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Sex Differential Responding in Preschool Teachers: A Foundation for a Functional Analysis

Joanne Kimak
Western Michigan University

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SEX DIFFERENTIAL RESPONDING IN PRESCHOOL TEACHERS:
A FOUNDATION FOR A FUNCTIONAL ANALYSIS

by

Joanne Kimak

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Master of Arts
Department of Psychology

Western Michigan University
Kalamazoo, Michigan
August 1982
SEX DIFFERENTIAL RESPONDING IN PRESCHOOL TEACHERS: 
A FOUNDATION FOR A FUNCTIONAL ANALYSIS

Joanne Kimak, M.A. 
Western Michigan University, 1982

This observational study investigated whether there was consistent 
sex differential treatment of children by preschool teachers. It 
measured the antecedents and consequences of responses made by child-
ren to certain problematic situations often present in free-play situa-
tions. The subjects were five paraprofessional teachers in a university-
affiliated preschool. In five classrooms, observers recorded the 
ocurrence of aggression, accident, and object problems, the various 
children's responses to these problems, and the teacher response to 
the children. The data were analyzed to determine if the teachers 
were responding differentially on the basis of the sex of the child 
and if there were sex differences in the children's behaviors. The 
results indicated that there were no consistent sex differential re-
sponses under the specific conditions measured. There was sex 
differential responding among the individual teachers, but there was 
no consistent pattern across teachers. Sex differences were found in 
the children's behavior, especially with males engaging more frequently 
in aggression than females. These results indicated the development of 
sex-typed behaviors seemed to occur at earlier ages than three years 
and that there may be more influential variables than the teacher con-
sequence in the shaping and maintenance of certain sex-typed behaviors.
ACKNOWLEDGEMENTS

The author wishes to express sincere appreciation to Dr. Barbara Fulton for her advising in the development of this thesis and editing of the manuscript. The author gratefully acknowledges the staff at the Child Development Center, Kalamazoo, Michigan, for their cooperation with this project.

Joanne Kimak
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<td>19</td>
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</tbody>
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CHAPTER I

INTRODUCTION

Title IX of the Education Amendment of 1972 prohibits discrimination on the basis of sex in any education program or activity. However, the problem of sexism in education has been widely reported (Stacey, Bereaud, & Daniels, 1974). Differential treatment of children by teachers on the basis of the sex of the child is a main area of concern. Theories of sex role development assume that differential treatment of children by adults influences the shaping and maintenance of sex differences in children's behavior.

There is extensive literature on sex differences; as evidence, Maccoby and Jacklin (1974) list over 1,400 references in their annotated bibliography. Research has centered around experimental studies investigating whether sex-typed behaviors are influenced by adult-mediated contingencies and observational studies that document the existence of these differential contingencies.

One question of interest is whether adult-mediated contingencies influence sex-typed behaviors. Rekers and Lovaas (1974) reported a clinical study of the "sex inappropriate" behaviors of a young boy, in which the boy's mother was trained to use social and token reinforcement to increase the frequency of "masculine" behaviors and to use extinction to decrease the frequency of "feminine" behaviors. Serbin, Tonick, and Sternglanz (1977) found that the use of contingent praise by teachers increased the rates of cooperative cross-sex play.
among preschool children, which the authors demonstrated with a re-
versal design. Serbin, Connor, and Citron (1978) investigated the in-
fluence of teacher-mediated contingencies on "independent" and "depen-
dent" play behavior, utilizing a group design. In the experimental
group, the teachers delivered contingent praise for the "independent"
behaviors of task persistence and exploration of new activities, ignored
the "dependent" play behavior of proximity-seeking, and instructed the
children to work independently when they solicited teacher attention.
The control group was given the same amount of praise noncontingently.
The results indicated that independent and dependent behaviors were
both sensitive to changes in these social contingencies. Thus, it
appears that adult-mediated contingencies can influence sex-typed be-
haviors.

The next question to address is whether differential treatment of
children by adults is evident in observational studies. Although
there is extensive literature in this area, there are contradictory
conclusions. Based on a review of the literature, Maccoby and Jacklin
(1974) concluded that reinforcement contingencies for the two sexes
appear to be remarkably similar. Other investigators (Block, 1976;
Tieger, 1980) criticized this conclusion and supported the view of
the existence of consistent differential treatment of children by
adults. The numerous studies on differential treatment are difficult
to compare since many of the measures were broadly defined. Thus,
further research is needed in this area.

The preschool setting has been frequently used to study
differential treatment since sex differences in children's behavior appear at early ages. Birns (1976) concluded that by age three, consistent sex differences in behavior have been found in many settings and cultures.

Serbin, O'Leary, Kent, and Tonick (1973) studied the frequency of various teacher responses to disruptive and dependent behaviors of children in fifteen classrooms by comparing teacher responses to males with those to female children. Disruptive behavior was defined as aggression toward others, destruction of materials, and ignoring teacher directions. Dependent behavior was defined as crying, proximity to the teacher, and solicitation of teacher attention. Based on a statistical analysis, the authors reported that teachers used more reprimands for boys than girls, used more directions and instructions when responding to solicitation by boys than girls. Thus, there have been observed sex differences in teacher-given consequences.

The antecedent conditions of sex-typed behaviors are another interesting variable to investigate. In a search of the literature, the author did not find any observational research that provided a functional analysis of sex-typed behaviors. A functional analysis has been described by Lutzker and Martin (1981) as an analysis of both the antecedents and consequences of a problem, and that the problem is viewed as part of a sequence of behaviors; what happens before and after the behavior occurs. The purpose of this study was to develop a methodology so that a functional analysis can be made and to further investigate whether differential treatment of children by teachers was consistent in a preschool setting.
CHAPTER II

METHOD

Subjects and Setting

Five undergraduate university students, having completed 1½ to 4 years of college, served as subjects while working as paraprofessional preschool teachers. There were three males and two females, ranging in age from 19-23 years. Three of the subjects received academic credit and two were paid paraprofessionals, at a university-affiliated preschool located in a residential community. The paraprofessionals spent two to three hours daily teaching academics or supervising play activities. The academic-credit paraprofessionals were given daily points for engaging in a variety of behaviors on a checklist, including attendance, frequent use of praise, and "non-sexist behavior". Although they received points for "non-sexist behavior" they did not receive any training in this area nor were they told whether they were or were not engaging in this behavior. All paraprofessionals who were present in the preschool during the observation sessions agreed to participate in the study for the duration of the seven-week academic session, by signing informed consent forms. The subjects were not informed of the nature of the study; however, during Week 5, S1 was informed about part of the observation code. This did not produce any noticeable changes in her behavior.

The study occurred in five classrooms, each staffed by one
paraprofessional. The number of children in each classroom varied from three to twelve, due to daily attendance fluctuations and late arrivals within an observation session. The children, ages 3-5 years, were from predominantly white middle-class families. Across four classrooms, the ratio of males to females was approximately equal. The fifth classroom had about twice as many females as males enrolled.

Observational Code

The experimenter developed an observational recording system for this study so that a functional analysis could be made. The three components necessary for a functional analysis were 1) the antecedent conditions, 2) the child's responses, and 3) the consequential adult response. The main behaviors of interest for this study were the adult's reactions to the children's behavior (the third component of the code).

The experimenter observed the classroom activities for approximately 10 hours. Observations revealed that some children were likely to display certain behaviors when faced with a problem. Furthermore, three such antecedent problem conditions were frequent during free play. They included:

1) Object or space problems - a child has a problem manipulating an object, (e.g., buttoning a sweater, manipulating a toy), or two or more children try to possess the same object or occupy the same space, (e.g., both children want to play with the same toy, or both want to sit in the same chair).
2) Aggression - a child inflicts bodily harm to another child through a physical response. It included pushing, hitting, biting, scratching, pulling hair, pinching, or throwing objects at another child. It did not include verbal aggression.

3) Accident - a child hurts self or another without clear intention, (e.g., a child trips, falls, down, or steps on another's fingers).

Once the antecedent conditions were identified, the experimenter looked for the behaviors in which the children engaged in order to solve the problem. Based on these observations, the experimenter defined categories to reflect the most frequent responses to antecedent conditions which fell into five categories:

1) **Mands** (Skinner, 1957) for adult help - the child mands (asks for) adult help by requesting it directly, (e.g., "Tell him to stop"), or indirectly, by calling out the adult's name, (e.g., "John" or "Teacher"), or by reporting the occurrence of an event to the adult, (e.g., "She hit me").

2) **Cries** - the child engages in crying or screaming vocalizations that are unintelligible.

3) **Verbal responses to other children** - the child engages in a verbal statement to another child, (e.g., "Let's share").

4) **Physical responses** - the child engages in a physical act which includes contact with a child or an object,
5) Other responses - the child engages in a novel or other low frequency response not included above, (e.g., the child does nothing, or walks away).

Next, the experimenter observed the reactions of the adults to these behaviors and identified eight categories of responses:

1) Praise - the adult makes a positive verbal statement indicating approval, (e.g., "good" or "I like the way you share your toys").

2) Reprimand - the adult makes a negative verbal statement indicating disapproval, (e.g., "No, that's wrong" or "I don't like it when you hit"). It may involve a statement of a rule, (e.g., "We don't hit at school").

3) Timeout - the adult removes the child from the situation by giving a verbal direction, (e.g., "go sit in the corner"), or by physically removing the child from the situation.

4) Instructions - the adult makes a statement which involves any direction for the child to follow except timeout, (e.g., "Give it back to him"). It may involve a statement of a rule, (e.g., "We share out toys").

5) Physical - the adult makes physical contact with a child. It may involve the adult physically solving the problem, (e.g., taking the toy away from the child).

6) No adult response - the adult does not interact with
either child in the dyad, (e.g., the child is ignored, or the adult may be unaware of the problem).

7) Responds to the other child (ROC) - the adult responds to the other child in the dyad, (e.g., the adult does not interact with one child but reprimands the other child).

8) Other - the adult engages in any other responses not included above.

Measurement

The experimenter trained seven female observers - six undergraduate students and one graduate student - on the observational recording system by using videotaped sessions of free play. Observers then viewed the classrooms for the 30-45 minute free-play period at the start of each day. Observers began recording a trial with the onset of a problem condition and recorded all three components of the code. In one interaction between two children, a minimum of five variables were recorded: 1) the problem condition, 2) the sex of each child, 3) the response of the first child, 4) the response of the second child, and 5) the adult response (see Appendix for data sheet). One interaction between two children often required more than one response category to be recorded, since one child may emit more than one response in an interaction. The interactions were usually of very short duration (e.g., under 10 seconds each).

The experimenter divided the classrooms into four equal areas, and the initial area was always that having the highest number of
children playing within it. However, the observation area changed from day to day or within sessions, as the amount of play activity shifted to other quarters of the room. In some classrooms, the children had free movement around the room, while in other classrooms, the paraprofessionals limited the children to a specific area. If most of the children left the observation area, the observer moved to the area where there were the highest number of children present.

The dependent variable was the proportion of occurrences per opportunity of each type of adult response, where opportunity was determined by the type of children's behavior under each antecedent condition. Any child response category was possible in any antecedent condition, but data were grouped on the basis of the antecedent condition and child response which occurred.

Interobserver Agreement

Two independent observers assessed interobserver agreement during routine observation for 21% of all sessions. Agreements and disagreements were calculated by considering all trials where observers recorded the same antecedent condition. Then calculations were made on the behaviors observed. An agreement was scored if both observers recorded the same category for child responses and teacher responses during a simultaneous observation. Agreement was calculated by dividing the agreements by the agreements plus disagreements, and multiplying by 100. This procedure yielded 80% agreement on child responses and 94% on teacher responses.
CHAPTER III

RESULTS

The results of the study were analyzed by focusing on several questions regarding the frequencies of adult interactions with children. These questions addressed the ways in which teachers reacted under various conditions, whether there were sex differences in their reactions, and what responses characterized the children's actions in problem situations.

The first question was concerned with how the teachers typically responded to particular types of children's behaviors under the three problem conditions. The results showed that the five teachers did not differ from one another in their reactions to verbal, physical, manding, or crying responses of the children. In all of these cases, the most frequent response category recorded was "no adult intervention" and this was observed across all problem conditions. Casual observation revealed that when the teachers made no response to the children being observed, the teachers were typically engaged in interactions with other children or were working alone at a task. When teachers did interact with the children, the most frequent response varied across problem conditions. In the object condition, instructions were the most likely response across all child behaviors, whereas in the other conditions, the most likely response varied across subjects.

A second question of interest was whether the teachers responded
differently as a function of the sex of the child. The data were analyzed as percentages based on the frequencies of each teacher reaction divided by the total number of child responses under each problem condition for each sex. A difference of at least ten percentage points was arbitrarily chosen to indicate a meaningful sex difference. Both within-subject and between-subject analyses were made by calculating weekly averages for each subject. In addition an average across all seven weeks was calculated for each subject. These seven-week averages comprised the basis for the across-subjects' analysis. The results follow for particular types of dependent variable behaviors.

No Teacher Responses

Teacher behavior was first examined across all child response categories, showing that there were no overall sex differences in adult responding across subjects for any adult response category. However, there were some sex differences for individual subjects. Most notably, there were overall sex differences for "no adult response" under all problem conditions (see Table 1). For example, Subjects 1 and 5 were less likely to respond to females (50% and 51% no response) than to males (39% and 32% no response, respectively) under the object condition. This overall difference was representative of the weekly differences for these subjects.

The aggression condition was analyzed in two ways: 1) for the initiator and 2) for the victim of the aggression. Across-subject averages showed no sex difference in "no adult response" with aggressors,
### TABLE 1

Percent of "No Adult Response" for Each Subject Across Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Object</th>
<th>Aggression</th>
<th>Accident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>39%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>N=51</td>
<td>N=91</td>
<td>N=35</td>
</tr>
<tr>
<td>2</td>
<td>35%</td>
<td>27%</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>N=156</td>
<td>N=130</td>
<td>N=38</td>
</tr>
<tr>
<td>3</td>
<td>44%</td>
<td>36%</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>N=179</td>
<td>N=28</td>
<td>N=77</td>
</tr>
<tr>
<td>4</td>
<td>63%</td>
<td>62%</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td>N=135</td>
<td>N=180</td>
<td>N=14</td>
</tr>
<tr>
<td>5</td>
<td>32%</td>
<td>51%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>N=114</td>
<td>N=80</td>
<td>N=15</td>
</tr>
<tr>
<td>Average</td>
<td>43%</td>
<td>48%</td>
<td>56%</td>
</tr>
</tbody>
</table>

M = Male  
F = Female

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yet three individual subjects showed sex differences. Subjects 1 and 4 were less likely to respond to female aggressors (53% and 78% no response) than to male aggressors (40% and 57% no response). However, S3 was less likely to respond to male aggressors (68% no response) than to female aggressors (30% no response).

There were no average sex differences in "no adult response" to victims of aggression, yet three individual subjects showed sex differences. Subjects 1 and 4 were less likely to respond to female victims (53% and 71% no response) than to male victims (31% and 53% no response). On the other hand, S5 was less likely to respond to male victims (64% no response) and he always gave some response to female victims (0% no response).

Only three subjects were included in the analysis under the accident condition due to very low frequencies of accidents in the other two classrooms. Under the accident condition, two subjects showed individual sex differences, but in opposite directions. Sub-2 was less likely to respond to males (48% no response) than to females (31% no response) and S5 was less likely to respond to females (61% no response) than to males (24% no response).

Instructions from Teachers

As with the "no response" category, there were also no average sex differences across subjects for the amount of instruction given to children. The percentages are presented in Table 2 for the problem conditions. Under the object problem condition, two subjects showed
### TABLE 2

Percent of Instructions for Each Subject Across Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Object</th>
<th>Aggression</th>
<th>Accident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aggressor</td>
<td>Victim</td>
</tr>
<tr>
<td>Subjects</td>
<td>M</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>25%</td>
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<td>2%</td>
</tr>
<tr>
<td></td>
<td>N=51</td>
<td>N=97</td>
<td>N=35</td>
</tr>
<tr>
<td>2</td>
<td>27%</td>
<td>26%</td>
<td>5%</td>
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<td></td>
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<td>4</td>
<td>15%</td>
<td>17%</td>
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<td></td>
<td>N=135</td>
<td>N=180</td>
<td>N=14</td>
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<tr>
<td>5</td>
<td>18%</td>
<td>24%</td>
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<td>N=114</td>
<td>N=80</td>
<td>N=15</td>
</tr>
<tr>
<td>Average</td>
<td>21%</td>
<td>19%</td>
<td>4%</td>
</tr>
</tbody>
</table>

M = Male  
F = Female
sex differences in opposite directions. Subject 1 was more likely to
give instructions to males (25%) than to females (13%) and S3 was more
likely to give instructions to females (36%) than to males (21%).
There were no sex differences in the amount of instruction given for
the aggressors and victims. Under the accident condition, only one
subject showed a sex difference; S2 was more likely to instruct fe­
males (69%) than males (18%).

Other Adult Reactions

The teacher response category of "responds to other child" showed
differences under the aggression condition. For victims this would
mean teachers did not respond to the victim's behavior and responded
only to the aggressor, and for aggressors it would mean teachers did
not respond to the aggressor's response and responded only to the victim.
There were individual subjects demonstrating sex differences in this
way. Subject 5 was more likely to respond to the victim when the
aggressor was male (13%) than when the aggressor was female (0%).
Subject 4 was more likely to respond to the aggressor when the victim
was male (18%) than when the victim was female (8%).

In general, the categories of praise, reprimands, timeout, and
physical responses were all low, characterizing less than 10% of all
adult responses. Thus, the criterion of ten percentage points differ­
ence could not be employed. In most cases, the percentages were ap­
proximately equal. However, in the case of timeout, there were notice­
able differences for males and females. For example, in the object
condition, timeout was used 15 times for males and only once for females. Furthermore, adults used timeout on the male aggressor 11 times and never used it for female aggression.

Children may already exhibit sex differences in the types of responses they make in problem conditions, and thus the opportunities for teachers to respond to them may be different. Thus, the next question considered was whether there were sex differences in the children's responses. The percentage for a particular type of response was computed for females by dividing the frequency of that response of all female children in the classroom by the total number of female child responses in that classroom. The same procedure was carried out for all male response categories, and the percentages appear in Table 3. Of the 1,027 object problems observed, males were involved in 58% and females were involved in 42% of them. The only sex difference observed in child responses to object problems was that females were more likely to engage in verbal responses (48%) than males (37%).

Across these classrooms, there were 195 occurrences of aggression, 73% were initiated by males and 27% were initiated by females. Males were victims 65% of the time and females were victims 35% of the time. The only sex difference in the aggressor's behavior was that males were more likely to engage in another physical response (23%) after the initial aggression than females (11%). Female victims were more likely to engage in crying responses (32%) than males (12%). Male victims were more likely to respond physically (31%) than females (16%).

Of the 137 accidents observed, males were involved in 58% and
### TABLE 3

Percent of Child Responses Across Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Object</th>
<th>Aggression</th>
<th>Accident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>N=597</td>
<td>N=430</td>
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<td></td>
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<td>M</td>
</tr>
<tr>
<td></td>
<td>N=80</td>
<td>N=57</td>
<td></td>
</tr>
<tr>
<td>Molding</td>
<td>4%</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Crying</td>
<td>6%</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td>Verbal</td>
<td>37%</td>
<td>48%</td>
<td>9%</td>
</tr>
<tr>
<td>Physical</td>
<td>19%</td>
<td>12%</td>
<td>23%</td>
</tr>
</tbody>
</table>

M = Male
F = Female
females were involved in 41%. Females were more likely to engage in crying responses (21%) than males (8%). Females were more likely to respond verbally (47%) than males (22%).

The previous analysis of adult responding examined sex differences across all child response categories. However, a further question concerns whether there were sex differences in adult responding within specific child response categories.

An analysis was made of specific child response categories for object and aggression conditions across subjects (see Table 4). Manding was not included due to the low frequencies of that response. The accident condition was not included due to low frequencies within each response category. For some response categories under aggression, the frequencies were less than 10 occurrences, and they do not appear in Table 4.

The most frequent adult response category for both males and females was "no response". There were some sex differences in the percentages under each condition. Under object problems, teachers were less likely to react to females for each response. With aggressors, teachers were less likely to react to males who emitted additional physical responses (59% no response) than females (36% no response). With victims of aggression, teachers were less likely to react to both males and females depending upon the child's response, verbal responses with females and crying responses with males.

There were some sex differences with adults giving instructions. Adults were more likely to give instructions to males who cried (32%)
<table>
<thead>
<tr>
<th>Conditions</th>
<th>Object</th>
<th>Aggression</th>
</tr>
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<tbody>
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<td>Verbal</td>
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<td>N=40</td>
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M = Male
F = Female
than to females who cried (19%) with object problems. Adults were more likely to give instructions to female aggressors who engaged in verbal responses (20%) than with male aggressors who engaged in verbal responses (2%).

Thus, there were sex differences in teacher responses when child response categories were analyzed separately. However, these differences were not consistent across child responses, conditions, or the sex of the child.
CHAPTER IV

DISCUSSION

Adult Responses

The analysis of adult responses across all child responses indicated that there was no consistent differential adult responding as a function of the sex of the child under the specific conditions measured. There was sex differential responding among the individual teachers, but there was no consistent pattern across teachers. In addition, the sex differential responding for individual teachers was not consistent from week to week.

The present study found that teachers responded about equally to male and female aggression, whereas previous research has shown differential teacher responses to male aggression 31% of the time and female aggression only 10% of the time. Serbin et al. (1973) also found that teachers responded three times as often to male aggression than female aggression.

The analysis of adult reactions to particular types of child responses did indicate sex-differential adult responding. It is difficult, however, to compare these results with other studies, due to differences in the specification of response categories. For example, Serbin et al. (1973) found that teachers gave more instructions when responding to "solicitation" in males than females, but the authors did not provide an operational definition of "solicitation". If
"solicitation" is equivalent to "manding adult help", the present study found no difference in the amount of instructions given to boys than to girls who manded help.

Procedural Discrepancies

Procedural differences between the present study and other studies could account for some of the differences in the results. For example, Fagot (1981) defined aggressive responses to include taking another's object or invading another's territory, which was recorded as a separate condition (object problem) in the present study. However, the proportion of teacher responses to object problems were equal for males and females, still yielding no difference when both object and aggression conditions were analyzed together.

Serbin et al. (1973) studied 15 classrooms with a mean of 4.2 hours of observation per classroom over a three-week period. The authors reported that aggressive responses were infrequent, as did the present study. However, they also reported sex-differential adult responding to aggression that was not found in the present study. Similar adult differences were sometimes observed in some 4-hour segments of the present study, but they were not consistent across the entire observation period of the present research (24 hours per classroom). Thus, the conclusions of studies based on short observation periods may be misleading, due to artifactual or temporary differences. Furthermore, the history and contingencies of the teachers in the present study could have some influences.

The present study also measured the antecedent conditions to child
responses. For example, the only condition in which girls were more likely to cry than boys was when they were victims of aggression. Serbin et al. (1973) found no sex differences in crying responses. If the present study had analyzed crying without regard to the antecedent conditions, there would have been no sex difference. Thus, one reason for inconsistent findings across studies may be linked to differences in antecedent conditions. If so, future research might reduce possible errors of interpretation by identification of antecedents as well as consequences.

Children's Responses

Comparisons with other studies show similar findings about differences in children's behavior and differences in adult-child interactions. Once again, it is not clear which are due to the subject population, which are due to methodological differences, and which are due to other variables.

The present study found sex differences in the children's behavior. Generally, the findings were consistent with the stereotyped behaviors usually associated with each sex, (e.g., boys are more aggressive than girls, boys are more likely to counter-aggress when they are victims than girls). The results of this study support previous research (Fagot, 1981; Serbin et al. (1973) that males engage more frequently in aggressive behaviors than females.

The present study determined observation by the occurrences of problem situations and did not measure behavior under other conditions.
Thus, the data are representative of children in the classroom who engaged in problem-solving situations and no attempt will be made to assume explanation about children's behavior in general, without regard to the conditions under which it occurred.

The number of males and females were approximately equal in this study, yet the number of males involved in the problem situations was much higher than the number of females, resulting in fewer opportunities to record teacher responses to females responses. As an extreme example, under the object condition for S3, there were 222 opportunities to respond to males and only 32 opportunities to respond to females.

The activities in which the children were involved may account for the disproportional number of male and female responses measured. Carpenter and Huston-Stein (1980) found that there were no sex differences in children's behavior within the same activities, but that girls spent more time in activities structured by teacher feedback or high structured activities. The present study typically involved what Carpenter and Huston-Stein would call "low structure" activities, in which girls spent less time than boys. The experimenter observed the males to be more active in play than females. Research supports this observation; for example, Fagot (1981) reported that parents discourage girls from engaging in active motor play more than they discourage boys. She also reported that toddler aggression often occurred as a result of active play where one child was bumped accidentally and hit back, so aggression might be expected to occur with most active children. The experimenter also observed that females were more often
proximal to teachers than were boys. Serbin et al. (1973) also found that boys do not spend as much time in close proximity to teachers and aggression is more likely to occur when the children were not under the teacher's physical control. Further research is necessary as the precise controlling variables for such differences have not been verified.

It may be that other variables are more crucial for differential responding than the sex of the child. The frequency and/or magnitude of an aggressive response may be the controlling variable for differential responding rather than the sex of the child. Fagot (in press) found that the behavior of "experienced" teachers appears to be determined by the teacher's definition of appropriate student behavior rather than the sex of the child (e.g., both boys and girls are encouraged to exhibit compliant, cooperative behavior).

Since adult consequences followed the children's responses so infrequently in problem situations, it may be that other consequences are more important variables in shaping and maintaining sex-typed behaviors. It seems logical that the peer's response, and in turn, the outcome of that response, (e.g., which child ends up with a toy) would be at least as influential as the adult interaction or the lack thereof. Fagot and Patterson (1969) maintained that peer reinforcement of "masculine" behavior overrode the teacher reinforcement of "feminine" behavior so that "masculine" behavior was maintained. Fagot (in press) found that for boys, the male peer group was the most influential in maintaining behaviors, while for girls, both teacher and peers helped maintain the behavior. Fagot concluded that teacher's intervention
in children's sex-typed behaviors was not particularly effective in changing behavior, but boys' responses to other boys was successful. Fagot (1981) reported that the maintenance of aggressive responses is to a large extent determined by the recipient's response to the aggressor which is an immediate consequence for the aggressor. She found that there are differential peer reactions to aggression as a function of the sex of the aggressor. For example, female aggression is more likely to be ignored by peers than male aggression. Thus, future research should explore the peer's role in maintaining sex-typed behaviors.

Since many sex differences in behavior are exhibited by preschool-aged children, further research should be undertaken at earlier ages. Fagot (1974; 1978) studied aggressive responses in two-year-old children. She reported sex-differential responding by parents in the earlier study but there was no differential responding in the later study. Thus, further research is needed in this area.

These results suggest that training in non-sexist teaching methods at the preschool level be geared to increasing the adult interaction with the children since the low frequency of adult responses seems to have little impact on sex-typed behaviors in children. Training should focus on insuring that boys and girls participate in the same activities since activities seem to be an important variable in the occurrence of certain behaviors.

It seems that the shaping and maintenance of sex-typed behaviors cannot be accounted for by simply studying the adult consequence for that behavior. It appears that there are many variables which influence the behavior, especially the antecedent conditions.
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REFERENCES


BIBLIOGRAPHY


Winkler, R. C. What types of sex role behavior should behavior modifiers promote? *Journal of Applied Behavior Analysis,* 1966, **3**(10), 549-552.