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ABSTRACT

Occupational and sex equity programs administered by the New Jersey Department of Education, Office of Bilingual Education and Equity Issues, and funded through the Carl D. Perkins Vocational and Applied Technology Education Act were evaluated. Participants in single-parent and sex equity programs completed a series of pretests and posttests that measured changed in knowledge and attitudes resulting from their experience with these programs. The four tests participants completed were: (1) the Sex Role Survey, a modified version of the instrument developed by MacDonald (1976), taken by 499 subjects; (2) the Coopersmith Self-Esteem Inventory (S. Coopersmith, 1993), taken by 468 subjects; (3) the Gender Equity Standards Test developed for use in evaluating New Jersey's programs, taken by 1,061 participants; and (4) the Mathematics Anxiety Ratings Scale-Elementary (MARS-e) (R. Suinn and R. Edwards, 1982), taken by 485 subjects. Numbers and characteristics of participants vary, depending on enrollment, attendance, and reporting deadlines, but participants were generally female (85 to 95 %) and parents (94 to 95%). About 43% were Black, 37 to 39% Caucasian, and 12 to 14%, Hispanic. Sex Role Survey results reflected a significant change toward more equitable attitudes for all participants combined, and especially for younger participants. Significantly higher posttest scores on the Coopersmith Self Esteem Inventory indicate higher self esteem for all participants combined and for several categories of participants. The knowledge of gender equity standards increased significantly for all participants combined and for those in several racial categories and of all ages. MARS-e results indicate decreased mathematics anxiety for all participants combined. Evaluation results clearly demonstrate the success of the Perkins Act sex equity set aside programs in removing barriers to high wage employment opportunities for women. (Contains 8 figures and 44 references.) (SLD)

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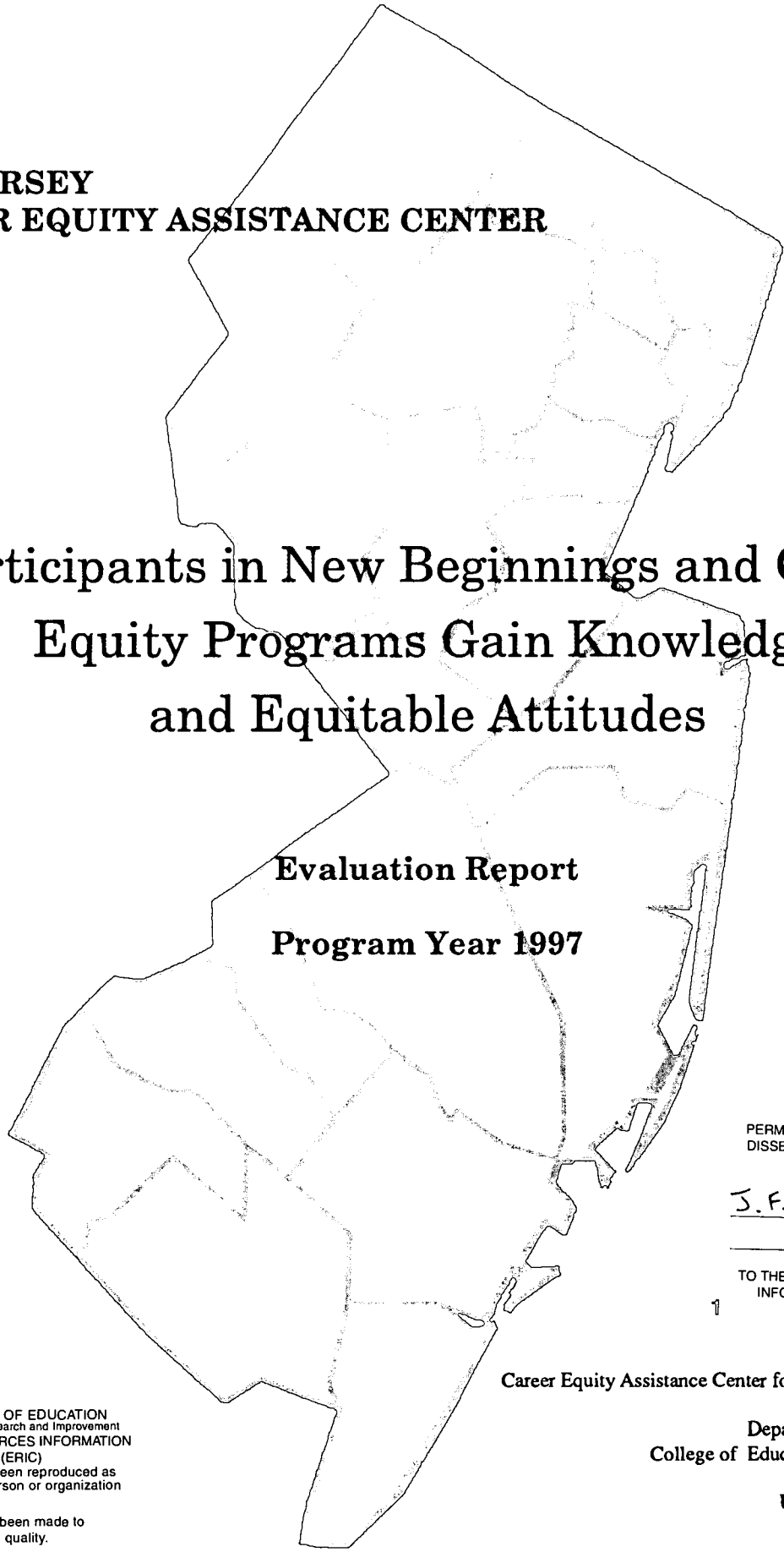

Participants in New Beginnings and Career Equity Programs Gain Knowledge and Equitable Attitudes

Evaluation Report

Program Year 1997

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Participants in New Beginnings and Career Equity Programs Gain Knowledge and Equitable Attitudes

During Program Year 1997, the New Jersey Department of Education, Office of Bilingual Education and Equity Issues administered occupational training programs funded through the Carl D. Perkins Vocational and Applied Technology Education Act sex equity set aside. The Perkins set aside goals are to:

- provide marketable skills to single parents, displaced homemakers and single pregnant women to lessen dependence on public assistance
- increase vocational enrollments in programs nontraditional for a person's gender, and
- eliminate sex bias and stereotyping in vocational/career education.

Programs are assisted in attaining these goals by three statewide centers. The intent of the Career Equity Assistance Centers is to make nontraditional and high wage occupational training more accessible to all students by eliminating the gender barriers that limit access to these programs.

In this report:

The Career Equity Assistance Center for Research and Evaluation conducts ongoing evaluations of the accomplishment of these goals by single parent and sex equity programs funded by the Perkins set aside. To do this, program participants complete a series of pre and post tests that measure changes in knowledge and/or attitude that result from their experiences with these programs.

The sex equity program administered by the New Jersey Department of Education has been making steady progress over the last five years as shown by changes in knowledge of equity standards and nontraditional careers and/or attitudes concerning issues pertaining to equity and nontraditional employment, such as sex role stereotyping. Again in Program Year 1997, participants completed a series of four pre and post tests as a part of these ongoing evaluations of sex equity programs. These tests were selected to measure four specific areas that have been previously shown to limit access to nontraditional careers. These areas are:

- knowledge of equity standards and nontraditional careers,
- anxiety related to mathematics,
- sex role stereotyping, and
- self esteem.

Changes in knowledge and attitudes due to participation in sex equity programs in the Program Year 1997 demonstrate the continued success of the sex equity set aside programs in New Jersey.

REVIEW OF LITERATURE

Economically, women continue to be disadvantaged. At every income level, women have lower median annual earnings than men (U.S. Women's Bureau, 1996). In New Jersey, for 1990, the ratio of women's to men's full-time, full-year median annual earnings was 66 percent (Institute for Women's Policy Research, 1996). Additionally, women continue to be underrepresented in the higher paid and higher prestige occupations (National Science Foundation, 1994).

In New Jersey, women continue to be concentrated in low wage jobs, accounting for 67 percent of all low wage workers. In the New Jersey work force, 54 percent of the females held low wage jobs compared to 29 percent of the males (Life Skills Center, 1992).

Women working in jobs that are nontraditional for their gender typically earn 20 - 30 percent more than women in traditional occupations, but earn less than men in the same occupation (*Women and Nontraditional Work,* 1993). A nontraditional career is defined as any career that is dominated by 75 percent or more of one gender. According to *Women and Nontraditional Work* (1993), approximately 7 percent of all working women were employed in nontraditional occupations in 1992. The Institute for Women's Leadership (1993) reported that in 1990, 68 percent of New Jersey women worked in gender-segregated clerical, service and sales jobs, earning less, with fewer benefits, status and security than "men's" jobs.

Barriers to the entry of women into nontraditional careers that were identified by Haring and Bryard-Tyler (1984) included sex role socialization; low self esteem, particularly concerning math and sciences; and attitudes toward nontraditional careers. Lack of awareness of basic equity terms and concepts is another barrier to entry into nontraditional careers. Increased knowledge is a beginning step in equity education. Standards provide a uniform basis for developing and implementing a range of activities and strategies.

Sex Bias and Stereotyping

Social stereotypes are characterized as beliefs and expectations that are attributed to a group of humans (Hamilton and Trolier, 1986; Six and Eckes, 1991). Females are viewed less positively than males by both males and females as reflected recently by the written statements of adolescents about their beliefs and attitudes toward the opposite gender (Hedrich and Voss, 1996).

Both gender and ethnicity have been related to sex role stereotyping. Females generally have more equitable sex role attitudes than males (King and King, 1990; Bernstein, Coté-Bonanno and Reilly, 1992; Tuck, Rolfe and Adair, 1994). African-American subjects considered more affective traits common to both sexes than did other ethnic groups. Anglo-Americans rated more items desirable for one gender than did Hispanic-Americans (Harris, 1994).

Adolescent girls typically explore fewer career options than adolescent boys (Farmer, 1995), in part because of occupational sex role stereotyping. Sex role stereotypes are one of many gender related biases that delay the movement of women into these careers (Coyle-Williams, 1992). Boys and girls continue to confront stereotypes of "men's work" and "women's work," which are constantly reinforced by toys and games, including computer software, as well as by the media (Balancing the Equation, 1997).

Self Esteem

Self esteem is a critical component of a woman's life and acts as a mediator affecting many other

areas of her life. Self esteem has been reported to play a part in how likely a woman is to feel competent (Orenstein, 1994); feel satisfied with her job (Lundgren, 1993); be satisfied with her relationships (Vera, 1991); become a parent as a teenager (Plotnick, 1992; Barnett, 1991); and get involved in a relationship that is physically or sexually abusive (Hanson, 1992; Carswell, 1991).

The self esteem of women has consistently been reported as being lower than that of men (Flansburg, 1993; Marron and Kayson, 1994). This trend continues as women get older. The same forces that work to limit an adult woman's entrance into nontraditional careers have also been found to under evaluate and under utilize their talents and abilities (Kiesler, Sproull and Eccles, 1995).

Nontraditional Careers

In a statewide survey of high school students, the majority of students would not consider enrolling in nontraditional vocational programs (McKenna and Ferrero, 1991). "Lack of interest," "area of interest not listed" and "prefers traditional work" were listed as the most common reasons for not being interested in enrolling.

Lack of information has been identified as one of the barriers to entering nontraditional careers (Baynes and Gerber, 1990; Bernstein, Reilly and Coté-Bonanno, 1992). In a previous study, Bernstein,et al. (1992) found a strong relationship between knowledge of nontraditional careers and attitudes toward these careers. Students who were most knowledgeable were also most likely to have positive attitudes concerning the suitability of nontraditional careers for either gender.

Math and Science

Projections suggest that strong educational backgrounds in mathematics, science and technology will be very important to the future labor force (Balancing the Equation, 1997). However, New Jersey's Statewide Systemic Initiative for Achieving Excellence in Mathematics, Science and Technology Education (SSI) recognized that "young women are still underachieving and underinvolved in these disciplines, as compared to young men" (New Jersey Statewide Systemic Initiative, 1996).

The effect of math anxiety, not intellect, as a road block to successful math performance in both academic settings and in everyday life has been examined (Tobias, 1991). High math anxiety has been related to lower confidence (Fennema and Sherman, 1976) and to lower performance (Engelhard, 1990). Both women (Tobias, 1991; Widgield and Meece, 1988) and minorities (Tobias, 1991) are likely to have higher levels of math anxiety.

Differences in math anxiety levels between males and females have been reported by several researchers (Tobias, 1991; Tocci and Engelhard, 1991; Wigfield and Meece, 1988). Females displayed more anxiety than males.

In a study of students in both traditional and nontraditional career fields, the majority reported moderate levels of math anxiety. Age was found to be significantly related to anxiety, with the lowest levels of anxiety among those students who were between 14 and 17 years of age. Nontraditional students have been found to have high math anxiety levels (Reilly, Coté-Bonanno and Bernstein, 1992).

METHOD OF STUDY

Data was collected from participants enrolled in New Beginnings and career equity programs throughout New Jersey during the 1997 program year. Four separate tests were administered using a pre and post test design. The number of matched pre and post test scores differs for each of the four tests due to variations in enrollment, attendance and reporting deadlines.

Program personnel administered both pre and post tests. Pre tests were administered prior to the beginning of any program. Post tests were administered after the completion of that part of the program pertaining to each individual test. Tests were scored by program personnel. Total scores were forwarded for analysis to the Career Equity Assistance Center for Research and Evaluation at Montclair State University.

The Gender Equity Standards Test, which measures knowledge of gender equity issues, terminology, equity law and nontraditional careers, was developed specifically for use in New Jersey. All 25 questions were scored together to produce a single score. Matched pre and post tests were collected from 1061 program participants.

The MARS-e version which was developed specifically for use with elementary school students was utilized in this study (Suinn and Edwards, 1982). The elementary school version of the MARS test was selected to decreasc the amount of time devoted to testing and to take into account the lowest reading level of program participants. The response to each item of the MARS-e was scored from 1 to 5, with 1 indicating the least anxiety and 5 the most anxiety. Possible scores could range from 26 reflecting the lowest anxiety level for each item to 130 reflecting the highest anxiety level. Matched pre and post tests were collected from 485 subjects.

A modified version of MacDonald's Sex Role Survey (MacDonald, 1976) was used to determine attitudes concerning overall sex role stereotypes. For each of the 30 statements, respondents indicate their agreement or disagreement on a scale from 1 to 6. Total scores can range from a low of 30 to a high of 180 reflecting attitude toward gender equity. Attitudes were also determined for four dimensions of equity: equality in professions (Work); sex appropriate behavior such as customs and manners (Behavior); social equity (Equity); and domestic power (Home). Matched pre and post tests were collected from 499 subjects.

Participants were also evaluated using the Coopersmith Self Esteem Inventory. This inventory consists of 25 forced choice questions in which the subject is required to respond to each statement as either "like me" or "unlike me". Self esteem, as defined by the Coopersmith Self Esteem Inventory, is "the evaluation a person makes and customarily maintains with regard to him- or herself." Reliability measures for this test are quite high, ranging from .87 to .92, and validity has been proven through various tests of construct, concurrent and predictive validity and factor analysis (Coopersmith, 1993). Matched pre and post tests were collected from 468 subjects.

CHARACTERISTICS OF PARTICIPANTS

Because not all participants were present for all pre and post tests, slight variations exist in the demographics for the four evaluation measures. However, in general the participants were:

- female (85-95 percent);
- parents (94-95 percent);
- Black (43 percent), Caucasian (37-39 percent), or Hispanic (12-14 percent);
- single (49-53 percent), separated (20-22 percent) or divorced (15-16 percent); and
- 20-40 years of age (67-71 percent).

SEX ROLE SURVEY

Total Sex Role Survey

On the total Sex Role Survey, all participants combined had a significantly higher mean score on the post test than on the pre test. This increase reflects a change toward a more equitable attitude as a result of participation in an equity program. Most other categories of participants also had higher mean scores as compared to scores on the pre test, but some of these differences were not significant.

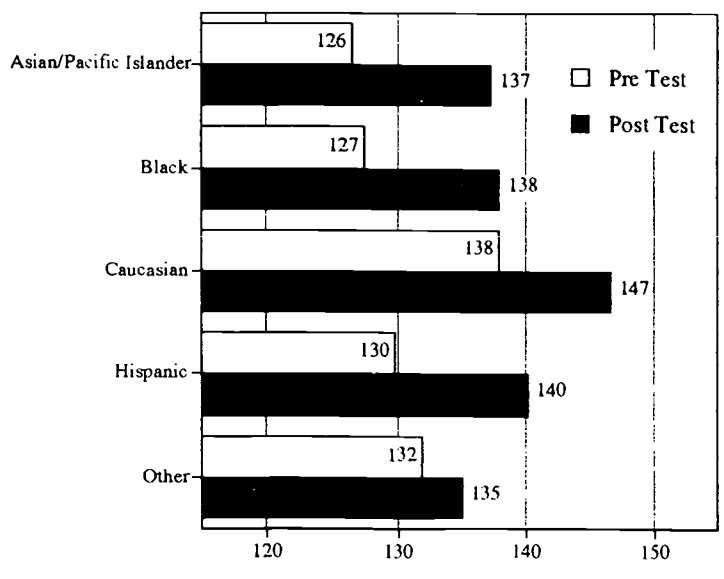
Mean scores on both the pre and post test were higher for females than for males. Females also had a larger difference between the pre and post test than did males. This difference reflects more equitable attitudes among females than among males.

When scores were compared for ethnic/racial groups, participants who classified themselves as Caucasian had the highest mean post test score. Hispanic participants had the second highest score on the total Sex Role Survey. Participants in the Asian and Black racial/ethnic groups had the greatest change in mean scores between the pre and post tests.

On the Total Sex Role Survey, the change between the pre and post test scores toward a more equitable attitude was significant for:

- all participants combined,
- females,
- participants who classified themselves as Black and Caucasian,
- participants in age categories between 18 and 35 years and in the 41-45 year age range, and
- participants who were single, separated or divorced.

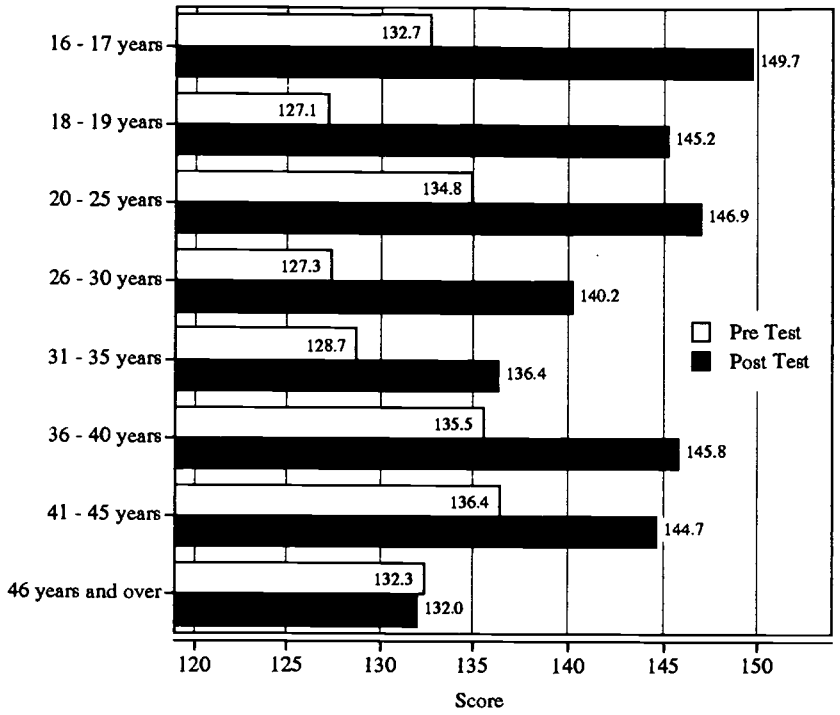
Figure 1. Pre and Post Test Scores on the Sex Role Survey by Ethnic/Racial Group, Program Year 1997



Based on marital status, participants who were separated or divorced had the highest mean scores on the post test for the total Sex Role Survey. Participant who were divorced had the greatest difference between their mean scores on the pre and post tests.

When post test scores for different age groups were compared, participants in the age ranges from 16 to 25 years had the highest means on the total Sex Role Survey. This reflects a more equitable attitude in younger people. The age groups with the lowest scores on the post test were those in the ranges from 26 to 35 years of age and 46 years of age and over.

Figure 2. Pre and Post Test Scores on the Total Sex Role Survey by Age, Program Year 1997



Dimensions of the Sex Role Survey

Attitudes were also determined for four dimensions of equity: equality in professions (Work); sex appropriate behavior such as customs and manners (Behavior); social equity (Equity); and domestic power (Home). For all participants combined, the mean score on the post test was signficantly higher than on the pre test for each of the four dimensions.

Differences between the pre and post test scores were also significant for females on each of the four dimensions. The mean scores on the post test were also higher than on the pre test for males participants, but these differences were not significant. These changes reflect generally more equitable attitudes as a result of participation in an equity program. On each of the four dimensions, mean post test scores were higher for females than for males.

On all four of the dimensions, post test scores were highest for participants in the Caucasian category. On the Social dimension, Hispanic participants had a post test score similar to Caucasians, while on the Behavior dimension, they had the second highest score on the post test. On the Work and Home dimensions, scores for Hispanics and Blacks were similar to each other and slightly lower than the mean score for Caucasians.

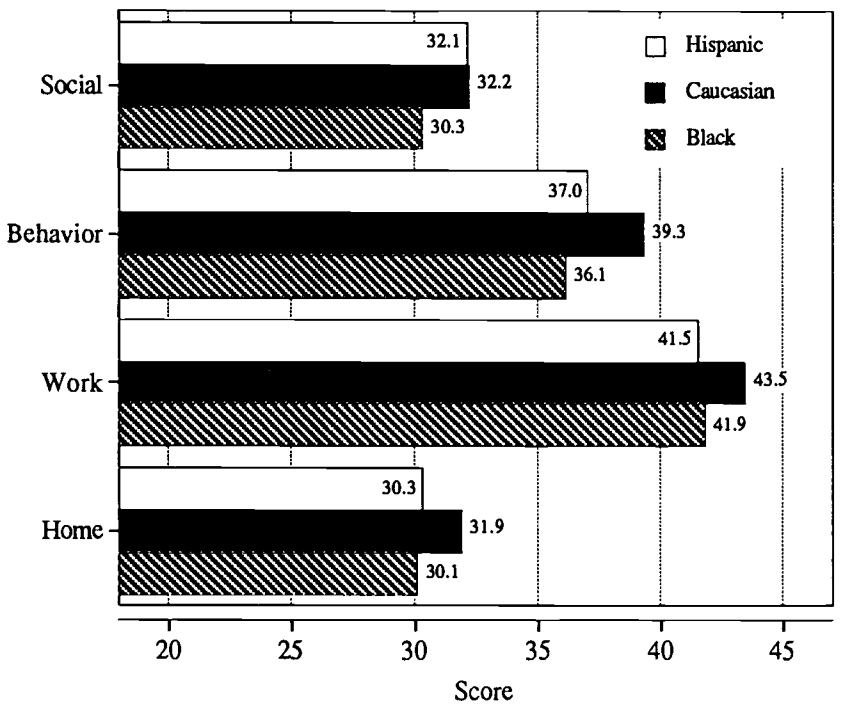
The change on the dimensions of the Sex Role Survey toward more equitable attitudes was significant for:

- all participants combined for all four dimensions,
- females for all four dimensions,
- Caucasian participants on all four dimensions,
- Black participants for the Behavior, Home and Work dimensions, and
- Hispanic participants for the Social, Home and Work dimensions.

Discussion

As in previous program years, participants in the sex equity programs showed more equitable attitudes concerning sex role sterotyping after participating in programs funded through Perkins Act sex equity set aside funds. Mean post test scores on the Sex Role Survey for all

Figure 3. Post Test Scores on Dimensions of the Sex Role Survey, by Ethnic/Racial Group Program Year 1997



participants combined were also significantly higher than mean pre test scores in Program Year 1995 (Bernstein, et al., 1995c) and in Program Year 1996 (Bernstein, et al., 1996). Only in Program Year 1994 was the change between the pre and post test for the total Sex Role Survey not significant.

Female participants and participants who classified themselves as Black and Caucasian had significant increases on the total Sex Role Survey in both Program Years 1996 and 1997. Similarly, test scores were higher for females than for males on both the total pre and post test in these two program years.

On the four dimensions of the Sex Role Survey, the equity programs continued the success of Program Year 1996 when significant increases were reported for each dimension, Work, Social, Behavior and Home (Bernstein, et al., 1996b). Increases on the Behavior dimension for all participants have occurred consistently in Program Years 1994, 1995 and 1996.

Signficant increases for females have been reported previously for the Behavior and Social dimensions in Program Year 1994 and on all four dimensions in Program Year 1996. Scores on the dimensions were reported only for females in Program Year 1995.

In both Program Years 1996 and 1997, Black participants had significant increases on the Work, Behavior and Home dimensions, but not on the Social dimension. Caucasians had significant increases on Work, Behavior and Social dimensions in both Program Years 1996 and 1997. Program year 1997 was the first year that Caucasian participants also had significant increases in the Home dimension.

Although slight differences occur between program years, Perkins funded equity programs continue to change the attitudes of participants to reflect more equitable attitudes. For the total Sex Role Survey and for the four dimensions, Work, Social, Behavior and Home, the attitudes of females continue to reflect more equitable attitudes than those of males.

COOPERSMITH SELF ESTEEM INVENTORY

Results

Mean post test scores were significantly higher than mean pre test scores on the Coopersmith Self Esteem Inventory for all participants combined and for most categories studied. This change reflects an increase in self esteem following participation in a sex equity program. Other categories analyzed showed an increased mean score following program participation, but some of these increases were not signficant.

Significantly higher post test scores reflected increased self esteem for:

- all participants combined,
- female participants,
- participants who classified themselves as Black, Caucasian or Hispanic,
- participants in the age ranges 26-35 years, 41-45 years and 46 years and over,
- participants who were parents, and
- participants in all marital status categories, except those who were widowed.

Mean scores for males were higher than those for females on both the pre and post test. These scores reflect higher self esteem among men than among women.

Participants who classified themselves as Black had the highest post test score of any racial/ethnic group analyzed. Post test scores of participants who classified themselves as Caucasian and Hispanic were slighltly lower than scores for Black participants and similar to each other. Participants who classified themselves as Asian/Pacific Islanders had mean pre test scores as high as Black participants, but showed little increase as a result of program participation. Variations in the cultural basis for self esteem is an important issue in curriculum preparation.

Self esteem scores were also influenced by age. Mean post test scores were highest for participants in the 31-35 and the 41-45 year age range.

Mean post test scores were lower for participants who were separated or divorced, reflecting a generally lower self esteem for participants in these two marital status categories. While scores for participants in both of these categories increased as a result

Figure 4. Pre and post test scores on the Coopersmith Self Esteem Inventory by ethnic/racial group, Program Year 1996

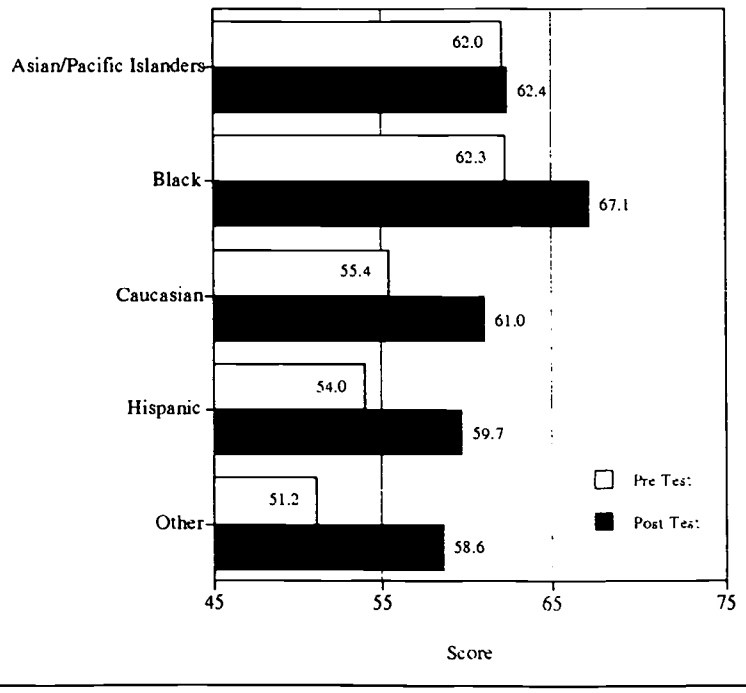
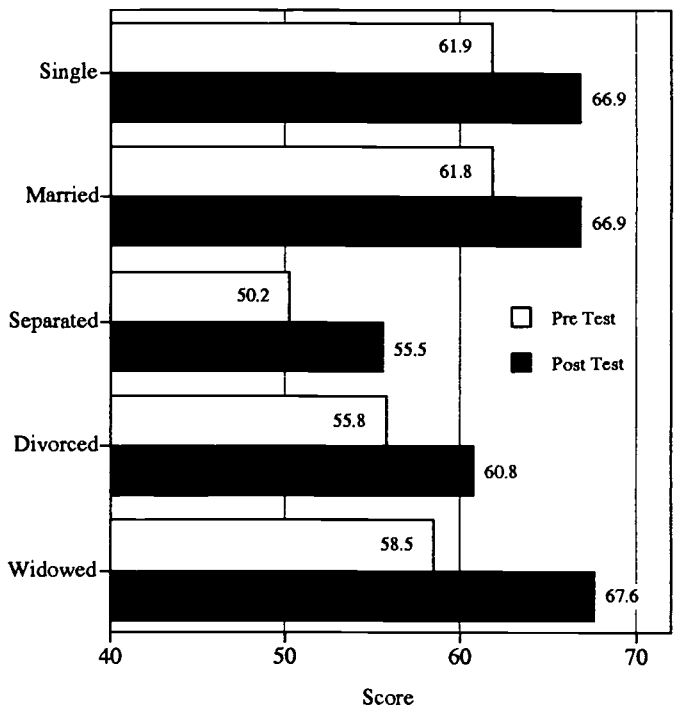


Figure 5. Pre and post test scores on the Coopersmith Self Esteem Inventory by marital status, Program Year 1996



of program participation, they were still noticeably below scores for participants who were single, married or widowed. Participants in these categories may have special needs to consider in program planning.

Discussion

As in previous program years, siginificant increases in self esteem occurred after participation in programs funded through Perkins Act sex equity set aside funds (Bernstein, Coté-Bonanno, Reilly, Carver, Doremus and Fallon, 1995; Bernstein, Coté-Bonanno, Reilly, Carver, Doremus and Fallon, 1996). These increases have been shown for all participants combined and for female participants for three consecutive years.

In agreement with previous studies (Flansburg, 1993; Marron and Kayson, 1994), the mean post test scores for females were lower than the mean post test scores for males for three consecutive years, Program Years 1995, 1996 and 1997. The difference between mean scores of males and females was smaller on the post than on the pre test for each year.

Although program participation has increased self esteem for all age categories in consecutive program years, these changes have not been consistently significant. As in previous years, mean post test scores on the Coopersmith Self Esteem Inventory were lower for participants in the youngest age category (16-17 years) and the oldest age category (46 years and over).

For three consecutive years, participants who were Hispanic or Caucasian have had significant increases in self esteem as a result of participation in Perkins funded programs. Particpants who were Black had significant increases for two of the three program years. When the three largest racial/ethnic groups were compared, participants who were Black had the highest mean post test scores and participants who were Hispanic had the lowest mean post test scores in both Program Years 1996 and 1997. These findings mirror those of Harris (1994) who reported the least gender stereotyping among Blacks and the most among Hispanics and support the relationship between gender stereotyping and self esteem. Sources of self esteem are culturally defined and further exploration into sources of self esteem in Hispanic populations may be useful to further increasing self esteem in this group of participants.

GENDER EQUITY STANDARDS TEST

Equity standards in New Jersey have been developed in response to the requirements of the Perkins Act to develop performance standards for programs in vocational education. Standards were developed by the New Jersey Gender Equity Coordinator in cooperation with the three statewide Career Equity Assistance Centers, the Equity Advisory Committee and other professionals throughout the state. These standards cover a wide range of knowledge including sex bias, sex discrimination and sexual harassment. Standards also include knowledge of laws and regulations pertinent to gender equity.

Knowledge of gender equity standards increased significantly for:

- all participants combined;
- females;
- participants who classified themselves as Black, Hispanic or Caucasian;
- participants in all age categories;
- parents; and
- participants who were single, separated, married or divorced.

Results

During Program Year 1997, equity programs successfully increased the knowledge of gender equity standards for most participants. Some groups of participants, such as males and widows, exhibited increased knowledge as a result of program participation; however, these changes were not significant.

The mean score on the post test for all participants combined was 18.9, which reflects a 76 percent level of competence. The mean pre test score for all participants reflects only a 64 percent level of competence.

Levels of knowledge were higher for females than for males on both the pre and post test. Females also had a larger increase in knowledge due to program participation than did males. The average score for females on the post test reflects a 76 percent level of competence.

The mean score on the post test was highest for participants who classified themselves as Caucasians, 20.3 or an 81 percent level of competence. Asian participants had the second highest score on the post test, 18.8 or a 75 percent level of competence. Asian participants also had the largest increase between the pre and post tests.

Participants in the age ranges 20-25 years, 26-30 years and 46 years and

Figure 6. Pre and post test scores on the Gender Equity Standards Test for all participants and by gender, Program Year 1997

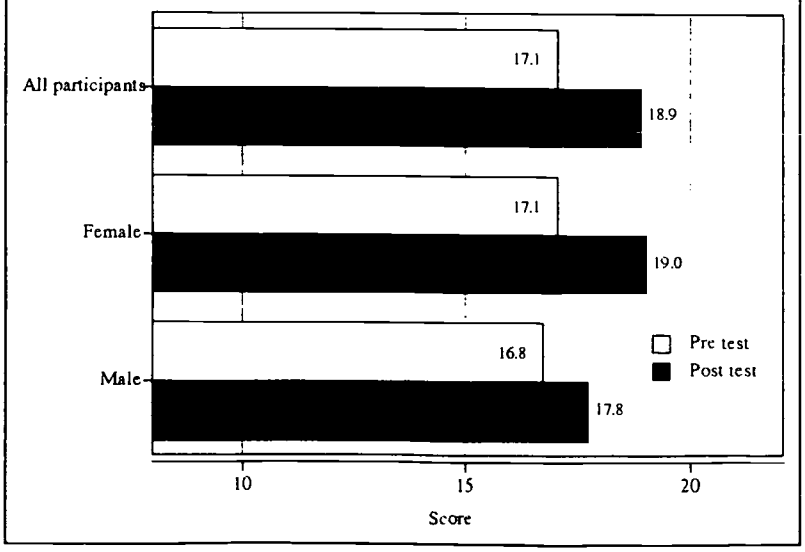
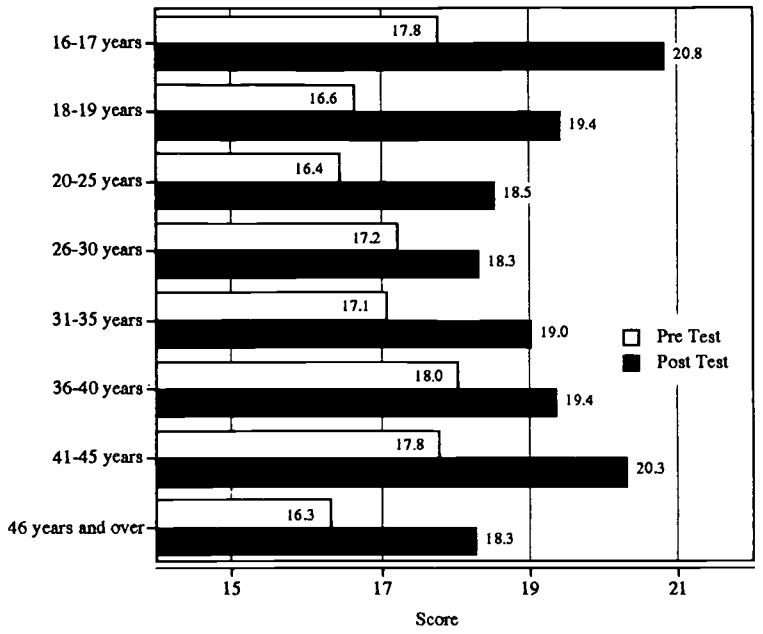


Figure 7. Pre and Post Test Scores on the Gender Equity Standards Test, by Age, Program Year 1997



over had the lowest average scores on the post test, 18.53, 18.31 and 18.26 respectively. These scores reflect levels of competence below the 76 percent reached for all participants combined.

Variations between participants based on marital status were small. The lowest scores on the post test were for single participants with a 73 percent level of competence. The highest mean score on the post test was for married participants with an 81 percent level of competence.

Discussion

Although the Gender Equity Standards Test used for evaluation during Program Year 1997 was a new test, many of the concepts were previously measured using the Equity Standards Survey and the Technical Careers Survey. Both of these tests were used for evaluation previously. Comparison of Program Year 1997 scores with results from these two tests used in previous years shows a pattern of increasing knowledge in the areas of equity standards and nontraditional careers due to participation in a Perkins funded gender equity program.

In both Program Years 1995 and 1996, participants in Perkins funded equity programs in New Jersey showed an increase in scores between the pre and post test on the Equity Standards Survey (Bernstein, Coté-Bonanno, Reilly, Carver and Doremus, 1995b; Bernstein, Coté-Bonanno, Reilly, Carver and Doremus, 1996a). The level of competence in both previous years was similar to that found during the current program year, 76 percent correct.

Comparison of Program Year 1997 and earilier years shows a continued increase in knowledge of equity standards among many categories of participants. Knowledge increased significantly for the third year for female participants and for Black, Caucasian and Hispanic participants. Program Year 1997 marks the first year that increases were significant for all age categories, although most age categories showed signficant increases in previous years.

Similarly, a comparison with evaluations from previous years showed continuous increases in knowledge concerning nontraditional careers. In previous years, significant increases were found on the Technical Career Survey for participants across a wide range of demographic variables.

MATHEMATICS ANXIETY RATINGS SCALE - ELEMENTARY

Results and Discussion

For most categories of participants, the change between the pre and post test scores on the MARS-e was significant, reflecting a decreased level of math anxiety as a result of participation in a New Beginnings or single parent program. Other participants also had decreased scores on the post test, but these changes were not significant.

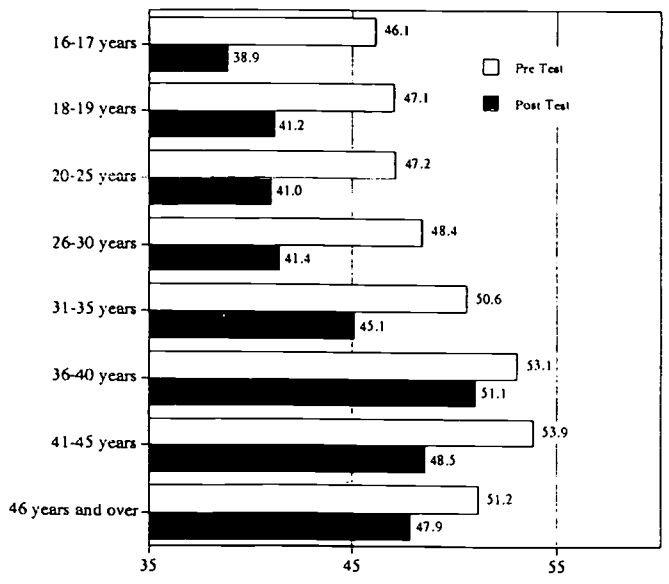
Decreased math anxiety was reflected in the change between pre and post test scores for:

- all participants combined,
- female participants,
- participants who classified themselves as Black, Caucasian and Hispanic,
- participants in all age categories from 18 years of age to 45 years of age
- participants in both parental status categories, and
- participants in all marital status categories.

When scores of males and females were compared, the mean scores for females were lower than those for males, both before and after program participation. Previous evaluation in Program Year 1994 also found a significant decrease in the anxiety rating for females and a lower mean post test score for females as compared to males. This difference reflects a generally higher level of math anxiety among females.

The highest level of math anxiety on both the pre and the post test was for participants who classified themselves as Hispanic. Participants who classified themselves as Asian had the biggest difference between the mean pre and post test scores. Their pre test score reflected the second highest math anxiety of the ethnic/racial groups. Their mean post score, however, was the lowest of any ethnic/racial group indicating the lowest level of math anxiety after program participation.

Figure 8. Pre and post test scores on the Mathematics Anxiety Rating Scale-Elementary by age, Program Year 1997



When participants were grouped according to age, younger age categories had lower scores on both the pre and post tests than did older groups. For participants who were 30 years of age and younger, mean pre test scores were lower than for older participants. A greater decrease in scores on the MARS-e among younger participants resulted in mean post test scores that were noticeably lower for participants who were 30 years of age and younger than for participants who were older. The higher scores for older participants may reflect a longer absence from the educational system than for younger participants, contributing to higher levels of math anxiety. Participants in these categories may have special needs to consider in program planning.

RECOMMENDATIONS

In 1994, *Leveling the Playing Field*, the report of the Gender Equity Task Force, presented the following goals for the State of New Jersey:

- Females must have full access to the labor market;
- Females must be able to occupy high-wage, high-skill jobs and nontraditional jobs;
- New Jersey must have equitable education, employment and training environments; and
- New Jersey must have an equitable workforce readiness system that brings about economic self sufficiency for all.

The subtle nature of the barriers to full access to high wage jobs for females was acknowledged. Recommendations included the infusion of gender equity issues and information on nontraditional occupations into all aspects of education within the State.

In preparing its second report, *Balancing the Equation*, the Gender Equity Task Force emphasized the interrelationship of equitable educational opportunities to the success of our economy. The invisibility of gender equity issues too often results in a lack of the specific actions needed to achieve gender equity and prevents the results of reformation of education to a system that is truly available to "all students."

Recommendations addressed all agencies that are involved in the elimination of sex bias and stereotyping and in the establishment of an equitable environment so that all students can achieve and increase access to courses and programs which provide career opportunities in high wage, high skill areas. Specific recommendations included emphasizing the benefits of nontraditional employment for women, identifying skills and interests that females have which are transferrable to nontraditional employment and continuing the grant programs administered through the Office of Bilingual Education and Equity Issues.

The programs funded through the Perkins Act sex equity set aside operate in a tiered organizational configuration that maximizes the delivery of expertise on gender equity issues to single parents and displaced homemakers throughout the state. Three statewide assistance centers provide support in areas of training, marketing and research and evaluation, providing centralized access to technical assistance.

The success of the Perkins Act sex equity set aside programs in removing barriers to high wage employment opportunities for women are clearly demonstrated by evaluation results. Four consecutive years of evaluation have shown changes in knowledge and attitudes that reflect more equitable attitudes after participation in these programs. Continuation and expansion of these successful programs, which directly address recommendations included in *Balancing the Equation*, should include, but not be limited to:

- administering the New Beginnings gender equity grant programs, the statewide career equity assistance centers and model programs.
- providing technical assistance and advice on expanding nontraditional career opportunities throughout the educational system in New Jersey.
- gathering, analyzing and distributing data on the effectiveness of career education programs, the status of men and women students and employees in career education programs.

Bibliography

Balancing the Equation, A Report on Gender Equity in Education. (1997). New Jersey: State Employment and Training Commission, Gender Equity Task Force.

Barnett, J.K., Papini, D.R. and Gbur, E. (1991). Familial correlates of sexual active pregnant and nonpregnant adolescents. *Adolescence*, 26, 457-472.

Bernstein, J.D., Reilly L.B., and Coté-Bonanno, J.F. (1992). *Study to examine student knowledge and attitude toward nontraditional careers.* Upper Montclair, NJ: Montclair State College.

Bernstein, J.D., Coté-Bonanno, J., Reilly, L.B., Carver, J. and Doremus, M.E. (1995a). *Attitudinal Changes in Sex Role Stereotyping.* Research Bulletin No. 9. Upper Montclair, NJ: Montclair State University.

Bernstein, J.D. Coté-Bonanno, J.F., Reilly, L.B., Carver, J. and Doremus, M.E. (1995b). *Equity Standards: Changes in Knowledge.* Research Bulletin No. 12. Upper Montclair, NJ: Montclair State University.

Bernstein, J.D., Coté-Bonanno, J., Reilly L.B., Carver, J. and Doremus M.E. (1995c). *Sex Role Stereotyping: Changes by Program Participants.* Research Bulletin No. 14. Upper Montclair, NJ: Montclair State University.

Bernstein, J.D., Coté-Bonanno, J.F., Reilly, L.B., Carver, J., Doremus, M.E., and Fallon, M. (1995). *Self Esteem: Changes Due to Program Participation.* Research Bulletin No. 13. Upper Montclair, NJ: Montclair State University.

Bernstein, J.D., Coté-Bonanno, J., Reilly, L.B., Carver, J. and Doremus, M.E. (1996a). *Increases in Knowledge: Equitable Standards.* Research Bulletin No. 19. Upper Montclair, NJ: Montclair State University.

Bernstein, J.D., Coté-Bonanno, J., Reilly, L.B., Carver, J. and Doremus, M.E. (1996b). *Program Participants Increase Equitable Attitudes.* Research Bulletin No. 20. Upper Montclair, NJ: Montclair State University.

Bernstein, J.D., Coté-Bonanno, J.F., Reilly, L.B., Carver, J, Doremus, M.E. and Fallon, M. (1996). *Self Esteem: Changes Due to Program Participation.* Reserach Bulletin No. 18. Upper Montclair, NJ: Montclair State University.

Carswell, R. L. (1991). Abuse in dating among high school students. Unpublished Master's Thesis, Fort Hays State University. (ERIC No. ED 339 929).

Coopersmith, Stanley. (1993). Self-Esteem Inventories. Palo Alto, CA: Consulting Psychologist Press, Inc.

Coyle-Williams, M. and Maddy-Bernstein, C. (1992). The 1990 Perkins: Raising the academic and occupational achievement of women and girls. TASPP Brief, Volume 4.

Engelhard, G. (1990). Math anxiety, mother's education, and the mathematics performance of adolescent boys and girls: Evidence from the United States and Thailand. *Journal of Psychology*, 124, 289-298.

Farmer, H.S. (1995). Gender Differences in Adolescent Career Exploration. ERIC Digest. Greensboro, NC: University of North Carolina at Greensboro, ERIC-Clearinghouse on Counseling and Student Services.

Fennema, E. and Sherman, J. (1976). Fennema-Sherman Mathematics Attitude Scales. *JSAS: Catalog of Selected Documents in Psychology*, 6,31.

Flansburg, S. (1993). *Building self: Adolescent girls and self-esteem.* Newton, MA: Education Development Center, Inc.

Hamilton, D.L. and Trolier,T.K. (1986). Sterotypes and stereotyping: An overview of the cognitive approach. In J.F. Dovidio and S.L. Gaertner (Eds)., *Prejudice, discrimination, and racism.* Orlando, FL: Academic Press.

Hanson, H. and others. (1992). *The relationship between battered women and self-esteem.* Paper presented at the Annual Meeting of the Southwestern Psychological Association, Austin TX. (ERIC No. ED 345 154).

Haring, M.J. and Beyard-Tyler, K.C. (1984). Counseling with women: The challenge of nontraditional careers. *The School Counselor*, 31, 301-309.

Harris, A.C. (1994). Ethnicity as a determinant of sex role identity: A replication study of item selection for the Bem Sex Role Inventory. *Sex Roles*, 31, 241-273.

Hedrich,M.A. and Voss, R. (1996). Ninth graders' views about the opposite sex and themselves. *Journal of Family and Consumer Sciences, 88,* 9-12.

Institute for Women's Policy Research. (1996). The status of women in New Jersey. Washington, D.C.: IWPR.

Institute for Women's Leadership. (1993). *NJ Women count. Boxed in and breaking out: New Jersey women and work in the 1990's.* New Brunswick, NJ: Rutgers, The State University of New Jersey.

Kiesler, S., Sproull, F., and Eccles, J.S. (1995). Gender relations in secondary schooling. *Sociology of Education*, 58, 43-48.

King, L. and King, D. (1990). Abbreviated measures of sex role egalitarian attitudes. *Sex Roles*, 31, 241-273.

Leveling the Playing Field. (1994). New Jersey: State Employment and Training Commission, Gender Equity Task Force.

Life Skills Center. (1992). *Low-wage jobs and workers in New Jersey.* Research Report No. 5. Upper Montclair, NJ: Montclair State University.

Lundgren, C.A. (1993). Self-esteem of working women in business and academia. *Delta Pi Epsilon Journal*, 35, 14-25.

Marron, J.A. and Kayson, W.A. (1994). Effects of living status, gender and year in college on college students' self-esteem and life-change experiences. *Psychological Reports*, 55, 811-814.

National Science Foundation. (1994). Request for Proposals. Washington, D.C.: Government Printing Office.

New Jersey Statewide Systemic Initiative,: Achieving Excellence in Mathematics, Science and Technology Education. (1996). *Equity Indicators - Thrust II.* New Brunswick, NJ: Rutgers University.

Orenstein, P. (1994). *School girls: Young women, self-esteem and the confidence gap.* New York, NY: Doubleday.

Plotnick, R.D. (1992). The effects of attitudes on teenage premarital pregnancy and its resolution. *American Sociological Review*, 57, 800-811.

Reilly, L.B., Coté-Bonanno, J.F. and Bernstein, J.D. (1992). *Study to examine math anxiety for students who are single partens and those enrolled in nontradtiional career preparation programs.* Upper Montclair, NJ: Department of Education, Division of Vocational Education.

Six, B. and Eckes, T. (1991). A closer look at the complex structure of gender stereotypes. *Sex Roles*, 24, 57-71.

Suinn, R.M. and Edwards, R. (1982). The measurement of mathematics anxiety: The Mathematics Anxiety Rating Scale for adolescents—MARS-A. *J of Clinical Psychology*, 38, 576-580.

Tobias, S. (1991). Math mental health. Going beyond math anxiety. *College Teaching*, 39, 91-93.

Tocci, C.M. and Engelhard, G. (1991.) Achievement, parental support, and gender differences in attitudes toward mathematics. *Journal of Educational Research*, 84, 280-286.

Tuck, R., Rolfe, J. and Adair, V. (1994). Adolescents' attitude toward gender roles within work and its relationship to gender, personality type, and parental occupation. *Sex Roles*, 31, 547-558.

U.S. Women's Bureau. (1996). *20 Facts on Women Workers.* Washington, D.C.: U.S. Department of Labor, Women's Bureau.

Vera, E.M. and Betz, N.E. (1991). Relationships of self-regard and affective disclosure to relationship satisfaction in college students. (ERIC No. ED 339 982).

Widfield, A. and Meece, J.L. (1988). Math anxiety in elementary and secondary school students. *Journal of Educational Psychology*, 80. 210-216.

Women and Nontraditional Work. (1993). Washington, D.C.: Wider Opportunities for Women, Inc.

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