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FROM A CHILD'S VIEW: CHILDREN'S OCCUPATIONAL KNOWLEDGE AND PERCEPTIONS OF OCCUPATIONAL CHARACTERISTICS

Jeanne McGee and Jean Stockard

Only a small amount of research has examined children's awareness or knowledge of occupational characteristics and the effect that gender has on their perceptions. Most of this earlier research dealt with only a few aspects of this area or had severe limitations in study design, scope, and/or sampling frame. This paper explores children's occupational knowledge and perceptions of occupational characteristics using a large sample and a study design that avoids many of the problems in earlier works. Specifically we examine two areas. The first is children's occupational knowledge, including the extent to which boys and girls recognize a wide range of jobs; their views of their relative importance, monetary rewards, difficulty and control over others; and the degree to which the children's perceptions correspond to those from adults and/or more objective measures. The second is the effect of gender on occupational perceptions including the extent to which children's own gender and the gender of the perceived occupant of a job affect perceptions of a given occupation.

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RELATED LITERATURE

The literature related to children's perceptions of occupations may, with one exception, be divided into two separate time periods: the first, through the early 1970s, deals primarily with children's knowledge of occupations and the occupational status hierarchy, while the second tends to focus on gender differences in the workplace as an important variable.¹ Both eras of research are important in our own work.

First Generation Studies

The research published through the early 1970s generally involved asking children to describe a series of occupations and to rank them along a status or prestige hierarchy. While most of the studies gave the children a job title in an interview (Gunn 1964; Simmons and Rosenberg 1971) or written questionnaire (Lauer 1974; Simmons 1962; Wehrly 1973), DeFleur (1966) presented them with simple cartoon-like drawings of workers and Goldstein and Oldham (1979) used a combination of pictorial and verbal stimuli. The use of pictures is generally seen as preferable because it avoids the normative constraints associated with a job title (see Nemerowicz 1979, p. 92).²

The results of these studies suggested that children's understandings of occupational roles are relatively well developed by the fourth grade (DeFleur 1966; Gunn 1964; Lauer 1974; Simmons 1962; Wehrly 1973) and that children are more knowledgeable of occupations with which they have had some personal contact than those with which they have had only vicarious contact (such as through the media) or none at all. Similarly they are more knowledgeable of those with which they have had vicarious contact than those with which they have had none (DeFleur 1966; Wehrly 1973). Finally, the studies confirm that, at least by the fourth grade, children understand status or prestige differences between occupations (Galler 1951; Lauer 1974; Simmons and Rosenberg 1971; Stewart 1959; Weinstein 1958), although the distinctions may be more accurate at the extreme ends of the status continuum than in the middle ranges (DeFleur 1966; Gunn 1964). This might reflect the tendency for children's understanding of occupational roles to become more precise as they grow older (DeFleur and DeFleur 1967; Goldstein and Oldham 1979; Gottfredson 1981; Heise and Roberts 1970; Wehrly 1973).

These studies generally did not have the gender of the workers or subjects as a major focus of the study. For instance, DeFleur (1966) had only male workers in the pictures given her subjects; and the lists used by Gunn (1964), Wehrly (1983), and Simmons and Rosenberg (1971) did not differentiate between male and female workers. Simmons (1962), undoubtedly because a second focus of his study was occupational choice, used separate lists for boys and girls, with same-sex-typical jobs included in the lists given to the subjects.

Although Gunn (1964) included only boys in her study, the other authors had both male and female subjects and usually noted a test of any sex differences in response. The results suggested no difference in occupational knowledge of boys and girls (DeFleur 1966; Wehrly 1973), but a tendency for them to differ in their estimates of occupational prestige (DeFleur 1966; Simmons 1962) and income (Goldstein and Oldham 1979), with the prestige rankings and income estimates (but not rankings) of boys more closely resembling those of adults.

Second Generation Studies

Beginning with the onset of the recent feminist movement in the early 1970s the literature began to consider gender as an important explanatory variable. Work has focused on how the sex-typing of the occupation, the gender of a job occupant, and the gender of the subject affect perceptions of an occupation. Because only a small portion of this work has used children as subjects, we review studies using both adults and children below.

Studies of college students and adults have looked at both how people evaluate workers' performance and at ratings of the desirability and prestige of given occupations. Much of this work has produced conflicting results. For instance, two studies indicate that evaluations of workers' performance generally depend upon the nature of the task or field of work, but not the gender of the worker (Deaux and Emswiler 1974; Decker 1986; Hesselbart 1977a), while two other studies suggest that performance evaluations are higher of workers whose gender is typical of people working in a field, at least within the United States (Mischel 1974; Shinar 1978), although this result may be limited to men (Hesselbart 1977b).

Several studies have examined the effect of the gender of a job occupant on the prestige ratings assigned by respondents. While one study found only small effects (Bose and Rossi 1983), several others have found moderate to substantial effects (Guppy and Siltanen 1977; Jacobs and Powell 1984; Nilson 1976; Powell and Jacobs 1983, 1984). The sex-typing of the occupation usually appears to affect the assigned ratings, with women accorded lower prestige than comparable men when in male-typed jobs and men accorded lower prestige than comparable women when in female-typed jobs. Although earlier studies indicated that men and women give similar prestige rankings to occupations when the sex of the occupant is unspecified (Hodge, Siegel, and Rossi 1964), some of the second generation studies have found that men are more likely than women to degrade the prestige of incumbents in non sex-typed jobs (Haug 1975; Jacobs and Powell 1984; Nilson 1976).

Finally, experimental studies have examined the effect of college students' perceptions of the sex-typing of professional occupations on their ratings of their prestige and desirability, with earlier studies (Touhey 1974a, 1974b) indicating that ratings were lower when students believed that more women were entering

male-dominated fields and higher when they believed more men were entering female-dominated fields. More recent work, however, has found no such effects (Johnson 1986; Shaffer, Gresham, Clary, and Thielman 1986; Suchner 1979).

The literature regarding children is far less extensive than that which deals with adults. Nemerowicz (1979) showed pictures of male and female workers in eight different jobs to boys and girls in the second through sixth grades and asked them to talk about each job. She reported that students had more problems in identifying workers in nontraditional jobs (although she did not report on the extent to which age affected this result) and that the students, and especially boys, tended to give more positive comments about work stereotyped as typical of their own sex group, regardless of the gender of the worker pictured. In two separate studies, O'Bryant, Durrett, and Pennebaker (1978, 1980) presented children with four pairs of jobs, one job in each pair typically female and the other typically male. The jobs in each pair were matched by judges on ratings of general respect, salary, requisite education, and service provided to the community. When asked to rate each of the occupations on the four criteria used in matching them, boys and girls in both studies gave equal ratings to the occupations in terms of required education, but girls gave higher ratings to the occupations on the other three scales in the second study and, in both studies, rated jobs typical of their own gender group higher on the more subjective dimensions of respect and service to the community. In the first study (O'Bryant et al. 1978) students were shown one of two sets of pictures of workers in these roles, one with traditional sex typing and one with nontraditional sex typing. Unlike most of the studies of adults, they found only a slight tendency for children to give lower ratings to pictures of workers in nontraditional roles.

Summary and Hypotheses

Based on literature in the first generation, we would expect most fourth graders to be able to identify occupations correctly and few differences in boys' and girls' ability to identify them, although boys' perceptions of adult occupations may more closely resemble adults' on dimensions measuring status and earnings. Both boys and girls should more easily identify occupations with which they have had direct contact than those with which they have had only vicarious or no contact.

The evidence from the second generation of literature regarding the effect of the gender of the job occupant is conflicting. The majority of the studies with adults appear to indicate that workers in non sex-typed fields receive lower prestige ratings, especially from men, although these findings are far from conclusive and most often appear in nonexperimental designs. Studies of children suggest that students would rank jobs typical of their own sex group higher, at least on more subjective dimensions such as perceived importance

or prestige, but that the effect of the gender of the worker on perceptions may be relatively small.

The studies reviewed above, especially those of children, were often very limited in scope and suggest important characteristics to incorporate into a study of occupational perceptions. First, it is important to use nonverbal cues to minimize the extent to which a normative context influences students' responses (Nemerowicz 1979, p. 92). Second, it is important to include occupations with which children may have had a range of contact (cf. DeFleur 1966; Wehrly 1973) and jobs which reflect a wide variety of types of work. (The most extensive studies in the second generation of work [O'Bryant et al. 1978, 1980; Nemerowicz 1979] only included eight different jobs.) Third, measuring perceptions of the occupations on a variety of dimensions is important (cf. O'Bryant et al. 1978, 1980). Fourth, none of the second generation studies we reviewed explicitly compared children's ratings with standardized ratings of the occupations on various dimensions. We believe this is important in itself and is only possible when a wide variety of occupations are studied. Finally, the design of the stimuli given to the subjects should be fully crossed. None of the studies reviewed above gave children both sex-typical and nonsex-typical stimuli in the same setting, but either a set of occupations with all workers in traditional jobs or all workers in nontraditional jobs. We believe that stimuli which intermix both traditional and nontraditional workers can help overcome any response set generated by the previously used designs.

Building on this literature and the expectations outlined immediately above, we examine two broad areas: (1) children's occupational knowledge and (2) the effect of gender on children's perceptions of a job. First, given a variety of different jobs, to what extent do boys and girls recognize these jobs, how do they view their relative importance, monetary rewards, difficulty, and control over others; and how do these perceptions compare to those of adults and/or more objective measures? Second, how do children's views of these occupations vary by their gender and the gender of the occupant of the job being considered?

METHODOLOGY

The data used to examine these questions come from hour long individual interviews conducted with 496 fourth grade students in a western Oregon school district. This age group was chosen because earlier studies indicated that students of this age are generally aware of a wide variety of occupations. The community in which the school district is located is predominantly white, working class, and dependent on the lumber industry. Students receiving permission to be in the study appeared to be typical of those in the classrooms in terms of demographic variables and represented about 85% of all students enrolled.

Interview Procedures and Measures

The interviews were conducted by trained interviewers in a room provided by the school, focused on students' occupational knowledge and future plans, and lasted for about one hour. Students were assured that their teachers and parents would not be told what they said.

A central part of the interview with each child was assessing their perceptions of 22 different occupations. As shown in Table 1, the occupations represent a broad range of types of work, prestige, and required training and skills. Professional, mechanical, clerical, sales, service, and agricultural jobs were included with standardized prestige measures (Hodge et al. 1964) ranging from a low of 15 for a fast-food worker to a high of 82 for a surgeon. Some jobs in the list, such as high school teacher, judge, surgeon, airline pilot, and ballet dancer, require a great deal of special training; while others, including farm worker, fast-food worker, and grocery clerk, require little special preparation. The jobs differ in the nature of the work which they demand, as shown by the measure of the extent to which they require workers to interact with data, people, and objects (see Table 1). They also differ in the proportion of women employed in the field, from a low of 1% for firefighter and airline pilot to a high of 96% for nursery school teacher and 99% for secretary, and in their average salary, with surgeons, airline pilots, and judges earning the most and fast-food workers, farmers, and grocery clerks earning the least. In all of the occupations men earn much more than women.

Each of the occupations was depicted in a drawing showing the worker at task. Parallel drawings for each occupation were developed with a male worker and a female worker and were extensively pretested to assure that children could correctly identify the occupations. Examples of these drawings are given in Figure 1.³

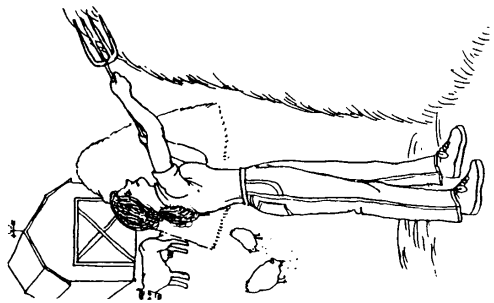
Four decks of cards, each including pictures of workers in all of the occupations in Table 1, were used to gather the data analyzed below. In two of these decks the sex of the job occupant was constant (either male or female). In the other two decks the sex of the job occupant in each pictured occupation was randomly assigned but switched from one deck to the other. That is, jobs portrayed by men in one of these two decks were portrayed by women in the other deck and vice versa (see Table 1). The deck with mixed-sex job occupants which was used in a particular interview was randomly assigned, and the order in which the cards were presented to the children was also randomized.

At various times during the interview the children were asked to sort the cards along selected dimensions. A practice run was used to assess the children's understanding of the sorting procedure. The children were given a stack of cards with names of different kinds of food and were asked to sort them into five boxes which indicated how much they liked each food. All 496 children were able to do the sorting procedure.

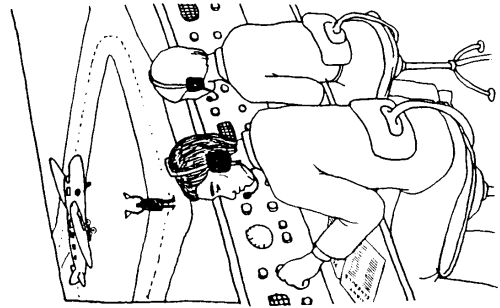
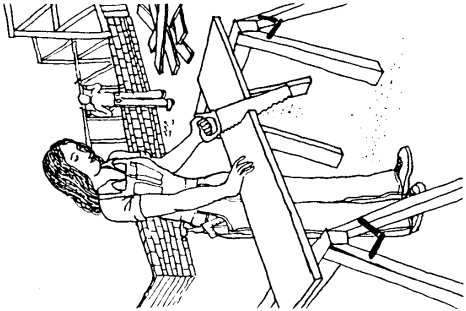
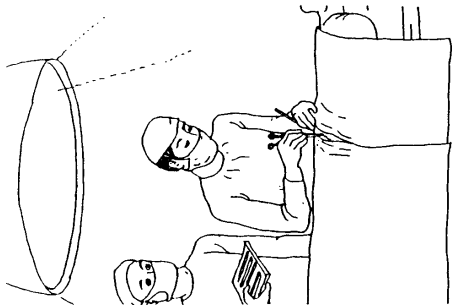
Table 1. Occupations Used in Sorting Procedures and Relevant Characteristics*

Occupations	Type of Work	Prestige	SVP Rating	Data-People-Things Rating	Female Income (\$)	Male Income (\$)	Female (%)	Deck
Architect	Professional	71	7.0	0-6-1	12,000	23,900	8	B
High School Teacher	Professional	63	8.0	2-2-7	11,500	16,500	56	A
Judge	Professional	76	8.0	1-0-7	16,600	34,100	17	A
Lab Scientist	Professional	68	7.5	0-6-1	14,800	22,100	20	A
Librarian	Professional	55	7.0	1-2-7	10,300	13,000	83	B
Nursery School Teacher	Professional	60	6.5	2-2-7	5,700	10,700	96	A
Surgeon	Professional	82	8.0	1-0-1	27,000	57,100	13	B
Firefighter	Community Helper	44	6.5	3-6-4	9,500	17,700	1	A
Police Officer	Community Helper	48	3.5	3-6-7	12,400	17,800	6	B
Airline Pilot	Mechanical	70	7.5	2-6-3	16,700	36,100	1	B
Air Traffic Controller	Mechanical	43	6.5	1-6-2	12,100	25,500	15	B
Carpenter	Mechanical	40	7.0	3-8-1	7,400	12,100	2	A
Dump Truck Driver	Mechanical	32	4.0	8-8-3	10,600	13,100	5	B
TV Repair Person	Mechanical	35	7.0	3-8-1	9,300	13,900	5	B
Fast-Food Worker	Clerical/Sales	15	3.0	3-6-1	3,400	5,600	81	B
Grocery Clerk	Clerical/Sales	29	2.5	4-7-7	5,400	8,700	83	A
Secretary	Clerical/Sales	46	6.0	3-6-2	8,600	14,800	99	A
Artist/Painter	Expressive	56	6.7	0-6-1	7,400	14,700	48	B
Ballet Dancer	Expressive	38	7.5	0-4-7	7,200	10,600	75	A
Hairstylist	Personal Service	33	4.5	2-7-1	6,300	12,700	88	B
Farm Worker	Agriculture	27	2.0	8-8-7	4,300	7,100	21	A

Note: * The prestige score used is Hodge-Siegel-Rossi (1964). The SVP scores range from a low of 1 to a high of 9, rating jobs in terms of the amount of "Special Vocational Training" required for average job performance. The mean of the ratings is given when more than one is listed in the *Dictionary of Occupational Titles*. The Data-People-Things Rating are 3 digit codes rating jobs in terms of the complexity of relationships to data, people and things (respectively) required by the jobs. Codes range from 0 to 8; 0 represents greatest complexity and 8 represents no significant relationship to the function (*Dictionary of Occupational Titles*, vol. 2, 1965). The data on average female and male incomes come from 1980 census data and represent the average yearly income of male and female workers in each occupational job category rounded to the nearest \$100. Data on the proportion of females in each job category also come from the 1980 Census data. The designation of Deck A or Deck B indicates the gender of the worker picture in the mixed-sex decks. Jobs with a "B" in the deck column were all pictured as men on deck B and, as women in deck A. Jobs designated "A" were pictured as men on deck A and women on deck B.



120



121

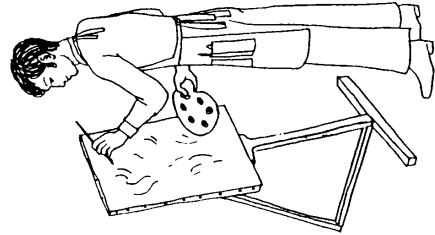
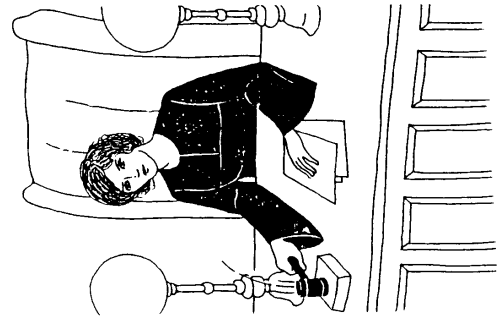


Figure 1. Examples of Pictures Shown to Children in Sorting Procedures

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The children were then shown the deck of cards in which all of the portrayed job holders were of their own sex. As each card was presented for the first time the child was asked to tell what occupation it represented. If a child's answer was incorrect the interviewer gave the job title and asked the student if he or she knew what a worker did in that job. Any wrong answers were noted and those cards were omitted from the later sorts for that child.⁴ The children were then shown the deck with mixed gender job occupants and were asked to sort them on four different dimensions. The order in which the dimensions were presented was reversed in one-half of the interviews to diminish any effect of the order of questions on responses.⁵

One of the sorts assessed the difficulty of the job, with the child being given the following instructions. "Now I want to show you some pictures of jobs again. This time, would you sort them into different boxes according to how hard or easy you think it would be for somebody to work at that job. I don't mean how hard or easy it would be for you personally—just how hard or easy the job is, in general." A second measured the importance of the job with instructions to "think about how important each job is to people in the community, and how much others admire or respect people who work at that job.... Please sort the jobs into different boxes according to how important you think the job is to people in the community." A third sort was designed to measure the children's views of hierarchies within the workplace and the authority which various job holders have over others. The instructions were to sort the cards "into different boxes, depending on whether people who work at each job tell other people what to do as part of doing their job." This is referred to as the "supervision" dimension. In the fourth sort the children were asked about the financial rewards that the workers received: "This time, put [the cards] in different boxes according to how much money you think a person makes for doing the job. Just make your best guess about how much money." This is referred to below as the "earnings" dimension. Each of these dimensions (difficulty, importance, supervision, and earnings) was measured on a 5-point scale where a higher score indicates a greater value (harder, more important, supervises more people, earns more money).

Standardized measures of occupational prestige, job difficulty, and monetary rewards were used to measure adults' views and/or objective characteristics of the various jobs and to compare to the children's views. The Hodge-Seigel-Rossi scale (Hodge et al. 1964) was used to measure occupational prestige, the Special Vocational Preparation score from the Dictionary of Occupational Titles was used to measure difficulty, and the rankings of the occupations in terms of average yearly income was obtained from the 1980 census reports. Summary scores for each occupation on these measures are given in Table 1.

Analysis

Two simple methods were used to address the first research question regarding the students' knowledge of the occupations and their relative ranking on the four measured dimensions. First, the percentage of boys and girls who accurately identified each job were computed and compared. Second, the average ranks assigned to each job by the boys and girls were computed and the resulting rank order on each dimension was compared to that obtained using the standard measures. Spearman's rank order correlation was used to assess the similarity of the two rankings.

Analysis of variance was used to examine the influence of the child's gender and the gender of the job holder in the stimulus job on their perception of the occupations (the second research question). This allowed us to assess the extent to which being presented with a male or female worker influenced a child's perception of the job and the extent to which the child's own gender (being a boy or a girl) influenced this perception, as well as the possibility that the portrayal of a male or female worker may differentially influence boys and girls. To control for the multiple number of jobs assessed, multivariate analysis of variance was used, with two multivariate analyses necessary for each dimension.⁶

RESULTS

Knowledge of Occupations and Perceptions of Occupational Characteristics

The students showed a great deal of knowledge of the occupations pictured on the cards. Sixteen of the 21 occupations were known by all but five or fewer of the 496 children. Nine children did not correctly identify the scientist, 10 did not identify the nursery school teacher, 12 did not identify the secretary, 24 did not identify the air traffic controller, and 27 misidentified the architect. Each of these less often identified occupations (with the possible exception of nursery school teacher) is one which is generally not part of children's direct or vicarious (media) experience, and the two most often unidentified occupations (air traffic controller and architect) may be least likely to be part of their direct experience. There were only two gender differences in the children's ability to identify the occupations, with girls less likely to identify the air traffic controller ($\chi^2 = 8.08$, $df = 1$, $p = .004$) and boys less likely to identify the laboratory scientist ($\chi^2 = 3.79$, $df = 1$, $p = .05$). Given the conflicting direction of these results and the high likelihood of obtaining one result significant at the .05 level by chance, we suspect that little weight should be given to these gender differences. There was no support for

Nemorowicz's (1979) suggestion that children may have more difficulty identifying workers in nontraditional jobs. The results are what would be expected from the earlier literature, which suggested that fourth graders are well aware of the occupational world, boys and girls are equally able to identify occupations, and occupations which they are least likely to identify are those with which they have had no direct experience.

The average scores assigned by the children to each dimension are shown in Tables 2-5. Table 2 gives the results for the "earnings" dimension and shows that the ratings given by the children generally correspond to those actually found in the occupational world. The jobs rated highest were surgeon, judge, police officer, scientist, and firefighter. Those rated lowest on the dimension were farmer, dancer, librarian, nursery school teacher, and fast-food worker. In general these distinctions correspond to actual differences in pay (the Spearman's rho with the rankings of males' average salaries was .87 for girls and .88 for boys; the Spearman's rho with the rankings of females' average salaries was .79 for girls and .81 for boys). They suggest that the children understand the system of remuneration in our society and that boys and girls have an equally good understanding of these distinctions.⁷ The major exception involves the "community helper" occupations of police officer and firefighter. Both boys and girls believed that workers in these fields received much higher remuneration than they actually do.

Table 3 gives the results for the difficulty dimension. The jobs rated most difficult by the students were surgeon, scientist, firefighter, pilot, and air traffic controller. The jobs ranked easiest were fast-food worker, grocery clerk, librarian, nursery school teacher, and truck driver. The rank order correlation between the students' rankings and the SVP scores is positive and moderately high (.56 for both boys and girls), indicating a fair amount of association and no difference in the relative knowledge of boys and girls.

The discrepancies between the rankings of the children and those of the standardized measures are, however, noteworthy. Those which are ranked harder by the students than by the SVP by five ranks or more include farmer, firefighter, air traffic controller, and police officer. Those ranked easier by a difference of five rank orders or more include dancer, high school teacher, preschool teacher, and librarian. We suspect that these discrepancies reflect both the nature of the SVP measure and the unique perceptions of the children. The SVP measures the amount of special training required by a job. Not all of the jobs rated difficult by the students require extensive preparation or training, but they all probably would be viewed as physically demanding and/or stressful. Those ranked most difficult by the students also tend to be somewhat unlikely to be part of children's everyday experiences. In contrast, those ranked easiest and those which are ranked markedly lower than the SVP ratings are those which may more often be seen by students in their everyday lives and therefore might be perceived as less formidable.

Table 2. Ratings of How Much Money Workers Made by Gender of Subject and Gender of Worker Pictured in Sorting Deck, Results of Analysis of Variance and Mean Scores

Occupation	Subject									
	Females					Males				
	Analysis of Variance Results		Gender Pictured		Total	Analysis of Variance Results		Gender Pictured		Total
F-inter	F-deck	F-sex	F-inter	F-deck		F-sex	F-inter	F-deck		
Set A										
Manova	2.09*	1.07	3.06***							
Carpenter	3.73*	0.36	1.42	3.62	2.70	3.49	3.57	3.79	3.62	3.62
Dancer	0.17	0.13	0.50	2.70	2.71	2.71	2.67	2.58	2.67	2.67
Farmer	1.18	0.26	1.88	2.26	2.19	2.30	2.30	2.48	2.31	2.31
Firefighter	0.52	5.98*	0.22	4.05	4.32	4.14	4.14	4.29	4.19	4.19
Grocery Clerk	0.12	3.30	2.42	3.19	3.06	3.09	3.09	2.89	3.06	3.06
High School Teacher	6.96**	0.14	8.02**	3.56	3.30	3.52	3.52	3.30	3.56	3.56
Judge	1.08	0.30	0.04	4.06	4.22	4.17	4.17	4.12	4.14	4.14
Nursery School Teacher	0.83	0.00	9.08**	3.02	2.92	2.71	2.63	2.71	2.82	2.82
Scientist	1.56	1.18	9.28**	3.99	4.22	4.39	4.39	4.28	4.24	4.24
Secretary	0.83	0.00	0.05	3.45	3.54	3.43	3.50	3.43	3.48	3.48
Set B										
Manova	1.56	0.66	2.93***							
Pilot	4.45*	0.16	8.26**	3.87	4.02	4.02	4.32	4.11	4.09	4.09
Air Traffic Controller	0.01	0.66	5.75*	3.91	3.84	4.04	4.10	4.04	3.97	3.97
Architect	0.53	0.07	0.68	3.86	3.81	3.86	3.86	3.95	3.87	3.87
Artist	2.40	2.80	1.20	3.58	3.16	3.50	3.47	3.47	3.42	3.42
Truck Driver	0.28	0.10	2.17	3.18	3.09	3.26	3.26	3.28	3.20	3.20
Fast-Food Worker	0.23	0.01	1.96	2.88	2.94	2.74	2.74	2.84	2.84	2.84
Hair Dresser	0.01	0.04	8.00**	3.16	3.16	2.91	2.91	2.88	3.02	3.02
Librarian	0.86	0.18	2.82	2.88	2.74	2.62	2.62	2.66	2.72	2.72
Police Officer	0.19	0.60	1.12	4.28	4.25	4.22	4.22	4.12	4.21	4.21
Surgeon	2.11	0.04	0.08	4.65	4.55	4.51	4.51	4.63	4.58	4.58
TV Repair Person	2.53	1.69	0.06	3.37	3.34	3.34	3.23	3.50	3.37	3.37

Notes: For Set A: *df* (manova) = 10,459; *df* (univariate) = 1,468; For Set B: *df* (manova) = 11,426; *df* (univariate) = 1,436; * *p* > .05; ** *p* > .01; *** *p* > .001.

Table 3. Ratings of Job Difficulty by Gender of Subject and Gender of Worker Pictured in Sorting Deck
Results of Analysis of Variance and Mean Scores

Occupation	Subject						Total
	Analysis of Variance Results			Gender Pictured		Male	
	F-inter	F-deck	F-sex	Female	Male		
Set A							
Manova	1.68	0.76	2.39**	3.70	3.80	3.59	3.67
Carpenter	0.20	1.12	2.07	3.28	3.17	2.94	3.18
Dancer	4.57*	1.60	0.81	2.74	2.71	3.13	3.34
Farmer	0.06	1.71	8.94**	2.42	4.31	4.20	2.91
Firefighter	0.12	0.94	0.02	2.35	2.36	2.61	4.23
Grocery Clerk	1.56	1.23	1.91	3.48	3.73	3.77	2.42
High School Teacher	4.84*	1.09	1.24	3.94	3.92	3.89	3.64
Judge	0.06	1.21	0.51	2.37	2.40	2.77	3.89
Nursery School Teacher	0.49	1.71	6.85**	4.17	4.32	4.29	2.54
Scientist	3.09	0.97	0.11	3.19	3.34	4.29	4.22
Secretary	5.16*	1.19	0.74	3.19	3.34	3.48	3.30
Set B							
Manova	0.85	2.01*	1.79*	3.98	4.15	3.85	4.04
Pilot	0.42	5.60*	0.45	3.84	4.05	3.98	3.97
Air Traffic Controller	1.20	0.98	0.04	3.77	3.99	3.56	3.82
Architect	0.31	7.88**	2.55	3.14	3.31	3.10	3.19
Artist	0.14	1.13	0.63	3.07	2.85	2.63	2.83
Truck Driver	2.71	0.01	3.88*	2.46	2.42	2.45	2.42
Fast-Food Worker	0.03	0.32	0.09	2.96	3.18	2.81	2.99
Hair Dresser	0.04	3.83*	3.00	2.34	2.43	2.64	2.53
Librarian	0.03	0.33	6.05**	3.79	3.94	3.88	3.88
Police Officer	1.30	6.37**	0.02	4.63	4.53	4.61	4.54
Surgeon	0.04	1.06	0.00	3.95	3.90	3.61	4.57
TV Repair Person	2.12	1.14	3.88*	3.95	3.90	3.61	3.83

Notes: For Set A: $d/(manova) = 10.456$, $d/(univariate) = 1.465$; For Set B: $d/(manova) = 11.431$, $d/(univariate) = 1.441$; * $p > .05$; ** $p > .01$; *** $p > .001$.

Table 4 gives the results for the importance dimension. The jobs ranked as most important were firefighter, police officer, surgeon, air traffic controller, scientist, and judge. Those ranked least important were dancer, artist, hairdresser, truck driver, and fast-food worker. Again, these ratings show a moderate correspondence to the standardized measures of occupational prestige ($\rho = .57$ for girls and $.52$ for boys).

The differences between the children's perceptions and the standardized measures are, however, noteworthy. Jobs seen as more important by the students than described by the prestige scale by a difference of at least five ranks include carpenter, farmer, firefighter, grocer, air traffic controller, and police officer. Those seen as less important include dancer, nursery school teacher, and architect. These discrepancies may reflect differences between the standardized measure of prestige and the nature of the question asked the children, which dealt both with the issue of admiration and respect (analogous to the standardized prestige measure) and "importance" to the community (the "service" dimension tapped by O'Bryant et al. 1978, 1980). The discrepancies may also reflect what Goldstein and Oldham (1979, pp. 143-144) have termed a tendency for early grade school-age children to be more likely than older students and adults to utilize "community-based functional explanations" for variations in social status, using the "good of the community" as the primary referent for their assessments of relative value (see also Gottfredson 1981). The jobs rated most important by the students, including those which differed most from the standardized prestige measures, tended to be those associated with the preservation of public health and safety, even though they may not have especially high associated admiration and respect. Those with substantially lower rankings tend to be those which may be perceived as relative luxuries of one type or another.

Some studies (e.g., DeFleur 1966; Gunn 1964) have noted a greater correspondence of children's rankings with standardized measures at the two ends of the prestige continuum than at the middle. We also found this pattern, but suggest that it reflects the characteristics noted above of the type of occupations found in this range (e.g., police officer, firefighter, and air traffic controller) rather than any differences in perceiving jobs in this mid-range. For instance, the occupation of secretary, ranked midway in the prestige hierarchy based on Hodge-Seigel-Rossi scores, is neither associated with health and safety nor seen as a relative luxury and received an average ranking from the students which was quite close to the rank obtained with the standardized measure.

Table 5 gives the rankings on the "supervising" dimension. The five jobs rated highest on this dimension were judge, police officer, high school teacher, air traffic controller, and surgeon. Of these jobs, only surgeon would generally be seen by adults as involving a great deal of workplace authority over others within a structured hierarchy. The other occupations involve authority over others, such as criminals, citizens, students, or airplane pilots, but not

Table 4. Ratings of Job Importance by Gender of Subject and Gender of Worker Pictured in Sorting Deck, Results of Analysis of Variance and Mean Scores

Occupation	Subject						Total	
	Analysis of Variance Results			Females		Males		
	F-inter	F-deck	F-sex	Female	Male	Female		Male
Set A								
Manova	0.65	0.77	2.35*	4.07	3.95	4.18	4.10	
Carpenter	0.55	1.29	2.23	2.40	2.49	2.25	2.14	
Dancer	0.98	0.01	6.02*	3.27	3.31	3.47	3.48	
Farmer	0.03	0.04	2.76	4.78	4.86	4.77	4.81	
Firefighter	0.02	2.77	0.06	3.77	3.63	3.54	3.63	
Grocery Clerk	0.75	0.35	2.72	4.31	4.20	4.36	4.29	
High School Teacher	0.02	1.49	0.57	4.43	4.43	4.37	4.42	
Judge	1.36	0.22	0.22	3.51	3.59	3.50	3.47	
Nursery School Teacher	0.30	0.03	0.32	4.22	4.16	4.36	4.45	
Scientist	0.75	0.02	5.49*	3.53	3.55	3.59	3.55	
Secretary	0.07	0.02	0.14					
Set B								
Manova	1.02	1.20	1.84*	3.89	4.03	4.12	4.24	
Pilot	0.02	1.92	4.97*	4.32	4.30	4.40	4.48	
Air Traffic Controller	0.35	0.17	2.91	3.98	3.99	3.95	4.25	
Architect	2.32	3.03	1.92	2.91	2.76	2.62	2.75	
Artist	1.90	0.00	1.72	3.04	3.14	3.33	3.33	
Truck Driver	0.26	0.19	5.02*	3.17	3.18	3.21	3.15	
Fast-Food Worker	0.49	0.41	0.16	3.17	2.98	2.76	2.84	
Hair Dresser	0.00	0.53	1.61	2.90	3.46	3.27	3.33	
Librarian	1.18	0.61	0.21	4.71	4.78	4.81	4.80	
Police Officer	0.73	0.22	1.09	4.79	4.88	4.78	4.83	
Surgeon	0.01	3.20	0.15	3.36	3.32	3.26	3.66	
TV Repair Person	3.56	2.70	1.53					

Notes: For Set A: $df(\text{manova}) = 10, 445$; $df(\text{univariate}) = 1, 454$; For Set B: $df(\text{manova}) = 11, 417$; $df(\text{univariate}) = 1, 427$; * $p > .05$; ** $p > .01$; *** $p > .001$.

Table 5. Ratings of Jobs' Supervisory Responsibilities by Gender of Subject and Gender of Worker Pictured in Sorting Deck, Results of Analysis of Variance and Mean Scores

Occupation	Subject						Total	
	Analysis of Variance Results			Females		Males		
	F-inter	F-deck	F-sex	Female	Male	Female		Male
Set A								
Manova	0.45	1.54	0.44	2.74	2.75	2.87	2.90	
Carpenter	0.02	0.04	2.03	1.56	1.84	1.49	1.80	
Dancer	0.03	9.59**	0.20	1.89	2.07	1.98	2.03	
Farmer	0.52	1.32	0.14	3.31	3.32	3.29	3.51	
Firefighter	1.06	1.34	0.50	1.87	2.04	1.99	2.15	
Grocery Clerk	0.00	3.02	1.70	3.93	4.05	4.01	3.97	
High School Teacher	0.52	0.07	0.05	4.05	4.12	4.16	4.11	
Judge	0.34	0.01	0.35	3.21	3.10	3.19	3.06	
Nursery School Teacher	0.01	0.83	0.07	2.34	2.63	2.53	2.58	
Scientist	1.19	2.15	0.73	2.26	2.35	2.29	2.31	
Secretary	0.12	0.35	0.60					
Set B								
Manova	1.20	1.36	1.01	2.92	2.84	3.01	2.97	
Pilot	1.02	0.27	1.00	3.58	3.75	3.44	3.68	
Air Traffic Controller	0.09	3.35	0.91	2.49	2.38	2.55	2.48	
Architect	0.04	0.59	0.65	1.57	1.48	1.71	1.66	
Artist	0.05	0.57	3.80*	2.52	2.48	2.52	2.52	
Truck Driver	0.18	0.00	0.23	1.96	2.24	2.15	2.15	
Fast-Food Worker	1.79	1.73	0.09	2.02	2.19	2.09	1.98	
Hair Dresser	2.05	0.03	0.83	2.54	2.44	2.56	2.27	
Librarian	0.80	3.69*	0.61	4.07	4.08	3.97	4.00	
Police Officer	0.04	0.05	0.82	3.42	3.73	3.59	3.38	
Surgeon	4.96*	0.09	1.15	2.25	2.07	2.07	2.16	
TV Repair Person	1.87	0.16	0.05					

Notes: For Set A: $df(\text{manova}) = 10, 458$; $df(\text{univariate}) = 1, 467$; For Set B: $df(\text{manova}) = 11, 428$; $df(\text{univariate}) = 1, 439$; * $p > .05$; ** $p > .01$; *** $p > .001$.

necessarily authority over coworkers. The four lowest rated jobs on this dimension were artist, dancer, farmer, and grocery clerk. All of these are relatively solitary occupations or, in the case of grocery clerk, generally involve only routinized interactions with others. It appears then that the children were aware of the nature of job activities, although they may not have been aware of the extent of hierarchical steps in the workplace.

This may result from the wording of the question. Comments the children made in the interviews seemed to indicate that they often saw "telling others what to do" as a negative trait in interpersonal interactions and did not necessarily associate it with hierarchies within the occupational world. It may also, however, reflect the children's level of development. Extensive understanding of the reciprocal role relationships involved in the employer—employee relationship may not be fully developed until after the fourth grade (Danziger 1958; Goldstein and Oldham 1979, pp. 53-55).

The Effect of Gender on Perceptions of Jobs

Tables 2-5 also give the results of the analyses of variance showing the effect of the children's own gender and the gender of the pictured worker on their perception of the earnings, difficulty, importance, and supervisory responsibilities associated with the job.

With the analyses related to the earnings dimension (Table 2) the main effect of the children's gender was significant with both of the manova terms and with the univariate results for high school teacher, nursery school teacher, scientist, pilot, air traffic controller, and hair dresser. There were no significant multivariate effects for the deck presented the children (a univariate effect only for firefighter, which, given the 21 analyses, could appear by chance), and significant interaction effects for carpenter, high school teacher and pilot. Inspection of the mean scores indicated that girls rated high school teachers, nursery school teachers, and hair dressers as making more money than boys did and that boys gave higher earnings rating scores than girls to scientists, pilots, and air traffic controllers, whether male or female workers were depicted. With high school teachers the difference between boys and girls was much larger when they were shown pictures of men than when they were shown pictures of women, but with the pictures of pilots the differences were much larger when women were depicted. A complete reversal appeared in the rankings for carpenter with girls rating the workers as earning more money when women were depicted and boys rating pictures of men as making more money.

In general, these differences appear to be related to the sex-typing of the occupations in the world at large, even though they do not relate to the reality of sex differences in wages within occupations (see Table 1).⁸ When differences appear, jobs which are typically female or portrayed by women are seen by

girls as having higher salaries and jobs which are typically male or portrayed by men are seen by boys as having higher salaries. The major exception to this situation is high school teachers, which in the aggregate is a mixed occupation (56% women in 1980) and was perceived by girls as having higher salaries, especially when depicted by a man. In contrast, boys ranked high school teachers as having higher salaries when they were depicted by a woman. We are unsure why this result appeared, but suspect that it may be related to the rather neutral sex-typing of the occupation as a whole; or even, given the extensive sex-typing found within the profession of high school teaching, to the sex-typing of the subject matter which the children believed the teacher was presenting (probably English).

Table 3 gives the results of the analyses of variance related to the difficulty dimension. As with the "money" dimension, significant multivariate effects appeared for the children's gender. Significant univariate effects for gender appeared for the occupations of farmer, nursery school teacher, truck driver, librarian and TV repair person. Multivariate main effects for deck were also significant, with significant univariate effects for pilot, architect, hair dresser, and police officer. There was a trend toward a significant multivariate interaction effect with significant univariate effects for dancer, high school teacher, and secretary.

Examination of the mean scores indicated that the work of farmers, nursery school teachers, and librarians was rated harder by boys than girls but the work of truck drivers and TV repair persons was rated harder by girls than boys. Where there are differences by gender on the difficulty dimension they tend to be related to the sex-typing of the occupation, with students rating jobs typical of the other sex as more difficult. In contrast, all of the four cases with significant differences by deck (pilots, architects, hair dresser, and police officer) showed that both boys and girls rated the jobs significantly harder when they were portrayed as held by men than by women. Each of these jobs is highly sex-typed (one as female and three as male). This result may reflect a tendency to perceive that men's work is more difficult than women's even in female-typed occupations. It should be remembered, however, that a significant effect of the gender of the worker pictured (deck) appears in only 4 of the 21 comparisons. The three cases with interaction effects all involved reversals. For both the jobs of high school teacher and secretary girls ranked the occupation harder if it were portrayed by a man, but boys ranked the occupation as harder if it were portrayed by a woman. In contrast, girls ranked being a dancer as harder if it were portrayed by a woman, but boys ranked it as harder if it were portrayed by a man. Again these results appear unrelated to the sex-typing of the occupation and we are unsure why they appeared.

Table 4 gives the results of the analysis of variance for the "importance" dimension. The only significant multivariate and univariate results on this dimension involved gender, with significant differences appearing for the

occupations of dancer, scientist, pilot, and truck driver. Girls ranked dancers as significantly more important than boys did, while boys ranked scientists, pilots, and truck drivers as significantly more important than girls. Again, these differences appear to be related to the sex-typing of the occupations. When differences appear, a job which is sex-typed as feminine is seen as more important by girls, those sex-typed as masculine are ranked more important by boys.

Table 5 gives the results of the analyses of variance for the "supervising" dimension. No significant multivariate results appeared on this dimension for either the main effects of gender or deck or for the interaction effect. Given the large number of comparisons the univariate effects which did appear (the *F* associated with gender for artist; with gender of the pictured worker for dancer and librarian, and the interaction for surgeon) could well have appeared by chance.

SUMMARY AND DISCUSSION

The results of the examination of the children's knowledge of occupations were much as expected. They confirm the results of earlier studies which suggested that fourth graders are able to recognize a wide variety of occupations and that students can more often identify jobs which are part of their direct or vicarious experiences. In contrast to some earlier studies, there was no gender difference in the relationship between children's perceptions of occupations and various standardized measures. Early reports of this result (e.g., DeFleur 1966) suggested that it reflected the tendency for girls to less often expect that they would be part of the labor force. The gender difference in labor force participation is much smaller today and we suspect that both boys and girls anticipate working outside the home in the future and thus are interested in learning about the workplace.

The results regarding the effect of gender on children's perceptions of occupations were somewhat less clear-cut. Of the 84 comparisons regarding the effect of the gender of a pictured worker on perceptions of occupations only seven were significant at the .05 level or beyond. (Four significant findings at the .05 level would have been expected by chance.) In all but one of these comparisons the picture of male workers was ranked higher on the continuum studied (earnings, difficulty, supervision). This occurred whether the job was male-typed (e.g., firefighter, pilot, architect, police officer) or female-typed (e.g., dancer, hairdresser). While previous studies, which used adults or college students as subjects (e.g., Guppy and Siltanen 1977; Jacobs and Powell 1984; Nilson 1976; Powell and Jacobs 1983, 1984) suggested that nontraditional workers would be degraded, these results suggest simply that, at least for children, a male worker, even in a female-typed job, is more highly valued.

Because, however, these results appeared in so few of the comparisons, this interpretation should be considered with a great deal of caution.

Sixteen of the 94 comparisons regarding the effect of the gender of the child on perceptions were significant. In contrast to the results of O'Bryant et al. (1978), these results appeared in not just the more subjective dimensions of importance and difficulty, but also in the more "objective" earnings dimension. The gender differences appeared in a wide variety of occupations, but all appeared related to the sex-typing of the jobs. On the earnings and importance dimensions students tended to rank jobs more typical of their own sex group as either earning more or being more important. With the difficulty dimension they tended to rank those typical of the other sex group as harder. The former result is similar to that reported by others who have looked at a much smaller range of occupations (e.g., Nemerowicz 1979; O'Bryant et al. 1978, 1980) and may reflect a "chauvinistic" view of occupations, where students tend to inflate the importance of work which is typical of their own gender group. The latter result has not, to our knowledge, been reported before and may represent a tendency for students to view work which they see as less likely for them to pursue to be harder. Even though we must again caution about making too much of these implications given the small number of significant results, we believe that these results illustrate the importance of not only considering gender differences in analyses of perceptions of occupations, but also in looking at a variety of dimensions of perceived occupational characteristics.

Seven of the 84 interaction effects considered were statistically significant, again only a small number. It is difficult to find any generalization that can encapsulate the nature of these interactive effects. Some involve enhancements of the differences noted above and some involve reversals. There did not appear to be any support for the finding among adults that men are more likely than women to degrade workers in nontraditional posts (Haug 1975; Jacobs and Powell 1984; Nilson 1976). Given the small number of significant interaction effects, however, we are reluctant to speculate further on their meaning.

In general, we believe that these results point to the importance of a number of variables in understanding children's perceptions of occupations. The type of contact which children have had with a job is important in influencing their ability to recognize an occupation, although the fourth graders in this study were very knowledgeable of the occupational world. Gender of the child appears to be somewhat more important than the gender of a pictured worker in influencing perceptions of jobs. But, the most important variable of all appears to be the nature of the job itself. However children learned of an occupation, whether they were boys or girls, or whether the job occupant was depicted as a man or a woman, the children's perceptions of the job's earnings, difficulty, and importance were very similar to those obtained from more standardized measures. When the gender of a child or the gender of a pictured worker affected the students' perceptions of a job, the nature of this influence

appeared to be associated with another occupational characteristic, the sex-typing of the job.

Two exceptions to this generalization, however, stand out. The children believed that "community helpers," such as police officers and firefighters, both earned more and were more "important" than the standardized measures suggested. The children also appeared unable to understand the notion of "supervision" within the workplace and, although they understood which workers had authority over other people, including library patrons, criminals, and the like, they did not seem to be able to rank occupations accurately in terms of those with greater or less supervisory responsibility. We suspect that while these results may partly reflect the wording of our instruments, they also reflect children's developing understanding of occupations. We would hypothesize that more adult-like interpretations of occupational prestige and supervisory responsibilities would be common among students older than the fourth graders in this study. Whether older children would also exhibit greater differences in ratings assigned to male and female workers, especially in nontraditional fields, is a question for further research.

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NOTES

1. Even though Goldstein and Oldham's work appeared in 1979, it lacks the specific attention to the influence of gender found in the second generation of work and thus is included in our discussion of what we term the first generation.

2. Until the very recent past, and even still in casual conversation, the gender-typing of an occupation is often revealed by its title. Garbageman is one example. Researchers could use the gender-neutral title of garbage collector; but, given the strong gender-typing of the fields, it is not clear that respondents would perceive the workers to be of either sex. Researchers could also specify the gender of the worker through titles such as "woman garbage collector" or "garbage woman," but such efforts would only draw attention to the atypical gender typing. Using pictures avoids these semantic problems.

3. It proved impossible to draw a male nurse that was reliably identified by the children. The figure was usually identified as an orderly or physician. We suspect that this is an indication of how strongly the occupation of nurse is stereotyped as feminine.

4. This first presentation was also used to assess the degree to which students would "like" or "dislike" to have a given job when they were grown. Results from the analysis of these results are in Stockard and McGee (1990).

5. In one half of the interviews the sorts were ordered with "difficulty" first, then "importance," "supervision," and finally, "earnings." In the other half the ordering was reversed with "earnings" first and "difficulty" last.

6. Two multivariate analyses of variance were necessary because students were shown each occupation only once with either a male or female figure. Thus, one manova includes the occupations portrayed by men in Deck A and women in Deck B and the other includes occupations portrayed by women in Deck A and men in Deck B.

7. Goldstein and Oldham (1979) reported that fifth grade boys gave more accurate estimates than girls of the income of workers in various occupations, but the relative rankings of the occupations' earnings were very similar for boys and girls, as in our study.

8. The male-female differences in earnings are slightly overstated in Table 1 because both part-time and full-time workers are included and women more often work part-time.

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