

GENDER ROLES AND VOCATIONAL DECISIONS

Jacquelynne S. Eccles

University of Michigan

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, augmenting occupations. (Hacker, 1986). Similarly, although there have been significant increases in the enrollment of women in law, medicine, and business schools, 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 (see 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

Insert Figure 1 about here

of a recent survey of San Francisco Bay area conducted by the EQUALS project at the Lawrence Hall of Science. As you can see, eleven of the fifteen career categories evidence 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 representative sample of tenth grade students' in Michigan surveyed in 1983 (Michigan Board of Education, 1984). Stereotypic sex differences in these students reports of which

Presidential Address, Division 35, American Psychological Association, 1986, Washington, D. C. This research was made possible by grants from the National Institute of Mental Health (MH (MH31724 - to Jacquelynne S. Eccles), the National Institute of Child Health and Human Development (HD17296 - to Jacquelynne S. Eccles), and the National Science Foundation (BNS-8510504 - to Jacquelynne S. Eccles and Allan Wigfield). Address correspondence to: Jacquelynne S. Eccles, Research Center for Group Dynamics, Institute for Social Research, University of Michigan, Box 1248, Ann Arbor, Michigan, 48106.

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.

Although highly important, institutional barriers 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 paper explores these social and psychological processes.

Before preceding 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 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 (see 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 Occupation 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 individual's expectations for their performance on various achievement tasks and to their perceptions of the importance of these various achievement tasks (see 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.

Insert Figure 2 about here

For example, people should prefer occupations that they think they can succeed at and that have high value for them. Their expectations for success 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 occupations compatible with the individual's other life goals and anticipated activities?

Four features of our model are particularly important for understanding sex differences in the 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 (see 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.

The second is our 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 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.

Conceptualizing achievement sex differences in terms of choice highlights a third 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.

Understanding the processes shaping individuals' perceptions of the viable options is essential to our understanding of the dynamics leading women and men to make different achievement decisions. 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 phenomena have not been fully identified. Role modelling surely is one important contributor. Through their own occupation parents provide salient information on available occupational options. Similarly, the success of non-traditional 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 options (Kidd, 1984b).

In the past school counselors have been notoriously bad at providing students with information on non-traditional careers (see 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. 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 non-traditional 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 T.V. 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 non-traditional 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 (see 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 outnumber girls about 8 to 1 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., 1982; 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 support for one's occupational commitments). Clearly, social agents can either encourage or discourage students' from considering non-traditional choices. Unfortunately, they typically highlight and reinforce options that are consistent with gender-role stereotypes (see Eccles & Hoffman, 1984).

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 family-role scripts (as even recent data suggest that they are [Leslie, 1986]), this may also lead her to 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 (see Eccles & Hoffman, 1984; Klein, 1985).

The fourth 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, etc. 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 of 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. We 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 choice.

In summary, we assume 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 & Licht, 1980; Horner, 1972; Tobias, 1978). While this may be true, it overlooks other possible influences on women's educational and career decisions. Second, the assumptions 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 on measures of causal attributions or expectations, for example, and conclude 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 interventions based on value socialization rather than expectancy socialization. I'll now discuss these processes in more detail, focusing on the impact of gender-roles and socialization as 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, since 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. 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 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 is 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 & Kahl, 1980; 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 will 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 are 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 or 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. 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 occupational 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 & Bachman (1982) reported that young girls planning careers in male-dominated fields expected to face discrimination while 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 discriminating 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 at present. 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: (1) the utility value of the task in facilitating one's long range goals; (2) 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; (3) the attainment value of the task in terms of its relation to one's self image and personal values; and (4) the cost of engaging in the activity. Although each of these can be influenced by processes linked to gender-role, 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, etc.. Participating in a particular task will require the demonstration 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 our understanding of 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. For one, gender-role socialization could lead males and females to have different hierarchies of core personal values (such as interest in people versus 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 (Dunteman, Wisenbaker, & Taylor, 1978; Feather, 1984; Fox and 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 on several studies assessing the criterion adolescent males and females use in picking an occupation or a course. For example, both Tittle (1981) and Herzog & Bachman (1982) have found that high school-aged males 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 Joe Veroff and Elizabeth Douvan (Veroff, 1983) suggest 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 being 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 the young women who plan to devote time to their children, their family, and their 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 could also differ in the density of their goals, values, and motives. For example, several studies suggest that women integrate achievement and affiliative needs while 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 than women to exhibit a single-minded devotion to one particular goal, especially their occupational goal. In contrast, women seem more likely than men 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 their 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 & 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 discussing integrating a family and a career with her mother and father. 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. To the extent that 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 since 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 & 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 young 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 insure 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 (Benbow & Stanley, 1984; Erb, 1983; Fox, Pasternak, & Peiser, 1976; Kreinberg, 1985; Terman, 1926, 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, 1926, 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 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) suggest that 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.

Academics 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 while the men place more importance on the publishing. 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 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 rating 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 suggest 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 motive and that gender-role definitions play a major role in these choices. In support of this, subsequent studies suggest 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 gender roles may be linked to the subjective value men and women place on various occupations and to their definition 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 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: (1) daughters are better at English than sons; (2) sons are better at math than daughters; and (3) 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 recently discovered a more subtle dynamic that may be important in explaining sex differences in expectations. We have been exploring 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 equivalently in both subjects. How does this differentiated view of their child's abilities affect girls' self-perceptions?

We have used regression analyses to find out. When we regressed children's self-concept of their math abilities simultaneously on their parents' ratings of both their daughters' math and English abilities and their 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 English abilities have relatively lower perceptions of their math abilities than children whose parents have lower estimates of their English abilities. Who are these children likely to be? Girls! Apparently, then, parents may be undermining their daughter's expectations in mathematics through two mechanisms: their underestimation of their daughter's 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), Jan 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 to both their own "pre-test" ratings and to 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' 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 individuals are exposed to 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.

But let me be more specific. 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 high teacher expectancy boys, 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 are developing different value for various subjects not because they 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, P. Casserly (1980), J. Kahle (1984), E. Fennema & P. 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 is emerging. Girls have more positive attitudes toward math in classrooms characterized by low levels of competition among the students, high levels of co-operative 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 (see Casserly, 1980; Eccles, MacIver, & Lange, 1986; Eccles & Blumenfeld, 1985).

Furthermore, Peterson & Fennema (1985) have found that cognitive gain scores of boys and girls are differentially influenced by these same characteristics. Girls' gain scores are 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' gain scores are 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. They also point to the importance of active career and educational counselling for increasing non-traditional choices.

The analysis I have developed 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, I have suggested that 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 thing-oriented versus 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 pre-professional training may result, in part, from differences in men's and women's psychological investments in and definitions of their family roles versus their professional roles. These gender differences in psychological investment in family versus 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).

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 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 1000 gifted boys and girls in California. Most of these people have been reinterviewed 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 contributed 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 than their gifted male peers 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 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 1930's and early 1940's 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.

What is important to note in terms of this paper is that 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 proscribed norms, few apparently based their decision on a lack of confidence in their ability to succeed. Similar results characterize much younger samples of women. 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, non-career worker. For the most part, 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 working women reported economic necessity as the primary reason for their role choice. Finally, Gerson (1985), clearly documents how women's life choices involve inextricably linked decisions about work and family.

Economic Costs

But what are the costs of these decisions. I will focus on economic and psychological costs. 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 of past generations. For example, in 1969, in the United States, non-working middle-aged wives enjoyed a higher standard of living than working 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. 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 places less economic value on those vocations typically chosen by women, the economic and long-term psychological cost of these decisions can be quite 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 2) and there is a growing number of divorced women and children living in poverty (Weitzman, 1985).

Insert Table 1 and Figure 3 about here

Furthermore, several investigators have argued that these gaps reflect, at least in part, the impact of female family responsibilities on women's work patterns (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 are more difficult to assess. Several studies suggest, however, that the decision to sacrifice one's own career 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 life than the professional women (Oden, 1968; Sears, 1979). Similarly, despite the fact that they reported having chosen to stay home, the homemakers in the Sholomokas 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 life than full-time homemakers (Coleman & Antonucci, 1983; Veroff, Douvan & Kukla, 1981). Finally, numerous studies have shown that maternal employment can have a positive impact on one's children (especially girls) as well as one's self (see Hoffman & Nye, 1974; Hoffman, 1984). Furthermore, remaining at home reluctantly can have a negative impact on one's children.

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 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 interest. Parents, teachers, counselors, and peers appear to lack confidence in girls' ability or motivation to succeed at demanding or non-traditional educational programs. They do little to foster girls' perception 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 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 non-traditional 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 insure that girls, as well as boys, have as full a picture as possible of the options available to them, to insure that girls have equal access to these options, to make the importance of being able to support one's self 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 on the mediators of these choices (see 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, are more likely to exhibit a learned helpless response to failure, etc. Furthermore, it has been argued that these differences mediate the sex differences we observe 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 (see 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 biases. 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 pay off 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.

References

- Armstrong, J. M. (1985). A national assessment of participation and achievement of women in mathematics. In S. F. Chipman, L. R. Brush, & D. M. Wilson (Eds.), Women and mathematics: Balancing the equation. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Astin, H. S. (1984). Academic scholarship and its rewards. In M. W. Steinkamp & M. L. Maehr (Eds.), Women in science. (pp. 259-280). Greenwich, CT: JAI Press.
- Atkinson, J. W. (1964). An introduction to motivation. Princeton, NJ: Van Nostrand.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, 84, 191-215.
- Baruch, G., Barnett, R., & Rivers, C. (1983). Life prints. New York: McGraw-Hill.
- Bell, C. S. (1985). Comparable worth: How do we know it will work. Monthly Labor Review, December, 5-12.
- Benbow, C. P., & Stanley, J. C. (1980). Sex differences in mathematical ability: Fact or artifact? Science, 210, 1262-1264.
- Bernard, J. (1981). The female world. New York: The Free Press.
- Betz, N. E. & Hackett, G. (1981). The relationship of career-related self-efficacy expectations to perceived career options in college women and men. Journal of Counseling Psychology, 28, 399-410.
- Bihm, E. M., & Winer, J. L. (1983). The distortion of memory for careers: The influences of the thematic organization of occupational information. Journal of Vocational Behavior, 23, 356-366.
- Blackman, S. (1986). The masculinity-femininity of women who study college mathematics. Sex Roles, 15, 33-42.
- Boswell, S. (1979). Nice girls don't study mathematics: The perspective from elementary school. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Brophy, J. E., & Good, T. (1974). Teacher-student relationships: Causes and consequences. New York: Holt, Rinehart & Winston.
- Buss, D. M. (1981). Sex differences in the evaluation and performance of dominant acts. Journal of Personality and Social Psychology, 40, 147-154.
- Callahan, C. M. (1979). The gifted and talented woman. In A. H. Passow (Ed.), The gifted and talented: Their education and development. The seventy-eighth yearbook of the National Society for the Study of Education. Chicago: The University of Chicago Press.
- Cassery, P. (1980). An assessment of factors affecting female participation in advanced placement programs in mathematics, chemistry, and physics. In L. H. Fox, L. Brody, & D. Tobin (Eds.), Women and the mathematical mystique (pp. 138-163). Baltimore: Johns Hopkins University Press.
- Coleman, L. M., & Antonucci, T. (1983). Impact of work on women at mid life. Developmental Psychology, 19, 290-294.
- Covington, M., & Omelich, C. (1979). Are causal attributions causal? A path analysis of the cognitive model of achievement motivation. Journal of Personality and Social Psychology, 37, 1487-1504.
- Crandall, V. C. (1969). Sex differences in expectancy of intellectual and academic reinforcement. In C. P. Smith (Ed.) Achievement-related behaviors in children. New York: Russell Sage Foundation.
- Dunteman, G. H., Wisenbaker, J., & Taylor, M. E. (1978). Race and sex differences in college science program participation. Report to the National Science Foundation. North Carolina: Research Triangle Park.

- Dweck, C. S., & Licht, B. G. (1980). Learned helplessness and intellectual achievement. In J. Garber & M. E. P. Seligman (Eds.), Human helplessness: Theory and application. New York: Academic Press.
- Eccles (Parsons), J. (1984). Sex differences in math participation. In M. I. Maehr and W. Steinkamp (Eds.), Women in Science. Greenwich, CT: JAI Press, Inc.
- Eccles, J. (1986). Female achievement patterns: Attributions, expectancies, values, and choice. Unpublished manuscript, University of Michigan.
- Eccles (Parsons), J., Adler, T. F., Futterman, R., Goff, S. B., Kacazala, C. M., Meece, J. L., & Midgley, C. (1983). Expectations, values and academic behaviors. In J. T. Spence (Ed.), Perspective on achievement and achievement motivation. San Francisco: W. H. Freeman.
- Eccles (Parsons), J., Adler, T., & Meece, J. L. (1984). Sex differences in achievement: A test of alternate theories. Journal of Personality and Social Psychology, 46, 26-43.
- Eccles, J., & Blumenfeld, P. (1985). Classroom experiences and student gender: Are there differences and do they matter? In L. C. Wilkenson and C. Marrett (Eds.), Gender influences in classroom interaction. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Eccles, J., & Hoffman, L. W. (1984). Sex roles, socialization, and occupational behavior. In H. W. Stevenson and A. E. Siegel (Eds.) Research in child development and social policy: Volume 1. Chicago: University of Chicago Press.
- Eccles, J. S., & Jacobs, J. (1986). Social forces shape math participation. Signs, 11, 367-380.
- Eccles, J., Jacobs, J., Flanagan, C., Goldsmith, R., Barber, B., Yee, D., & Carlson, E. (1986). Sex differences in achievement: Parental influences, Part II. Unpublished manuscript, University of Michigan.
- Eccles, J., MacIver, D., & Lange, L. (1986). Classroom practices and motivation to study math. Symposium paper, AERA, San Francisco, April.
- Erb, T. O. (1983). Career preferences of early adolescents: Age and sex differences. Journal of Early Adolescence, 3, 349-359.
- Farmer, H. S. (1985). Model of career and achievement motivation for women and men. Journal of Counseling Psychology, 32, 363-390.
- Feather, N. T. (1982). Reasons for entering medical school in relation to value priorities and sex of student. Journal of Occupational Psychology, 55, 119-128.
- Feather, N. T. (1984). Masculinity, femininity, psychological androgyny and the structure of values. Journal of Personality and Social Psychology, 47, 604-620.
- Feather, N. T. (1986). Gender differences in values: Implications of the expectancy-value model. In F. Halisch & J. Kuhl (Eds.), Motivation, intention, and volition. New York: Springer-Verlag.
- Feather, N. T., & Newton, J. W. (1982). Values, expectations, and the prediction of social action: An expectancy-valence analysis. Motivation and Emotion, 6, 217-244.
- Fennema, E. (1985). Attribution theory and achievement in mathematics. In S. R. Yussen (Ed.), The Development of reflection. New York: Academic Press.
- Fennema, E., & Peterson, P. (1986). Autonomous learning behaviors and classroom environments. Paper presented at the annual meeting of American Educational Research Association. San Francisco.
- Fennema, E., Wollat, P., Pedro, J. D., & Becker, A. D. (1981). Increasing women's participation in mathematics: An intervention study. Journal for Research in Mathematics Education, 12, 3-14.

- Fox, L. H. (1976). Sex differences in mathematical precocity: Bridging the gap. In D. P. Keating (Ed.), Intellectual talent: Research and development. (pp. 183-214). Baltimore: Johns Hopkins University Press.
- Fox, L. H. & Denham, S. A. (1974). Values and career interests of mathematically and scientifically precocious youth. In J. C. Stanley, D. P. Keating, and L. H. Fox (Eds.), Mathematical talent: Discovery, description, and development (pp. 140-175). Baltimore, MD: Johns Hopkins University Press.
- Fox, L. H., Pasternak, S. R., & Peiser, N. L. (1976). Career-related interests of adolescent boys and girls. In D. P. Keating (Ed.), Intellectual talent: Research and development. (pp. 242-261). Baltimore: Johns Hopkins University Press.
- Freedman, D. (1986). Gender-role identity and the choice of a math-related major. Unpublished undergraduate honors thesis, University of Michigan, Ann Arbor.
- Frieze, I. H., & Hanusa, B. H. (1984). Women scientists: Overcoming barriers. In M. W. Steinkamp & M. L. Maehr (Eds.), Women in science (pp. 139-164). Greenwich, CT: JAI Press.
- Gerson, K. (1986) Hard Choices: How Women Decide about Work, Career, and Motherhood. University of California Press.
- Gilligan, C. (1982). In a different voice. Cambridge, MA: Harvard University Press.
- Hacker, A. (1986). Women at work. The New York Review of Books. Aug. 14; 26-32.
- Herzog, A. R. & Bachman, J. G. (1982). Sex-role attitudes among high school seniors. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Hewlett, S. A. (1985). A Lesser Life. New York: William Morrow and Co.
- Hoffman, L. W. (1984). Maternal employment and the young child. In M. Perlmutter (Ed.), Mother/child interaction and parent/child relations in child development. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hoffman, L. W. & Nye, F. I. (1974). Working mothers. San Francisco: Jossey-Bass.
- Holland, J. L. (1985). Making vocational choices: A theory of vocational personalities and work environments. Englewood Cliffs, NJ: Prentice-Hall.
- Horner, M. (1972) (check date 1966 in text??) Toward an understanding of achievement-related conflicts in women. Journal of Social Issues, 28, 129-156.
- Huston, A. C. (1983). Sex-typing. In P. Mussen and E. M. Hetherington (Eds.), Handbook of Child Psychology, Vol. IV. New York: John Wiley.
- Jacobs, J., & Eccles, J. S. (1985). Science and the media: Benbow and Stanley revisited. Educational Researcher, 14, 20-25.
- Jayarathne, T. (1983). Sex differences in children's math achievement: Parental attitudes. Paper presented at the annual meeting of the Society for Research in Child Development, Detroit, MI.
- Johnston, J. & Erttema, J. S. (1982). Positive images. Beverly Hills, CA: Sage.
- Kahle, J. (1984). Girl-friendly science. Paper presented at the meeting of the American Association for the Advancement of the Sciences, New York.
- Kidd, J. M. (1984a). The relationship of self and occupational concepts to the occupational preferences of adolescents. Journal of Vocational Behavior, 24, 48-65.
- Kidd, J. M. (1984b). Young people's perceptions of their occupational decision-making. British Journal of Guidance and Counseling, 12, 15-30.

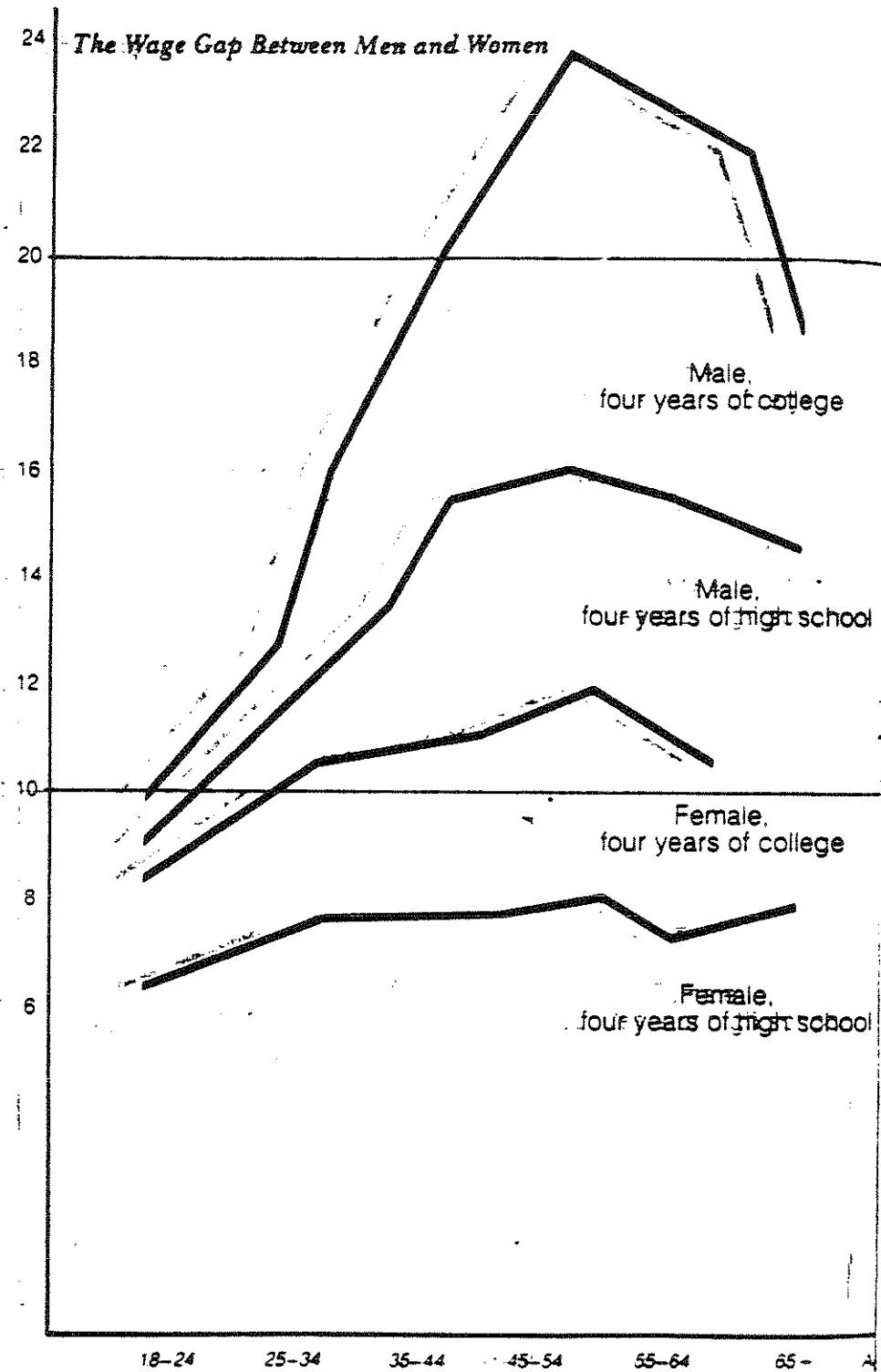
- Kiesler, S., Sproull, L., & Eccles, J. S. (1985). Pool halls, chips, and war games: Women in the culture of computing. Psychology of Women Quarterly, 9, 451-462.
- Klein, S. (Ed.). (1985). Handbook for achieving sex equity through education. Baltimore, MD: Johns Hopkins Press.
- Kreinberg, N. (1985). Girls and math: EQUALS and sex equity. EQUALS workshop, University of Michigan.
- Lantz, A. E., & Smith, G. P. (1981). Factors influencing the choice of nonrequired mathematics courses. Journal of Educational Psychology, 73, 825-837.
- Leslie, L. A. (1986). The impact of adolescent females' assessments of parenthood and employment on plans for the future. Journal of Youth and Adolescence, 15, 29-50.
- Lewin, K. (1938). The conceptual representation and the measurement of psychological forces. Durham, NC: Duke University Press.
- Lyson, T. A. (1984). Sex differences in the choice of a male or female career line: An analysis of background characteristics and work values. Work and occupations, 11, (2), 131-146.
- Maines, D. R. (1983). A theory of informal barriers for women in mathematics. Paper presented at the annual meeting of the American Educational Research Association, Montreal.
- Markus, H. (1980). The self in thought and memory. In D. M. Wegner and R. R. Vallacher (Eds.), The self in social psychology. New York: Oxford University Press.
- McGinn, P. V. (1976). Verbally gifted youth: Selection and description. In D. P. Keating (Ed.), Intellectual talent: Research and development (pp. 106-182). Baltimore: Johns Hopkins University Press.
- Meece, J. L., Eccles (Parsons), J., Kaczala, C. M., Goff, S. B., & Futterman, R. (1982). Sex differences in math achievement: Toward a model of academic choice. Psychological Bulletin, 91, 324-348.
- Michigan Board of Education (1984). Michigan Educational Assessment Program: Career Development Interpretative Report, 1983-1984. East Lansing, MI: Michigan Board of Education.
- Montemayor, R. (1974). Children's performance in a game and their attraction to it as a function of sex-typed labels. Child Development, 45, 115-128.
- Norwood, J. (1985) Monthly Labor Review, (December), pp. 3-4.
- Nathanson, C. A., & Lorenz, G. (1982). Women and health: The social dimensions of biomedical data. pp. 37-87. In J. Zollinger Giel (Ed.), Women in the Middle Years: Current Knowledge and Directions for Research and Policy. New York: Wiley Interscience.
- Naylor, F. D. (1984). Sex, schools, and emerging occupational interests. In J. Palmer (Ed.), Melbourne studies in education. Melbourne, Australia: Melbourne University Press.
- Oden, M. H. (1968). The fulfillment of promise: 40 year follow-up of the Terman gifted group. Genetic Psychology Monographs, 77, 3-93.
- O'Neill, J. (1985). co-quoted in USA Today, Friday, December 20, 1985, GA.
- Paludi, M. A., & Fandell-Hauser, J. (1986). An idiographic approach to the study of women's achievement strivings. Psychology of Women Quarterly, 10, 89-100.
- Parsons, J. E., Adler, T. F., & Kaczala, C. M. (1982). Socialization of achievement attitudes and beliefs: Parental influences. Child Development, 53, 310-321.
- Parsons, J. E., & Goff, S. G. (1980). Achievement motivation: A dual modality. In L. J. Fyans (Ed.), Recent trends in achievement motivation: Theory and Research. Englewood Cliffs, NJ: Plenum.

- Parsons, J. E., Kaczala, C., & Meece, J. (1982). Socialization of achievement attitudes and beliefs: Classroom influences. Child Development, 53, 322-339.
- Pavan, B. N. (1985). Certified but not hired: Women Administrators in Pennsylvania. Paper presented at the Research on Women and Education Conference. Boston, MA.
- Peterson, P. L. & Fennema, E. (1985). Effective teaching, student engagement in classroom activities, and sex-related differences in learning mathematics. American Educational Research Journal, 22, (3), 309-335.
- Resnick, B. F., & Hartmann, H. I. (1986). Women's Work, Men's Work: Sex Segregation on the Job. National Academy Press, p. 1
- Rokeach, M. (1973). The nature of human values. New York: The Free Press.
- Rowell, J. A. (1985). Multidimensional scaling: A possible technique for examining male and female occupational perceptions and preferences. Multivariate Behavioral Research, 20, 201-222.
- Sears, P. S. (1979). The Terman genetic studies of genius: 1922-1972. In A. H. Passow (Ed.), The seventy-eighth yearbook of the National Society of the Study of Education. Chicago: University of Chicago Press.
- Sholomskas, D., & Axelrod, R. (1986). The influence of mother-daughter relationships on women's sense of self and current role choices. Psychology of Women Quarterly, 10, 171-182.
- Sorensen, G., Pirie, P., Folsom, A., Luepker, R., Jacobs, D., & Gillum, R. (1985). Sex differences in the relationship between work and health: The Minnesota heart survey. Journal of Health and Social Behavior, 26, 379-394.
- Stevens, G. (1986). Sex differentiated patterns of intergenerational occupational mobility. Journal of Marriage and the Family, 48, 153-163.
- Super, D. E. (1963). Self-concepts in career development. In D. E. Super, R. Starishevsky, N. Matlin, & J. P. Jordan (Eds.), Career Development: Self-Concept Theory. New York: College Entrance Examination Board.
- Sutherland, E., & Veroff, J. (1985). Achievement motivation and sex roles. In V. E. O'Leary, R. K. Unger, & B. S. Wallston (Eds.), Women, Gender, and Social Psychology. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Terman, L. M. (1925). Genetic studies of genius: Vol. 1. Mental and physical traits of a thousand gifted children. Stanford, CA: Stanford University Press.
- Terman, L. M. (1930). Genetic studies of genius: Vol. 3. The promise of youth: Follow-up studies of a thousand gifted children. Stanford, CA: Stanford University Press.
- Terman, L. M., & Gden, M. H. (1947). Genetic studies of genius: Vol. 4: The gifted child grows up: Twenty-five years' follow-up of a superior group. Stanford, CA: Stanford University Press.
- Tittle, C. K. (1981). Careers and family: Sex roles and adolescent life plans. Beverly Hills, CA: Sage.
- Tobias, S. (1978). Overcoming math anxiety. New York: W. W. Norton.
- Verbrugge, L. M. (1976). Females and illness: Recent trends in sex differences in the United States. Journal of Health and Social Behavior, 17, 387-403.
- Veroff, J. (1983). Contextual determinants of personality. Personality and Social Psychology Bulletin, 9, 331-343.
- Veroff, J., Douvan, E., & Kulka, R. A. (1981). The Inner American: A Self-Portrait from 1957 to 1976. New York: Basic Books, Inc.
- Veroff, J., & Feld, S. C. (1970). Marriage and work in America. NY: Van Nostrand-Rineholt.

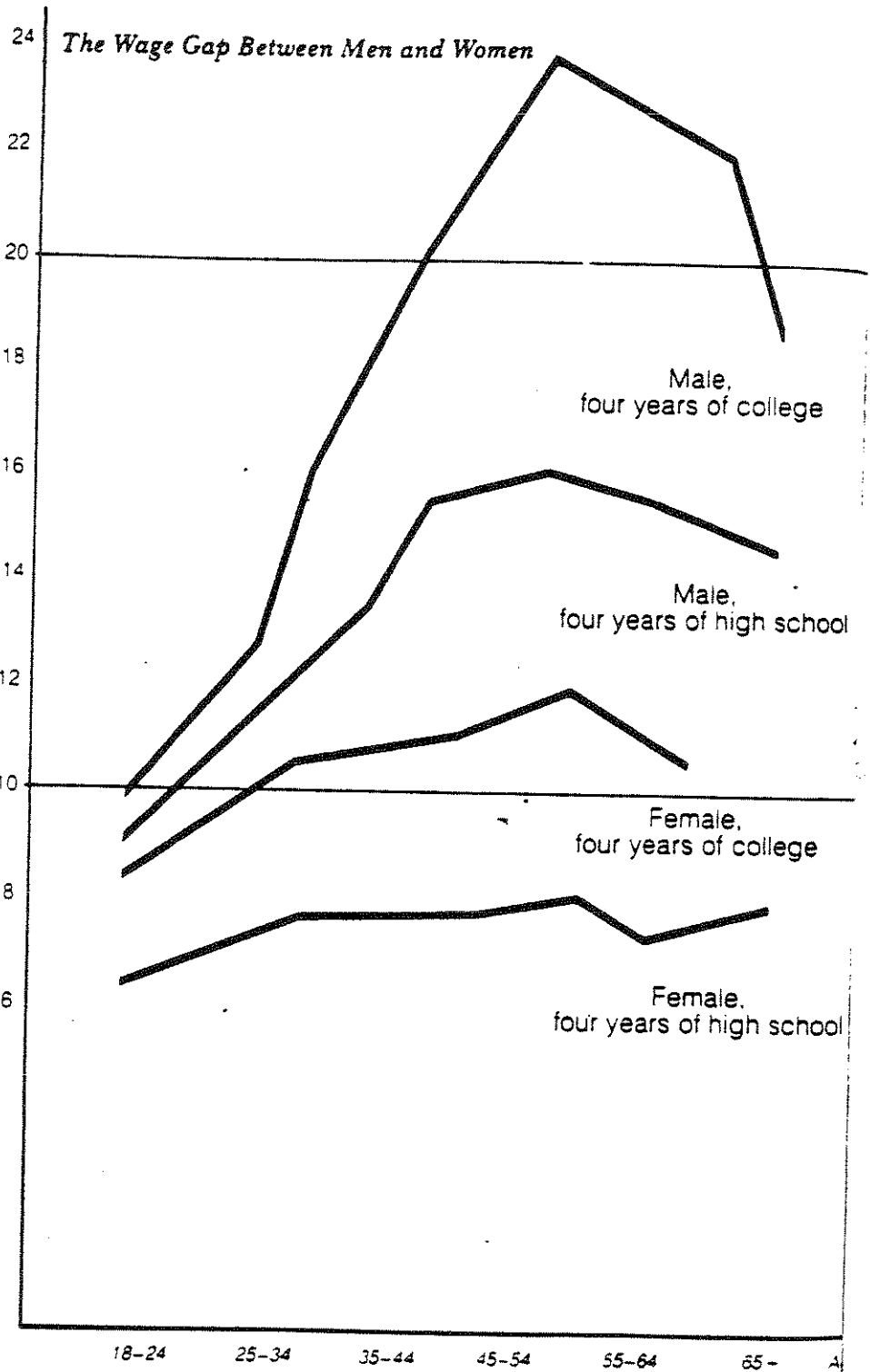
- Vetter, B. M. (1981). Women scientists and engineers: Trends in participation. Science, Vol. 214, 1313-1321.
- Weiner, B. (1974). Achievement motivation and attribution theory. Morristown, NJ: General Learning Press.
- Weitzman, L. J. (1985). The Divorce Revolution. Free Press. 504 pp. (WW)
- White, J. W. & Gruber, K. J. (1985). Gender differences in leisure-need activity pattern. Sex Roles, 12, 1173-1186.
- Williams, J. E., Bennett, S., & Best, D. (1975). Awareness and expression of sex stereotypes in young children. Developmental Psychology, 11, 635-642.
- Wise, L. (1985). Project Talent: Mathematics course participation in the 1960s and its career consequences. In S. F. Chipman, L. R. Brush, & D. M. Wilson (Eds.), Women and mathematics: Balancing the equation. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Yee, D., & Eccles, J. (1983). A comparison of parents' and children's attributions for success and unsuccessful math performances. Paper presented at the annual meeting of the American Psychological Association, Anaheim, CA.

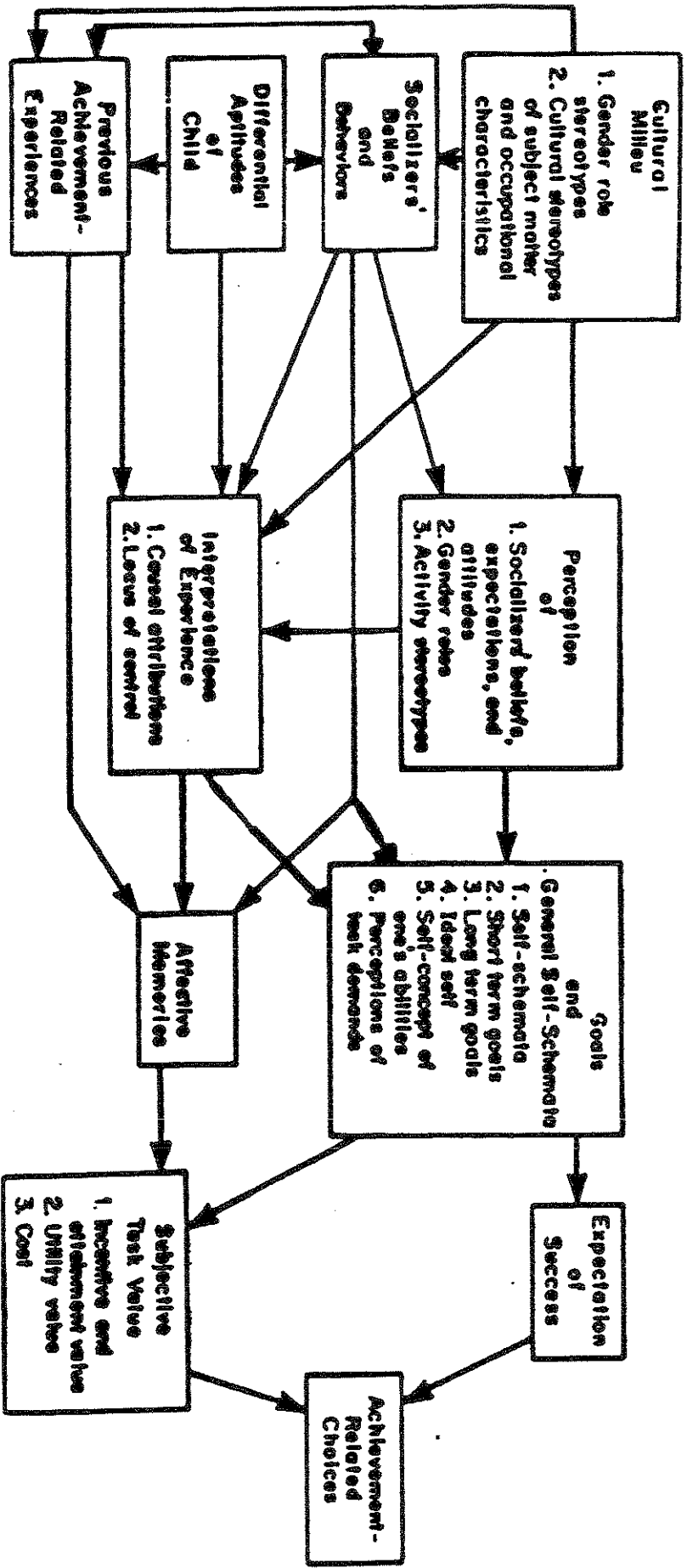
Dollars
(in thousands)

The Wage Gap Between Men and Women



Dollars
(in thousands)





HOW MUCH LESS?

Full-time Working Women Who Are:	Earnings per \$1,000 for Men	
	Annual (Census)	Weekly (Bureau of Labor Statistics)
Single	\$910	*
Under 25	\$899	\$875
Black	\$825	\$829
Hispanic	\$741	\$776
Union Members	*	\$753
Divorced	\$728	*
Heads of Households	\$671	\$702
All Women	\$637	\$682
High School Graduates	\$631	*
White	\$622	\$674
College Graduates	\$611	*
Married	\$583	\$626
Age 45 to 55	\$536	\$595

*Not available

Sources: Bureau of the Census and Bureau of Labor Statistics, 1984.

Figure Captions

Figure 1. Student responses to The Job Picture Story and Typical Day When I'm Thirty essay.

Figure 2. Model of achievement-related choices.

Figure 3. Wage differential across the life cycle.

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

K-12 CAREERS

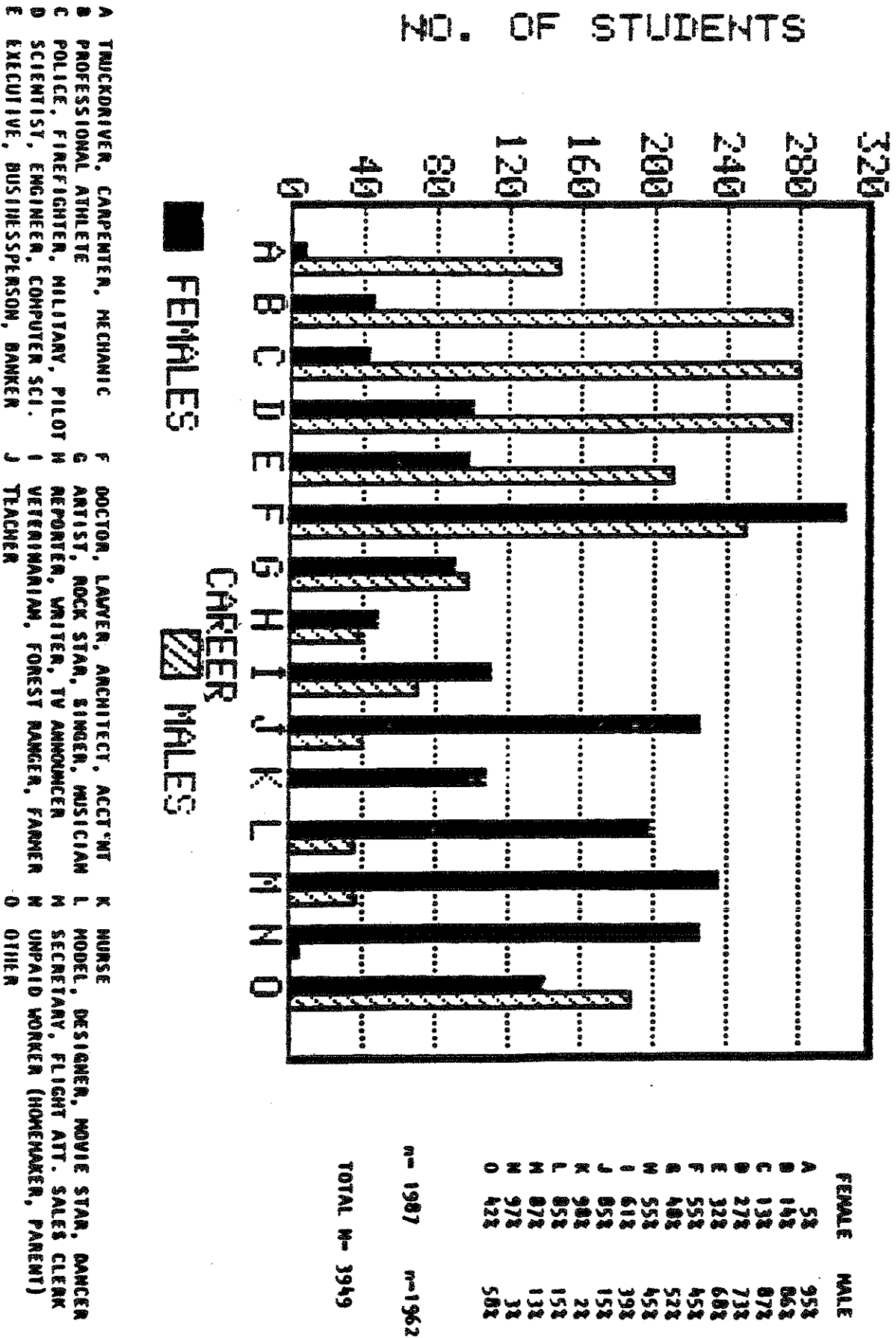


Figure Captions

Figure 1. Student responses to The Job Picture Story and Typical Day When I'm
Thirty essay.

Figure 2. Model of achievement-related choices.

Figure 3. Wage differential across the life cycle.