

Female Achievement Patterns:  
Attributions, Expectancies, Values, and Choice

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Attributional factors mediating female achievement,  
career aspirations, and occupational choice.

Unequal participation of the sexes in the domain of employment has become increasingly difficult to ignore. Although increasing numbers of women are working, these women are still concentrated in the lower levels of the professional hierarchy in spite of attempts in recent years to decrease discrimination in hiring and salaries of women. For example, the percentage of women in professional and technical occupations decreased from 42 percent in 1950 to 39 percent in 1968 while during the same time period the percentage of women clerical workers increased from 59 percent to 73 percent (U.S. Department of Labor, 1969). The underemployment of women implied by these figures is widespread:

Although college-trained women are more likely than other women to become gainfully employed and although more women are college trained now than in the past, they are taking positions lower than in the past and lower than their potential, as measured in terms of education, would indicate. The problem is not, therefore, that the talented women are not in the labor force but rather that they are not contributing at the level their talents would justify. (Bernard, 1971, p. 123)

Although highly important, institutional barriers are not entirely responsible for this phenomenon. There is evidence that other factors might also contribute to the fact that women are underrepresented in professional careers. Psychological investigations have highlighted several such factors which could interfere with female professional accomplishments by influencing career aspirations in such a way as to predetermine the training young women seek and the skills they acquire.

Over the past several years, my colleagues and I have been exploring the

motivational factors influencing the achievement behaviors of women. Our initial interest in this area grew out of our concern with the underrepresentation of women in professional careers and with the decisions of many capable college women not to pursue high status career training. Like many contemporary researchers in this field, we sought first to identify both those distinctive characteristics of non-traditional women or role innovators and those factors constraining many women's efforts to attain non-traditional goals. Recently, however, it has become increasingly clear that such an approach is one-sided at best and misguided at worst. Research models which assume that the choice of a non-traditional career reflects maturity and sex-role flexibility while the choice of a traditional career reflects immaturity and sex-role rigidity are inherently biased. Unfortunately, most current psychological explanations of women's underrepresentation in the higher levels of the employment hierarchy have adopted this assumption; the question which has attracted most attention has been "why aren't women more like men?" As a consequence, much existing research has sought to identify and help over-come the obstacles to the "maturity".

The work reported herein approaches the issue of women's "underachievement" from a different perspective. Impressed with the mandate set out by Tolkien (cited by Hellburn in Barnett & Baruch, 1978), that "all we have to decide is what to do with the time given us," we have set ourselves to answer a different question: namely, "why women choose the occupations or avocations they do." Choice is critical to our conceptualization of the issue. Women, like men, must select their major life roles and activities from a variety of options. Understanding the factors influencing women's choices is the goal we have set for ourselves. Too often, researchers have sought to explain why women decide not to engage in a given task, e.g. medical school, without considering the possibility that the choice not to engage in an activity or a specific occupation may actually reflect a choice to engage in some other activity or occupation. Past focus on negatively motivated choices without also analyzing positive motivational choices has perpetuated a distorted view of women's

achievement patterns and occupational choices (see Parsons & Goff, 1980, for a more complete discussion of this issue). The work reported here is based on a broader perspective, a perspective that considers both positive and negative influences on women's occupational choices. The paper has three sections. The first section summarizes a theoretical model of occupational choice based on expectancy/value models of task choice and decision making and presents empirical support for the importance of value as a mediator of women's achievement choices. The second and third sections summarize a series of studies assessing the relation of attributions, expectations, and value to women's occupational plans and choices.

#### Section I:

##### A Model of Occupational Choice

Decision, achievement, and attribution theorists (e.g. Atkinson, 1964; Weiner et al., 1972) have all addressed the issue of choice behavior. Applying these theories of behavior to achievement decisions, my colleagues and I have proposed a model of achievement choices that links academic choices to students' expectations for their performance on various achievement tasks and to their perceptions of the importance of these various achievement tasks (see Eccles et al., 1983 and Meece et al., 1982). I believe a very similar model would be useful in explaining sex differences in adult achievement patterns and occupational decision making. Figure 1 presents an overview of this model as it applies to occupational decision making. According to this model, occupational choice is influenced most directly by the value the individual places on the array of potential occupational choices and by the individual's estimates of the probability of success at the various options. Individual differences on these attitudinal variables are assumed to result from socialization experiences, the

individual's interpretation of her own performance history at various achievement tasks, and by the individual's perceptions of appropriate behaviors and goals.

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INSERT FIGURE 1 ABOUT HERE

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This theoretical model, originally proposed as a general model of achievement choices, seems particularly relevant to the problem of sex differences in occupational choice. The model assumes that the effects of experience are mediated by the individual's interpretation of the events rather than by the events themselves. For example, doing well in math is presumed to influence one's future expectations for math performance only to the extent that doing well is attributed to one's ability. Past research has shown that girls do as well in math as boys throughout their formative years, yet they do not expect to do as well in the future nor are they as likely to go on in math as are boys. This apparent paradox is less puzzling if we acknowledge that it is the subjective meaning and interpretation of success and failure that determine an individual's perceptions of the task and not the objective outcomes themselves. The extent to which boys and girls differ in their interpretation of outcomes and the extent to which they receive differential information relevant to their interpretation of their experiences should account, in part, for the observed sex differences in occupational choice.

The model assumes that academic decisions such as the decision to take advanced mathematics, or the decision to major in education rather than engineering, and occupational decisions such as the decision to become a nurse rather than a doctor, are made in the context of a variety of choices which are guided by core values such as achievement needs, competency needs, and gender-role values, and by more utilitarian values such as the importance of math achievement for future goals. Thus, if a female likes math but feels that the amount of effort it will take to do well is

not worthwhile because it decreases the time she will have available for more preferred activities (i.e., activities more consistent with her personal values), then she will be less likely to continue taking math than a female who both likes math and thinks her efforts at mastering it are worthwhile and important. Similarly, a female who stereotypes mathematics, or careers involving competency in mathematics, as masculine, or inconsistent with her own gender-role values, will be less likely to value mathematics learning and less likely to continue her mathematical studies, especially if she does not expect to do well, than a female who finds math-related courses to be consistent with her values and self-perceptions.

What distinguishes this model from other models of achievement behavior is this attention to the issue of choice and the importance we attach to values as a critical determinant of choice. Whether done consciously or not, individuals make choices among a variety of activities all of the time. For example, they decide whether to work hard at school or just to get by; they decide which intellectual skills to develop or whether to develop any at all; they decide how much time to spend doing homework; they decide which courses to take; they decide whether to take difficult courses or to spend their extra time with their friends; and they decide which occupations or jobs to seek training for, etc. We have tried to address this issue of choice directly and to develop a model that allows us to predict the type of choices being made. Furthermore, we have tried to specify the kinds of socialization experiences that shape individual differences on the mediators of these choices especially in the academic achievement domain.

Furthermore, because we have focused on choice rather than avoidance, we believe our model provides a more positive perspective on women's achievement behavior than is common in many popular psychological explanations for sex differences in achievement patterns. Beginning with the work associated with need achievement and continuing to current work in attribution theory, a variety of scholars have considered the origin of sex differences in achievement patterns. The bulk of these scholars have looked

for the origin in either motivational differences or in expectancy/attributional differences. For example, in the fifties and sixties, several studies focused on sex differences in need achievement. In 1966, Horner introduced the concept of fear of success and suggested that sex differences in achievement patterns reflected high levels of fear of success in women.

In the early seventies, Weiner and his colleagues (see Weiner, 1972) introduced an attributional model of achievement motivation and paved the way for a new set of hypotheses regarding sex differences in achievement, a set focusing on cognitive-mediational variables. Within this new framework, sex differences in achievement patterns have been attributed variously to expectation differences, self-confidence differences, differential causal attribution patterns, and female learned helplessness. So, for example, it has been argued that women have lower expectations for success, are less confident in their achievement-related abilities, are more likely to attribute their failures to lack of ability, are less likely to attribute their success to ability, are more likely to exhibit a learned helpless response, etc. Furthermore, it has been argued that these differences mediate the sex differences we observe in achievement patterns.

There are several problems with this body of work, stemming primarily from the fact that it has assumed a deficit model of female achievement. This assumption has led to three major consequences. First, it has focused researcher's attention on the question of "How are women different than men?" rather than on the question of "what influences women's achievement behavior?". Second, the assumption that the differences uncovered in most studies actually mediate sex differences in achievement behavior has rarely been tested. Instead, the bulk of the studies simply demonstrate a statistically significant difference between males and females and conclude that this difference accounts for sex differences in achievement behavior. Third, this perspective has limited the range of variables studied. Researchers have focused most of their attention on a set of variables that are linked to self confidence and

expectancies since high self confidence is one of those "good" things men have which facilitates competitive achievement.

The dominance of this deficit perspective in sex difference research has been especially marked in the last decade. Our model provides a very different perspective. By assigning a central role to the construct of subjective task value, we have offered an alternative explanation for sex differences in achievement patterns. This alternative explanation puts male and female achievement choices on a more equal footing. Our model makes salient the hypothesis that differences in male and female achievement patterns may result from the fact that males and females have different but equally important and valuable goals for their lives. This view differs markedly from explanations which attribute sex differences in achievement patterns to females' lack of confidence, low expectations, and/or debilitating attributional biases. Instead of characterizing females as deficient males, our perspective legitimizes females' choices as valuable on their own terms rather than as a reflection or distortion of males choices and male values. It also opens up the possibility of testing the relative importance of a variety of beliefs in mediating females' occupational decisions. To test the utility of our general model for explaining sex differences in achievement patterns, we conducted a large scale, cross-sectional/longitudinal study of the ontogeny of students' achievement beliefs, attitudes, and behaviors with regard to mathematics and English. Given our focus on choice, we felt it important to include two academic subjects; and given our concern with sex differences we selected the two subject domains that yield the most consistent evidence of sex differences in attitudes and choice behavior.

In support of our model, we found that sex differences in students' enrollment in advanced math courses and sex differences in students' plans to continue taking advanced English courses were mediated most strongly by sex differences in the value males and females attached to math and English. From the ninth grade on females valued English more than boys and more than they valued math. It is not surprising

then that the girls enrolled in approximately one semester less mathematics than the boys (Eccles, Adler, and Meece, 1984).

We also found some evidence of a sex difference in attributional patterns that might contribute to students' attitudes toward mathematics. Boys, in comparison to girls, attributed their successes in mathematics more to their own ability; in contrast, girls in comparison to boys, attributed their successes in mathematics more to their own efforts (Parsons, Adler, Kaczala, and Meece, 1982). This pattern suggests that males and females of approximately equivalent math ability have a different perception of the causes of success and failure in math which may lead then to different decisions regarding future prospects for success and the value of continued enrollment in mathematics courses. Both boys and girls think that next year's math course will be harder than this year's. The girl who views consistent effort as a more important determinant of her success in this year's math course might have lower expectations of success for next year's math course precisely because she assumes that future math courses will be more difficult, requiring even more effort to succeed, than this year's course. The amount of effort an individual can or is willing to expend has limits and if the individual already thinks she is working very hard to do well in math, she might well conclude either (a) that her performance will deteriorate in these more difficult courses because she can not expend the additional effort needed to succeed or (b) that the additional amount of effort needed to do well is just not worth it to her. Either of these conclusions could undermine the student's decision to enroll in additional math courses or to seek out a math-related occupation. Attributing one's successes to ability would yield a quite different impression of future math courses.

Both of these sets of results support our suggestion that sex differences in achievement patterns might result from processes linked to expectations for success and subjective task value. In the next two sections, we will explore the links of the processes to occupational decisions more directly.

## Section II:

### Attributional Process and Occupational Beliefs

The results reported above suggest that males and females may have differing attributional patterns for various academic subjects and that these differences may influence academic decisions. To the extent that comparable attributional differences exist for various occupations, attributional differences may also mediate sex differences in occupational choice. Perhaps the fact that many math-able women do not enter engineering or other technical fields results, in part, from their reluctance to attribute their performance in mathematics to their abilities rather than their efforts. If women do not attribute success in these fields to stable, internal causes and failure to unstable, modifiable causes, then they may be disposed to select other occupations. The two studies reported in this section provide an initial look at this issue. The first study was designed to establish the link of attributions to occupational preferences. The second study was designed to establish the link of attributions to sex-typed occupational preferences.

## Study 1.

To investigate the link between attributions and occupational preferences, we had 48 college women make attributions for their most and least preferred occupations. We predicted that a high expectancy attributional pattern, i.e. internal and stable for success and external or unstable for failure, would characterize their attributions for their most preferred but not their least preferred occupation.

In the first of two sessions, the subjects selected their most preferred and least preferred careers from a list of eleven possible occupations. These choices were selected from a pilot study to represent a range of training, status, and sex-role appropriateness. All eleven were appropriate career goals for college students. The eleven were surgeon, pediatrician, interior decorator, trained artist, psychologist, elementary school teacher, high school teacher, mechanical engineer, accountant, nurse, and mother.

In the second session, subjects rated (on a 10 point scale) the importance of each of the following five causes for success and failure in their most and least preferred careers: effort, ability, specific help from others, stable help from other, and task ease. It is important to note that the specific careers varied across subjects but the magnitude of preference was held constant. Each subject rated her own most and least preferred occupation. Separate ANOVA's were run for each of the five dependent measures. The results are summarized in Table 1 and 2.

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INSERT TABLE 1 AND 2 HERE

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In general the main effects for the outcome manipulation replicate previous attributional findings, see Frieze and Weiner, 1971. Internal factors were given higher ratings as causes for success than for failure and task difficulty was judged

to be a more important cause of failure than of success. Similarly, inspection of the means associated with the various causes reveals a general trend toward higher ratings on the importance of the internal attributions (ability and effort). This trend is evident in all relevant comparisons with the one exception of the ratings associated with task difficulty in the failure condition. Furthermore, effort is rated as a more important cause of both success and failure than is ability. Again the findings replicate the patterns reported by Frieze and Weiner using a comparable, high achieving, college population consisting of both males and females. These attributional patterns suggest that the attributional model can be applied to such long range goals as careers.

With regard to the relationship between career preference and attributional patterns, the predictions were, for the most part, supported. Internal factors were seen as more important determinants of success in one's most preferred occupation. Conversely, relative to one's most preferred career, external factors were rated as more important determinants of success in one's least preferred occupation. This differential patterning of the relative importance of internal versus external attributions suggests that the subjects will internalize their successes more and see themselves as more in control of success in their most preferred occupation. If so, then success should be seen as more rewarding in these occupations. In addition, the positive affective valence should be higher and thus the approach motive should be greater for one's preferred career.

Likewise, the predictions regarding failure attributions were supported. Internal factors were seen as more importance determinants of failure in one's least preferred career while task difficulty and lack of supportive, external influence (both external causes) were seen as more important determinants of failure in one's most preferred occupation. Again, this differential patterning suggests that subjects externalize their failures more in their most preferred occupations. As a consequence, the negative affective valence and avoidance, or fear of failure, motive

should be lower for one's most preferred occupation. Again, this differential patterning suggests that subjects externalize their failures more in their most preferred occupations. As a consequence, the negative affective valence and the avoidance, or fear of failure, motive should be lower for one's most preferred occupation. Combined, these two patterns suggest that subjects will approach their most preferred occupations, relative to their least preferred occupations, with higher expectation for success and with greater positive affect.

## Study 2.

Having established the relevance of an attributional analysis for career choices, we next set out to investigate the link between attributional patterns and sex-stereotyping of occupations. If women perceive male stereotyped occupations differently than female stereotyped occupations of comparable status and required training, then they will respond differently to these career options. More specifically, if women attribute success and failure in male stereotyped occupations in accord with a low expectancy, low value pattern but attribute success and failure in female stereotyped occupations in accord with a high expectancy, high value pattern, then they should be more likely to select female occupations.

To investigate this prediction, we had 78 undergraduate women rate the importance of the following six causes on a 10 point scale for success and failure in either four female stereotyped or four male stereotyped occupations: effort, ability, specific help from others, stable help from others, task ease, and interest. Success and failure was manipulated within subject and sex-stereotyping was manipulated between subjects.

Separate three way ANOVA's (sex-stereotyping x status level x outcome) were run for each of the six causes. Unstable and stable external help yielded no significant effects and were seen as unimportant causes of either success or failure. The means associated with the three way interaction term for each of the other four causes are

listed in Table 3. Appropriate simple effects were tested with Newman - Keuls at  $p < .05$  and are summarized in Table 3. Significant effects for each of the four causes are summarized in Table 4.

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INSERT TABLE 3 AND 4 HERE

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In general, whenever stereotyping effects emerged, the women rated the cause as a more important determinant of success or failure in the female occupations. Nevertheless, of the fourteen relevant significant differences, twelve supported our predictions and only two ran counter to them. But of the fourteen only three are relevant to the low expectancy predictions, (i.e., that failure in male stereotyped occupations would be attributed more to lack of ability than failure in female occupations while success in male occupations would be attributed to task ease rather than ability or effort more than success in female occupations) and only one (attributing failure to lack of ability) supported our prediction. Thus there is support for the prediction that women's attributions for success at female stereotyped occupations are more characteristic of the high expectancy pattern than are their attributions for success in male stereotyped occupations. But a low expectancy attributional pattern is not characteristic of these women's attributions for either success or failure in any of the occupations sampled. These results support our original suggestion that avoidance models of female-occupational choices may be painting an unnecessarily negative picture of females occupational choices. Females may be selecting female-stereotyped occupations because they are attracted to these occupations for a variety of different reasons and are not similarly attracted to the more male-stereotyped occupations. Now let us turn to the set of variables that are more closely linked to values.

### Section III:

#### Occupational Perceptions and Subjective Values

Having shown that attributional patterns do vary depending both on occupational preferences and sex-stereotyping, let us now turn to another set of attitudinal variables linked to occupational perceptions and subjective values. If women perceive male stereotyped occupations differently than female stereotyped occupations of comparable status and required training, then they should respond differently to these various occupational options. More specifically, if women think that male stereotyped occupations are more difficult, demanding more of the individual, and yet of no more importance to them than female stereotyped occupations, then they should be more likely to select the female-stereotyped occupations.

To test for differential perception of occupational difficulty and importance, we had 48 college women rate 10 occupations on (a) the difficulty of the occupation, (b) the probability of success, (c) the importance of success, (d) the amount of effort they would be willing to put out to succeed, (e) how good they would feel if they succeeded, and (f) how bad they would feel if they failed. They used a 7 point scale ranging from 1 = the low end of the scaled value to 7 = the high end of the scaled value for all ratings except probability of success. For probability of success, they estimated the probability from 0% to 100%.

Eight of the occupations represented four pairs of occupations matched on status and required professional training but varying on sex-role stereotyping: surgeon - pediatrician, trained artists - interior decorator, high school teacher - elementary

school teacher, mechanical engineer (B.A. level) - nurse (B.A. level). Two other occupations were included because of their importance to women: psychologist because it was the single most commonly selected occupation in study 1 and mother because it is the occupation selected by most women in general.

Since specific apriori predictions were made, the data were submitted to a series of t tests. The means and summary of statistical analysis are presented in table 5.

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In general, the results support the predictions. The male stereotyped occupation in each status/training level was rated as more difficult. In three of the pairs, the probability of success was rated as lower for the male stereotyped occupation. Success in the male stereotyped occupation was rated as more important relative to success in the female stereotyped occupation in only one of the pairs. No consistent stereotyping effect emerged for the other three dependent measures (the amount of effort the subject was willing to invest, and the two affective ratings). But the rank ordering of the occupations on each of these three measures correlated significantly with the rank ordering of the careers on the perceived importance of success and not with the rank orderings of the careers on either perceived difficulty or perceived probability of success.

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INSERT TABLE 6 HERE

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(Of these six, only the rank order correlation between positive affect and probability was significant.) If we consider perceived difficulty, perceived probability of success and perceived importance as properties primarily of the occupation and

anticipated effort and affect as intrapersonal responses to the occupations, then these data suggest that it is the perceived importance of various occupations that determines one's intrapersonal response to these occupations. And, while the sex stereotyping within the various occupational pairs did not systematically affect the rated importance of the occupations, it is interesting to note that mother was given the highest rating for importance ( $p < .01$ ) and that all of the helping professions (except nurse) were rated as more important than the three more individually-oriented careers ( $p < .05$ ).

In conclusion, the data from this study support the prediction that male stereotyped occupations are seen as relatively more difficult than comparable female stereotyped occupations but are not seen as of any more importance to the women subjects themselves. Further, these data indicate that success at mothering is rated as more important than success at any of the other occupations. In line with this finding, the women reported that they would be willing to exert the most effort to be "successful" mothers, would feel the best about this success, and the worst about failing to meet this goal. Thus it seems that the mother role is extremely important to this group of college women and that they plan to put a large amount of effort into succeeding in this role. It seems likely, given this pattern, that any occupation that seriously threatens these women's ability to become "successful" mothers would not be seen as very appealing. Further data are needed to test this hypothesis.

#### General Discussion

While I'd like to conclude that both perceived causes of success and failure and perceived importance influence, in part, one's career choice, the causal direction of this relationship can not be specified from these data. It is possible that career choice, attributional patterns and perceived importance are influenced by some third

variable like sex-role stereotyping. However, past research indicates that attributional and valuing patterns do effect behavioral choices (see Weiner, 1974 for review of this literature). Thus, it seems reasonable that once established, the attributional and valuing patterns demonstrated in these studies can influence one's consideration of various occupations. And, as a result, some occupations may not be considered as possible career alternatives. In turn, without serious consideration and subsequent input of new information, it is unlikely that either the attributional patterns or the perceived importance of unions occupations will change or that new options will be investigated.

The implications of these results for an understanding of women's career choices are clear. If we assume that females acquire differential attributional patterns for success and different values for success at various occupations, and that these differential patterns are associated with the sex-role appropriateness of the career, then attributional and valuing patterns may help explain preference for sex-appropriate careers. Perhaps, more importantly, this approach provides a mechanism for increasing women's perceived career options. If one's approach-avoidance patterns can be changed by altering the attributional and valuing patterns one has, then women's (and men's) perceived career options can be increased by value and attributional resocialization, i.e., by training them to associate different attributions with success and failure at and different importance and value-ratings for various occupations. Dweck, 1975, and Dweck & Repucci, 1973, have demonstrated that attributional retraining can be successful with chronic underachievers. Erickson, 1975, has demonstrated that value retraining can also be accomplished. Both should be successful with career counseling as well.

#### Sex Bias in the Attributions of Observers/Employers

But, having once gotten women to consider various professional careers, counselors need to be aware of and to alert the women to the attributional biases that

they may well confront. Several studies have documented the low expectancies for success people in general have for women (e.g., see Frieze et al. for review). Further, Feather and Simon (1975) demonstrated that ability is used by college students to explain male occupational success to a greater degree than female occupational failure to a greater extent than male occupational failure. In a similar study using college subjects (Heim, 1975), males' achievement successes were attributed more to ability than were females' while females' achievement failures were attributed more to lack of ability than were males'. In addition, both females' achievement success and failures were attributed more to effort than were males. Thus a females' success was seen as unstably caused, leaving the observer in doubt as to whether her performance will continue. In contrast, a male's success was seen as stably caused, allowing the observer to conclude that the man will continue to succeed. Further, when failing, women were seen as both less capable and less diligent than their male counter-parts. Given the importance of both ability and effort in this culture, this discrepancy puts women at a distinct disadvantage. Their successes do not necessarily lead to increased estimations of their ability while their failures do lead to decreased estimations of both their ability and their willingness to try.

In a major literature review, O'Leary (1974) concluded that employers in major career fields also exhibit this low expectancy pattern. In one of the few studies of attributional processes in simulated employment settings, Valle (reported in Frieze et al., 1975) demonstrated the effect of low initial expectancies on employer's attributions of workers' successes and failures. She found that simulated employers make attributions which coincide with their initial expectancies such that unexpected success and unexpected failure are attributed to unstable factors. What this means for women is that, to the extent that employers have lower initial expectancies for them, these employers will discount the women's successes and over-weight their failures in making evaluative judgements of their performances.

Women need to be aware of this bias for at least two reasons. First, and most importantly, they need to know that the employers' attributions reflect a bias and not an accurate assessment of the situation. Because women have lower expectancies for themselves, they are in need of social support for newly emerging self images and attributional patterns. If they are confronted with disconfirming social feedback, their own self concepts may suffer. But if a woman is aware of the bias that may be operative in her employment setting, she can muster supports elsewhere to bolster her aspirations and self concept. Second, she can work in the setting to change the employer's bias. Unfortunately, this means that she may have to work harder than her male peers to gain recognition. But at least being forewarned, she can plan and anticipate what she'll have to do to overcome the potential biases that may be operating against her.

As a final note, more research needs to be done in this area and society needs to be alerted to this bias. In this way, perhaps change can occur at a more societal level which will lessen the problem. But in the mean time, counselors and individual women need to be aware of this issue in order to maximize their own chances of surviving and succeeding on the individual level.

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Table 1

## Summary of Results for Career Attribution Study 1

Causal Attribute	Means			
	Most Preferred Career		Least Preferred Career	
	Success	Failure	Success	Failure
Effort	7.56	5.13	7.00	6.39
Ability	6.81	4.29	5.21	5.42
Specific help	2.92	3.58	3.27	2.83
Task difficulty	2.21	3.00	5.33	4.25

Table 2

## Summary of ANOVA results for Career Aspiration Study 1

Causal Attribute	$F$ 's	
	Outcome	Outcome X Preference
	Main Effect	Interaction
Effort	19.41, $p < .0001$	15.66, $p < .001$
Ability	17.94, $p < .001$	15.12, $p < .001$
Specific help	$p > .01$	7.42, $p < .01$
Stable, external help	7.15, $p < .01$	$p > .05$
Task Difficulty	52.33, $p < .0001$	18.06, $p < .001$

Table 3

Means for the Three-Way Interaction for Each Causal  
Attribution in Study 2.

<u>Attribution</u>	<u>Outcome</u>	<u>Means</u>								
		Pediatrician	Surgeon	Elementary School Teacher	High School Teacher	Nurse	Mechanical Engineer			
Effort	Success	7.77 <sup>1</sup>	>	7.49	7.51	>	7.23	7.54	>	7.51
	Failure	6.44	>	5.23	6.54	>	5.46	5.97	>	5.72
Ability	Success	6.49	>	5.97	6.36		6.67	8.33	>	6.62
	Failure	4.38		4.66	4.51		4.08	4.08	<	4.90
Task Ease/ Difficulty	Success	3.46	>	2.77	3.13	>	2.59	3.28		3.10
	Failure	6.10		6.23	5.64		5.89	7.15	>	4.85
Interest	Success	6.69	>	3.95	6.87		7.56	8.02	>	6.62
	Failure	5.13		5.00	5.51		5.38	5.10		5.44

Appropriate simple effects tested with Newman - Keuls at  $p < .05$ .

> listed as marginally significant due to significant main effect.

Table 4

## Significant Effects for Study 2

Attribution	Significant effects
Effort	Sex Stereotyping $p < .064$
	Outcome $p < .001$
Ability	Three way Interaction $p < .05$
	Outcome $p < .001$
Task Ease	Three way Interaction $p < .02$
	Outcome $p < .001$
Interest	Status of Occupation $p < .01$
	Outcome $p < .001$
	Status X Outcome $p < .06$

Mean Attribute Ratings for Career Attribution in Study 3

Attribute	Career									
	Surgeon	Pediatrician	Commercial Artist	Interior Decorator	High School Teacher	Elementary School Teacher	Mechanical Engineer	Nurse	Mother	Psychologist
Difficulty	6.65 <sup>1</sup> >	6.00	5.06 <sup>2</sup> >	3.97	4.73	4.62	5.33 <sup>1</sup> >	4.73	5.60	5.30
Probability of Success	52.68% <sup>1</sup> <	64.49%	45.74% <sup>2</sup> <	65.30%	76.20%	73.30%	42.51% <sup>2</sup> <	70.40%	82.84%	82.76%
Importance of Success	5.73	5.75	4.59 <sup>2</sup> >	4.16	5.30	5.20	4.07 <sup>1</sup> <	4.82	6.73	5.32
Effort	5.29	5.27	4.47 <sup>2</sup> >	3.92	5.17	4.97	3.89 <sup>1</sup> <	4.60	6.38	5.14
Positive Affect for Success	5.88	5.63	4.97 <sup>2</sup> >	4.16	5.23	5.15	4.25 <sup>1</sup> <	4.81	6.49	5.41
Negative Affect for Failure	4.82	4.97	3.92 <sup>2</sup> >	3.53	4.88	4.67	3.39 <sup>2</sup> <	4.54	6.31	4.80

1 p < .05

2 p < .01

Table 6

## Rank Order of Occupations on Each Dependent Measure in Study 3

<u>Occupation</u>	<u>Dependent Measure</u>					
	Difficulty <sup>1</sup>	Probability <sup>2</sup> of Success	Importance <sup>3</sup> of Success	Effort <sup>3,4</sup>	Positive <sup>3,5</sup> Affect	Negative <sup>3,6</sup> Affect
Mother	3	10	1	1	1	1
Pediatrician	2	4	2	3	3	2
Surgeon	1	3	3	2	2	3
Psychologist	5	7	4	4	4	5
High School Teacher	8	9	5	5	5	4
Elementary School Teacher	9	8	6	6	6	6
Nurse	7	6	7	7	8	7
Artist	6	2	8	8	7	8
Interior Decorator	10	5	9	9	10	9
Mechanical Engineer	4	1	10	10	9	10

<sup>1</sup>1 = most difficult

<sup>2</sup>1 = lowest probability of success

<sup>3</sup>1 = most importance, most effort, most positive affect  
for success, most negative affect for failure.

<sup>4</sup> $\rho(\text{with Difficulty}) = .60, p > .05$ ;  $\rho(\text{with Probability}) = .50, p > .05$ ;  
 $\rho(\text{with Importance}) = .89, p < .001$ .

<sup>5</sup> $\rho(\text{with Difficulty}) = .67, p < .05$ ;  $\rho(\text{with Probability}) = -.40, p > .05$ ;  
 $\rho(\text{with Importance}) = .97, p < .001$ .

<sup>6</sup> $\rho(\text{with Difficulty}) = .55, p > .05$ ;  $\rho(\text{with Probability}) = .52, p > .05$ ;  
 $\rho(\text{with Importance}) = .97, p < .001$ .

Carol -

this is the paper I need  
put on the file.

Female Achievement Patterns:  
Attributions, Expectancies, Values, and Choice

Jacquelynn S. Eccles [aka Parsons]

University of Michigan

1983

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