Shortchanging Girls

Nadine Barlow
NASA Johnson Space Center

Recent years the organization has taken the lead in improving the educational environment for young girls. In the fall of 1990, AAUW commissioned Greenberg-Lake: The Analysis Group to survey 3,000 girls and boys ages 9 to 15 across the United States on their attitudes about themselves and their aspirations. Three major conclusions arose from the study:

1) Both boys and girls experience a decline in self-esteem as they get older but the decline is more pronounced for girls:
2) Adults have the greatest impact on adolescents' self-esteem and aspirations; and
3) Boys and girls who enjoy science and math tend to retain higher levels of self-esteem and are more likely to achieve their aspirations.

The decline in self-esteem was the most interesting finding of the survey. Girls at 9 years of age tend to be very confident, assertive, and self-assured, but by the time they reach 15 years of age they are much less confident about themselves and their abilities. Girls emerging from adolescence have a poor self-image, are very concerned about their appearance, and feel constrained in the future options permitted them by societal expectations. Boys also suffer a decline in self-esteem between the fourth and tenth grades, but the decline is not as dramatic as it is for girls.

Women NEED encouragement, and this encouragement has to start at home; parents need to value a science career for their daughters. Approval is a very important part of most young women's lives — approval and self-esteem. We find that a little encouragement helps build the self-confidence needed to get over some barriers. The best encouragement, though, is from one's peers, be they male or female.

France Cordova
Pennsylvania State University

France Cordova is the head of the astronomy and astrophysics department at Penn State University. She is best known for her research on compact x-ray sources, and discovered a new class of soft x-ray pulsations from dwarf novae and x-ray emissions from cataclysmic binary stars.
Women in Astronomy
A Sampler

acceptance by one's peers. The survey also found that young women become discouraged because of the attitude of adults, including their teachers, that women cannot do the things that they themselves believe they can. Teachers have a special opportunity to affect the self-esteem of female students since a young woman's feelings about her academic performance correlate very strongly with her relationship with her teachers. Young men's sense of self-esteem correlates with their sense of confidence in their abilities, and since society sends the message that males can do anything they put their minds to, boys end up with higher degrees of self-esteem by the end of adolescence than do girls.

For readers of Mercury, perhaps the most interesting result of the AAUW survey is the result that students who enjoy math and science tend to retain higher levels of self-esteem regardless of gender. Most students indicated they liked math and science, particularly at the elementary level: 81% of girls and 84% of boys in elementary school like math and 75% of girls and 82% of boys in elementary school like science. However, this enthusiasm drops as students get older: by high school only 65% of girls and 72% of boys like math and 63% of girls and 75% of boys like science. Even fewer of the adolescents who "like" math feel they are "good at math". Girls interpret their problems with math as personal failures whereas boys are more likely to see problems as a result of the subject material itself. However, those adolescents who do like math and science are more likely to prefer career occupations in which they use these subjects and therefore aspire to careers as professionals. In addition, students who like math and science have higher levels of self-esteem — they like themselves more, feel better about their school work and grades, consider themselves more important, and feel better about family relationships. Adolescent women who like math and science are more confident about their appearance and worry less about others liking them. They also are less likely to be dissuaded from pursuing the career they are interested in.

So what can we do to encourage our girls and improve their sense of self-esteem? AAUW currently is sponsoring Educational Equity Roundtables on the state and local levels to address this question. Some of the suggestions which have been proposed are:

1) short-term, focused teacher training to acquaint teachers with the subtle ways that girls are discouraged in the classroom,
2) encouragement of partnership programs between schools and industry, universities, and community organizations to provide girls with extra encouragement and improved opportunities outside the classroom environment,
3) more parental involvement in their daughters' education and training of parents to encourage their daughters' aspirations,
4) inclusion of different teaching techniques in the classroom (such as cooperative learning projects, emphasis on logical thinking, etc.), and
5) better media coverage of female professionals who can serve as role models to young girls.

Times are changing — the AAUW study revealed that most young people assume that women as well as men will have careers outside the home and that women can enter professions which previously were held predominantly by men. The results of this survey will present challenges which educators and public policy makers will need to overcome as we prepare today's students to face the realities of the next century.

Some of the most outstanding researchers and some of the most effective administrative leaders in astronomy are women. They are widely recognized for their work. Potentially, this establishes a good background climate for young people entering the field. However, in my view, many astronomers do not consciously consider the outstanding successes as representative of what women can do. There is a great deal of talk about encouraging women to enter astronomy and frequent declarations of support for women who aspire to reach the highest levels of our profession. But there are relatively few university departments where this talk is translated into important practical action.

The result is that the percentage of women in senior positions in astronomy today is not significantly greater than it was 50 years ago.

One of the key problems is that the people making the decisions regarding tenure or professional recognition are overwhelmingly men.

John Bahcall
Institute for Advanced Study

John Bahcall is President of the American Astronomical Society. He headed the Astronomy and Astrophysics Survey Committee for the National Academy of Sciences which published a blueprint for the path astronomy should take over the next decade, and was one of the prime movers behind the development of the Hubble Space Telescope.

His research interests include solar neutrinos, quasars, and a variety of other theoretical problems.

A 17-page summary of the AAUW report "Shortchanging Girls, Shortchanging America" can be obtained from AAUW Publications, 1111 Sixteenth Street, N.W., Washington, D.C. 20036-4873. The cost is $5 plus $2.50 shipping and handling. The full report and a 15-minute videotape on the subject are also available. For more information, write the AAUW at the above address, or call (202)785-7700.

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