

GENDER ROLES AND WOMEN'S ACHIEVEMENT-RELATED DECISIONS

Jacquelynne S. Eccles
University of Michigan

Occupational sex segregation continues to exist and the occupational career paths of women and men continue to differ. This article proposes a model to explain these persistent, gender-role linked trends, summarizes evidence to support the proposed mediating psychological mechanisms, and discusses the social experiences that shape gender differences on these mediators. In addition, the article reviews the economic and psychological costs often associated with the traditional female choices and proposes interventions aimed at achieving a more gender-fair social system that does not devalue traditionally female domains. The proposed model links occupational choices to expectations for success and subjective task value, which, in turn, are linked to gender-role socialization, self schemas, and anticipated role and task demands. The importance of subjective task value is stressed, as is the need to study women's achievement-related choices from the women's perspective.

Differential participation of the sexes in employment and education is difficult to ignore. Although increasing numbers of women are working, women are still concentrated in the lower levels of the professional hierarchy and in female-dominated occupations, despite attempts to decrease discrimination. For example, since 1970 approximately 4 million women have entered the work force; 3.3 million of these have taken jobs as secretaries, nurses, bookkeepers, cashiers, and other female-dominated, supportive occupations (Hacker, 1986). Similarly, although there have been significant increases in the enrollment of women in law, medicine, and business schools,

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women are still underrepresented in physical science and engineering programs and in all male-dominated vocational education programs. Furthermore, women are still less likely to enter and complete advanced graduate training even in such female fields as education (Eccles & Hoffman, 1984). Finally, even the most recent surveys of the career aspirations of children and adolescents suggest that sex segregation will continue to characterize the world of work into the future despite the growing interest females have in the fields of law, medicine, and business. For instance, Figure 1 illustrates the results of a recent survey of San Francisco Bay area children conducted by the EQUALS project at the Lawrence Hall of Science. As you can see, 11 of the 15 career categories show stereotypic sex differences in the children's interest responses, including the traditionally male-dominated fields of science, engineering, and business, and the traditionally female-dominated fields of teaching, nursing, clerical work, and homemaker (Kreinberg, 1985). Similar differences characterize the aspirations of a representative sample of 10th grade students in Michigan surveyed in 1983 (Michigan Board of Education, 1984). Stereotypic sex differences in these students' reports of which occupation they were considering occurred on 25 of the 35 occupations assessed, including accountant, architect, all forms of skilled unionized labor, cosmetologist, teacher, secretary, engineer, nurse, and homemaker. Furthermore, 46% of the females were considering homemaker as their career choice. As is true of the EQUALS data, no sex differences occurred for lawyer, physician, artist, reporter, and musician. In addition, no sex differences emerged for biologist, company president, computer programmer, dentist, and retail salesperson.

Institutional barriers, although highly important, are not solely responsible for these patterns. Psychological factors also contribute to women's underrepresentation in certain high-level and scientific careers. Some of these factors limit women's professional and educational accomplishments through their influence on the training young women seek and the skills they acquire. Successful intervention requires a thorough knowledge of the socialization processes linked to these psychological factors as well as a thorough knowledge of the psychological dynamics themselves. This article explores these social and psychological processes.

Before proceeding however, it is important to note that any discussion of sex differences in achievement must acknowledge the problems of societal influence on the very definitions of achievement as well as on our assessment of the differential worth of various forms of achievement. Defining achievement itself, much less defining appropriate or ideal ways of using one's talents, is a value-laden enterprise at best. Evaluating the meaning and consequences of sex differences on any particular criterion of achievement is equally value-laden. Too often scientists adopt a male standard of ideal achievement when judging the value of female accomplishments; they seek to understand why women do not "achieve" like men without considering the possibility that not engaging in some activity may reflect the choice of

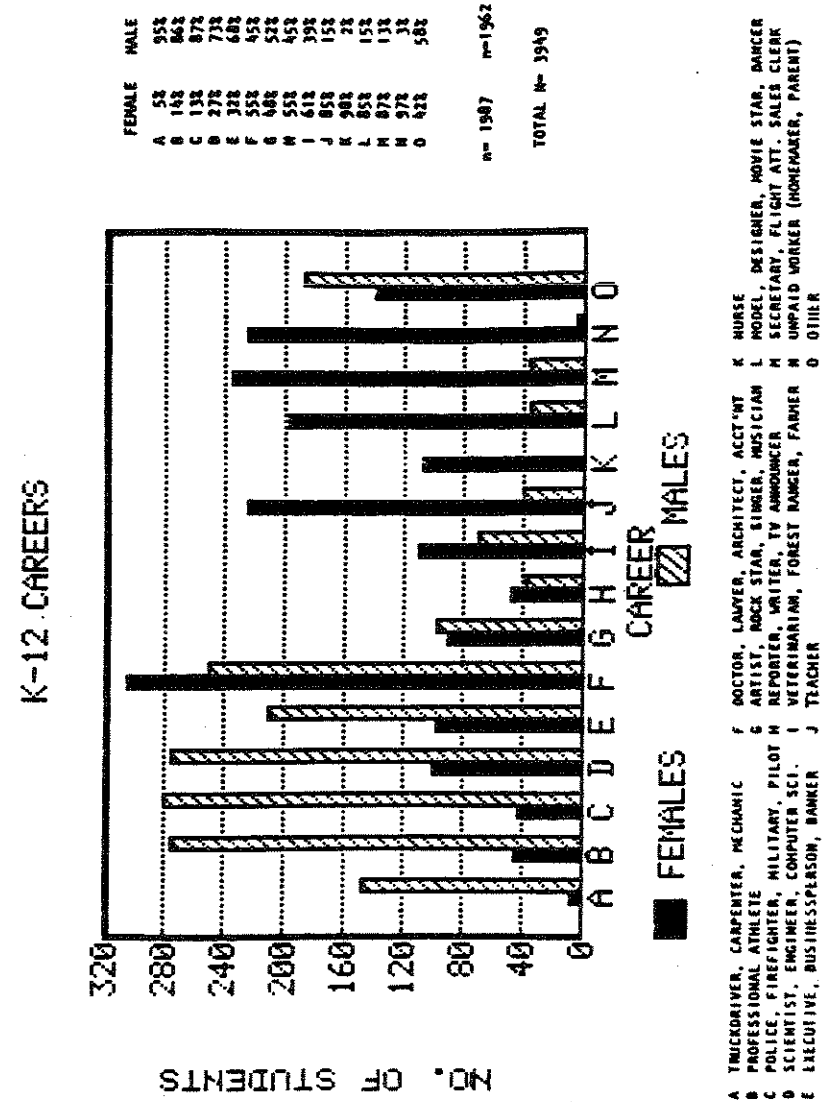


FIGURE 1. Student responses to *The Job Picture Story* and *Typical Day When I'm Thirty* Essay.

an alternate activity rather than avoidance. Focusing on negatively motivated dynamics at the expense of analyzing positive motivational dynamics has perpetuated a distorted view of women's achievement patterns and occupational choices and has limited the range of constructs studied (Parsons & Goff, 1980). As a consequence, very little systematic information has been gathered regarding the more typical female achievement domains, such as the academic accomplishments of one's offspring and/or one's pupils, the satisfaction of one's clients, or one's contributions to local organizations. And until quite recently, even less information has been gathered regarding the meaning women and men attach to various achievement-related activities. As a result, we know very little about why women think they make the achievement-related choices they do.

What is needed is a neutral model that legitimizes women's choices while acknowledging the impact of rigid gender-role socialization on the determinants of these choices, as well as the costs and benefits of various choices. Such a model would provide both a framework for more comprehensive research on men's and women's achievement patterns and a basis for designing more comprehensive intervention programs to broaden the range of educational and occupational choices considered by both females and males. Over the last several years, my colleagues and I have been developing such a model. I'll summarize that model briefly here, discuss the impact of gender roles and socialization on the psychological components of the model and suggest intervention strategies.

A MODEL OF EDUCATIONAL AND OCCUPATIONAL CHOICE

Let me begin by summarizing the major features of our model. Applying decision, achievement, and attribution theories of behavior (see Atkinson, 1964; Crandall, 1969; Weiner, 1974) to academic decisions, we suggest that achievement-related choices are related to individuals' expectations for their performance on various achievement tasks and to their perceptions of the importance of these various achievement tasks (Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgley, 1983; Eccles, 1984; Meece, Parsons, Kaczala, Goff, & Futterman, 1982). Applying this model to broader educational and occupational choices, we predict that such choices are influenced most directly by the value the individual places on the array of choices perceived as appropriate and by the individual's estimates of the probability of success at these various options. Individual differences on these attitudinal variables, in turn, are assumed to result from socialization experiences, the individual's interpretation of her own performance history at various related achievement tasks, and by the individual's perceptions of various behaviors and goals. These predictions are summarized in Figure 2.

For example, people should prefer occupations that they think they can succeed at and that have high value for them. Their expectations for success

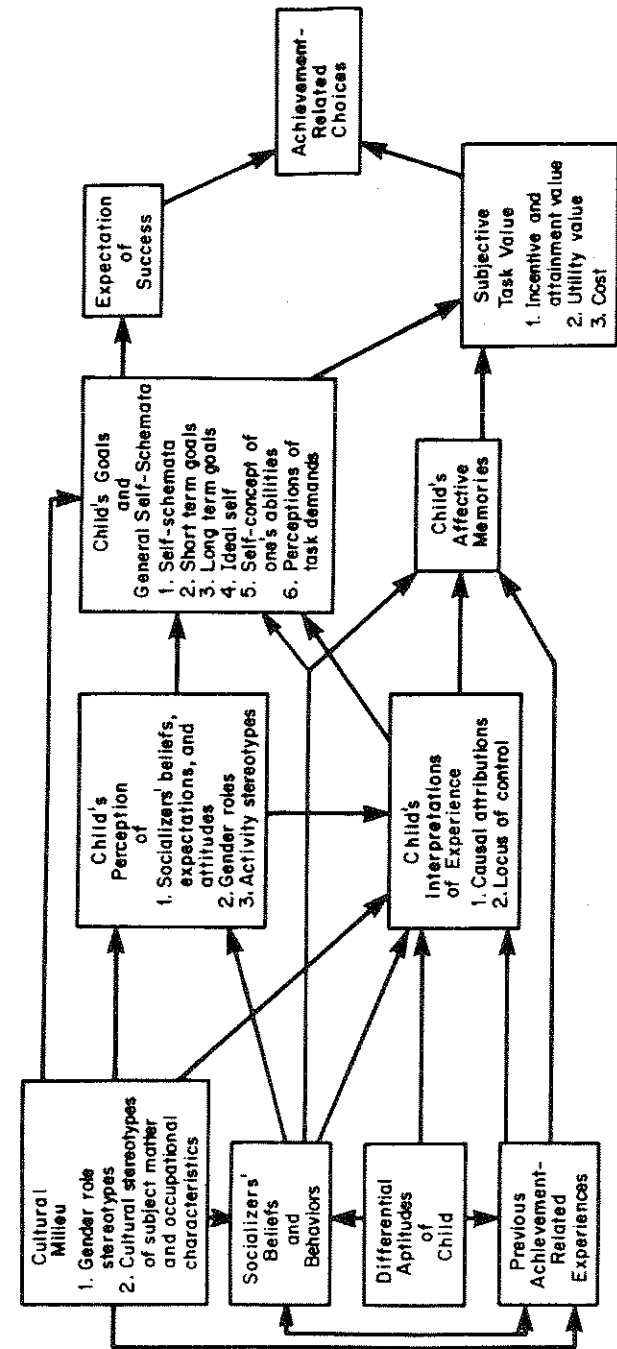


FIGURE 2. Model of achievement-related choices.

should depend on the confidence they have in their intellectual and other relevant abilities, on their estimates of the difficulty of various occupations, and on their estimates of the external or societal barriers to their success. These beliefs will have been shaped over time by experiences with related activities, by individuals' interpretations of these experiences (e.g., does the person think that her successes are a consequence of high ability or hard work?), and by their beliefs regarding the opportunity structures in their culture.

The value of any particular occupation for a particular individual is also influenced by several factors. For example, does the person anticipate liking the work? Is the work seen as instrumental in meeting long- or short-range goals? Have the individual's parents or counselors insisted that she consider this particular occupation, or conversely, have people tried to discourage her from considering it? Has the person had negative or positive experiences in associated activities, like various related school subjects? Finally, is the occupation seen as too time-consuming? That is, are the demands assumed to be inherent in the occupation compatible with the individual's other life goals and anticipated activities?

CRITICAL FEATURES OF MODEL

Cognitive Mediation

Several features of our model are particularly important for understanding sex differences in educational and vocational decisions: First, we assume 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 (Eccles, 1984). 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.

Choice

The second feature of our model is the focus on choice as the outcome of interest. We believe that individuals continually make choices, though often

nonconsciously, regarding how they will spend their time and their efforts. Many of the most significant sex differences occur on achievement-related behaviors that involve an element of choice, even if the outcome of that choice is heavily influenced by socialization pressures, gender-role beliefs, and cultural norms. Conceptualizing sex differences in achievement patterns in terms of choice takes us beyond the question of "Why aren't women more like men?" to the question "Why do people make the choices they do?" Asking this latter question, in turn, legitimizes the choices of both men and women, allowing us to look at sex differences from a choice rather than a deficit perspective.

Perceived Field of Options. Conceptualizing achievement sex differences in terms of choice highlights another important component of our perspective; namely, the issue of what becomes a part of an individual's field of perceived options. Although individuals do choose from among several options, they do not consider the full range of objectively available options in making their selections. Many options are never considered because the individual is unaware of their existence. Other options are not seriously considered because the individual has inaccurate information regarding either the option itself or the probability of achieving the option. Still other options may not be considered seriously because they do not fit in well with the individual's gender-role schema. In fact, assimilation of the culturally-defined gender-role schema can have such a powerful effect on one's view of the world that activities classified as part of the opposite sex's role may be rejected without any serious evaluation or consideration. Research has provided some support of this hypothesis. By age five, children have clearly defined gender-role stereotypes regarding appropriate behaviors and traits, and appear to monitor their behaviors and aspirations in terms of these stereotypes (Huston, 1983; Montemayor, 1974; Williams, Bennett, & Best, 1975). Consequently, it is likely that gender roles influence educational and vocational choices through their impact on individuals' perceptions of the field of viable options, as well as through their impact on expectations and subjective task value.

If we are to understand the dynamics leading women and men to make different achievement decisions, we must understand the processes shaping individuals' perceptions of the viable options. Yet there is very little evidence regarding these processes and their link to important achievement choices. Socialization theory provides a rich source of hypotheses: For example, sociologists have repeatedly documented the tendency for children, especially sons, to move into occupations much like those of their parents, especially their fathers (Stevens, 1986). The mechanisms underlying this phenomenon have not been fully identified. Role modeling surely is one important contributor. Through their own occupations, parents provide salient information on available occupational options. Similarly, the success of nontraditional role models may lay in the information they provide regarding

available occupational options. These models may legitimize novel or non-traditional options; raising these options to the level of conscious consideration. Parents, teachers, and school counselors can also influence students' perceptions of their field of options through the information and experiences they provide regarding various courses and/or occupations (Kidd, 1984b).

In the past, school counselors have been notoriously bad at providing students with information on nontraditional careers (Eccles & Hoffman, 1984). In part, this failure stems from the time demands and client loads placed on school counselors; they simply don't have the time to provide individualized career guidance to very many students. As a result, they tend to rely on pre-packaged materials that often provide the students with rather general, gender-role stereotyped information. However, special programs designed to give more comprehensive career information have been successful at expanding the options children consider (see Eccles & Hoffman, 1984; Fennema, Wolleat, Pedro, & Becker, 1981; Klein, 1985). For example, "Free Style," a television series designed to expose children to nontraditional family and occupational roles, appears to have its primary impact on children's views of the range of options that are appropriate for males and females to consider. After viewing the TV series, both boys and girls endorsed a wider range of family activities and occupations as appropriate for males and females (Johnston & Ettema, 1982). Similarly, comprehensive counseling/career guidance programs coupled with support for nontraditional choices have been effective at increasing the participation of females in math and science (e.g., Fennema et al., 1981).

Parents can also affect the options actually available to their children by providing or withholding funds for certain training and educational experiences. For example, in the past parents have been less willing to pay to send their daughters to college (Eccles & Hoffman, 1984). Although this no longer appears to be true (Eccles, Jacobs, Flanagan, Goldsmith, Barber, Yee, & Carlson, 1986), parents now seem less willing to provide their daughters with computer training. As a consequence boys substantially outnumber girls in summer computer camps (Kiesler, Sproull, & Eccles, 1985).

Parents can influence the options considered through less direct, more psychological means as well. For example, parental encouragement has emerged in several studies as one of the major influences children cite as a reason for both course enrollment decisions and career choice. Furthermore, children list parents as one of the major sources for educational and occupational information and guidance (Eccles (Parsons) et al., 1983; Farmer, 1985; Kidd, 1984b).

Finally, peers can affect the options seriously considered by either providing or withholding support for various alternatives. These effects can be quite direct (e.g., laughing at a girl when she says she is considering becoming a nuclear physicist), or very indirect (e.g., anticipation of one's future spouse's psychological support for one's occupational commitments). Clearly, social agents can either encourage or discourage students from considering

nontraditional choices. Unfortunately, they typically highlight and reinforce options that are consistent with gender-role stereotypes (Eccles & Hoffman, 1984).

Psychological Influences on Choice. Choice among various options will also be influenced by the individual's self schemas and by the individual's educational and occupational stereotypes. As individuals mature, they develop an image of who they are and who they would like to be. They also acquire stereotypes of the characteristics inherent in various occupations and academic subjects. We believe that individuals assess the match between their own self images (self schema) and the occupations they consider (see Holland, 1985, and Super, 1963, for similar argument). If the match is good, the odds of selecting that occupation increase. If the match is bad, the odds decrease. For example, if a female prides herself in being a caring, person-oriented individual, anticipates spending a substantial portion of her adult life actively involved in the roles of wife and mother, and sees working largely in terms of employment rather than career development, then occupations that allow her to express these nurturing, person-oriented characteristics, and that fit well, logistically, with her anticipated adult-role plans will be seen as more attractive than occupations perceived as either antithetical to her caring, person-oriented characteristics (such as engineering or physical science) or as demanding excessively high levels of time, energy, or geographical mobility (such as high-level management positions). The limited available evidence supports these hypotheses for at least a sizeable portion of the population (Farmer, 1985; Holland, 1985; Kidd, 1984a,b; Leslie, 1986).

Unfortunately, the stereotypes young women and men develop regarding various occupations are typically ill-informed. Consequently, young women may, unnecessarily, rule out, or not consider seriously, many occupations that might well fit with their self schema and their adult-role plans. Additionally, if a young woman's adult-role plans are based on outmoded, gender-role stereotyped scripts of family roles—as even recent data suggest that they are (Leslie, 1986)—she may make decisions that are not in her own best interest. Better career and life-role counselling have been shown to be effective in helping young women develop more informed images of the occupational world and their own adult responsibilities and probable role demands (Eccles & Hoffman, 1984; Klein, 1985).

Complexity of Choice. The fifth important feature of our perspective is the explicit assumption that achievement decisions, such as the decision to enroll in an accelerated math program or to major in education rather than law or engineering, are made within the context of a complex social reality that presents each individual with a wide variety of choices, each of which has both long-range and immediate consequences. Furthermore, the choice is often between two or more positive options or between two or more options that each have both positive and negative components. For example,

the decision to enroll in an advanced math course is typically made in the context of other important decisions such as whether to take advanced English or a second foreign language, whether to take a course with one's best friend or not, whether it's more important to spend one's senior year working hard or having fun, and so on. Too often theorists have focused attention on the reasons why capable women do not select the high status achievement options and have failed to ask why they select the options they do. This approach implicitly assumes that complex choices, such as career and course selection, are made in isolation from one another. For example, it is assumed that the decision to take advanced math is based primarily on variables related to math, or the decision not to become a medical doctor is based primarily on the occupational characteristics of the medical profession. My colleagues and I explicitly reject this approach, arguing instead that it is essential to understand the psychological meaning of the roads taken as well as the roads not taken if we are to understand the dynamics leading to the differences in men's and women's achievement-related choices.

Summary

In summary, I am assuming that educational and vocational choices, whether made consciously or not, are guided by the following: (a) one's expectations for success on the various options perceived as being appropriate, (b) the relation of these options both to one's short- and long-range goals and to one's core self identity and basic psychological needs, (c) the individual's gender role and more general self schema, and (d) the potential cost of investing time in one activity rather than another. We believe that each of these psychological variables are shaped by experiences, cultural norms, and the behaviors and goals of one's parents, teachers, role models, and peers. Finally, 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 or expectancy/attributional differences. There are several problems with this body of work that stem from the fact that it has assumed a deficit model of female achievement. First, the deficit perspective has limited the range of variables studied. Researchers have focused most of their attention on a set of variables linked to either self confidence and expectancies or to anxiety, since high self confidence and low anxiety facilitate competitive achievement (e.g., Betz & Hackett, 1981; Dweck, 1986; Horner, 1972; Tobias, 1978). While this may be true, it overlooks other possible influences on women's educational and

career decisions. 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 have simply demonstrated a statistically significant difference between males and females on measures of causal attributions or expectations, for example, and concluded that these differences account for sex differences in more general achievement behavior.

Our model provides a 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 that 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 been socialized to have different but equally important goals for their lives. It also opens up the possibilities of testing the relative importance of a variety of beliefs in mediating females' occupational decisions and of designing more comprehensive vocational education programs using value socialization as well as expectancy socialization. I'll now discuss these processes in more detail, focusing on the impact of gender roles and socialization on expectations for success and subjective task value.

EXPECTATIONS FOR SUCCESS

Expectations for success and confidence in one's abilities to succeed have long been recognized by decision and achievement theorists as important mediators of behavioral choice (e.g., Atkinson, 1964; Bandura, 1977; Lewin, 1938; Weiner, 1974). Furthermore, there are good theoretical reasons to believe that gender-role socialization could lead females to have less confidence in their abilities than males. For example, because females are typically stereotyped as less competent than males, incorporation of gender-role stereotypes into one's self concept could lead girls to have less confidence in their general intellectual abilities than boys (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972; Parsons, Ruble, Hodges, & Small, 1976). This, in turn, could lead girls to have lower expectations for success at difficult academic and vocational activities. It could also lead girls to expect to have to work harder in order to achieve success at these activities than boys expect to have to work. These differences should be even more extreme for male-sex-typed activities and occupations.

Evidence from several sources suggests that either of these beliefs could deter girls from selecting demanding educational or vocational options, especially if these options are not perceived of as especially important or interesting. Unfortunately, although general expectations and other related variables have been studied, the link of these self perceptions to sex differences in academic and vocational choices has typically not been assessed

and the few studies that have looked at these variables have yielded mixed results once aptitudinal differences are controlled. For example, we have found that the sex differences in the decision to take advanced math are more a function of perceived task value than of expectations for success (Eccles, Adler, & Meece, 1984). Similar results in a variety of domains have been reported by several other investigators (e.g., Blackman, 1986; Eccles, 1986; Farmer, 1985; Fennema, 1985; Freedman, 1986; Kidd, 1984b; Paludi & Fankell-Hauser, 1986). This is not to say that expectations are not important. Numerous studies have documented the relation of expectations for success to both performance and occupational choice (Armstrong, 1985; Betz & Hackett, 1981; Covington & Omelich, 1979; Lantz & Smith, 1981). Furthermore, we certainly would not expect people to select occupations at which they are not reasonably confident they can succeed. But expectations for success are strongly related to actual levels of performance, and when levels of performance history are controlled, expectations for success appear to play a less substantial causal role in choice.

It is also possible, however, that researchers have been assessing the wrong expectancies. Typically, individuals are asked to report on their confidence about succeeding on an upcoming task or course. They are not asked how confident they are that they could succeed in particular professions or in particular advanced training programs. They are also not asked how much effort they think it would take to succeed in various professions or advanced training programs. It could be that females are less confident than males of their prospects for success in these more abstract, distant activities. It is also possible that females are as confident as males in their ability to succeed but assume that it will take more work, time, and/or effort to succeed than their male peers assume it will take. Either of these beliefs could mediate a sex difference in educational and vocational decisions, especially given the gender stereotyping of most high-status occupations and the plans of most women to integrate work and family roles.

Alternatively, it is possible that the critical expectancy beliefs are neither the expectation one has for success in a particular field nor the perception one has of the amount of effort it will take to succeed in a particular field; instead, the critical beliefs may be the relative expectations one has for success across several fields and the perceptions one has of the relative amounts of effort it will take to succeed in various fields. If females think it will take a lot more effort to succeed as an engineer or a doctor than it will take to succeed as an elementary school teacher, a newspaper journalist, or a nurse, they may opt for the more female-typed occupations, especially if they place high importance on having a career that is compatible with their anticipated family roles.¹ Similarly, if a woman thinks she has relatively more ability in English, for example, than math, she may opt to develop her English skills rather than her math skills even though she is quite confident of her ability to master mathematics.

Finally, we need to consider the possibility that expectations of occupa-

tional success are influenced by factors other than confidence in one's abilities. An understanding of the dynamics of discrimination and tokenism may affect women's estimates of the probability of success in various occupations and their perceptions of the potential costs of that success (Pavan, 1985). In support of this suggestion, Herzog and Bachman (1982) reported that young girls planning careers in male-dominated fields expected to face discrimination whereas girls planning careers in female-dominated fields did not. Knowledge that one will have to overcome discrimination as well as acquire the training necessary for success may deter some females from seriously considering male-dominated professions, especially if the young women doubt their ability to be assertive enough to fight discriminatory practices and beliefs. Similarly, more general concerns over the availability of jobs and opportunities could affect an individual's estimates of the probability of success at various occupations (Paludi & Fankell-Hauser, 1986).

In summary, then, it is likely that expectations for success do influence occupational choice. In addition, it is probable that lower expectations have deterred some women from seriously considering male-dominated occupations. But whether expectations for success and the other related psychological constructs are the primary cause of sex differences in educational or occupational choices is not clear. Furthermore, it is likely that one will have to choose from among several occupations for which one has essentially equivalent expectations for success. In this case, subjective task value is likely to play a more powerful causal role. Thus expectations for success may be a necessary but not sufficient condition for achievement choices (see Eccles, Adler, & Meece, 1984, for review).

VALUES AS MEDIATORS OF ACHIEVEMENT-RELATED CHOICES

Value is the second major component of our model: Educational and vocational decisions are assumed to be influenced by the value individuals attach to the various options they believe are available to them. Furthermore, given the probable impact of gender-role socialization on the variables assumed to be associated with subjective task value, sex differences in the subjective value of various achievement-related options are likely to be important mediators of sex differences in educational and vocational choices. Evidence from several sources support this hypothesis (Eccles, Adler, & Meece, 1984; Farmer, 1985; Holland, 1985; Lantz & Smith, 1981; Naylor, 1984; Wise, 1985). For example, in a longitudinal study of the math course enrollment decisions of high aptitude, college-bound students, sex differences in students' decisions to enroll in advanced mathematics were mediated primarily by sex differences in the task value the students' attached to mathematics (Eccles, Adler, and Meece, 1984): The girls were less likely than the boys to enroll in advanced mathematics primarily because they felt that math was less important, less useful, and less enjoyable than did the boys.

But what exactly is task value? My colleagues and I define task value in terms of four components: (a) the utility value of the task in facilitating one's long-range goals; (b) the incentive value of engaging in the task in terms of more immediate rewards such as the pleasure and/or external rewards one gets from doing the activity; (c) the attainment value of the task in terms of its relation to one's self image and personal values; and (d) the cost of engaging in the activity. Although each of these can be influenced by processes linked to gender roles, I will discuss the last three in more detail before proceeding.

Incentive and Attainment Values. Incentive value is conceptualized in terms of the immediate rewards, intrinsic or extrinsic, an individual derives from performing the task. For example, studying mathematics is intrinsically rewarding to those individuals who enjoy solving mathematical problems; studying mathematics can also yield extrinsic rewards, particularly if one's parents or teachers provide praise and/or privileges for doing well in mathematics. As discussed earlier, either actual rewards and punishments or anticipated rewards and punishments for engaging in a particular activity or profession may be related to the gender-typing of the activity.

The attainment value of a task or occupation is best understood in terms of the needs and personal values that the task fulfills. As they grow up, individuals develop an image of who and what they are. This image is made up of many component parts including: (a) conceptions of one's personality and capabilities, (b) long range goals and plans, (c) schema regarding the proper roles of men and women, (d) instrumental and terminal values (Rokeach, 1973), (e) motivational sets, (f) ideal images of what one should be like, and (g) social scripts regarding proper behavior in a variety of situations. Those parts that are central or critical to self definition should influence the value the individual attaches to various educational and vocational options. These differential subjective task values, in turn, should influence the individual's achievement-related choices (Eccles, Adler, & Meece, 1984; Holland, 1985; Markus, 1980; Parsons & Goff, 1980; Super, 1963).

More specifically, personal needs, self images, and personal values should operate in ways that both reduce the probability of engaging in those activities or roles perceived as inconsistent with one's central values and increase the probability of engaging in roles or activities perceived as consistent with one's definition of self through the following processes. First, it seems likely that individuals perceive tasks and occupations in terms of certain characteristics that can be related to their own needs and values (see Bihm & Winer, 1983, and Rowell, 1985, for some support of this suggestion). For example, a difficult task requiring great effort for mastery may be perceived as an achievement task; if it also involves pitting one's performance against others, it may be perceived as a competitive task. Other tasks may be perceived in terms of nurturance, power, intelligence, masculinity, aesthetic pleasure, and so on. Participating in a particular task will require the dem-

onstration of the characteristics assumed to be associated with the task. Whether this requirement is seen as an opportunity or a burden will depend on the individual's needs, motives, and personal values, and on the individual's desire to demonstrate these characteristics both to him/herself and to others.

Essentially, I am arguing that the opportunity to affirm the central components of one's self schema will have positive value for the individual. To the extent that females and males have different self images, various activities will come to have different subjective value for them. And, to the extent that females and males place differential subjective value on various educational and vocational options, they should also differ in their educational and vocational choices. Preliminary support for this hypothesized link has been provided by Feather and his colleagues (e.g., Feather, 1982; Feather, 1986; Feather & Newton, 1982).

Personal values and self schema can influence the subjective task value of various options in another way—through the anticipated pleasure one expects to experience from engaging in the activity. For example, if someone values helping others then it is likely they have had positive experiences in the past associated with helping others. These pleasant affective memories should be aroused when one considers engaging in tasks with similar characteristics in the future, leading one to anticipate positive affective consequences from engaging in such activities in the future. These affective associations in turn, should raise the value of tasks providing such opportunities.

Perceived Cost. The value of a task will also depend on a set of beliefs that are best characterized as the cost of participating in the activity. Cost is influenced by many factors, such as anticipated anxiety, fear of failure, and fear of the negative consequences of success. Several researchers have suggested that potential emotional costs of both success and failure may inhibit women's achievement aspirations (e.g., Horner, 1972; Sutherland & Veroff, 1985). To the extent that women think that participating in particular occupations will lead to censure by their peers or loved ones or will project an image of them that is antithetical to their self schema, they should attach low or negative value to such occupations.

Cost can also be conceptualized in terms of the loss of time and energy for other activities. People have limited time and energy and so must choose among activities. To the extent that one loses time for Activity B by engaging in Activity A and to the extent that Activity B is high in one's hierarchy of importance, then the subjective cost of engaging in A increases. Alternatively, even if the attainment value of A is high, the value of engaging in A will be reduced to the extent that the attainment value of B is higher and to the extent that engaging in A jeopardizes the probability of successfully engaging in B.

Gender Roles and Task Value

This analysis has a number of implications for understanding sex differences in educational and vocational choices. Because socialization shapes individuals' goals and personal values, men and women should acquire different personal values and goals resulting from the process of gender-role socialization. Through their potential impact on subjective task value, these gender differences in personal value structure can affect educational and vocational choices in several ways.

Value Hierarchies. One possibility is that gender-role socialization could lead males and females to have different hierarchies of core personal values (such as interest in people vs. interest in things or high status achievement). Consequently, tasks embodying various characteristics should have different values for men and women. For example, both boys and girls stereotype mathematicians and scientists as loners who have little time for their families or friends because they work long hours in a laboratory on abstract problems that typically have limited immediate social implications (Boswell, 1979). Such a profession should hold little appeal to someone who rates social values high and thinks it is very important to devote time and energy to one's family. A wide variety of studies suggest that females rate social values and helping, person-oriented values, higher than males do (Duntzman, Wisenbaker, & Taylor, 1978; Feather, 1984; Fox & Denham, 1974; Gilligan, 1982; Lyson, 1984; Naylor, 1984; Sutherland & Veroff, 1985). Thus it is not surprising that they are less likely than males to aspire to a career as a mathematician or scientist. It is also not surprising that adolescent females rate working in social service agencies or in schools as more desirable while adolescent males rate self employment and technological careers as more desirable than their female peers (Erb, 1983; Herzog & Bachman, 1982).

Similar differences have emerged in several studies assessing the criterion adolescent males and females use in picking an occupation or a course. For example, both Tittle (1981) and Herzog and Bachman (1982) have found that high school-aged males are more likely than females to consider the status and economic aspects of an occupation. In contrast, high school-aged females are relatively more likely to consider their own intrinsic interest in the field and the human service aspects of the job. Similarly, college males rate money, status, freedom, and the opportunity to be a leader as more important job characteristics than women, while women rate the opportunity to help others, work with people, and be creative as more important than males (Lyson, 1984).

Recent data gathered by Veroff and Douvan (e.g., Veroff, 1983) suggested that these concerns may have a particularly important impact during late adolescence and early adulthood. They have found that women's need for affiliation and social connectedness is especially high in their late teens and early twenties—precisely the time when important life decisions are made.

For young men, in contrast, the need for achievement is especially high at this point in their lives. If this is true, then, we should expect socially-oriented adolescent women to be most likely to select occupations that allow time for anticipated social relationships and for diverse interests and activities. This should be especially true for young women who plan to devote time to their children, family, and friends. In support of this suggestion, Farmer (1985) found a negative association of both career aspirations and career commitment to adolescent girls' interest in becoming full-time homemakers.

Motive and Goal Density. Men and women may also differ in the density of their goals, values, and motives. For example, several studies suggest that women integrate achievement and affiliative needs whereas men are more likely to compartmentalize their various needs, leading to less potential conflict between these needs (Sutherland & Veroff, 1985; Tittle, 1982).

There is also evidence suggesting that men are more likely to exhibit a single-minded devotion to one particular goal, especially their occupational goal. In contrast, women seem more likely to be involved in, and to value, competence in several activities simultaneously, to plan a multiphased life path, and to worry about the interconnectedness of family and occupational domains (Baruch, Barnett, & Rivers, 1983; Fox, Pasternak, & Peiser, 1976; Leslie, 1986; Maines, 1983; McGinn, 1976; Paludi & Fankell-Hauser, 1986; Sears, 1979; Terman & Oden, 1947). For example, in his study of doctoral students in mathematics, Maines (1983) asked the students what they worried about most. To the extent that there were sex differences, the men were relatively more concerned about their professional status and about their mentors' estimates of their professional potential. In contrast, the women were relatively more concerned about the impact of their graduate training on their families and other interests; they felt that their studies were taking too much time and energy away from other activities that they valued just as much as their graduate training. Similarly, both Leslie (1986) and Paludi and Fankell-Hauser (1986) found that many females are concerned about the worth of success/working in terms of its personal and familial costs.

A discussion with one of my graduate students made this point especially poignant. She had been talking with her mother and father about integrating a family and a career. Her mother assured her it could be done and that nothing was as rewarding as raising children. In contrast, her father warned her that it was quite difficult to have a family and be the "very best" at what you do (meaning, of course, her profession). Both of these pieces of advice are true. What is most interesting is the fact that women are forced to reconcile their consequences but men, in this culture, typically are not. Equally important is the value judgment associated with each perspective. The male-dominated professional system clearly assumes that one should sacrifice other interests to the goal of being the "very best" at what you do, despite recent concern over the high cost of such a perspective to individuals'

physical and mental health. Women appear to be less likely than men to endorse this value and, in part, as a consequence, may be both less likely than men to rise rapidly through the ranks in their chosen educational and vocational settings and more likely than men to reap the physical and psychological benefits of their diverse interests and activities (Nathanson & Lorenz, 1982; Sorensen, Pirie, Folsom, Luepker, Jacobs, & Gillum, 1985; Verbrugge, 1976).

Role-Prescribed Values. Even more directly, gender-role socialization could lead males and females to place different value on various long-range goals and adult activities. The essence of social roles is that they define the activities that are central to the role. In other words, they define what one should do with one's life in order to be successful in that role. Gender roles mandate different primary activities for men and women. If success in one's gender role is a central component of one's identity, then activities that fulfill this role should have high value and activities that hamper efforts at successfully fulfilling one's gender role should have lower subjective value. Consequently, to the extent that a woman has internalized this culture's definition of the female role, she should rank order the importance of various adult activities differently than her male peers. In particular, she should rate the parenting and the spouse-support roles as more important than (or at least as important as) a professional career role and she should be more likely than her male peers to resolve life's decisions in favor of these family roles. In contrast, men should rate family and career roles as equally important and because they can fulfill their family role by having a successful career, they should expect these two sets of roles to be compatible. Consequently, aspiring after a high status, time-consuming career should pose less of a conflict for men and such careers should have higher subjective value to men not only because of the rewards inherent in these occupations but also because they fulfill the male gender-role mandate.

In support of this suggestion, both Tittle (1982), and Herzog and Bachman (1982) have found that young women are more likely than young men to expect to have to modify their work roles and commitment for the sake of their families, despite the fact that the young men and women in these studies had equally ambitious occupational plans. In addition, in Tittle's study the adolescent men and women who agreed that their family roles would influence their work behavior differed in the specific type of influence they anticipated their family roles would have. Consistent with the analysis outlined here, the young men reported that children would induce them to work harder in order to ensure a steady family income; in contrast the young women reported that children would induce them to leave work for a period of years. Less than 10% of the females in these studies planned to continue working while their children were under 3 years of age. Similar results were reported by Leslie (1986).

Gender roles also mandate which educational and vocational activities one

should be interested in: Women are expected to be interested in occupations that allow the expression of their "need to nurture," men are expected to be interested in occupations associated with sports, mechanics, business, or science. To the extent that gender roles are salient to the individual, this mandate should affect their interest in various sex-typed occupations and avocations directly. In turn these interests should affect the training one seeks out and the skills one develops through hobbies and other avocational activities. Evidence suggests that from early in life females and males do aspire to different occupations and engage in different avocational activities. For example, when asked their occupational interests and/or anticipated college major, females typically rate domestic, secretarial, artistic, biological science, and both medical and social service occupations and training higher than males, while males express more interest than the females in both higher-status and business-related occupations in general, and in the physical sciences, engineering, and the military in particular (Erb, 1983; Fox, Pasternak, & Peiser, 1976; Kreinberg, 1985; Terman, 1925, 1930). Similarly, throughout childhood and adolescence, girls both like and spend more time than boys reading, writing, and participating in a variety of activities related to arts and crafts, domestic skills, and drama; in contrast, boys spend more time engaged in sports, working with machines and tools, and involved with scientific, math-related, and/or electronic hobbies (Fox, 1976; McGinn, 1976; Terman, 1925, 1930; Terman & Oden, 1947). These differences should have a direct effect on the training boys and girls seek out and on the skills they acquire during childhood.

Definitions of Success. Similarly, gender roles can also influence the definition one has of successful performance of those activities considered to be central to one's identity. Consequently, men and women may differ in their conceptualization of the requirements for successful task participation and completion. If so, then men and women should approach and structure their task involvement differently even when they appear, on the surface, to be selecting a similar task. The parenting role provides an excellent example of this process. If males define success in the parenting role as an extension of their occupational role, then they may respond to parenthood with increased commitment to their career goals. In contrast, if women define success in the parenting role as high levels of involvement in their children's lives, they may respond to parenthood with decreased commitment to their career goals, at least for a period of time. The spouse role provides an equally compelling example. To the extent that males and females differ in how they define their spousal role, they should differ in how they integrate career and family roles and in what they expect from their spouse in the way of financial, physical, and emotional support and deference. Since many men define their role as that of provider and not caregiver, they should be less likely to offer assistance in home and child care and maintenance and more likely to expect family deference to their career

development and occupational demands. If women accept this definition of the husband's role, they will not feel justified in asking for help with housework and childcare and in asking the family to accommodate to their own professional needs. The women may also experience guilt over the demands their occupation is placing on the family.

These dynamics may affect both the occupation women aspire to enter and the sacrifices they are willing to make once they are in a particular occupation. For example, it seems likely that young women who accept society's definition of both the appropriate male and female spousal roles and the paramount importance of the male's occupational development will attach higher value to occupations that they perceive as being compatible with these definitions, namely, lower status, flexible jobs that are readily available in many parts of the country. Data gathered by Herzog and Bachman (1982) suggested that the majority of young men and women in this country still endorse these definitions—however unrealistic they may be—and that acceptance of these role definitions is predictive of traditional future plans and aspirations.

The academic world provides another example. I am repeatedly struck by the different orientation my male and female colleagues seem to have toward the professorial role. The women seem much more likely to place high importance on the teaching and advising aspects of the job whereas the men place more importance on the research and publishing aspects. As a consequence it seems to me that the women advise more students, spend more time on informal teaching, and serve on more committees than the men, often at the expense of their publication rate. Similarly, the women seem less likely to request promotion or salary increases and less likely to seek outside offers. It is not surprising then, given the disproportionate weight placed on publication and outside offers in most universities, that academic women's salaries continue to lag behind those of their male colleagues (Vetter, 1981).

Motives, Goals and Task Perceptions. Men and women may also approach similar activities with different goals and needs in mind. In a recent study of leisure activities, White and Gruber (1985) asked male and female college students to rate the extent to which each of 16 popular leisure activities fulfilled 13 different need attributes (e.g., cooperating with other people, seeing the results of your efforts, feeling important, hearing how well you are doing from others). The women rated each of the following attributes as more salient to them in selecting particular leisure activities: feeling satisfied, cooperation with other people, and significantly affecting the lives and well being of others. In contrast, the males rated feeling secure and seeing the results of one's own efforts as more salient for the same leisure activities. These differences should certainly affect men's and women's behaviors in these activities.

A recent study by Buss (1981) provides an example of one more relevant

dynamic: namely, expressing the same psychological need in different ways. He compared male and female evaluations and performances of acts of dominance. Men and women who expressed equally high levels of dominance on the California Psychological Inventory were asked if they had ever engaged in an array of 100 different acts of dominance. Although the men reported more incidents, the more interesting sex differences emerged on the types of acts that correlated with the subject's dominance scores. For men but *not* women, personal dominance scores were correlated with the number of manipulative self-enhancing acts of dominance the person reported. In contrast, for women but not men, dominance scores were correlated with the frequency of dominance acts linked to helping others, settling disputes, and sexual initiation. These data suggested that gender roles influence the manifestation of personal characteristics as well as the acquisition of those characteristics. To the extent that this is the case then occupations embodying varying opportunities to express these manifestations should be differentially appealing even to men and women who have similar levels of the associated personal characteristics.

A similar dynamic was reported by Veroff and Feld (1970). They related adults' need-achievement scores to behaviors at work and at home. The women's need-achievement scores were related to behaviors associated with parenting and homemaking and not to work-related behaviors. In contrast, the men's need-achievement scores correlated with their work-related achievement behaviors, but not their family-related behaviors. Veroff and Feld (1970) concluded that men and women differ in how they choose to express their achievement motives and that gender-role definitions play a major role in these choices. In support of this, subsequent studies suggested that high need-achievement men and women conform more to gender-role stereotypes than those with lower achievement motivation; in other words high need achievement may lead one to excel at precisely those activities considered to be "gender-role appropriate" (Sutherland & Veroff, 1985). Such relationships, however, ought to hold primarily for people who consider their gender role to be a central component of their self schema or who define their masculinity or femininity in terms of culturally-defined, gender-role characteristics and activities.

In sum, there are a variety of ways in which gender roles may be linked to the subjective value men and women place on various occupations and to their definitions of the nature of various occupations. Unfortunately, few of these hypotheses have been adequately tested.

SOCIALIZATION INFLUENCES

Now let me turn to a brief discussion of how socialization might differentially affect females' and males' expectations for success and subjective task values. Since most of the published work has focused on expectations, I will discuss

these influences quite briefly, devoting more space to the socialization of subjective task value.

Socialization of Expectations

Most of the work on the socialization of expectations focuses on differential treatment in the classroom and on attributional processes. This work suggests that parents and secondary school teachers have sex-typed beliefs regarding boys' and girls' abilities, and that they communicate these beliefs to boys and girls through various subtle and explicit behaviors. For example, we have found that parents believe the following: (a) Daughters are better at English than sons, (b) sons are better at math than daughters, and (c) daughters have to work harder to master math than sons and vice versa for English. Furthermore, these sex-differentiated beliefs exist even after school performance levels are controlled (Eccles et al., 1986; Eccles & Jacobs, 1986; Jayaratne, 1983; Parsons, Adler, & Kaczala, 1982).

In trying to understand these effects we have looked at parents' causal attributions. As one might predict, parents exhibit a slightly different attributional pattern for boys' and girls' math successes. Although parents of both boys and girls rate effort and talent as the two most important causes of their children's math success, they differ in the relative weighting of these two attributions. Compared to girls' parents, parents of boys rate math talent as a relatively more important cause of their child's math successes. In contrast, they rate effort as a relatively less important cause of their child's math success. Consequently, talent is rated the most important cause for boys, while effort is rated the most important cause for girls (Yee & Eccles, 1983).

We have discovered a more subtle dynamic that may be important in explaining sex differences in expectations, one that involves the joint impact of parents' perceptions of their child's English and math abilities. Many parents believe that their daughters have higher English than math abilities even when they are performing equally well in both subjects. How does this differentiated view of their child's abilities affect girls' self perceptions?

Using regression analyses, we examined the impact on children's self-concept of their math abilities of both their parents' ratings of their child's math and English abilities, controlling for the math teachers' ratings of the children's math talents. A negative beta coefficient emerged for the relation between parents' rating of their children's English abilities and the children's self concept of their math ability. This finding indicates that when controlling for parental confidence in their child's math ability and teacher's ratings of the children's math ability, children whose parents have higher estimates of their children's English abilities have relatively lower perceptions of their own math abilities than children whose parents have lower estimates of their children's English abilities. Who are these children likely to be? Girls! Apparently, then, parents may be undermining their daughters' expectations

in mathematics through two mechanisms: their underestimation of their daughters' math ability and their relatively high estimates of their daughters' English abilities (Eccles et al., 1986).

Finally, we have also found that mothers' beliefs regarding their daughters' math abilities are rather easily modified in a gender-stereotyped direction. In a study designed to assess the impact of the media coverage of Benbow and Stanley's original *Science* article (1980), Jacobs and I sent follow-up questionnaires in April, 1980, to a random subset of approximately 100 parents who had participated in our study of parental beliefs during 1978 and 1979. We asked them once again for their estimates of their child's math abilities and for their gender-role stereotypes regarding math abilities and math utility. In addition, we asked them (on the last page of the questionnaire) whether they had read or seen anything about the Benbow and Stanley report. Consequently, we had measures of these parents' estimates of their children's math ability before and after the media coverage of the article as well as information regarding their exposure to this coverage. We found that media exposure had a particularly adverse effect on mothers of daughters. Compared with both their own "pretest" ratings and the ratings of mothers who reported no exposure to the media, mothers of daughters who reported having been exposed to the media coverage had lower ratings of their daughter's math competence (Jacobs & Eccles, 1985). Apparently, a relatively brief exposure to "scientific" information supposedly documenting biologically-based differences in math ability is sufficient to move mothers' beliefs about their daughters' math competence in a gender-stereotyped direction.

Socialization of Subjective Task Value

Gender roles should affect the subjective value of various educational and vocational options indirectly through their influence on the behaviors and attitudes of the people to whom individuals are exposed as they grow up. If, for example, parents, friends, teachers, and/or counselors provide boys and girls with different feedback on their performance in various school subjects, with different advice regarding the importance of various school subjects, with different information regarding the importance of preparing to support oneself and one's family, or with different information regarding the occupational opportunities that the student should be considering, then it is likely that boys and girls will develop different estimates of the value of various educational and vocational options. Similarly, if the males and females around children engage in different educational and vocational activities, then boys and girls should develop different ideas regarding which activities they are best suited for.

Specifically, how might parents and teachers be influencing the value boys and girls place on various achievement activities? As discussed earlier, they can influence these values most directly by the pattern of encouragement

and information they provide. They can also influence subjective value more indirectly and it is these processes I would like to explore now, focusing on the classroom as an affective environment.

Rewards and Punishments. Several studies suggest that boys, especially those for whom the teacher has high expectations, get more rewards or praise for academic performance in school (e.g., Brophy & Good, 1974; Parsons, Kaczala, & Meece, 1982). These findings are often interpreted in terms of their influence on boys' and girls' expectations for success and confidence in their academic abilities. They can also be interpreted in terms of their influence on the value children come to place on various intellectual domains. Through basic classical conditioning processes, we would expect children's affective experience in the classroom to become attached to the subject matter itself. Thus to the extent that boys and girls have different affective experiences in various subjects, we should expect them to come to attach different affective value to different subject areas. This, in turn, according to our model, should affect the courses boys and girls take and the occupational domains some children seek out. The rather limited available evidence supports this suggestion.

Girl-Friendly Classrooms. But this process assumes differential treatment of boys and girls in the same classroom. I have recently become intrigued by an even more subtle, indirect process. Perhaps boys and girls develop different values for various subjects not because boys and girls are treated differently but because similar environments affect boys and girls differently. There is a growing body of literature on what is loosely being called "girl-friendly" classrooms. Using quite different strategies, Casserly (1980), Kahle (1984), Fennema and Peterson (1986), and my colleagues and I have tried to identify math and science classrooms in which girls have especially positive attitudes toward math. A rather consistent pattern emerges. Girls have more positive attitudes toward math in classrooms characterized by low levels of competition among the students, high levels of cooperative learning or individualistic learning structure, and high levels of teacher communication of both the intrinsic value of math and the link between math and various interesting occupations (Casserly, 1980; Eccles, MacIver, & Lange, 1986; Eccles & Blumenfeld, 1985). For example, in a study of 89 6th grade classrooms, Eccles et al. (1986) identified 19 classrooms in which girls had more positive attitudes toward math than boys in terms of their plans to take advanced high school math courses, their confidence in their math ability, their expectations for success in math, and their intrinsic interest in math. These classrooms differed from the other 70 classrooms in several respects. According to student reports of the classroom environment, teachers in the girl-friendly classrooms treated the students more equitably and fairly, did more to make the math interesting, and were more likely to explain why studying math is important. In addition, the students in these classrooms were less likely to compete with one another and to compare their tests and

report cards. In contrast, the boys had the most positive attitudes toward math in classrooms characterized by relatively high levels of social comparison among the students.

Furthermore, Peterson and Fennema (1985) have found that the cognitive gain scores of boys and girls over a 1-year period were differentially influenced by these same characteristics. Girls' math-related gain scores were related negatively to the number of competitive interactions between students and positively to the frequency of opportunities for cooperative and/or individualized learning. In contrast, boys' math-related gain scores were positively related to competitiveness of the classroom and negatively related to frequency of cooperative learning opportunities.

These results suggest that females and males respond differently to competitive environments. At a minimum, females, on the average, appear to find such environments less motivating than males. In addition, however, some females appear to find such environments aversive, leading them to learn less in such classrooms and perhaps to avoid situations and environments that they anticipate as being competitive in the future.

These results also point to the importance of active career and educational counselling for increasing nontraditional choices. Casserly's study of exemplary high schools illustrated this conclusion dramatically. Schools that had large numbers of females enrolled in their advanced math and science courses had teachers who both considered career counselling an integral part of their job and devoted substantial time to encouraging talented females (and males) to consider careers in math- and science-related fields (e.g., Casserly, 1980).

Summary

The analysis in this section suggests that the educational and occupational differences between men and women result, in part, from sex differences in gender-role definition and in the structure of one's hierarchy of values and interests. Furthermore, these differences result from differential socialization experiences and from the internalization of culturally-defined, and readily observable, gender roles. More specifically, this analysis suggests that the differential involvement of men and women in math and science-related occupations, for example, may result, in part, from differences in their interest patterns and their personal values (e.g., being object- or thing-oriented vs. being person-oriented). Furthermore, this analysis suggests that the differential involvement of men and women in "high status" time-consuming occupations requiring long periods of preprofessional training may result, in part, from differences in men's and women's psychological investments in and definitions of their family roles vs. their professional roles. These gender differences in psychological investment in family vs. professional roles undoubtedly result from a complex set of both psychological and sociological forces including the internalization of gender roles, the

individual's assessment of what jobs and roles are realistically available, and both overt and subtle forms of discrimination operating in educational and occupational institutions. Consequently, women may choose to limit their investment in the professional role because they want to maximize their investment in their family roles or because they think that their opportunities in the professional role are restricted by discriminatory forces beyond their control, or both (see Astin, 1984; Callahan, 1979; Frieze & Hanusa, 1984; Pavan, 1985; and Sears, 1979, for a discussion of the external barriers to success women face within the professions).

THE COST OF TRADITIONAL CHOICES

This brings us back to the question of the value society places on the achievement choices of men and women. It is clear that women achieve less than men in terms of traditional educational and occupational advancement. But do they make less use of their talents, do they think they have "achieved" less? One answer to this question can be found in Terman's longitudinal study of gifted women and men. Early in this century, Terman and his colleagues began a longitudinal study of just over 1,000 gifted boys and girls in California. Most of these people have been interviewed several times over the last 60 years, most recently in 1978. The accomplishments of the gifted men are easy to document. They have been highly successful vocationally and, as a group, have amassed an impressive list of awards and distinctions. The women have fared less well on these criteria; they are less well represented in high-level occupational positions, have earned substantially less money, and have earned fewer awards and honors. Instead, the majority of these gifted women invested a large portion of their time and energy into their families. As a consequence, their educational and vocational attainments are less notable than those of their male peers. But have these women really achieved less? The gifted men and women themselves provide one answer to this question. In 1960, they were asked to rate the extent to which they have lived up to their intellectual promise. Although the unemployed housewives gave a slightly lower rating than the professional women, both groups of gifted women were quite positive in their response to this question and, as a group, the men and women did not differ in their responses (Oden, 1968). In general, then, in 1960 many of these gifted women were fairly satisfied with their use of their intellectual talents.

More recent interviews, however, suggest that some of these women now have more regrets about their high levels of investment of time and energy in their families coupled with their relatively low levels of investment in their own professional development (Sears, 1979). When asked in 1978 to rate their level of satisfaction with several areas of their lives, the gifted women were less satisfied than the gifted men with their occupational development. (They were also more satisfied with their friendships and the

cultural richness of their lives.) In addition, when asked how they would have structured their lives differently, many now wished they had placed less importance on the homemaker role and more importance on a career.

This shift in satisfaction with their life decisions has undoubtedly been stimulated, at least partially, by the shifting cultural norms regarding women's family and occupational roles. The decision to invest time and energy in one's family rather than in an occupation was consistent with the gender-role norms of the late 1930s and early 1940s and may even have been attractive given the limited work opportunities readily available to them. But, women have been reevaluating gender-role norms for the past 15–20 years. In addition, employment and educational opportunities for women have expanded substantially over the last 30 years. Consequently, when asked to reflect back on the decisions they made 30–40 years ago, the cost of these decisions in terms of their own development is likely to have become more salient since 1960. Furthermore, the direct benefits gained by their families may seem less salient now that their children have left home and most of their husbands have retired and no longer depend on their wives' contributions for their career advancement.

Most importantly, many of these women made their initial decisions for what they considered to be good reasons. In addition, although many may have made no conscious choice, simply accepting the culturally-prescribed norms, few apparently based their decisions on a lack of confidence in their ability to succeed. Similar dynamics characterize the role choice of women today. For example, Sholomskas and Axelrod (1986) interviewed 67 women with children under the age of 6 regarding their role choices. These women had made one of three role choices: full-time homemaker, career worker, noncareer worker. For the most part, both the homemakers ($n = 27$) and the career women ($n = 28$) reported that their current role status was primarily a matter of personal choice. In contrast, the noncareer working women ($n = 12$) reported economic necessity as the primary reason for their role choice, and several of these women would have preferred to be full-time homemakers. Apparently, as documented by Gerson (1985), women's life choices continue to involve inextricably linked decisions about work and family that have consequences for their vocational advancement in terms of traditional modes of assessing achievement. And it is often family role considerations that limit women's investment in the occupational world rather than lack of confidence, fear of success, or debilitating attributional patterns.

Economic Costs

But what are the economic and psychological costs of these decisions? The economic cost of a traditional choice has changed dramatically in the last twenty years. As a group, the married Terman women suffered relatively little economically for their choice; nor did many white American women

Table 1
Women's wages: How much less?

	<i>Earnings per \$1,000 for Men</i>
All Women ¹	\$637
Single Women ²	\$910
Married Women ¹	\$583
Divorced Women ²	\$728
Heads of Households ²	\$671
Union Members ²	\$753

¹Includes women working full and part time

²Includes only women working full time

Sources: Bureau of Census and Bureau of Labor Statistics, 1984 as reported by Hacker (1986).

of past generations. For example, in 1969, in the United States, nonemployed middle-aged wives enjoyed a higher standard of living than employed middle-aged single women (Bernard, 1981).

Other groups of women have not fared so well economically either in the past or the present, and at present the strategy of relying on a husband as one's primary means of support is quite risky for all women (Weitzman, 1985). Like Terman's gifted women, many women make educational and vocational decisions consistent with gender-role norms for positive rather than negative reasons. However, because society gives fewer economic rewards to those vocations typically chosen by women, the economic and long-term psychological cost of these decisions can be great, especially given the current high rates of divorce, spouse abuse, and failure to pay child support.

Table 1 illustrates these costs dramatically. Even though the differential in men's and women's wages in some occupations (primarily professions) and for some segments of the population (primarily the young and single) have declined, the earning differentials among marrieds, heads of households, divorced, and older workers are still substantial. Consequently, there is still a large wage gap between men and women (see Figure 3) and a growing number of divorced women and children living in poverty (Weitzman, 1985).

Furthermore, several investigators have argued that these gaps reflect, at least in part, the impact of female family responsibilities on women's work patterns (Hewlett, 1985; Norwood, 1985; O'Neill, 1985). In addition to the lower wages associated with many female gender-role stereotyped jobs, and the fact that women's jobs are less likely to be unionized, the wage gap reflects, in part, those patterns of women's employment associated with child rearing and spousal responsibilities; namely, part-time and intermittent employment, and limited geographic mobility (Resnick & Hartmann, 1986).

Psychological Costs

The psychological cost of these decisions is more difficult to assess. Several studies suggest, however, that the decision to sacrifice one's own career

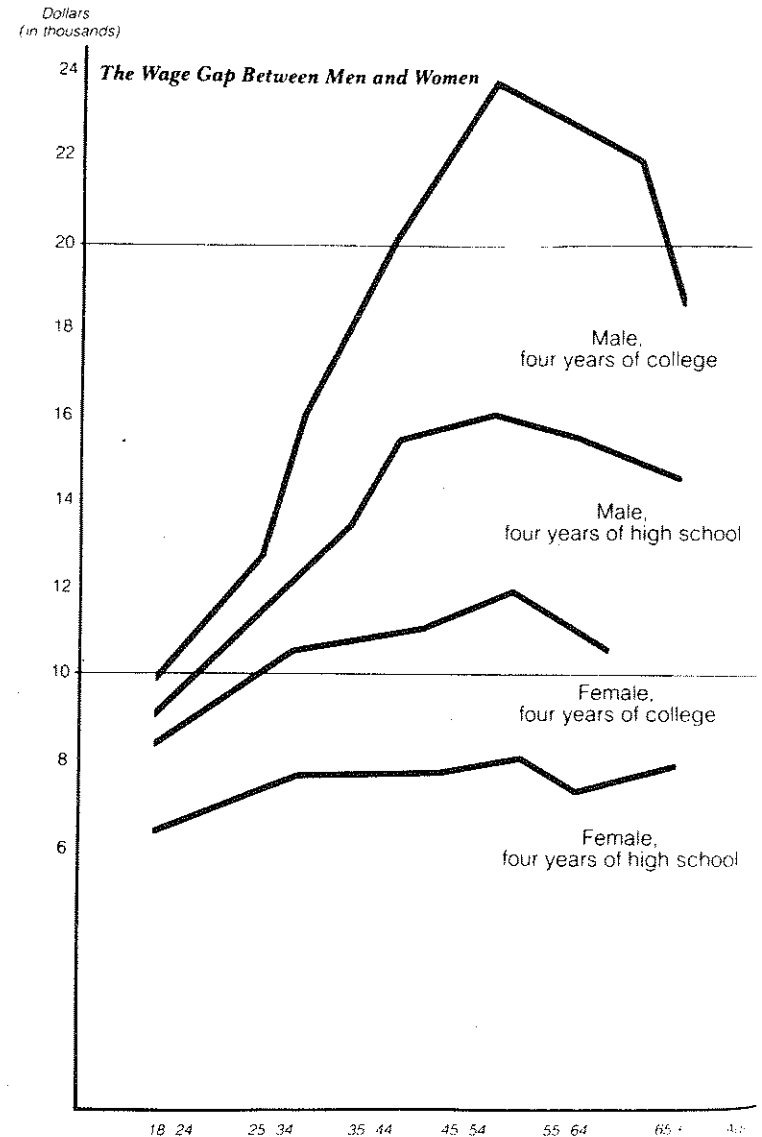


FIGURE 3. Wage differential across the life cycle.

development for one's family may have some negative consequences for females. For example, in the Terman sample, the housewives reported less satisfaction with their lives than the professional women (Oden, 1968; Sears, 1979). Similarly, despite the fact that they reported having chosen to stay home, the homemakers in the Sholomskas and Axelrod (1986) study scored lower on a measure of self-esteem than either of the other two groups of women. Consistent with this result, various studies of subjective well being suggest that women who work outside the home feel better about themselves and their lives than full-time homemakers (Coleman & Antonucci, 1983; Veroff, Douvan, & Kulka, 1981). Finally, numerous studies have shown that maternal employment can have a positive impact on one's children (especially girls) as well as oneself (Hoffman & Nye, 1974; Hoffman, 1984). Furthermore, remaining at home reluctantly can have a negative impact on one's children (Hoffman & Nye, 1974).

But the solution to these problems does not lie in looking to deficit explanations for females' educational and vocational choices. The solution, in part, lies in two separate strategies. First, efforts need to be made to change the differential value society places on female and male vocations, thus making both female and male choices equally economically viable. Comparable worth is one such strategy; legitimizing the right of parents, both males and females, to invest time in their children without jeopardizing their vocational advancement is another; allowing late entry into various educational and vocational settings is yet another; and providing adequate supports for working parents is still another (see Bell, 1985; Hewlett, 1986, for fuller discussion of these issues).

Second, efforts need to be made to broaden the range of educational and vocational options that females consider during their formative years. Processes associated with gender-role stereotyping and gender-role socialization lead girls to make choices that are often not in their best long-range interests. Parents, teachers, counselors, and peers appear to lack confidence in girls' ability or motivation to succeed at demanding or nontraditional educational programs. They do little to foster girls' perceptions of these programs as valuable and important; they do little to help girls evaluate the relative importance of careers and family as well as the absolute importance of economic independence; and they do little to provide girls with accurate and detailed information about the educational and occupational *options* available for them and with experiences that might increase the salience of these options (see Eccles & Hoffman, 1984, for a review). This is true for all levels of occupational aspirations, but is still especially true for occupations linked to vocational education programs. Given the omnipresence of gender-role prescriptions regarding appropriate female life choices, there is little basis for females to develop nontraditional goals if their parents, peers, teachers, and counselors do not encourage them to consider these options. And there is even less basis if these individuals actively discourage such consideration, socializing instead traditional female goals and deference to

males as the "providers." Consequently, due largely to inadequate career and educational guidance in the schools and at home, girls reach critical decision points with an incomplete picture of the vocational world, a romanticized picture of traditional family roles, and incomplete information regarding the potential costs and benefits of various educational and vocational options. Without such information it is difficult to make a wise choice for oneself. Every effort should be made to ensure that girls, as well as boys, have a full picture of the options available to them, to ensure that girls have equal access to these options, to make the importance of being able to support oneself and one's family equally salient to both boys and girls, and to increase the boys' interest in more traditional family maintenance tasks. In addition, every effort needs to be made to keep options open for women who may seek new opportunities as their role obligations change.

CONCLUSIONS

In summary, I have argued that sex differences in educational and vocational choices result from both differential expectations for success and differential values and have suggested that sex differences on both of these psychological constructs result from gender-role socialization. What distinguishes my approach from other explanations of sex differences in achievement is its attention to the issue 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 whether to take difficult courses or to spend their extra time with their friends; and they decide how to integrate work and family roles, etc. My colleagues and I have tried to address the issue of choice directly and have specified the kinds of socialization experiences that shape individual differences in the mediators of these choices (Eccles et al., 1983).

Furthermore, because we have focused on choice rather than avoidance, we believe this 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. Many of these scholars have looked for the origin in female motivational deficits or in expectancy/attributional differences, arguing that women avoid male achievement activities because they lack confidence or because they are afraid of the consequences of success. For example, it has been suggested 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, and are more likely to exhibit a learned helplessness

response to failure (e.g. Betz & Hackett, 1981; Dweck, 1986; Parsons et al., 1976). Furthermore, it has been argued that these differences mediate the sex differences observed in achievement patterns.

Although these dynamics may characterize some individuals, there are several problems with the deficit perspective implied in these hypotheses. First, because they assume a deficit model of female achievement, research has focused on the question "How are women different than men?" rather than "What influences men's and women's achievement behavior?". As a consequence of this focus on sex differences, individual differences among women have largely been ignored until quite recently (Gerson, 1985) despite the fact that we know that within-sex variations on any psychological measure are much larger than the mean between sex differences. Second, the assumption that sex differences in these variables actually mediate sex differences in achievement behavior has rarely been tested. Instead, many studies simply demonstrate a statistically significant difference between males and females and conclude that this difference accounts for sex differences in achievement behavior. Third, the deficit 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 that facilitates men's competitive achievement. Fourth, the deficit psychological perspective has led to a static rather than a dynamic view of role choices. As Gerson (1985) documents so well, women have coped with the multiple demands of work and family by the continual process of renegotiation with their social and personal situations and reassessments of their own goals and options.

Our model provides a 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 educational and vocational choices result from the fact that males and females on the average have different but equally important goals for their lives and that these goals themselves may change over the lifetime as roles and obligations change. This view differs markedly from explanations that attribute sex differences in achievement patterns to females' lack of confidence, low expectations, and/or debilitating attributional tendencies. Instead of characterizing females as deficient males, the perspective outlined here legitimizes females' choices as valuable on their own terms rather than as a reflection or distortion of male choices and male values. (Gilligan, 1982, has made a similar point regarding males' and females' moral judgments.) It also suggests specific types of interventions that stress rational and comprehensive career counselling, changing opportunity structures and classroom experiences across the lifetime, providing societal supports for parenting and personal development rather than motivational retraining, and macro-level reassessment of the differential economic payoff afforded to male

versus female occupations. Consequently, it places less blame on the "victims" of gender-role socializations and focuses our attention on the social changes that are needed if we are to create a truly gender-fair society.

NOTE

1. Recent time use studies add support to these concerns. Despite the fact that women are now working more hours outside the home, husbands and fathers still contribute little time or energy to child care or household maintenance (Goff-Timmer, Eccles, & O'Brien, 1985). In fact the wife's working status has very little effect on the husband's time use patterns either inside or outside the home.

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