonal outcome to luck and to attribute interpersonal success more to external sources than college women were not replicated in the present study. Lefcourt et al. did not report a greater tendency among women to attribute success to effort. The absence of sex differences

on the other attribution scores for the IPS and the interpersonal scale of the MMCS is generally consistent with the Lefcourt results. The author does mention a few sex differences on the three item scales of the MMCS which he fails to specify.

The limited data on sex differences in expectancy and attribution within a communal context is consistent in not carrying negative implications for the achievement of women relative to the achievement of men. This lends support to the argument that limiting attribution research primarily to traditionally masculine areas of achievement had led to an unrepresentative picture of the process of assigning causality among men and women. There are discrepancies in the literature regarding the patterns of causal attribution and expectancy within a communal context which would have negative implications for men relative to women. More research in conventionally feminine areas is needed, with particular attention to the use of categories of attribution indigenous to the area of achievement.

Ambiguity of the Data on Sex Differences in Masculine Areas

The conclusion from the present study that men and women do not differ much in their expectancies of success and their perception of causality in a traditionally masculine area of achievement, with the exception of failure ability attributions, is difficult to reconcile

with the general picture of achievement inhibiting expectancies and attributions among women in the literature. As was evident in the comparison of present results to past findings, there are discrepancies in the results reported by previous researchers. Lenney (1977) discovered that variations in sex differences in expectancy in achievement situations are determined by situation variables such as ability area and other task specific factors, emphasis on social comparison and the availability of feedback. Given the theoretical relationship between expectancy and attribution, it seems likely that these variables may also be important determinants of patterns of sex differences in attributions. The situation variables specified by Lenney and other methodological differences may help explain the discrepancies between the results of the present research and past research.

Influence of Situation Variables on Results

This study is similar to much other attribution and expectancy research in the selection of academic or intellectual achievement as the specific ability area in which to assess cognitions. The Matching Parts and Figures Test is similar in character to other types of tasks employed in attribution and expectancy research, such as anagram tasks (e.g., Deaux & Farris, 1977), digit symbol matching tasks (e.g., Crandall, 1969) and design

matching tasks (e.g., McHugh, Fisher & Frieze, 1975). Most investigators, except those using the Rotter I-E measure (1966), have assessed task specific attributions, like the measurement of attributions for the behavioral task. The measurement of general attributions for a goal specific area with the MMCS may be a factor in the inconsistency of present results with past findings. It does not account for the discrepancies between the behavioral task data and past findings.

Sex linkage of ability area. Sex linkage was the aspect of specific ability area that Lenney (1977) focused on as a determinant of expectancy. Her review of the literature revealed that women held lower expectancies of success than men for tasks sex linked as masculine, but not for tasks sex linked as feminine. Though the MPF was explicitly sex linked as masculine in the instructions given by the experimenter, which could have been expected to maximize sex differences, no sex differences in expectancy or attribution were found. Academics were not explicitly sex linked as masculine for the MMCS. However, sex differences in attribution and expectancy for academic or intellectual tasks have frequently been reported regardless of whether the tasks were explicitly sex linked.

One possible explanation of the few sex differences in the academic area is that, despite manipulations, the area was not perceived as masculine by subjects. It was

difficult to develop tasks which were perceived as distinctly sex linked. Four pilot studies with varying experimental tasks and instructions were conducted before the tasks and instructions employed were decided upon. In one pilot, sex linkage of anagram tasks was found to be an ineffective manipulation, though Deaux and Farris (1977) reportedly had used the manipulation successfully. Regarding the Matching Parts and Figures Test employed in this study, both men and women estimated that college males would perform better than college females, though they also rated the academic task as being approximately equally masculine and feminine (see Table 8). Thus the data as to whether the academic task was perceived as sex linked is ambiguous. Since the rating was specific to the MPF, it is also unclear whether the area of academics in general was perceived as a male area of achievement. The majority of the sex difference research cited earlier was published in the early 70's or before. It is conceivable that though the specific ability area in the present study is the same as in many past studies, the sex linkage of the task is no longer clearly masculine. Though Deaux and Farris (1977) found sex differences in self-evaluation, expectancy and attributions for an intellectual task sex linked as masculine in a fairly recent study, their sex linkage manipulation was much stronger than the manipulation in the present study. In addition to stating that

males typically performed better at the anagram task which subjects were asked to perform, the experimenter described research purportedly indicating male superiority at such tasks and related the superiority to other masculine abilities.

Table 12

Mean Scores for Posttest Checks of Perceived Sex-linkage of IPS and MPF

Variable	IPS		MPF	
	Females (N=81)	Males (N=65)	Females (N=81)	Males (N=65)
Masculinity or femininity*	4.46	4.20	3.60	3.51
Estimated percent of items women answered correctly	61.00	56.41	60.75	55.47
Estimated percent of items men answered correctly	48.64	47.69	69.75	63.91

*1 Most masculine; 7 most feminine

Another possible explanation of the absence of sex differences is that the manipulation designed to strengthen the sex linkage of the academic task actually minimized sex differences in attribution and expectancy. The introduction to the experiment referred to a test of understanding of spatial relations, "...an area in which men as a group tend to be better than women." Immediately before completing the Expectancy Questionnaire for the MPF, subjects were told, "Though it is not always the case, there is

some reason to believe that men as a group are generally better than women in academic subjects requiring the understanding of spatial relations." Women students may have responded with an angry determination to disprove the stereotype which influenced expectancy and attributions in the masculine domain. The cognitive set could have carried over from the MPF to the MMCS, which was done later in the experiment. Though this explanation is obviously speculative, some women subjects in a pilot study volunteered the information that they had responded in this way to the manipulation. The response of women subjects to the manipulation in the present study may have been different from the response to the manipulation employed by Deaux and Farris (1977) because in the present study a generalization based on sex role stereotypes was made without the manipulation of giving empirical support for the generalization.

Social comparison. Lenney (1977) specifies social comparison as another determinant of sex differences in self-confidence. Differences have been reported in studies in which the social environment is made salient, but not in studies in which the social environment was minimized. In the present study, subjects worked anonymously in a group and no criteria for success were provided. This absence of social comparison cues may have minimized sex differences in expectancy and possibly in attribution.

Feedback. Providing subjects with information about their task specific abilities has also been found to result in males and females reporting equal levels of self-confidence in achievement situations (Lenney, 1977). Sex differences have been reported when feedback is ambiguous or when subjects state their expectancies before beginning an unfamiliar task. Subjects in the present study were given time to work four sample problems before the academic task. Though the solution was given for only one of the four items, subjects did have some opportunity to assess their task specific abilities, which would have minimized sex differences in expectancies, according to Lenney's (1977) conclusions. For the MMCS, subjects had to draw on past experiences for estimates of their ability. Stein (1971) found no sex differences when boys and girls were asked to give generalized predictions for success in a variety of broadly defined skill areas they had rated as "more boyish." Perhaps sex differences in attribution and expectancy are weaker when individuals draw on a range of experience to make general statements about outcome than when they make task specific statements.

Discrepancies Between the MMCS and the Behavioral Task Data

In addition to the discrepancies between the results of this study and the picture of sex differences in

attribution and expectancy from past research, there were discrepant results within the present study. A main effect of area of achievement was obtained for many MMCS attribution scores. It was not obtained for behavioral task attribution scores. The sex differences in attribution significant at the univariate level for the MMCS data were not significant for the task data. Area of achievement by condition effects were obtained for the IPS and MPF data only.

Lenney's situation variables. The variables specified by Lenney (1977) as determinants of sex differences in expectancy provide a starting point in considering factors which may account for the contradictory results in this study with regard to attribution patterns. The influence of social comparison should not be a source of difference since social comparison was not salient for either set of data. The MMCS and tasks do differ in the type of feedback available. There was some feedback as to task specific ability from the samples for the IPS and MPF. Estimates of ability for the MMCS had to be drawn from life experience. Though the specific ability areas for the MMCS and the behavioral tasks were the same, the MMCS assessed general attributions in a goal specific area and attributions regarding the IPS and MPF were task specific. In addition, some aspects of the experimental situation may have given the IPS an academic flavor, reducing area of

achievement effects for the behavioral tasks. The IPS was a timed, paper and pencil measure administered in a classroom. Though manipulation checks indicate that subjects of both sexes estimated that women would perform better on the IPS than men, they rated the task as only slightly more feminine than masculine (see Table 12). It seems likely that the IPS was less clearly a traditionally feminine achievement situation than the interpersonal situations describe on the MMCS. While it would have been desirable to measure attributions regarding an actual social interaction, such an approach would have created methodological inconsistencies between the collection of data in the interpersonal and academic areas.

Other variables. A consideration of variables other than those specified by Lenney (1977) which could have contributed to inconsistent results within the present study makes salient the complexity of methodological issues which must be considered in attempting to draw generalizations about the attribution and expectancy patterns of men and women from the literature. One possible source of difference in attribution patterns within this study is that success and failure were explicit for the MMCS but not for the behavioral task. Success or failure classification for the behavioral task was based on the subject's composite score from the three posttest items measuring self-perception of success relative to median scores for all subjects.

There is no evidence that subjective perceptions of success or failure when subjects were indicating attributions on the posttest measure were the same as the success or failure classifications assigned on the basis of scores. It seems that results would have been more comparable to MMCS results if subjects had been given specific criteria for success or failure, or had made forced choice self-ratings of success or failure before making attributions for outcome. The means of establishing success and failure classifications for the IPS and MPF may also have been a factor in the discrepancy between results of this research and past studies. In much past research, success or failure has been manipulated by giving subjects easy or difficult tasks and specific criteria for success (e.g., Deaux & Farris, 1977).

The use of different types of attribution measures is also probably a factor in the inconsistent results. Subjects were asked to assign a percentage of outcome on the behavioral tasks to various causes. The MMCS is composed of multiple unipolar scales. Both types of structured attribution measures have been employed in the past and have been shown to have moderately good intermethod correlation with each other. Research on measuring causal attribution for success and failure indicates that the convergent and discriminant validities of such measures are satisfactory (Elig & Frieze, 1979). The major

difference between the two types of attribution measures is the independence of attribution ratings. The percentage method provides an excellent measure of the relative importance of various causes, but it induces negative correlations between attributions. The multiple unipolar scales of the MMCS allow each attribution to be rated independently. Thus the two attribution measurement techniques have different psychometric properties. Elig and Frieze (1979) suggest that different attribution measurement techniques also yield different types of data. The use of different attribution measurement techniques is undoubtedly a source of inconsistency in results within the present study and in the attribution literature, in which methods of attribution measurement vary greatly from study to study.

One other factor which may have contributed to the discrepancy between MMCS and task results was the use of context versus task difficulty as a category of attribution. Though both are external, stable causes, they are not equivalent. The context subscale of the MMCS interpersonal scale is composed of items attributing the cause of outcome to others. The context subscale of the MMCS academic attribution scale was composed of task difficulty and powerful other attribution items. The external, stable attribution category for IPS and MPF outcome was limited to task difficulty.

Implications for Women and Achievement

Possible Changes in Attribution and Expectancy

Clearly, there are numerous situation variables and methodological variables which could contribute to inconsistencies between the MMCS data and the behavioral task data and to the inconsistencies between the results of the present study and past research. The discrepancies make it difficult to draw conclusions about sex differences in expectancy and attribution. One consistent aspect of the most recent data, the data from the present study and the Lefcourt et al. (1979) research, are cognitions regarding achievement in a traditionally masculine domain which have fewer negative implications for women relative to men than the patterns which have typically been reported in the literature. A greater likelihood among women to attribute failure to lack of ability is the only sex difference which would interfere with achievement. It may be that college women of today have different beliefs about their competence and personal control over outcome in academic endeavors than college women of 10 or more yeras ago when the bulk of the sex difference in attribution research was done. College women of the present may have developed concepts of self that include competence in what have traditionally been masculine areas of achievement. If the data from the present study does accurately reflect

a change among women in beliefs about achievement as it is traditionally defined, the change may be limited to younger women who have gone through adolescence under the influence of the women's movement. It may also be limited to academics. Research with women of other age groups and in a wider range of traditionally masculine area of achievement is needed.

Other Factors Influencing Achievement Among Women

If the cognitions of college women about academic achievement are changing, one might expect changes to be occurring also in the high rate of attrition of female graduate students (Patterson & Sells, 1973), the low educational and vocational goals set by women relative to men (Howe & Ahlum, 1973) and the low percentage of Ph.D.s, lawyers, physicians and other professionals who are women. While such a trend is likely, other possible internal and external barriers to achievement may interfere. The incongruity between the fairly achievement promoting pattern of expectancy and attribution revealed in this study and actual achievement by women may speak to an impact of the women's movement in changing cognitions that has not yet reached women at an affective level. It is possible that though women are learning to say the "right things" to themselves about their capacity to achieve and their control over outcome, their feelings

about themselves and their competence, which are not tapped by the cognitive attribution measures, may continue to create internal barriers to achievement. This affective level may be reflected in the greater attribution of failure to lack of ability among women than among men, a pattern of attribution which is somewhat incongruous with the overall pattern of expectancy and attributions for academic outcome found. A gap between cognition and affect is difficult to bridge with the research methodology currently available. Though some investigation of the quantitative and qualitative affective consequences of attribution has been done (Weiner, Russell & Lerman, 1976), research on the interrelationship of affect and attribution as motors for achievement behavior is lacking.

The attempts of women to achieve outside conventionally feminine domains are also likely to be hindered by the conflict between the demands of agential achievement and their more traditional expectations of themselves as women. Choosing to focus on the attainment of excellence in either the communal or the agential domain would lessen the conflict, particularly if the choice is for the communal involvement supported by society. Attempts to integrate agential and communal achievement would be likely to give rise to greatest conflict.

In addition to internal barriers to achievement, such as affect and cognition, any attempt to understand women

and achievement must take into account social factors. Women do not receive the unequivocal societal approval that men receive for achievement as it is traditionally defined. There are frequently negative social consequences and few environmental supports for achievement. Though there have been some changes in recent years, the devaluation of women's abilities and prejudice against women in the working world continues. Frieze (1975) emphasizes that there is little evidence of male perceptions of female competency changing. In most achievement situations, women are being evaluated by men rather than women. In addition, there are few same-sexed role models for women with aspirations to achieve (Frieze, 1975).

In attempting to generalize findings on expectancy and attribution, it is important to keep in mind some major differences between experimental and life achievement situations. While social comparison cues are absent from many experimental situations, as in the present study, they are inherent in almost all real life achievement situations. Women participating in a research project are unlikely to anticipate the negative social consequences for achievement which they might anticipate in life situations. These factors could lead to different cognitions in an

experimental setting than are likely to occur in life. One very important difference is that in an experimental situation a task is usually chosen for the subject, while individuals choose their own achievement goals in life. The expectancy measure in this study and most studies fails to tap expectancy at the level that causes the individual to approach or avoid achievement situations, and to choose easy or challenging tasks. Positive changes in expectancy and attribution for an assigned experimental task will have little impact on actual achievement if women set low goals for themselves.

There are a number of impediments to achievement in addition to their expectancies and attributions with which women may have to cope. If the data from this study accurately reflect a long term trend toward positive changes in the cognitions of women, their capacity to strive for achievement will be much greater despite other barriers.

Area of Achievement by Condition Interaction

The significant effect of area of achievement by condition for the behavioral task data suggests that expectancies and attributions about the task in one area of achievement were influenced by contrast with the task in the other area of achievement. When the Matching Parts and Figures Test was done first, subjects held higher expectancies of success for the MPF than for the

interpersonal task. They were more likely to attribute outcome to luck on the academic task than on the interpersonal task. Such area of achievement differences did not occur when subjects engaged in the IPS first. A possible explanation of the area of achievement by condition effect is that the contrast of the IPS to the MPF accentuated the different valuation of traditionally masculine and feminine ways of thinking and ability areas. Analytical thinking was required to respond to the MPF items. There were clearly right and wrong answers to the items. The IPS required an intuitive approach. The correctness or incorrectness of answers was ambiguous. It seems that achievement on the interpersonal task was perceived as requiring little of the individual, being more due to luck and less due to effort than the academic task, only in contrast to the conventionally masculine task which preceded it.

The area of achievement by condition effect for expectancy could also be due to the contrast between tasks. Subjects may have a tendency to have higher expectancies of success in a more valued area, such as academics. Subjects may have found the interpersonal task more difficult than they had anticipated. The mean estimates of the percent of items they answered correctly was lower for the IPS than for the MPF for subjects of both sexes. Given the probable perception of traditionally masculine

areas as being more demanding than traditionally feminine areas, engaging in the IPS could have led to low expectancies of success on the masculine task.

CONCLUSIONS

The primary conclusion to be drawn from this study is that women do not consistently have achievement inhibiting expectancies and attribution patterns relative to men across differing situations. The cognitions of women and men about causality and personal competence appear to be influenced by a variety of situation variables. One important determinant is the specific ability area. Women were not found to have cognitions with negative implications for achievement relative to the cognitions of men within a communal context. This finding indicates that limiting research to traditionally masculine areas of achievement has resulted in a picture of sex differences in self-confidence and the perception of causality that is not representative of the full range of human activities.

The different patterns found across sex in causal attributions for outcome in interpersonal situations, traditionally the primary area of achievement for women, and outcome in academics, suggests that the perception of causality may be influenced by different valuation of achievement in conventionally masculine and feminine areas. Achievement in masculine areas may be perceived as requiring more of an individual than achievement in a

feminine area. An alternate explanation is that the attribution categories derived from the Weiner model of the perception of causality which are typically employed in attribution research are not as applicable to the realm of interpersonal relationships as to more conventionally defined achievement areas. The investigation of achievement within a traditionally feminine area may be best approached using conceptual models and categories of attribution specific to a communal context.

The results of the present study suggest the possibility that women's expectancies of success and causal attributions for outcome in traditionally masculine areas are becoming less dysfunctional for achievement. However, it is difficult to draw conclusions because of the discrepancies in results between studies. It seems likely that the ambiguities of the data reflect differences in methodology and situation variables from study to study and an underlying change process.

The direction of future research which seems likely to be most fruitful is toward determining more precisely what variables influence the inconsistencies in findings on sex differences in attribution and expectancy. One focus should be increased attention to methodology. Elig and Frieze (1979) demonstrated that hypotheses about causal attributions can be supported by one method of attribution measurement and not by another. A second focus

which has more direct implications for actual achievement situations is the investigation of the influence of situation variables upon cognitions. The work of Lenney (1977) has demonstrated the importance of a number of situation variables in determining sex differences in self-confidence in an achievement situation. The results of the present study indicate that at least one situation variable, specific ability area, influences the attribution patterns of men and women.

Though the influence of situation variables upon cognitions about achievement can be inferred by comparisons of studies, research specifically designed to systematically investigate the influence of situation variables, and their interaction, on the expectancies and attributions of men and women is needed. Such research would provide a more accurate assessment of the pervasiveness of achievement inhibiting cognitions among women at present. Studies in which it is not assumed that women are an homogeneous group, investigating the factors affecting the beliefs of individual women in achievement situations, are also necessary. A more precise definition of the influence of specific situation variables on cognitions regarding achievement is essential to the development of programs of cognitive therapy which could ameliorate dysfunctional patterns of expectancy and attribution among women.

APPENDICES

APPENDIX A

Experimenter Instructions

Introductory Explanation-Condition 1

Experimenter 1:

Thank you for coming today. This study is called "Personal Beliefs and Success." My name is _____ and this is _____. We are the experimenters for the study.

In recent years, psychologists have become increasingly interested in how people's beliefs about themselves are related to their behavior. This study is designed to examine the relationship of personality characteristics and personal beliefs to the likelihood of success in two different kinds of skills. You will be asked to respond to some questionnaires about yourself and your beliefs about why people succeed or fail at something. You will also be asked to take two tests. The first is a test of interpersonal sensitivity, an area in which women as a group tend to be better than men. The second test is a test of spatial relations, an area in which men as a group tend to be better than women. On the Interpersonal Sensitivity Test, you will be shown some pictures of faces and asked to identify the emotions of the person in each picture based on the facial expression. On the spatial relations test, which is called "Matching Parts and Figures," you will be asked to determine which of several figures could be made by fitting together some parts.

All the results will be treated with strict confidence and will remain anonymous. You are free to discontinue the experiment at any time. You will receive ____ points for your introductory psychology course for participation in this experiment.

Any questions?

E2:

Please read the top page of the experimental booklet that was passed out to you. It is labeled "Departmental Research Consent Form." Do not look at any other pages in the booklet at this time. Throughout this experiment, do not look ahead at the materials in the booklet or turn the page unless you are so instructed. Are there any questions regarding the Departmental Research Consent Form? If not, please sign and date the statement.

Now turn to the next page of the booklet. Please read the instructions to yourself while I read them aloud.

Instructions: Preliminary Questionnaire

This questionnaire is designed to obtain some information about you with regard to interpersonal relationships and academic performance. For each question, please write your answer on the blank provided or check the appropriate box.

(Allow as much time as necessary for all to finish.)

Is anyone not finished with the Preliminary Questionnaire? Now we will proceed to the experimental tests.

E1:

This test is designed to gather data related to your probable success in the area of interpersonal skills. Though it is not always the case, there is some reason to believe that women as a group are generally better than men in some interpersonal skills, such as sensitivity to the feelings of others. On the following test, our interest is in the interpersonal sensitivity you show in identifying people's feelings on the basis of facial cues.

Please turn to the page in your experimental booklet labeled, "Instructions for Interpersonal Sensitivity Test." Read the instructions to yourself while I read them aloud.

Instructions for Interpersonal Sensitivity Test

This test consists of 32 pictures of faces, including the sample, number one. Your task is to look carefully at each picture to determine what emotion or emotions the person's facial expression is revealing. On line "A" to the right of the number on the answer sheet, write the dominant emotion that you think the person in the corresponding picture is feeling. If you think that the person is feeling other emotions in addition to the dominant emotion, write the other emotions on lines "B" and "C" below. While for some of the pictures, you may only be

able to identify the dominant emotion, you are encouraged to identify any additional emotions that you can. A list of emotions is provided for you at the top of the answer sheet for the Interpersonal Sensitivity Test. You are free to use any other emotions you wish in your responses to test items.

As an example, please turn for a moment two pages ahead in your experimental booklet to the page on which there are pictures of faces. As the pictures are numbered, the number of each picture is printed near the upper left-hand corner of the picture. Look carefully at picture one. If you thought that the person in picture one looked somewhat lonely, but mostly satisfied, you would write:

1A satisfied

B lonely

C _____

There are 31 pictures in addition to the sample, number one. The pictures are numbered in columns from top to bottom. As you work, be sure that the number of the picture and the number of the line on the answer sheet correspond.

This is a timed test. You will have five minutes to work on the 31 items. While some of you will finish the test in the time allowed, many of you will not.

Are there any questions?

E2:

Before you being the test, we would like you to answer some questions regarding your expectations and beliefs about your performance on the test. We realize that you do not have a great deal of information about the test at this time, but base your responses to the Expectations Questionnaire on the sample item.

Please turn to the page between the instructions for the Interpersonal Sensitivity Test and the page of pictures. The page is labeled, "Expectations Questionnaire." Write your answers directly on the questionnaire. You may begin. Stop when you finish the questionnaire. Do not turn the page until you are told to turn it.

(Allow as much time as necessary.)

Is anyone not finished with the Expectations Questionnaire?

Please turn the page to the pictures of faces. Please write only on the answer sheet, not on the page with the pictures. Try to identify the emotions of the person in each picture as completely as possible. You may begin.

(Allow five minutes.)

E1:

Stop working. Put your pencil down.

Please turn to the next page of your experimental booklet and answer the questions on the Posttest Questionnaire. You may write your answers directly on the

questionnaire. There are two pages to the Posttest Questionnaire. When you have completed the first page, turn the page and continue working. Stop when you have answered the questions on the second page. Do not look ahead in the booklet.

E1:

Is anyone not finished with the Posttest Questionnaire?

Now we will proceed to the next test.

E2:

This test is designed to gather data related to your probable success in some areas of academic skill. Though it is not always the case, there is some reason to believe that men as a group are generally better than women in academic subjects requiring the understanding of spatial relations, such as mechanical engineering. In the following test, questions on matching parts and figures assess your understanding of spatial relations. Please turn the page to the section of your booklet labeled, "Matching Parts and Figures," and read the instructions to yourself while I read them aloud.

(Turn page and read instructions.)

Instructions: Matching Parts and Figures Test

E2:

These questions on matching parts and figures test your understanding of spatial relations. The first two questions show two or more flat pieces. In each question select the arrangement lettered A, B, C or D that shows how these pieces can be fitted together without gaps or overlapping. The pieces may be turned around or turned over in any way to make them fit together.

1. From these pieces, what arrangement can you make? (Pause briefly so that subjects have time to figure out answer.)
2. From these pieces, which one of these arrangements can you make? (Pause briefly.)

The next questions are based on the four solid patterns shown. Each of the questions shows one of these four patterns cut up into pieces. For each question, decide which one of the four patterns could be made by fitting all of the pieces together without having any edges overlap and without leaving any space between pieces. Some of the pieces may need to be turned around or turned over to make them fit. The pattern must be made in its exact size and shape.

Look at sample question 3. If the two pieces were fitted together they would make pattern D. The piece on the left fits at the bottom of pattern D, and the piece at

the right is turned around and over to make the top of the pattern. (Pause so that subjects have time to figure out items 3 and 4.)

E1:

Your answers to the Matching Parts and Figures Test will be recorded on the computer answer sheet. Please print your name and student number in the spaces indicated and blacken the corresponding circles in the columns below with a number two pencil.

(Allow time to do this.)

This is a timed test. There are 21 items in addition to the four sample items and you will have <u>five</u> minutes to work on them. While some of you may finish the test in the time allowed, many of you will not. The items on the Matching Parts and Figures Test are numbered from 60 through 81. When responding to the test items, please be sure that you are recording the answers on spaces 60 through 81 on the answer sheet.

Are there any questions?

Before you begin the test, we would like you to answer some questions regarding your expectations and beliefs about your performance on the test. We realize that you do not have a great deal of information about the test at this point, but base your responses to the Expectations Questionnaire that follows on the sample items.

Please turn to the next page in your booklet, the Expectations Questionnaire, and respond to the questions. Write your answers directly on the questionnaire. Stop when you finish the questionnaire. Do not turn the page until you are told to turn it.

(Allow as much time as necessary.)

Is anyone not finished with the Expectations Questionnaire?

Please turn to the next page of your booklet and begin the Matching Parts and Figures Test. Do not write on the test. Mark only on the answer sheet. Remember, record your answers in spaces 60 through 81 on the answer sheet. You may begin.

(Allow 5 minutes.)

Stop working. Put your pencil down.

Please turn to the next page of your experimental booklet and answer the questions on the Posttest Questionnaire. You may write your answers directly on the questionnaire. There are two pages to the Posttest Questionnaire. When you have completed the first page, turn the page and continue working. Stop when you have answered the questions on the second page and do not look ahead in the booklet.

E2:

Is anyone not finished with the Posttest Questionnaire?

Now that you have taken the Matching Parts and Figures Test and the Interpersonal Sensitivity Test, we would like you to respond to the following questionnaire, on which you will be asked to give your opinion on a number of issues. Please turn to the next page in your booklet, which is labeled, "Personal Beliefs Measure." Read the instructions to yourself while I read them aloud.

Personal Beliefs Measure

The statements in this booklet express opinions on a number of issues. You may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others and perhaps feeling uncertain about others. Your reactions reflect your own opinions. In a belief survey there are no right or wrong answers. Whether you agree or disagree with any statement, you can be sure that there are many people who feel the same way you do.

Indicate on the separate computer answer sheet how much you agree or disagree with each statement by marking one of the circles in the following way:

1--I AGREE

2--I MILDLY AGREE

3--I AGREE AND DISAGREE EQUALLY

4--I MILDLY DISAGREE

5--I DISAGREE

If you have mixed feelings about an item, decide whether you lean slightly more to one side than the other. Try to avoid the middle response. Remember that the best answer is whatever your personal opinion is and this is usually best reflected in your first reaction to an item, rather than after long debates with yourself over particular experiences.

You may begin.

E1:

Finally, we would like to gather some information about your background and your plans for the future. Please turn to the next page in your experimental booklet and answer the questions on the Personal Characteristics Form. There are two pages to the questionnaire. Continue working until you have answered the questions on both pages. You may write your responses directly on the questionnaire.

APPENDIX B

Preliminary Questionnaire

Preliminary Questionnaire

This questionnaire is designed to obtain some information about you with regard to interpersonal relationships and academic performance. For each question, please write your answer on the blank provided or check the appropriate box.

1. How many people do you consider to be close friends of yours? _____

2. What type of interactions with people do you prefer?

   ☐ One-to-one

   ☐ Small groups

   ☐ Large groups

3. What was your high school grade point average? _____

4. What is your current overall college grade point average? _____

APPENDIX C

Expectations Questionnaire

Expectations Questionnaire

Note: On all questionnaires, please assume that "percent of the items" refers to percent of the total items on the test.

1. What percent of the items on this test would you have to get correct in order to consider yourself successful? Circle one "I" marker closest to the percent correct you would consider successful.

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100%

2. How important is it for you to be successful on this test? Circle one number from 1 to 7 below to indicate the importance of success on this test to you.

1	2	3	4	5	6	7
Very unimportant			Of medium importance			Very important

3. What percent of the items on the following test do you expect to get correct? Circle one "I" marker closest to the percent you expect to get correct.

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100%

4. What percent of the items on the following test you you think other college students will get correct on the average? Circle one "I" marker closest to the percent you think other college students will get correct on the average.

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100%

APPENDIX D

Interpersonal Sensitivity Test

Instructions for Interpersonal Sensitivity Test

This test consists of 32 pictures of faces, including the sample, number one. Your task is to look carefully at each picture to determine what emotion or emotions the person's facial expression is revealing. On line "A" to the right of the number on the answer sheet, write the dominant emotion that you think the person in the corresponding picture is feeling. If you think that the person is feeling other emotions in addition to the dominant emotion, write the other emotions on lines "B" and "C" below. While for some of the pictures you may only be able to identify the dominant emotion, you are encouraged to identify any additional emotions that you can. A list of emotions is provided for you at the top of the answer sheet for the Interpersonal Sensitivity Test. You are free to use any other emotions you wish in your responses to test items.

As an example, please turn for a moment two pages ahead in your experimental booklet to the page on which there are pictures of faces. As the pictures are numbered, the number of each picture is printed near the upper left-hand corner of the picture. Look carefully at picture one. If you thought that the person in picture one looked somewhat lonely, but mostly satisfied, you would write:

1A satisfied

B lonely

C _____

There are 31 pictures in addition to the sample, number one. The pictures are numbered in columns from top to bottom. As you work, be sure that the number of the picture and the number of the line on the answer sheet correspond.

This is a timed test. You will have five minutes to work on the 31 items. While some of you will finish the test in the time allowed, many of you will not.

_____
(Name)

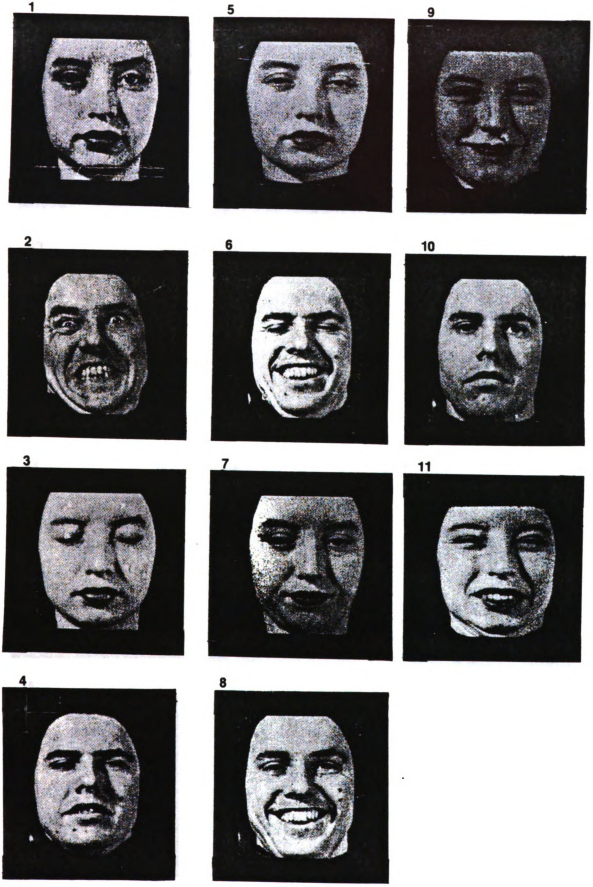
Interpersonal Sensitivity Test

Below is a list of emotions which you might use in responding. You are free to use any other emotions you wish.

ecstatic	miserable	bewildered	hostile
excited	disappointed	confused	perturbed
happy	sad	troubled	impatient
jovial	worthless	frustrated	isolated
satisfied	helpless	uncertain	abandoned
pleasant	inadequate	uncomfortable	lonely
tender	defeated	degraded	alienated
devoted	uncertain	rejected	excluded
caring	weak	hurt	aloof
respectful	terrified	belittled	humiliated
warm	horrified	neglected	exposed
friendly	fearful	unappreciated	ashamed
hopeless	threatened	furious	guilty
depressed	anxious	indignant	regretful
sorrowful	self-conscious	resentful	embarrassed

1A	_____	7A	_____	13A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
2A	_____	8A	_____	14A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
3A	_____	9A	_____	15A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
4A	_____	10A	_____	16A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
5A	_____	11A	_____	17A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
6A	_____	12A	_____	18A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____

19A	_____	24A	_____	29A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
20A	_____	25A	_____	30A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
21A	_____	26A	_____	31A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
22A	_____	27A	_____	32A	_____
B	_____	B	_____	B	_____
C	_____	C	_____	C	_____
23A	_____	28A	_____		
B	_____	B	_____		
C	_____	C	_____		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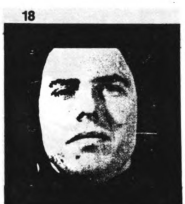
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APPENDIX E

Matching Parts and Figures Test

The Matching Parts and Figures Test was a 21-item test of understanding of spatial relations. The problems for the test were taken from The Complete Guide for Scoring High: Apprentice Mechanical Trades published by the Arco Editorial Board (1947). Test items are not reproduced here because permission to publish them was not obtained.

Nine problems for the test consisted of two-dimensional drawings of a set of geometric parts and three assembled figures. The task was to decide which of the three figures the parts could be assembled to make. Four other items were identical to the first nine, except that the parts and figures were three-dimensional. For each of the remaining eight problems, there was one two-dimensional figure and three sets of parts from which to choose, one of which could be assembled to make the figure. In addition to the 21 test items, there were four sample items which subjects were allowed to consider before beginning the test. The solution was given for only one sample item. Five minutes were allowed for the test.

APPENDIX F

Posttest Questionnaire

Posttest Questionnaire

For the first three questions, please circle one number from 1 to 7 below each question to indicate your response. The number one indicates one extreme of the response, the number seven indicates the other extreme and the numbers between one and seven indicate intermediate responses.

1. How successful did you expect to be on this test?

1	2	3	4	5	6	7
Very unsuccessful			Of average success			Very successful

2. How successful do you think you were on this test compared to your expectations?

1	2	3	4	5	6	7
Very unsuccessful			Of average success			Very successful

3. How important was it for you to be successful on this test?

1	2	3	4	5	6	7
Very unimportant			Of medium importance			Very important

4. Please write the percentage of your performance that you think was due to each of the four causes listed below on the space to the right of each cause. For example, if you think that 15% of your performance was due to task difficulty, you would write "15" in the space next to "Task Difficulty." Be sure that the sum of the percentages assigned to the four causes totals 100.

Percentage of performance due to:

Effort: _____%
Ability: _____%
Luck: _____%
Task difficulty: _____%
Total: 100 %

Go on to the next page.

Posttest Questionnaire, p. 2

5. What percent of the items on the test do you think you got correct? Circle one "I" marker closest to the percent you think you got correct.

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100%

6. What percent of the items on the test do you think female college students as a group would get right on the average? Circle one "I" marker closest to the percent you think that female students would get correct on the average.

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100%

7. What percent of the items on the test do you think male college students as a group would get right on the average? Circle one "I" marker closest to the percent you think that male students would get correct on the average.

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100%

8. Circle one number from 1 to 7 below to indicate how successful you think you were on this test compared to other college students.

1	2	3	4	5	6	7
Very unsuccessful			Of average success			Very successful

9. Circle one number from 1 to 7 below to indicate how closely related to your probable success in interpersonal skills you think your performance on this test was.

1	2	3	4	5	6	7
Not at all related			Somewhat related			Very closely related

Posttest Questionnaire, p. 3

10. Please indicate how masculine or feminine you think the test you just completed was by circling one of the numbers from 1 to 7 below. The number one indicates most masculine. The number seven indicates most feminine. The numbers between 1 and 7 indicate intermediate responses.

1	2	3	4	5	6	7
Very masculine			Equally masculine and feminine			Very feminine

APPENDIX G

Multidimensional-Multiattributional Causality Scale

PLEASE DO NOT WRITE ON THIS BOOKLET

Personal Beliefs Measure

The statements in this booklet express opinions on a number of issues. You may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others and perhaps feeling uncertain about others. Your reactions reflect your own opinions. In a belief survey there are no right or wrong answers. Whether you agree or disagree with any statement, you can be sure that there are many people who feel the same way you do.

Indicate on the separate computer answer sheet how much you agree or disagree with each statement by marking one of the circles in the following way:

1--I AGREE

2--I MILDLY AGREE

3--I AGREE AND DISAGREE EQUALLY

4--I MILDLY DISAGREE

5--I DISAGREE

If you have mixed feelings about an item, decide whether you lean slightly more to one side than the other. Try to avoid the middle response. Remember that the best answer is whatever your personal opinion is and this is usually best reflected in your first reaction to an item, rather than after long debates with yourself over particular experiences.

Please fill your name, student number and sex in the spaces indicated and blacken the corresponding circles in the columns below with a number two pencil. When responding to an item, make sure that the test booklet number and the answer sheet number are the same.

You may begin.

PLEASE RESPOND ON ANSWER SHEET PROVIDED 1

1. When I receive a poor grade, I usually feel that the main reason is that I haven't studied enough for that course.

2. My enjoyment of a social gathering is largely dependent on the personalities of the people who are there.

3. If I were to receive low marks it would cause me to question my academic ability.

4. Making friends is a funny business; I just have to chalk up my successes to luck.

5. If I did not get along with others, it would tell me that I hadn't put much effort into the pursuit of social goals.

6. Many of the times that I have gotten a good grade in a course, it was due to the teacher's easy grading scheme.

7. It seems to me that failure to have people like me would show my ignorance in interpersonal relationships.

8. Sometimes my success on exams depends on some luck.

9. In my case, the good grades I receive are always the direct result of my efforts.

10. No matter what I do, some people just don't like me.

11. I feel that certain of my abilities have been crucial to my obtaining good grades.

12. Often chance events can play a large part in causing rifts between friends.

13. Maintaining friendships requires real effort to make them work.

14. In my experience, once a professor gets the idea you're a poor student, your work is much more likely to receive poor grades than if someone else handed it in.

15. It seems to me that getting along with people is a skill.

16. Some of my lower grades have seemed to be partially due to bad breaks.

17. When I fail to do as well as expected in school, it is often due to a lack of effort on my part.

18. There are certain kinds of people who can almost make me have a good time despite myself.

19. When I can't understand some material presented at school, I sometimes conclude that I don't have the ability to succeed at it.

20. In my experience, making friends is largely a matter of having the right breaks.

21. When I hear of a divorce, I suspect that the couple probably did not try enough to make their marriage work.

22. Some of my good grades may simply reflect that these were easier courses than most.

23. I feel that people who are often lonely are lacking in social competence.

24. I feel that some of my good grades depend to a considerable extent on chance factors, such as having the right questions show up on the exam.

25. When I receive good grades it is because I have studied hard for that course.

26. Some people just seem predisposed to dislike me.

27. I feel that my good grades reflect directly on my academic ability.

28. I find that the absence of friendships is often a matter of not being lucky enough to meet the right people.

29. In my case, success at making friends depends on how hard I work at it.

30. Often my poorer grades are obtained in courses that the professor has failed to make interesting.

31. Having good friends is simply a matter of one's social skill.

32. My academic low points sometimes make me think I was just unlucky.

33. Poor grades inform me that I haven't worked hard enough.

34. To enjoy myself at a party I have to be surrounded by others who know how to have a good time.

35. If I were to get poor grades I would assume that I lacked ability to succeed in those courses.

36. If my marriage were a long, happy one, I'd say that I must just be very lucky.

37. In my experience, loneliless comes from not trying to be friendly.

38. I sometimes think a teacher thinks more highly of my work just because he or she already feels I'm a good student.

39. In my experience, there is a direct connection between the absence of friendship and being socially inept.

40. Sometimes I feel that I have to consider myself lucky for the good grades I get.

41. Very often I find I can overcome most obstacles in the path of academic success if I work harder.

42. It is almost impossible to figure out how I have displeased some people.

43. I usually feel that the good grades I get are due to my having skill at understanding those particular subjects.

44. For me, not making friends sometimes seems the result of being plain unlucky.

45. If my marriage were to succeed, it would have to be because I worked at it.

46. Some low grades I've received seem to me to reflect the fact that some teachers are just stingy with marks.

47. Maintaining close relations with people requires tact and patience.

48. Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time.

APPENDIX H

Personal Characteristics Form

Personal Characteristics Form

Please answer the following questions about your background and your plans for the future by filling in the blank, checking the box or circling the appropriate letter.

1. Name _____ 2. Major _____

3. Please mark one of the boxes below to indicate your sex.

☐ Male ☐ Female

4. Age _____

5. Circle one of the letters below to indicate your current academic level in college.

a. First year student
b. Sophomore
c. Junior
d. Senior
e. Graduate student
f. Special student

6. Father's occupation _____

7. Mother's occupation _____

8. Circle the letter indicating the highest level of education completed by your father.

a. Finished eight grades, or less
b. Some high school
c. High school
d. Some college
e. BA/BS degree
f. Masters degree
g. MD, DDS, LLD, PhD or other professional degree

Go on to the next page.

Personal Characteristics Form, p. 2

9. Circle the letter indicating the highest level of education completed by your mother.

   a. Finished eight grades, or less
   b. Some high school
   c. High school graduate
   d. Some college
   e. BA/BS degree
   f. Masters degree
   g. MD, DDS, LLD, PhD or other professional degree

10. What level of education do your parents consider important for you to complete?

   a. High school graduate
   b. Junior college graduate
   c. BA/BS degree
   d. Masters degree
   e. Professional degree or Ph.D.
   f. Don't know

11. Do you think that your parents would have had different expectations for you educationally or career-wise if you were of the opposite sex?

   a. Definitely no
   b. Probably no
   c. Uncertain
   d. Probably yes
   e. Definitely yes

12. Do you expect to marry? ☐ Yes ☐ No

13. What occupation do you plan to pursue? _____

14. Circle the letter of the item below that best describes the situation you plan to be in ten years from now.

   a. Full-time career outside the home.
   b. Part-time career outside the home.
   c. Caring for the home full-time.

APPENDIX I

Hypothesis Testing Multivariate Analysis of Variance Summary Tables

Table 13

Summary of 2 x 2 x 2 MMCS MANOVA Results for Success Ability, Success Effort and Failure Effort Attribution Scores (df for Error=140)

Source of Variance	df	Multivariate F	p
Sex	3	1.81	.15
Condition	3	.69	.56
Sex x Condition	3	.94	.42
Sex x Area of Achievement	3	1.16	.33
Condition x Area of Achievement	3	.78	.51
Sex x Condition x Area of Achievement	3	.34	.79

Table 14

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Expectancy, Ability and Effort Scores of All Subjects (df for Error=140)

Source of Variance	df	Multivariate F	p
Sex	3	1.33	.27
Condition	3	2.25	.09
Sex x Condition	3	.46	.71
Sex x Area of Achievement	3	4.46	.005**
Condition x Area of Achievement	3	4.29	.006**
Sex x Condition x Area of Achievement	3	.22	.88

**p < .01

Table 15

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Expectancy, Ability and Effort Scores of Group 1, IPS Failure-MPF Failure Subjects (df for Error=25)

Source of Variance	df	Multivariate F	p
Sex	3	.25	.86
Condition	3	.25	.86
Sex x Condition	3	.36	.78
Sex x Area of Achievement	3	1.09	.37
Condition x Area of Achievement	3	2.83	.06
Sex x Condition x Area of Achievement	3	.20	.89

Table 16

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Expectancy, Ability and Effort Scores of Group 2, IPS Failure-MPF Success Subjects (df for Error=16)

Source of Variance	df	Multivariate F	p
Sex	3	.34	.79
Condition	3	3.33	.05*
Sex x Condition	3	.93	.45
Sex x Area of Achievement	3	.26	.85
Condition x Area of Achievement	3	.54	.66
Sex x Condition x Area of Achievement	3	.34	.74

*$p < .05$

Table 17

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Expectancy, Ability and Effort Scores of Group 3, IPS Success-MPF Failure Subjects (df for Error=31)

Source of Variance	df	Multivariate F	p
Sex	3	.62	.60
Condition	3	.57	.63
Sex x Condition	3	.09	.96
Sex x Area of Achievement	3	1.72	.18
Condition x Area of Achievement	3	4.11	.015*
Sex x Condition x Area of Achievement	3	.42	.74

*p < .05

Table 18

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Expectancy, Ability and Effort Scores of Group 4, IPS Success-MPF Success Subjects (df for Error=41)

Source of Variance	df	Multivariate F	p
Sex	3	1.44	.24
Condition	3	1.08	.37
Sex x Condition	3	.49	.69
Sex x Area of Achievement	3	2.55	.07
Condition x Area of Achievement	3	1.83	.16
Sex x Condition x Area of Achievement	3	1.22	.32

APPENDIX J

F Ratios for Area of Achievement Effect Summary Tables

Table 19

Summary of F Ratios for Main Effect of Area of Achievement for MMCS Data

Source	F	p
Area of Achievement (df=1/142)		
Success Ability	4.93	.05*
Success Effort	3.63	.10
Failure Effort	9.24	.005**
Failure Ability	1.79	ns
Success Context	5.46	.025*
Failure Context	1.40	ns
Success Luck	10.10	.005**
Failure Luck	2.43	ns

*p < .05; **p < .01

Table 20

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of All Subjects

Source	F	p
Area of Achievement (df=1/142)		
Expectancy	2.54	ns
Ability	3.54	.10
Effort	1.05	ns
Task Difficulty	2.24	ns
Luck	3.42	.10

Table 21

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Failure-MPF Failure Subjects

Source	F	p
Area of Achievement (df=1/27)		
Expectancy	2.29	ns
Ability	2.65	ns
Effort	.83	ns
Task Difficulty	.76	ns
Luck	2.13	ns

Table 22

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Failure-MPF Success Subjects

Source	F	p
Area of Achievement (df=1/18)		
Expectancy	2.52	ns
Ability	2.92	ns
Effort	.70	ns
Task Difficulty	1.55	ns
Luck	2.57	ns

Table 23

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Success-MPF Failure Subjects

Source	F	p
Area of Achievement (df=1/33)		
Expectancy	.19	ns
Ability	.06	ns
Effort	.16	ns
Task Difficulty	1.41	ns
Luck	.85	ns

Table 24

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Success-MPF Success Subjects

Source	F	p
Area of Achievement (df=1/43)		
Expectancy	.78	ns
Ability	2.62	ns
Effort	.89	ns
Task Difficulty	2.51	ns
Luck	1.79	ns

Table 25

Summary of F Ratios for Main Effect of Area of Achievement for MMCS Data of Females

Source	F	p
Area of Achievement (df=1/142)		
Success Ability	3.14	.10
Success Effort	1.98	ns
Failure Effort	7.49	.01**
Failure Ability	.44	ns
Success Context	6.07	.02*
Failure Context	.43	ns
Success Luck	6.67	.02*
Failure Luck	2.33	ns

*p < .05; **p < .01

Table 26

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of All Females

Source	F	p
Area of Achievement (df=1/142)		
Expectancy	.18	ns
Ability	3.18	.10
Effort	.59	ns
Task Difficulty	2.56	ns
Luck	2.20	ns

Table 27

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Failure-MPF Failure Females

Source	F	p
Area of Achievement (df=1/27)		
Expectancy	.83	ns
Ability	1.40	ns
Effort	.44	ns
Task Difficulty	.32	ns
Luck	.49	ns

Table 28

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Failure-MPF Success Females

Source	F	p
Area of Achievement (df=1/18)		
Expectancy	.73	ns
Ability	2.58	ns
Effort	.40	ns
Task Difficulty	1.47	ns
Luck	1.80	ns

Table 29

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Success-MPF Failure Females

Source	F	p
Area of Achievement (df=1/33)		
Expectancy	.80	ns
Effort	.03	ns
Ability	.13	ns
Task Difficulty	.80	ns
Luck	1.18	ns

Table 30

Summary of F Ratios of Main Effect of Area of Achievement for Behavioral Task Data of IPS Success-MPF Success Females

Source	F	p
Area of Achievement (df=1/43)		
Expectancy	.10	ns
Effort	1.15	ns
Ability	2.52	ns
Task Difficulty	2.66	ns
Luck	1.74	ns

Table 31

Summary of F Ratios for Main Effect of Area of Achievement for MMCS Data of Males

Source	F	p
Area of Achievement (df=1/142)		
Success Ability	3.88	.10
Success Effort	3.23	.10
Failure Effort	6.71	.02*
Failure Ability	3.51	.10
Success Context	5.69	.025*
Failure Context	1.61	ns
Success Luck	6.44	.02*
Failure Luck	1.04	ns

*p < .05

Table 32

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of All Males

Source	F	p
Area of Achievement (df=1/142)		
Expectancy	3.00	.10
Ability	1.76	ns
Effort	4.00	.05*
Task Difficulty	.53	ns
Luck	2.67	ns

*p < .05

Table 33

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Failure-MPF Failure Males

Source	F	p
Area of Achievement (df=1/27)		
Expectancy	2.23	ns
Ability	2.27	ns
Effort	1.35	ns
Task Difficulty	.71	ns
Luck	2.29	ns

Table 34

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Failure-MPF Success Males

Source	F	p
Area of Achievement (df=1/18)		
Expectancy	.57	ns
Ability	1.50	ns
Effort	.60	ns
Task Difficulty	.69	ns
Luck	1.84	ns

Table 35

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Success-MPF Failure Males

Source	F	p
Area of Achievement (df=1/33)		
Expectancy	1.41	ns
Ability	.09	ns
Effort	.10	ns
Task Difficulty	1.30	ns
Luck	.06	ns

Table 36

Summary of F Ratios for Main Effect of Area of Achievement for Behavioral Task Data of IPS Success-MPF Success Males

Source	F	p
Area of Achievement (df=1/43)		
Expectancy	.14	ns
Ability	1.06	ns
Effort	.04	ns
Task Difficulty	.68	ns
Luck	.68	ns

APPENDIX K

Post Hoc Multivariate Analysis of Variance Summary Tables

Table 37

Summary of 2 x 2 x 2 MMCS MANOVA Results for Failure Ability, Success Context, Failure Context, Success Luck and Failure Luck Attribution Scores (df for Error=138)

Source of Variance	df	Multivariate F	p
Sex	5	2.15	.06
Condition	5	.70	.63
Sex x Condition	5	1.69	.14
Sex x Area of Achievement	5	1.37	.24
Condition x Area of Achievement	5	2.00	.08
Sex x Condition x Area of Achievement	5	1.44	.21

Table 38

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Task Difficulty and Luck Scores of All Subjects (df for Error=141)

Source of Variance	df	Multivariate F	p
Sex	2	.92	.40
Condition	2	1.65	.20
Sex x Condition	2	.84	.43
Sex x Area of Achievement	2	1.86	.16
Condition x Area of Achievement	2	4.54	.013*
Sex x Condition x Area of Achievement	2	.67	.51

*p < .05

Table 39

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Task Difficulty and Luck Scores of IPS Failure-MPF Failure Subjects (df for Error=141)

Source of Variance	df	Multivariate F	p
Sex	2	2.19	.13
Condition	2	1.59	.22
Sex x Condition	2	.72	.49
Sex x Area of Achievement	2	.96	.40
Condition x Area of Achievement	2	5.78	.009**
Sex x Condition x Area of Achievement	2	.30	.74

*p < .05

Table 40

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Task Difficulty and Luck Scores of IPS Failure-MPF Success Subjects (df for Error=17)

Source of Variance	df	Multivariate F	p
Sex	2	2.24	.14
Condition	2	3.40	.06
Sex x Condition	2	.49	.62
Sex x Area of Achievement	2	.22	.80
Condition x Area of Achievement	2	.91	.42
Sex x Condition x Area of Achievement	2	.03	.97

Table 41

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Task Difficulty and Luck Scores of IPS Success-MPF Failure Subjects (df for Error=32)

Source of Variance	df	Multivariate F	p
Sex	2	.67	.52
Condition	2	.11	.89
Sex x Condition	2	.17	.84
Sex x Area of Achievement	2	1.43	.25
Condition x Area of Achievement	2	3.81	.04*
Sex x Condition x Area of Achievement	2	3.04	.06

*p < .05

Table 42

Summary of 2 x 2 x 2 Behavioral Task MANOVA Results for Task Difficulty and Luck Scores of IPS Success-MPF Success Subjects (df for Error=42)

Source of Variance	df	Multivariate F	p
Sex	2	.25	.78
Condition	2	.97	.38
Sex x Condition	2	.82	.45
Sex x Area of Achievement	2	1.63	.21
Condition x Area of Achievement	2	.18	.83
Sex x Condition x Area of Achievement	2	.00	.99

APPENDIX L

Summary Tables for Chi-square Analysis of Sex x Category of High Attribution Score Relationship

Table 43

2 x 4 Contingency Tables and Chi-square Values for Tests of the Relationship Between Sex and Category of Highest Attribution Score for the Interpersonal Area

Outcome	Category of Attribution: Ability	Effort	Context/ Task Difficulty	Luck	X^2 (df 3)
Success, MMCS					
Females	16.5	33.5	31	0	3.74*
Males	20.5	18	26.5	0	
Failure, MMCS					
Females	19.5	35.33	20.83	5.33	1.45
Males	13.5	25.5	18.5	7.5	
Across success and failure, MMCS					
Females	20.33	33.33	27.33	0	1.95
Males	17	26	20.5	7.5	
Across sucess and failure, behavioral task					
Females	23.92	25.92	27.58	3.58	1.69
Males	19.5	17	22.5	6	

*$p < .10$

Table 44

2 x 2 Contingency Tables and Chi-square Values for Tests of the Relationship Between Sex and Category of Higher Internal vs. External Attribution Score for the Interpersonal Area

Outcome	Category of Attribution		X^2 (df 1)
	Internal	External	
Success, MMCS			
Females	72.5	8.5	.16
Males	59.5	5.5	
Failure, MMCS			
Females	53	28	.09
Males	42.5	22.5	
Across success and failure, MMCS			
Females	69	12	.68
Males	52	13	
Across success and failure, behavioral task			
Females	52	29	.11
Males	43.5	21.5	

Table 45

2 x 4 Contingency Table and Chi-square Values for Tests of the Relationship Between Sex and Category of Highest Attribution Score for the Academic Area

Outcome	Category of Attribution: Ability	Effort	Context/ Task Difficulty	Luck	X^2 (df 3)
Success, MMCS					
Females	35.5	36	.5	9	.66
Males	32.67	24.83	.33	7.17	
Failure, MMCS					
Females	11.67	57.33	6.33	5.67	9.14*
Males	2.5	54.33	7.83	.33	
Across success and failure, MMCS					
Females	12.75	63.25	1.25	3.75	.76
Males	7.5	53.5	.5	3.5	
Across success and failure, behavioral task					
Females	33.57	30.17	16.67	.5	1.09
Males	23.5	23	18	.5	

*p < .05

Table 46

2 x 2 Contingency Tables and Chi-square Values for Tests of the Relationship Between Sex and Category of Higher Internal vs. External Attribution Score for the Academic Area

Outcome	Category of Attribution		X^2 (df 1)
	Internal	External	
Success, MMCS			
Females	76	5	.03
Males	60.5	4.5	
Failure, MMCS			
Females	60.5	20.5	.10
Males	50	15	
Across success and failure, MMCS			
Females	75	6	.31
Males	58.5	6.5	
Across success and failure, behavioral task			
Females	61.5	19.5	2.81*
Males	56.5	8.5	

*$p < .10$

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