

DOCUMENT RESUME

ED 160 208

ES 010 119

AUTHOR Schau, Candace Garrett; And Others  
 TITLE Effects of Stories on Elementary-School Children's Gender-Stereotyped Attitudes Toward Adult Occupations.  
 INSTITUTION Indiana Univ., Bloomington. School of Education.  
 SPONS AGENCY Spencer Foundation, Chicago, Ill.  
 PUB DATE [77]  
 NOTE 26p.

EDRS PRICE MF-\$0.83 HC-\$2.06 Plus Postage.  
 DESCRIPTORS Change Strategies; \*Childhood Attitudes; Elementary School Students; \*Occupations; \*Reading Materials; Research; Role Perception; Sex Discrimination; \*Sex Role; \*Sex Stereotypes

ABSTRACT

This study examines the effects of reading materials on children's gender stereotypes toward adult occupations. The study sample consisted of 355 first-, third- and fifth-grade middle class children randomized into 3 groups which received 10 stories each. One group received sex-role-reversed occupational stories, another sex-stereotyped stories, and the third stories unrelated to gender roles and occupations. Children's initial stereotypes were measured in a group-administered multiple-choice pretest. Post-treatment effects were measured by children's judgment of: (1) who (men or women) knows how or could learn how to do each of 20 identified male, female, and genderneutral occupations and (2) who ought to do them. Results show that (1) older children were more stereotyped than younger ones about male jobs; (2) children's judgments about who ought to work at each occupation were more stereotyped than their judgments of who can work at the occupations; (3) judgments of who can do the work were less stereotyped when they were made after judgments of who ought to do the work; and (4) the role-reversed stories did not make a statistically significant difference in the children's attitudes. It is concluded that simply changing the names, pronouns and illustrations or adding occasional non-traditional classroom materials may not be powerful enough to change children's attitudes toward gender roles and occupations. (Author/RB)

\*\*\*\*\*  
 \* Reproductions supplied by EDRS are the best that can be made \*  
 \* from the original document. \*  
 \*\*\*\*\*

ED160208

APR 20 1978

U.S. DEPARTMENT OF HEALTH,  
EDUCATION & WELFARE  
NATIONAL INSTITUTE OF  
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

EFFECTS OF STORIES ON ELEMENTARY-SCHOOL CHILDREN'S  
GENDER-STEREOTYPED ATTITUDES TOWARD ADULT OCCUPATIONS\*

Candace Garrett Schau  
University of New Mexico

Lynne Kahn and Leslie Tremaine  
Indiana University

SCOPE OF INTEREST NOTICE

The ERIC Facility has assigned this document for processing to

TM

In our judgement, this document is also of interest to the clearinghouses noted to the right. Indexing should reflect their special points of view.

CS  
CC

Running head: Gender-stereotyping

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Candace Schau

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

\*This research was supported in part by a Spencer Foundation grant awarded by the Indiana University School of Education and an Indiana University summer faculty fellowship. The authors would like to express their thanks to Lloyd R. Cline and the teachers and pupils in his school for their cooperation and enthusiasm in working with us on this project and Judith W. Busch for editing this paper. Requests for reprints should be sent to Dr. Candace Garrett Schau, Department of Educational Foundations, College of Education, University of New Mexico, Albuquerque, NM 87131.

PS010119

EFFECTS OF STORIES ON ELEMENTARY-SCHOOL CHILDREN'S  
GENDER-STEREOTYPED ATTITUDES TOWARD ADULT OCCUPATIONS

Sex differences exist in children's vocational aspirations as early as preschool and continue through elementary school (Beuf, 1974; Looft, 1971a; Siegel, 1973; Vondracek & Kirchner, 1974). Generally, these aspirations reflect society's stereotypic standards of gender-appropriate roles. Beuf (1974) asked children ages three through six what they wanted to be when they grew up: boys selected primarily adventurous, traditionally "masculine" jobs such as policeman, scientist, cowboy, or sports superstar, while girls chose nurturant, traditionally "feminine" occupations such as teacher or nurse. Siegel (1973) administered an open-ended occupational choice questionnaire to second graders; their responses closely paralleled those reported by Beuf.

The variety and range of occupational choices expressed by each sex also differ. Looft (1971b) and Siegel (1973) found that first- and second-grade boys mentioned over twice as many vocational preferences as first- and second-grade girls. Vondracek and Kirchner (1974) found that preschool girls more than boys tended to aspire to the specific adult role of parent.

A number of researchers (Looft, 1971a, b; Siegel, 1973; Vondracek & Kirchner, 1974) have suggested that children's learning of broad occupational sex-role stereotypes may contribute significantly to the sex differences evident in these early aspirations. In studies by Schlossberg and Goodman (1972) and Garrett, Ein, and Tremaine (1977), elementary school children rated few occupations as appropriate for women but many as appropriate for men.

In addition, results in the Garrett, Ein, and Tremaine study indicated a decrease in the rigidity of occupational sex-typing from first to fifth,

grade. Similarly, Shephard and Hess (1975) found increasing liberality, defined as the belief that both sexes should be allowed to do a job, from kindergarten to eighth grade. They found no sex differences in the degree to which children assigned jobs according to cultural stereotypes at the kindergarten level, but by eighth grade a significant sex difference emerged, with males more stereotyped than females.

Most child development theories agree that children learn a great deal of cultural information from models (Bandura, 1971; Freud, 1927; Kohlberg, 1966). Social learning researchers have shown that both live and symbolically represented models affect children's behavior (Bandura & Mischel, 1965; Bandura, Ross, & Ross, 1963). According to Bandura (1971), "in many instances, people pattern their behavior after models presented in verbal or pictorial form." (p. 2)

Books, pervasive environmental elements in school children's lives, present a great number of models who perpetuate sex-stereotypic behaviors and attitudes. Several content analyses of children's books have shown that the information presented in the books corresponds to the culture's traditional gender-role stereotypes (e.g., Steffire, 1969; Women on Words and Images, 1972). For this reason, writers and publishers currently are under great pressure to alter the gender stereotypes in their books. There has been very little empirical research, however, on the actual effects of reading materials on the development of children's attitudes. In one study, Litcher and Johnson (1969) used books in an attempt to change children's racial attitudes. They exposed white middle-class second-grade children to a multiethnic reader for four months while similar children used a traditional reader. They found significant differences between the groups on the posttest, with the multiethnic group exhibiting more favorable attitudes toward Blacks.

The present study examines the effects of reading materials on children's gender stereotypes toward adult occupations. The study explores age and sex differences in the flexibility of white upper middle class children's occupational stereotypes and the extent to which these attitudes can be modified by exposure to sex-role reversed stories.

### Methodology

#### Subjects

The subjects were 120 first-grade, 110 third-grade, and 125 fifth-grade children from an upper-middle class open-concept school in a suburb of a large midwestern city.

#### Materials

Forty adult occupations representing three levels of educational requirements (high school diploma, post-high school training, or college training) were selected from the Science Research Associates Occupation Kit (1964) for the pretest. Eighteen of the jobs were predominantly male in our culture (i.e., at least 75% of the people employed in the occupations were males); ten were predominantly female (i.e., at least 75% female employment), and eight were neutral (i.e., less than 75% of either sex were employed in the occupations) (U.S. Bureau of the Census, 1973). The remaining four jobs were not specifically mentioned in the Census information. Fewer female than male or neutral jobs were listed in the original SRA pool of occupations so that an even balance across jobs could not be accomplished.

Instruments using only sex-typed choices (i.e., male or female) probably measure children's knowledge of cultural stereotypes as opposed to their actual attitudes. A choice of both males and females is one possible attitude

and should be represented if the intent is indeed to measure flexibility in attitudes. Flexibility refers to the degree of stereotyping present, which ranges from not stereotyped (e.g., responding both females and males) to highly stereotyped (e.g., only females or only males).

Children's initial stereotypes were measured in a group-administered multiple-choice pretest. Subjects were asked, "Who can be (each of the 40 occupations)?" In a brief language lesson prior to the pretest, "can" was defined for the children as "knows how or could learn how to." Five possible responses were pictorially represented on the answer sheets: "only women" (represented by one woman's face), "mostly women, a few men" (two women's faces and one man's face), "women and men" (one woman's face and one man's face), "mostly men; a few women" (two men's faces and one woman's face), and "only men" (one man's face).

Internal consistency of the stereotyping instrument was .85; test-retest data indicated that the mean scores assigned to the occupations did not change significantly across time. Pilot work indicated that even first-grade children were able to use an instrument of this type with reasonable accuracy. When they did make errors, those errors tended to be random or toward the middle of the scale (i.e., "women and men"). (See Garrett, Ein, & Tremaine, 1977, for further information.) The results of the study have been interpreted with this as a source of variance.

From the results of this norming phase, the five occupations viewed by the children as most male-stereotyped and the five viewed as most female-stereotyped were selected to serve as treatment occupations for the sex-role reversed stories. The five male jobs included ship captain, football coach, train engineer, firefighter, and airplane pilot; the five female jobs included

nurse, airplane attendant, secretary, sewing machine operator, and model. Treatment and control stories about each of these occupations were written, generally using an existing stereotyped story as a model. For the treatment stories, the sex of the main character in each story was reversed from the children's gender-stereotype of the occupation (e.g., male nurse). The material-control stories were the same as the treatment stories except that the sex of the main characters matched the children's stereotypes (e.g., female nurse). The task-control stories were of comparable length and difficulty to the other two groups of stories but were not related to jobs or gender-roles in any way (e.g., a story about a dog with no indication of the dog's gender). Because of the grade range involved in the study, two versions of each story were used. One version of each story was used with both first- and third-graders; classroom teachers read the stories to the first-graders while the third-graders read the stories themselves. The second version of each story was read by the fifth-graders. Children were randomly assigned to groups, balancing for grade and sex.

Treatment effects were evaluated using a posttest instrument similar in design to the pretest. The posttest contained the ten occupations that formed the basis of the treatment stories as well as ten additional occupations identified in the norming phase as male, female, and gender-neutral. The male jobs included car mechanic, truck driver, farmer, carpenter, and plumber; the neutral jobs consisted of telephone operator, typist, babysitter, and grade-school teacher; and the female job was librarian.\* For each of the occupations,

---

\*Since so few jobs were stereotyped as female by the children, there was only one job left to include in the posttest after the five were selected as treatment occupations.

subjects were asked to indicate who "can" (knows how to or could learn how to) do each job and who "should" (ought to) do each job. "Can," as an ability perspective, and "should," as a prescriptive perspective, were chosen to represent two possible facets of stereotyping. Prior to the posttest, "can" and "should" were defined for the children, and they practiced using the words in situations unrelated to gender-roles. A random half of the children of each sex in each grade from each group responded to "can" first and then "should;" the other half responded to "should" first, then "can."

### Analysis

A complete least-squares multivariate analysis of variance was employed due to the differing cell sizes resulting from the naturally-occurring inequalities in number of boys and girls in each grade (Overall & Klett, 1972). To examine the unique contribution of each effect and interaction, the data were reanalyzed with each effect and with each interaction, by degree (e.g., second-order interactions), in the last position. Each multivariate analysis of variance was a 3 (grade level) by 2 (sex) by 2 (order of directions) by 3 (treatment group) fixed effects design. Within-subject missing data were eliminated from the analysis by inserting means from that subject's corresponding group (e.g., mean "can" response to the job firefighter from the story treatment group third-grade girls who responded to "should" first, then "can").\* When multivariate effects were significant (i.e.,  $p < .05$ ), the means from each of the dependent variables were examined for patterns.

Due to the sample size and the number of factors involved, type of response ("can" and "should") could not be analyzed as a repeated measure. To

---

\*Using means for within-subject missing data is not recommended for univariate ANOVA designs (Dalton, note 1). Eleven percent of the subjects in this study had at least one missing rating; the missing ratings accounted for only 2% of the total data. It was not reasonable to eliminate these from the MANOVA analyses. Hence, means were used. The statistical effect of this procedure is not known for MANOVA designs, but with the small total amount of data involved, the effect should be minor.



approximate this type of analysis, three separate analyses ("can," "should," and the difference between the two) were used.

For ease of interpretation within each of the three overall analyses, the dependent variables were placed in five groups representing the children's pretest stereotypes of male and female treatment and nontreatment occupations as well as gender-neutral occupations. An occupation was empirically defined as male-stereotyped if the average rating given to it by the children on the pretest fell between 3.93 ("mostly men, a few women": 4-SEM) and 5 ("only men"); as female-stereotyped if the average rating fell between 2.07 ("mostly women, a few men": 2+SEM) and 1 ("only women"); and as gender-neutral if the average rating was between 2.07 and 3.93 (Garrett, Ein, & Tremaine, 1977).

### Results

The results section is divided into five subsections: male-stereotyped jobs, treatment and nontreatment; female-stereotyped jobs, treatment and nontreatment; and neutral jobs. Within each subsection, significant multivariate effects are presented for "can" responses, then "should" responses, and finally "difference" ("should" minus "can") responses. Table 1 is a summary table of all significant multivariate effects ( $p < .05$ ).<sup>\*</sup> Table 2 presents the mean ratings of the averages of all jobs within each level of the significant multivariate effects.

Internal consistency of the posttest stereotyping instrument was 0.92.

Insert Tables 1 & 2 about here

---

<sup>\*</sup>Isolated significant effects (e.g., the grade by sex effect for "should" responses for female treatment occupations) are shown in Table 1 but are not discussed; generally they were marginally significant and were not interpretable.

### Male-stereotyped Jobs

The male-stereotyped treatment jobs included the five occupations that served as the basis for the half of the treatment stories that dealt with females in occupations stereotyped by the children on the pretest as male. The five male nontreatment jobs consisted of the other five male occupations used on the posttest.

#### Treatment Jobs

##### Grade Effect

Can responses -- The multivariate grade effect was significant ( $F = 7.16$ ;  $df = 10,630$ ;  $p < .001$ ). For all five jobs, fifth-graders gave the most flexible ratings and first-graders gave the least (see Table 2.).

Should responses -- The multivariate grade effect also was significant ( $F = 2.97$ ;  $df = 10,630$ ;  $p < .001$ ). All of the jobs exhibited a pattern of means such that the fifth-graders gave the most flexible ratings while the first- and third-graders gave less flexible and about equal ratings.

Difference responses -- This multivariate grade effect was also significant ( $F = 1.98$ ;  $df = 10,630$ ;  $p < .05$ ). In general, the means pattern showed the smallest difference between the ratings on "should" and "can" in the first grade with larger and about equal differences in the third and fifth grades.

##### Order Effect

Can responses -- The multivariate effect for order was significant ( $F = 6.73$ ;  $df = 5,315$ ;  $p < .001$ ). Order 2 responses (i.e., responses of children who were asked "should" first for each occupation, then "can") were less stereotyped than Order 1 "can" responses for all of the variables.

Difference responses -- The multivariate effect for the order effect was significant ( $F = 4.58$ ;  $df = 5,315$ ;  $p < .001$ ). For all five variables, the differences between the "should" and "can" responses for each job were greatest for Order 2 children.

#### Treatment Group Effect

Can responses -- The multivariate treatment group effect was not significant.

Should responses -- The multivariate treatment group effect was not significant.

#### Grade by Order Interaction

Can responses -- The multivariate interaction of grade by order was significant ( $F = 3.88$ ;  $df = 10, 630$ ;  $p < .001$ ). As indicated by the significant main effect for order, responses in Order 1 were more stereotyped than those in Order 2. The differences between the orders was almost zero in the first-grade. The largest difference occurred in the third-grade. The fifth-grade difference was between those found in the first- and third-grades.

Difference responses -- The multivariate interaction was significant ( $F = 3.56$ ;  $df = 10,630$ ;  $p < .001$ ). The mean order differences were small and about equal in the first-grade. The largest mean difference between the orders occurred in third-grade; the fifth-grade difference was smaller than the third-grade but still sizable.

#### Grand Mean Effect

Difference responses -- To determine if "can" and "should" responses were different, the grand mean of the difference responses was tested to see if it was different from zero. The multivariate effect was significant

( $F = 25.22$ ;  $df = 5,319$ ;  $p < .001$ ). For all five variables, "should" means were more stereotyped than "can" means ( $M$  difference = .50).

#### Nontreatment Jobs

##### Grade Effect

Can responses -- The multivariate grade effect was significant ( $F = 7.16$ ;  $df = 10,630$ ;  $p < .001$ ). For all five of the variables, first-graders were the most stereotyped and fifth-graders were the least stereotyped, while the third-graders were between.

Should responses -- The multivariate grade effect was significant ( $F = 2.77$ ;  $df = 10,630$ ;  $p < .01$ ). For all of the jobs in this set, first- and third-graders had approximately equal mean ratings but were more stereotyped than fifth-graders.

Difference responses -- The multivariate grade effect was significant ( $F = 2.89$ ;  $df = 10,630$ ;  $p < .01$ ). The pattern among the means for the variables included small positive differences for the first-graders with larger and about equal differences for the third- and fifth-graders.

##### Order Effect

Can responses -- The multivariate order effect was significant ( $F = 12.54$ ;  $df = 5,315$ ;  $p < .001$ ). Order 2 responses were less stereotyped than Order 1 responses.

Difference responses -- The multivariate order effect was significant ( $F = 6.77$ ;  $df = 5,315$ ;  $p < .001$ ). In general, mean difference responses were greater with Order 2 than with Order 1.

##### Grade by Order Interaction

Can responses -- This multivariate effect was significant

( $F = 2.74$ ;  $df = 10,630$ ;  $p < .01$ ). In general, Order 1 responses were more stereotyped than Order 2 responses, as the significant main effect for order indicated. The difference between the orders was largest for the third-grade. The order differences were small and about equal for the first- and fifth-grades.

Difference responses -- This multivariate interaction was significant ( $F = 2.74$ ;  $df = 10,630$ ;  $p < .01$ ). In first-grade, the mean differences for Order 1 and Order 2 were small and about equal. For fifth-grade, they were large and about equal. For third-grade, the Order 1 mean difference was small while the Order 2 mean difference was large.

#### Grand Mean Effect

Difference responses -- The multivariate effect of testing the grand mean against zero in the difference analysis was significant ( $F = 31.02$ ;  $df = 5,319$ ;  $p < .001$ ). For all five jobs in this set, "should" mean responses were more stereotyped than "can" ( $M$  difference = .36).

#### Female-stereotyped Jobs

The female-stereotyped treatment jobs included the five occupations that served as the basis for the half of the treatment stories that dealt with males in occupations stereotyped as female by the children on the pretest; the one nontreatment job was the remaining job the children stereotyped as female.

#### Treatment Jobs

##### Grade Effect

Can responses -- The multivariate grade effect was significant ( $F = 2.31$ ;  $df = 10,630$ ;  $p < .05$ ). The fifth-grade tended to be the least stereotyped and the first-grade the most.

Should responses -- The multivariate grade effect was significant

( $F = 3.32$ ;  $df = 10,630$ ;  $p < .001$ ). There was no obvious mean pattern.

Difference responses -- The multivariate grade effect was significant ( $F = 2.56$ ;  $df = 10,630$ ;  $p < .01$ ). In general, the first-graders showed the smallest difference between "should" and "can" responses while the third- and fifth-graders showed larger differences.

#### Order Effect

Can responses -- The multivariate order effect was significant ( $F = 9.43$ ;  $df = 5,315$ ;  $p < .001$ ). In general, Order 1 means were more stereotyped than Order 2 means.

Should responses -- The multivariate order effect was significant ( $F = 6.14$ ;  $df = 5,315$ ;  $p < .001$ ). The variables showed both possible patterns: in some cases, Order 1 was more stereotyped; in others, Order 2 was more stereotyped.

Difference responses -- The multivariate order effect was significant ( $F = 3.90$ ;  $df = 5,315$ ;  $p < .01$ ). Mean difference responses were greater with Order 2 than with Order 1.

#### Treatment Group Effect

Can responses -- The multivariate treatment group effect was not significant.

Should responses -- The multivariate treatment effect approached significance ( $F = 1.75$ ;  $df = 10,630$ ;  $p < .07$ ). For all five jobs, the experimental groups means were more flexible than the other two groups ( $M$  role-reversed group = 1.91;  $M$  material-control group = 1.72;  $M$  task-control group = 1.67).

#### Grade by Order Interaction

Can responses -- The multivariate interaction was significant

( $F = 2.32$ ;  $df = 10,630$ ;  $p < .05$ ). Consistent with the significant main effect for order, Order 2 responses were consistently less stereotyped than Order 1 responses. The means of the variables did not show consistent trends although order differences tended to be greatest in the third-grade.

Should responses -- The multivariate interaction was significant ( $F = 2.03$ ;  $df = 10,630$ ;  $p < .05$ ). There was no interpretable mean pattern.

Difference responses -- The multivariate interaction was significant ( $F = 2.43$ ;  $df = 10,630$ ;  $p < .01$ ). The general mean pattern indicated that the largest differences due to order were in the third-grade with smaller differences in first- and fifth-grades.

#### Grand Mean Effect

Difference responses -- The multivariate effect of testing the grand mean in the difference responses analysis was significant ( $F = 30.59$ ;  $df = 5,319$ ;  $p < .001$ ). For all five variables, should means were more stereotyped than can means ( $M$  difference =  $-.34$ ).

#### Nontreatment Job

##### Grade Effect

Difference responses -- The univariate grade effect was significant ( $F = 8.10$ ;  $df = 2,319$ ;  $p < .001$ ). Fifth-graders showed greater differences than third-graders who showed greater differences than first-graders.

##### Grand Mean Effect

Difference responses -- The multivariate grand mean effect was significant ( $F = 41.36$ ;  $df = 1,323$ ;  $p < .001$ ). The "should" response means were more stereotyped than the "can" response means ( $M = -.30$ ).

#### Neutral Jobs

The neutral jobs included four jobs from the pretest that were not stereotyped on the pretest by the children as either male or female. None were

included in the treatment.

#### Grade Effect

Can responses -- The multivariate grade effect was significant ( $F = 2.41$ ;  $df = 8,632$ ;  $p < .05$ ). Examination of the means of the variables did not yield a discernable pattern.

Should responses -- The multivariate grade effect was significant ( $F = 3.35$ ;  $df = 8,632$ ;  $p < .001$ ). The pattern was not completely consistent, but the first- and third-graders tended to be least stereotyped with fifth-graders most stereotyped.

Difference responses -- The multivariate grade effect was significant ( $F = 2.85$ ;  $df = 8,632$ ;  $p < .01$ ). In general, smallest mean differences occurred in the first- and third-grades with larger mean differences in the fifth-grade. In all cases, the mean differences were negative (i.e., "should" responses were more stereotyped than "can" responses).

#### Order Effect

Should responses -- The multivariate order effect was significant ( $F = 4.14$ ;  $df = 4,316$ ;  $p < .01$ ). Order 1 responses were more stereotyped than Order 2 responses for all variables.

#### Grand Mean Effect

Difference responses -- The multivariate grand mean effect was significant ( $F = 26.17$ ;  $df = 4,320$ ;  $p < .001$ ). For all four variables, "should" responses were more stereotyped than "can" responses ( $M$  difference =  $-.32$ ).

### Discussion

This research supports and extends the results of previous studies that show that younger children tend to be more stereotyped toward occupations



than are older children (Garrett, Ein, & Tremaine, 1977; Shephard & Hess, 1975). This pattern was found for the male treatment and nontreatment jobs for both "can" and "should" responses. This pattern of age variation is not due to measurement error built into the instrument. Pilot work indicated that first-grade children tended to be as competent as fifth-grade children in the use of a five-point rating scale in relation to concrete objects. When the first-graders were less accurate, their errors tended to be toward the middle of the scale or to be random. Hence, the more extreme scores of the younger children on the posttest cannot be attributed to inherent age biases in the instrument.

Although children at all three grade levels were more stereotyped in their "should" responses, the differences between "should" and "can" tended to increase between first- and third-grade with no change between third- and fifth-grade. Middle and upper elementary children apparently attach more differences to the concepts of ability and prescription than do younger children. They may also be more concerned with fairness than the younger children are. In either case, these findings suggest that future exploration of sex-role stereotypes should continue to differentiate between these dimensions.

The results also show that the order of presentation of "can" and "should" made a difference in the children's responses to "can." For the male treatment and nontreatment and the female treatment occupations, the children's responses to "can" were less stereotyped if they were asked to respond to "should" first. The strength of this effect differed across grades. Order made the biggest difference in third-grade with small differences in first- and fifth-grades. "Should" responses thus apparently exert some sensitizing effect on ability-based stereotyping of jobs, especially in middle elementary school.

This result suggests that one possible strategy for changing children's attitudes involves concentration on prescriptive stereotypes since ability stereotypes then also change.

Cognitive structural changes with age undoubtedly contribute to the pattern of results, especially in terms of age variations in the use of the scale, in the use of "can" and "should;" and in terms of the impact of order of directions. Older children, on the average, are cognitively more sophisticated than younger children (Piaget & Inhelder, 1969). Thus, older children should be able to use a social-role classification continuum of female-male choices and should be able to vary their judgments according to circumstances (e.g., in response to "can" and "should"). Thus, the findings of this study provide support for a model of the development of sex-role stereotyping that includes a cognitive component as well as a social learning component.

The results show clearer patterns in the data for jobs stereotyped by the children as male. Since the posttest instrument consisted of ten male jobs, six female jobs, and four neutral jobs, the male analyses did contain the most power. However, the instrument was constructed from the children's own responses to a pretest where they placed several jobs filled predominately by women in our culture into the neutral category. So the small number of female jobs included on the posttest reflected the children's stereotypes. In addition, there were enough female and neutral jobs to show systematic differences when they existed. Thus, lack of power is not a sufficient explanation for the clearer patterns in data for the male jobs.

The role-reversed stories did not make a statistically significant difference in the children's attitudes. However, their "should" responses to the

female treatment jobs were the least stereotyped when they had participated in the experimental group. There were never any significant differences between the two control groups. Because of the number of children in the study, it is not likely that the lack of statistical significance was due to a power problem. If children's attitudes can be affected by stories, then perhaps the stories in this study were not strong enough or the treatment did not last long enough. To further explore these issues, we are repeating the study using new stories. The main characters in the new stories possess the characteristics found in modeling studies to be salient for children. They are strong, successful, powerful, and so on. Rather than using one story about each of ten occupations, the new story group contains five stories about each of four occupations. The same main character is used in all five stories in each set. This procedure will provide a stronger test of the effect of written materials on children's attitudes.

For the present, the lack of statistically significant effects should serve as a caution for people who hope to change children's attitudes through minor changes in curriculum materials. Simply changing the names and pronouns, as we did in developing our role-reversed stories, or changing illustrations or adding occasional non-traditional materials may not be powerful enough to affect attitude changes. Systematic research and development is called for to determine more precisely how and when curriculum innovations can have the desired impact of changing sex-role stereotypes.

The results from this study are cross-sectional in nature and so indicate age differences that are not necessarily due to development. They also are based on upper-middle class children. More work needs to be done using several different cultural and ethnic groups of children and incorporating designs that will indicate age, maturational, and generational differences.

Table 1. Summary of probability levels associated with significant MANOVA effects ( $p < .05$ )

Effect	"Can" Responses				"Should" Responses						Difference Responses ("Should" - "Can")				
	Male Jobs		Female Jobs		Male Jobs		Female Jobs		Neutral Jobs		Male Jobs	Female Jobs		Neutral Jobs	
	T <sup>+</sup>	NT	T	NT	T	NT	T	NT	T	NT	T	NT	T	NT	
Grand Mean <sup>†</sup>											.001	.001	.001	.001	.001
Grade	.001	.001	.05	--	.05	.001	.01	.001	--	.001	.05	.01	.01	.001	.01
Order	.001	.001	.001	--	--	--	--	.001	--	.01	.001	.001	.01	--	--
Sex	.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grade by Order	.001	.05	.05	--	--	--	--	.05	--	--	.001	.01	.01	--	--
Grade by Sex	--	--	--	--	--	--	--	.05	--	--	--	--	--	--	--
Grade by Order by Sex	--	--	--	--	--	.05	--	.05	--	--	--	--	--	--	.05
Grade by Sex by Treatment	--	--	--	--	--	--	--	.05	--	--	--	--	--	--	--
Sex by Order by Treatment	--	--	--	--	--	.05	--	--	--	--	--	--	--	--	--

<sup>†</sup>T stands for treatment jobs and NT for nontreatment jobs.

<sup>\*</sup>Grand mean effects were only examined for difference responses.

Table 2. Means from the averages of the univariate variables involved in significant Grade, Order, and Grade by Order multivariate effects.

Note: Dashes in the table indicate that that specific effect was not multivariately significant.

	Grade 1			Grade 3			Grade 5			Means for Order Effect			
	Can	Should	Diff	Can	Should	Diff	Can	Should	Diff	Pooled Across Grade			
										Can	Should	Diff	
Order 1	Male Treatment	4.59	--	0.17	4.61	--	0.12	4.21	--	0.18	4.47	--	0.16
	Male Non-Treatment	4.52	--	0.13	4.44	--	0.13	3.92	--	0.44	4.29	--	0.24
	Female Treatment	1.88	1.83	-0.08	1.87	1.64	-0.22	2.11	1.76	-0.35	1.95	1.75	-0.21
	Female Non-Treatment	--	--	--	--	--	--	--	--	--	--	--	--
	Neutral	--	--	--	--	--	--	--	--	--	--	2.15	--
Order 2	Male Treatment	4.52	--	0.14	4.07	--	0.66	4.02	--	0.54	4.20	--	0.44
	Male Non-Treatment	4.32	--	0.18	3.83	--	0.73	3.80	--	0.54	3.98	--	0.48
	Female Treatment	2.14	1.88	-0.26	2.31	1.67	-0.63	2.27	1.80	-0.48	2.24	1.78	-0.46
	Female Non-Treatment	--	--	--	--	--	--	--	--	--	--	--	--
	Neutral	--	--	--	--	--	--	--	--	--	--	2.37	--
Means for Grade Effect Pooled Across Order	Male Treatment	4.56	4.71	0.15	4.32	4.73	0.41	4.11	4.48	0.36			
	Male Non-Treatment	4.42	4.58	0.16	4.12	4.55	0.45	3.86	4.36	0.49			
	Female Treatment	2.01	1.85	-0.17	2.10	1.65	-0.44	2.19	1.78	-0.41			
	Female Non-Treatment	--	--	-0.05	--	--	-0.35	--	--	-0.50			
	Neutral	2.56	2.35	-0.22	2.54	2.32	-0.22	2.63	2.14	-0.50			

REFERENCE NOTE

Dalton, S. Multiple regression and traditional solutions for disproportional variables. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, April, 1976.

## REFERENCES

- Bandura, A. Psychological Modeling: Conflicting Theories. Chicago: Aldine-Atherton, 1971.
- Bandura, A., & Mischel, W. Modification of self-imposed delay of reward through exposure to live and symbolic models. Journal of Personality and Social Psychology, 1965, 2, 698-705.
- Bandura, A., Ross, D., & Ross, S.A. Imitation of film-mediated aggressive models. Journal of Abnormal and Social Psychology, 1963, 66, 3-11.
- Beuf, A. Doctor, lawyer, household drudge. Journal of Communication, 1974, 24, 142-145.
- Freud, S. The ego and the id. London: Hogarth Press, Ltd., 1927.
- Garrett, C.S., Ein, P.L., & Tremaine, L. The development of gender-stereotyping of adult occupations in elementary-school children. Child Development, 1977, 48, 507-512.
- Kohlberg, L. A cognitive-developmental analysis of children's sex-role concepts and attitudes. In E. Maccoby (Ed.), The Development of Sex Differences. Stanford, California: Stanford University Press, 1966.
- Litcher, J.T., & Johnson, D.W. Changes in attitudes toward negroes of white elementary school students after use of multiethnic readers. Journal of Educational Psychology, 1969, 60, 148-152.
- Looff, W.R. Sex differences in the expression of vocational aspirations by elementary school children. Developmental Psychology, 1971, 5, 366 (a).
- Looff, W.R. Vocational aspirations of second-grade girls. Psychological Reports, 1971, 28, 241-242 (b).
- Overall, J.E., & Klett, C.J. Applied Multivariate Analysis. New York: McGraw Hill, 1972.
- Schlossberg, N.K., & Goodman, J. A woman's place: children's sex stereotyping of occupations. Vocational Guidance Quarterly, 1972, 20, 266-270.
- Science Research Associates, Inc. Junior Occupational Briefs, Palo Alto, California: Author, 1964.
- Shepard, W.O., & Hess, D.T. Attitudes in four age groups toward sex role division in adult occupation and activities. Journal of Vocational Behavior, 1975, 6, 27-39.
- Siegel, C.L.F. Sex differences in the occupational choices of second graders. Journal of Vocational Behavior, 1973, 3, 15-19.

Stefflre, B. Run, mama, run: women workers in elementary readers.  
Vocational Guidance Quarterly, 1969, 8, 99-102.

U.S. Bureau of the Census, Census of Population: 1970, Volume 1, Characteristics of the population, Part 1, U.S. Summary-Section 2, U.S. Government Printing Office, Washington, DC, 1973, Table 221.

Vondracek, S.C., & Kirchner, E.P. Vocational development in early childhood: an examination of young children's expressions of vocational aspirations. Journal of Vocational Behavior, 1974, 5, 251-260.

Women on Words and Images. Dick and Jane as victims: sex-stereotyping in children's readers-excerpts. In D. Gersoni-Staun (Ed.), Sexism and Youth. New York: R.R. Bowker Company, 1974, 196-208.