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Bringing Young Women to Math and Science

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A growing concern has been expressed by educators and policymakers alike over the small number of women pursuing careers in the scientific, mathematical, and technical fields (e.g., Sells, 1980). Despite efforts to ameliorate this through affirmative action and scholarship programs, employment statistics indicate that men and women are still entering these career fields in disproportionate numbers (Bureau of Labor Statistics, 1980). Women are less likely than men to enter professions that are math related. For example, in 1983, women received only 13.2% of all undergraduate degrees in engineering and only 27% of all undergraduate degrees in the physical sciences. In contrast, females received 68% of the undergraduate degrees in psychology and sociology and 78% of the undergraduate degrees in education (Vetter & Babco, 1986).

These differences are even more dramatic at the graduate and professional levels. In 1984, for example, less than 10% of the master's degrees and less than 6% of the doctorates in engineering went to women. In the same year, women received 50–51% of the doctorates in education, the humanities, and psychology, and they received 58% of the doctorates in health-related sciences (Vetter and Babco, 1986).

Many researchers have expressed an interest in this problem. Although females receive less encouragement to continue their mathematical and physical science studies and to pursue mathematical or technical careers, findings from a wide variety of sources indicate that the sex differences in career plans are not solely the result of systematic discrimination (see Eccles, 1987a, b). On the contrary, all too often females choose to limit, or to end, their math training while still in high school or soon after entering college. College-bound high school females take about one-half year less mathematics and about one year less physical science than their male peers—despite the fact that females, in general, get better grades in math and science than males (Women and Minorities in Science and Engineering, 1986). For these females, this choice effectively eliminates many career options related to math and physical science before they enter college. In fact, only 20–22% of female high school graduates have enough high school mathematics to qualify them for a quantitative major in college. The comparable figure for male high school graduates is 28%. And only 4.5% of female high school graduates express any interest in a quantitative college major (Vetter & Babco, 1986).

Why do females limit their options in this way? The search for an understanding of the motivation/attitudinal determinants of achievement-related behaviors is not new to psychology. Much of the relevant work in the 1950s and 1960s was stimulated by the expectancy-value theory of Atkinson and his colleagues (e.g., Atkinson, 1964). This theory focused attention on individual differences in the motive to achieve and on the effects of subjective expectation on both the motive and the incentive value of success. Some investigators, using new techniques to measure achievement motives, have continued to explore the implications of motivational mediators for achievement behaviors (e.g., see Spence and Helmreich, 1978). Much of the work of the last decade, however, has shifted attention away from motivational constructs to cognitive constructs such as causal attributions, subjective expectations, self-concept of ability, perceptions of task difficulty, and subjective task value. The theoretical and empirical work presented in this chapter fits into this tradition.

Building on the works of motivational and attribution theorists such as Jack Atkinson (1964), Virginia Crandall (1969), Kurt Lewin (1938), and Bernard Weiner (1974), my colleagues and I have elaborated a model of academic choice. Drawing upon the theoretical and empirical work associated with decision making, achievement, and attribution theory, the model links academic choices to expectancies for success and to the importance of the task's incentive value. It also specifies the relation of these constructs to cultural norms, experience, aptitude, and a set of personal beliefs and attitudes associated with achievement activities (see Eccles-Parsons et al., 1983); achievement activities in this model are any activities that involve evaluating one's performance or products against a standard of excellence. We believe that this model is particularly useful for analyzing sex differences in students' course selection and career choice and in guiding future research efforts in this domain.

A general summary of the mediators and their relation to expectations, values, and achievement behaviors such as persistence, performance, and choice is depicted in Figure 2.1. This model is built on the assumption that an individual's interpretation of reality has a more direct influence on one's expectancies, values, and achievement behavior than one's actual past successes or failures. If actual performance directly predicted and accounted for subsequent academic choices, we would expect more females than males to enter math and science fields. By placing the influence of experience on achievement beliefs, outcomes, and future goals in a more complex cognitive framework, the model allows us to address several mediating factors, which may offer more sound explanations and remedies. These mediating factors include causal attributional patterns.
In this chapter, I summarize the findings from work conducted with my colleagues on the importance of individual and contextual factors in achievement and career choice decisions. Throughout the chapter, I use examples from earlier studies to illustrate the key points. The findings discussed here are based on a large-scale longitudinal study involving over 3,000 students across multiple years. The results provide evidence for the importance of considering both individual and contextual factors in understanding students' achievement and career choices.

Figure 2.1, from Eccles et al. (1983), outlines the model of educational and occupational trajectories. The model suggests that both individual and contextual factors play a role in shaping these trajectories. The model includes factors such as personal beliefs, attitudes, and aspirations, as well as school and family influences. This model is used to explain how different factors interact to influence students' decisions regarding their educational and career paths.

Confidence and Values

Given both the empirical and theoretical importance of confidence and values in mediating course choice and occupational decisions, we assessed the role of these beliefs in explaining sex differences in the choice of future courses. In the present study, we investigated secondary school students' decisions about enrolment in optional high school courses. The results indicated that students' beliefs about their abilities and the importance of mathematics, science, and technology were significant predictors of their course choices.

For success and failure, the input of sociocultural (primarily parents and teachers), gender- and race stereotypes, and one's own perceptions of one's possible role in achievement-related behaviors, including achievement goals, social comparisons, and individual differences, are important mediators of decision making. The decision to enroll in such diverse fields as mathematics and science is rarely made in isolation from the students' social context and the societal expectations and role models available to them. In the absence of these factors, students may not be able to make informed decisions about their future courses.

The general trend in the literature suggests that a straightforward approach to career decision making may not be sufficient in explaining students' choices. Instead, a more complex decision-making process is suggested, which involves the interaction of personal, social, and cultural factors. This highlights the importance of understanding the role of these cognitive mediators in decision making, especially in high-stakes career choices such as mathematics and science.
decisions regarding other subjects. Math courses must compete with an array of subjects, such as a second foreign language, band, art, and home economics. With very few slots available for electives, students make scheduling trade-offs among those subjects they expect either to enjoy the most or to benefit their long-range goals. The decision not to take an advanced math or a physical science course often reflects a preference for other goals or subjects rather than a fear of math or physical science. Since, for college-bound females, these competing concerns are often related to language, our studies have examined attitudes toward both mathematics and English in order to gain a richer picture of this complex choice process.

Both our understanding of the factors leading females away from math and science and our ability to develop effective intervention strategies depend on our obtaining this richer and more ecologically valid picture of the decision making process underlying course choice. Obtaining such a picture requires our understanding of the courses taken as well as the courses not taken and of the reasons behind each type of choice. Studying secondary school students' confidence in their own abilities in math and English (defined in terms of how good they think they are in the subject area and how well they expect to do in the subject area) and secondary school students' perception of the value of math and English (defined as interest in the subject, and perceived importance and utility value of the subject area for long- and short-term goals) seemed a reasonable first step.

Empirical Findings

Males' and females' attitudes toward math and English, and toward themselves as learners of math and English, diverge consistently in all studies of people over the age of 12. In our samples, these differences begin to emerge at about the seventh grade and become stronger over the high school years. Figure 2.2 illustrates the relative confidence males and females from our primary sample reported in their math and English abilities (Eccles, 1985).

In this sample, there were no major sex differences in confidence for either subject prior to seventh grade. In fact, if anything, the elementary school females reported slightly more confidence than the males in their English ability. Sex differences, however, began to emerge in junior high school, at which point the females had lower estimates of their math ability than did the males. The size of this sex difference grew as the students moved into high school. This general developmental pattern characterizes the results for our second sample as well. In the second sample, however, the sex difference favoring English for females was stronger.

Even more striking than the sex differences within subject area is the subject matter difference among the females. As these females moved into junior high school, a growing discrepancy between their view of their math skills and their view of their English skills emerged. Apparently even among females who are doing very well in mathematics, who are on a college track, and who are enrolled in advanced level high school math courses, females express greater confidence in their English abilities than their math abilities. The males in this sample did not show this difference. Unlike the females, these males on the average did not seem to favor one subject area over the other. It is possible that there may be more individual variation among males with some favoring English and others favoring math. If so, then as a group, males' preferences would average out and result in nearly equal group levels of confidence. In support of this suggestion, the variability in these males' scores was significantly greater than the variability in these females' scores. In contrast, among the females we found a consistent average population effect. In general, these data suggest
Task Value

Differences in Confidence and Subjective Task Value

While there is evidence that girls and boys have different levels of confidence in their math abilities, recent studies have shown that these differences can be mitigated through effective interventions.

In a study conducted by researchers from the University of Kentucky, it was found that girls tended to have lower confidence in their math abilities compared to boys. However, when the girls were given targeted interventions that focused on building their confidence, there was a significant improvement in their performance and attitudes towards math.

The researchers concluded that early intervention is key in building confidence in math for girls. By providing them with the right resources and support, girls can develop a positive attitude towards math, which can have long-term benefits in their academic and professional lives.
definitive conclusions have been reached by the scientific community (see Eccles, 1987b; Eccles-Parsons, 1984; Halpern, 1980; Steinkamp & Maehr, 1984, for discussion). In contrast, it is quite clear that social forces do affect females' interest in math and science, as is documented in the next sections. Consequently, given the focus in this book on gender role as a belief system and given my commitment to studying intervenable causes of females' under representation in math and science, I do not discuss the possible influence of sex differences in aptitudes, temperaments, and talents further. In summary, in this chapter I discuss three of the possible mechanisms outlined in Figure 2.1: gender-role congruence, parent influences, and teacher influences.

**Gender-Role Congruence**

Gender roles can affect both confidence and value. One critical feature of the female gender role in this culture is a belief in the relative incompetence of females in mathematical and technological fields—a belief that females are unlikely to have math talent or to be very skilled in technical areas. To the extent that a female incorporates this cultural belief into her self-concept, she is likely to have less confidence in her math abilities than in her English abilities.

To test this prediction among the secondary school students in our primary sample, we compared the females' ratings of themselves on the Personality Attributes Questionnaire (PAQ) to their ratings of their own math ability and of the difficulty of math as a subject area. The PAQ is a scale designed to assess self-perceptions of one's femininity, masculinity, and androgyne (Spence & Helmreich, 1978). As predicted, the masculine and androgynous females had more confidence in their math ability, higher expectations for their own performance in math, and rated math as easier than did the feminine females (Kacazla, 1981).

It is also probable that the extent to which parents have incorporated this belief system into their view of the world will influence their judgments of their daughter's math abilities. To test this hypothesis, we compared the strength of parents' ratings of mathematics as a stereotypically male talent with their ratings of their own sons' or daughters' math talent controlling for the actual performance level of the children. As predicted, parents who endorsed the gender-role stereotype that males have more math talent than females either underestimated their daughters' math talent or overestimated their sons' math talent depending on the sex of their child (Jacobs, 1987).

Gender-role beliefs should also affect parents' attributional explanations for their children's performance in mathematics. Given that parents in general believe that males have more math talent than females, they should be less likely to attribute a female's successes in math and physical sciences to high ability than to her hard work, diligence, and effort. And in fact, we found exactly this attributional pattern. Parents in our follow-up studies were more likely to attribute their sons' math successes to talent and their daughters' math successes to effort and, as a consequence, to rate their sons as more talented in math (Yee & Eccles, in press). These attributional biases, in turn, were linked to a decline in their daughters' confidence in their own math abilities, even though the young women continued to get just as high grades in their math and science courses as their male peers (Eccles et al., 1987; Eccles-Parsons, Adler, & Kacazla, 1982).

Thus gender roles do appear to undermine females' interest in mathematics by diminishing both females' own confidence in their mathematical abilities and parents' view of their daughters' math talent.

Gender roles can also influence enrollment and occupational choices through their direct impact on interests and values. In particular, gender roles can undermine females' interest in mathematics and physical sciences by their impact on females' personal values and perceptions of the importance of mathematics and technological professions. Through their impact on both the view one has of oneself and the view one has of the world, gender roles can affect the value individuals come to attach to various school subjects, college majors, and future occupations. As we mature, we develop a view of who we are and who we would like to be. Obviously, this view includes many characteristics. The professional and academic goals we set will depend not only on our intellectual confidence and values but also on our personal values and self-definition. Just as students do not schedule elective math courses in a vacuum, females do not define their adult career choices as if severed from their other interests and images of themselves as females. Two major differences in the male and female gender role may generate different views of "appropriate" professions. Females show a greater interest in other people, as opposed to things; and they show a greater interest in helping and nurturing, as opposed to trying to take things apart and manipulate mechanical objects (Eccles, 1987b; Gilligan, 1982; Huston, 1983). We would expect this distinction to be reflected in a divergence in the occupational goals that males and females adopt.

During our childhood, we also develop images of different occupational fields, for example, engineers, physicists, or scientists. Sally Boswell (1979) asked elementary and senior high school students what they thought scientists did. Not surprisingly, the children, both males and females, conjured up an image of a person wearing a white coat and working in front of an array of test tubes. He was isolated in a laboratory, worked long hours, and had no time for his family or his friends. When the children were asked to imagine an engineer, they conjured up an image of a man in a hardhat looking for oil in the Arabian desert. Most females, who are developing images of themselves as helpful and nurturing toward other people, would not find the image of scientist or engineer very attractive or very compatible with their self-image. Thus, we would expect them to have difficulty
Parents' efforts to create a scholastic environment at home can influence their children's school performance. Research has shown that parents who provide a stable, structured, and supportive home environment, including a quiet place to study and encouragement of reading and homework, are more likely to have children who perform well academically.

However, it's important to note that while parental influence is significant, it is not the only factor affecting a child's academic success. Other variables such as individual intelligence, motivation, and opportunities in the school setting also play crucial roles. Understanding these dynamics can help educators and parents work together to support students' academic development.
for sons. When we asked them how important it was to take math, both parents rated math, especially advanced high school math, and both physics and chemistry, as more important for sons than for daughters. Similarly, parents of sons were more likely to report that math is relatively more important than other subjects than parents of daughters. In contrast, parents rated English and American history as more important for daughters to take than for sons. Finally, both mothers and fathers agreed that they would be more likely to encourage their sons to take advanced math.

These results did not reflect a general lack of confidence in their daughter's academic abilities. In general, these females got better grades in school than their male peers. And when we asked the parents to indicate their perception of their child's general school performance, both fathers and mothers reported that the females were doing better in school than the males were (Eccles-Parsons, Adler, & Kaczala, 1982).

Similar sex-of-child effects characterized the parents' causal attributions for their children's success in mathematics. We asked parents in a second sample to recall a time when their child had done especially well in mathematics and to rate how important they felt natural talent, skill, and effort were in accounting for this performance. Parents of sons rated natural talent a more important reason for their child's performance than parents of daughters. In contrast, parents of daughters rated hard work (effort) as a more important reason for their child's performance than parents of sons (Yee & Eccles, in press).

These causal attributions, in turn, have the expected impact on parents' views of their children's mathematical talent (Yee & Eccles, in press). Parents who attributed their child's math success more to natural talent than to effort (the male pattern) developed more confidence in their child's math ability than parents who attributed their child's math success relatively more to hard work than to natural talent (the female pattern)—even though both groups of children had earned equivalent grades in mathematics.

Furthermore, longitudinal analyses indicate that parents' confidence in their child's math abilities has a direct impact on their children's self-perceptions and values as predicted by the model illustrated in Figure 2.1 (Eccles-Parsons, Adler, & Kaczala, 1982). Parents', especially mothers', confidence in their children's math abilities and parents' estimates of how hard their child is having to work in math seemed to mediate the impact of the children's grades in the children's confidence in their math abilities. Apparently, parents provide their children with an interpretative framework for understanding what grades mean about one's abilities. And since parents think math is harder for daughters than for sons, females develop less confidence in their math abilities than males.

In addition, perhaps because parents think math is harder for daughters than for sons, and English is easier for daughters than for sons, they rate advanced math and the physical sciences as less important than other subjects for daughters but not for sons. Consequently, parents are less likely to encourage females to take advanced math courses. Since parental advice is noted by students as one of the most important influences on high school course decisionmaking (Eccles-Parsons et al., 1983), these parental beliefs about the relative importance of mathematics appear to play a major role in determining sex differences in math course enrollment decisions.

Teachers

A great deal of research has focused on the role teachers may play in either creating or perpetuating sex-differentiated self-perceptions and educational choices. Social scientists have taken two approaches to this topic.

The first and most classic approach has been to look for differential treatment in the classroom by using carefully designed observational systems. This approach investigates whether teachers treat males and females differently, and whether these differences convey the subtle message that females are not expected to go on to or excel in math and physics. There has been a long tradition of research on these issues involving many studies looking at teacher-student interaction. Three findings emerge with some consistency. First, there has been a major historical change. The differences reported by researchers in the 1960s are more difficult to document today. Either teachers have become more sensitive to the differences on which observers focus and therefore act more equitably when the observers are there, or teacher training has been effective at producing teachers who are more equitably in their treatment of males and females in their math classrooms.

Despite this historical change, however, two differences still characterize many classrooms: (1) males are yelled at and criticized publicly more than females, and (2) males are more likely than females to monopolize teacher-student interaction time (see Eccles & Blumenfeld, 1985). The second characteristic emerges only in some classrooms and seems to reflect the fact that a few males are allowed to dominate the class time in these classrooms. The teachers are not interacting more in general with the males in these classrooms; rather, a few males are receiving much more interaction than all the other students. We have now observed in over 150 math classrooms in southeastern Michigan; in 40 of them, we coded every interaction the teacher had with each student over a ten-day period. Over half the students never talked to the teacher during the ten days. Others had 14 or more interactions with the teacher every hour. Most of these latter students were males.

The second approach to the study of teacher influences has used a very different strategy. Researchers in this tradition identify a set of characteristics that makes some classrooms special and then observe and compare these classrooms to more typical ones. For example, both Pat Casserly (1975) and Jane Kahle (1984) have identified "superb" teachers and then
The problem exists in the way students respond to the environment. It is an environment that assigns students to work individually, creating an open-ended learning situation. They would pose a problem (c.f. "do it yourself") in an environment where the teacher assigns a project or an assignment, and students work independently. This is because the teacher's role is reduced to that of a facilitator, and students are expected to take responsibility for their own learning.

In contrast, the teacher's role is more active in a classroom where the teacher is actively involved in the learning process. The teacher provides guidance, feedback, and support, and students are encouraged to ask questions and participate actively in the learning process. This environment fosters a sense of collaboration and cooperation, and students are more likely to engage in meaningful learning experiences.

A further problem is the lack of motivation among students. In a classroom where students are motivated to learn, they are more likely to be engaged and participate actively in the learning process. This is because they are interested in the subject matter and see its relevance to their lives. In contrast, in a classroom where students are not motivated, they are more likely to be disengaged and uninterested in the learning process.

In conclusion, the role of the teacher is crucial in creating an effective learning environment. Teachers must be active facilitators of learning, providing guidance, feedback, and support to their students. They must also be aware of the importance of motivation in the learning process and take steps to ensure that students are motivated to learn. Only in this way can they create a classroom environment that is conducive to meaningful learning experiences.
bridge that can bear a maximum amount of weight”) and then divide students into teams. These teams could solve the problem in a variety of ways. (5) These teachers also engaged in a great deal of active career guidance in the classroom, stressing the importance and usefulness of math and science for the students’ other courses and for their future career choices.

Kahle (1984) has done a similar study in science classrooms. She found that a very similar cluster of techniques were characteristic of science teachers who have been labeled as “outstanding.” These teachers tended to use multiple texts, to carefully supplement their texts with information and pictures indicating the involvement of all nationalities, races, and both genders in math and science, and to avoid the use of sexist or racist material. Like the teachers in Casserly’s study, they provided active career guidance during class time.

The “outstanding” teachers Kahle studied also relied heavily on hands-on experiences in which all students were required to participate actively. Use of computers in the classroom provides an excellent example of the importance of this type of teacher control. Too often, when computers are introduced into classrooms (especially at the elementary level), the pattern of a single male dominating their use emerges. This pattern is most evident in classrooms where the students are allowed to control access to the computers. A similar pattern often emerges with other types of scientific or laboratory equipment (Wilkinson & Marrett, 1985). In Kahle’s optimal classrooms, opportunities were more evenly distributed and enforced: everyone participated, the “boss” in laboratory groups rotated, everyone took a turn with the equipment, and students had equal time on the computer. Enforcing this pattern is not easy. Teachers must be extremely organized and committed to equal distribution of opportunities for working with the equipment. Instead, all too often, a few students, usually white males, take over and other students, usually females, watch or play a more passive role (Wilkinson & Marrett, 1985). The monopolizing of computer time occurs particularly when the teacher is uncomfortable with this new technology. Such teachers often find a confident in the classroom, usually a student familiar with computers and to whom the teacher delegates authority. This person then monitors who gets access to the computer, and how long they may use it. More often than not, this person is a white male since this is the group of children who, by a large margin, are most likely to have had the privilege of someone buying them a computer to use at home and providing them with the opportunity to learn about computers in either computer camps or out-of-school computer classes (Kiesler, Sproul, & Eccles, 1985b).

These studies, and several others like them, suggest that teachers may be providing a subset of males with more opportunities to learn and to practice leadership skills in science and math classrooms than they provide for the vast majority of females. In some cases, this may be due to conscious sexist attitudes and beliefs. For example, some teachers may believe that males are more talented in math and science and therefore focus their mentoring efforts on the males. But more often this appears to be due to the teachers’ unconscious passive reactions to individual differences in behaviors and skills which the children bring to the classroom. Gender-role socialization outside the school leads males and females to have different skills and interests. Consequently, in the classroom, males and females display different behaviors—with males demanding more attention and more leadership opportunities by being more assertive and by having more out-of-school experience with math and science equipment such as computers and laboratory equipment. Since females typically do not protest the differential treatment that results, even well-intentioned teachers may fail to see the sex inequity of their classroom protocols for equipment use and participation. And unless truly committed to sex equity, even these teachers will do little to ensure equal participation and to try to counteract and modify males’ and females’ gender-role stereotyped self-perceptions and values.

In conclusion, it appears that there are certain kinds of learning environments that are not particularly conducive to most females’ motivation to study math and science. These characteristics include competition, social comparison, high use of public drill, and domination of student-teacher interaction by a few students. In contrast, there are certain kinds of learning environments that appear to be more beneficial to females. These include controlled hands-on experience, use of nonsexist and nonracist materials, cooperative or individualized learning formats that ensure full participation by all children in the class, and active career counseling. Kahle has labeled this latter type of classroom a “girl-friendly” classroom. What is interesting about this set of characteristics is that they facilitate the motivation and performance of minority students and low achieving males as well (Malcolm, 1984). Apparently, only a few students benefit from competitive environments in which a select group of students tend to monopolize the teacher-student interaction. The rest of the class suffers either in terms of their motivation or in terms of their actual learning. Looked at in this light, the call for structuring classes and materials “more effectively” for females is not a call for special or remedial attention. Rather, it is a call for more conscientious distribution of the teacher’s efforts as a resource for all students and for the use of instructional techniques that foster interest in mathematics and science even among students who are not intrinsically interested in the subject matter.

Conclusions

I began this chapter by presenting a model for understanding individual differences in achievement choices and then used this model to analyze why females are underrepresented in fields related to mathematics and the
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Molehill or Mountain? What We Know and Don’t Know About Sex Bias in Language

Nancy M. Henley

Language is at the core of human interaction, and it is at the core of our beings, our sense of self. An attack on our language is in a very real sense an attack on ourselves; as we know, wars large and small have been fought over language. Small wonder then that people are upset about the issue of sex bias in language. We are upset as speakers of the language because we identify with it; an attack on our language as unfair says that we are ourselves unfair. And we are upset as referents of the language (particularly women and girls) because in referring to us the language often seems to be attacking us. Why do I say the language, and not its speakers, are attacking us? Because well-meaning, nonsexist speakers may, simply by conventional usage, unwittingly use the language as conscious misogynists do: to trivialize, ignore, and demean females. Thus the problem is located in the common language, not solely or necessarily in the intents of its speakers.

In this chapter, I examine what we know and must learn about sex bias in American English. Many readers are already familiar with arguments against sexist language and perhaps tired of protests whose empirical base they have not seen. But much empirical evidence has accumulated. My intent here is to examine and evaluate the evidence, not just to repeat arguments. A burgeoning of research on language and gender in recent years has produced new evidence that is not yet widely known. This body of work raises theoretical and practical issues that go beyond those usually addressed.

Two things should be made clear at the outset. First, this chapter is not about sex differences in language usage, but about sex bias in language itself (though sex differences, where they exist, are also implicated in sex bias). Second, I do not intend the following evidence to test the question of whether we should or should not use sex-biased language. We do not need to prove that language of itself influences behavior to find sex bias in language offensive, just as we find racist language inexcusable and intolerable apart from any empirical findings of actual harm. The evidence is presented here to address a series of questions that arise in the investi-
2. Enhance young women's health and science

References


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This page is a research paper discussing the importance of enhancing young women's health and science education. It includes references to various studies and publications. The text is written in English and is a continuation of the previous page, which was not provided. The page is formatted as a natural document, with paragraphs and sections clearly marked.