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THE INFLUENCE OF THE KINDERGARTEN TEACHER ON SEX DIFFERENCES IN BEHAVIOR *

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The effect of the teacher on choice of activities of boys and girls in a German kindergarten is examined and her differential attraction for boys and girls is considered. The results indicate that the presence of the kindergarten teacher has a marked impact on boys' and girls' activity choices, thereby reducing the differences in boys' and girls' preferences for certain activities. The data also suggest that the teacher has a stronger attraction for girls than for boys. Possible influencing factors are discussed. The presence of the teacher is suggested to be a variable worth considering in kindergarten studies to give us further insights into children's behavior.

The effect of the teacher is a factor which is often ignored in kindergarten studies. However, while working on a study of differences in behavior between boys and girls, it became apparent that the presence of the kindergarten teacher in playgroups had a different effect on girls than on boys. Here I will briefly discuss this effect and suggest that, although each teacher may have different effects, girls, particularly older ones, spend more time near the teacher than boys. The question is raised whether teachers' differential behavior (Serbin et al. 1973; Dweck et al. 1978) could be an influencing factor.

* I would like to thank the children, parents and teachers for kindly allowing us to film and work in their kindergarten. Numerous colleagues at the Max-Planck-Institute gave me helpful comments on the study, in particular Prof. Dr. Eibl-Eibesfeldt, Dr. Wiessner, Dr. Schiefenhövel and Dr. Grammer. The analysis of the material was done at the computer center of the Ben Gurion University of the Negev and at the Max-Planck-Institute for Psychiatry in Munich, with the help of Dr. Chernikovsky and Mr. Barthelmes. To them I am thankful. I owe special thanks to Prof. Dr. R.A. Hinde and Alison Tamplin for their invaluable comments on the draft.

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Background

The material presented here is taken from a study of sex differences in behavior, concentrating on how boys and girls approach, enter, and become accepted in groups (Oettingen 1982). Observations on activity, group size, group composition, and different kinds of approaches to a group were made from videotapes filmed in a kindergarten in southern Germany. The data were analyzed with the help of the Statistical Package for the Social Sciences (Nie et al. 1975).

Data were collected on 24 children in one classroom, 13 boys and 11 girls, ranging in age from 3 to 6 years. One boy and one girl who enrolled mid-term were omitted from the analysis. All children in the study attended the kindergarten at least three times a week. The socioeconomic status of the children's families included workmen, employees, academics and self-employed, with the majority coming from higher income brackets. There were no single parents.

The kindergarten was built in 1975 and has four classrooms, which are well-equipped with toys. Each classroom has two teachers. The kindergarten is open from 7:30 to 12:30 AM; and until 10:30, the children have a free play period, during which they must remain indoors, but may play whatever they like although the teacher may try to direct children to engage in certain art projects during this period. Then, they clean up, have a snack, and engage in activities which the teacher directs such as gymnastics, singing, dance, and similar activities. When the weather is good, the children from all four classrooms go out and play in one or two big yards equipped with slides, sandboxes, swings, tricycles, and other things. Between 12 and 12:30 the children are collected by their parents.

Data collection

Analysis was collected from 13 videotapes which were filmed between 23.9.1980 and 19.3.1981 during the free play period by Dr. Karl Grammer (1982) and H. Shibusaka. They had filmed in randomly-chosen three minute periods, focusing on each child twice a week with zoom cameras which could rotate and which were installed in three corners of the room. The cameras were controlled from a separate room, so that the children could not know when they were being filmed.

Two kinds of observations were made. First, group size, group composition, and activity of the group members were recorded at the beginning of each three minute period. Second, the behavior of the children while approaching single children or groups of children was observed throughout the full three minute period.

Since Grammer's sampling strategy centred on individuals and not on groups, some three minute periods were filmed so closely that the child's social environment could not be determined, that is the area around the child within two arm lengths. Such periods had to be eliminated from the analysis. If group size and activity could be scored in the beginning and later the camera moved away or was too close to make it possible to record entrances, only group size, composition, and activity were recorded. Only if the entire group could be observed throughout the three minute period were observations on the behavior of the children made.

Definitions

Six kinds of activities were defined: constructive play, art, role play, rule play, rough and tumble play, and reading. In *constructive play*, children either build something or engage in play where the procedure and outcome are not the results of the rules of the game, such as building a house or ship with Lego blocks. *Art* was defined following Roper and Hinde (1979: 573): "art was making pictures or objects which the child might subsequently take home or which might be displayed in the school". *Role play* is play in which the child acts out the role of mother, father, child, lion tamer, or bus driver, etc. *Rule play* is play in which the procedure and/or outcome is defined by the set rules of the game, i.e. such games as "Mensch ärgere Dich nicht", "London bridges", "Simon says do this", or puzzle building. In *reading*, children either look at a book, listen to a child who is pretending to read, or to the teacher's reading. *Rough and tumble play* includes chasing, wrestling, running around, climbing on furniture, etc. Since it can take up the whole room, it was not possible to follow all participants with the camera, and thus approaches and entrances of children could not be scored.

A *group* was defined as two or more children engaged in the same kind of activity in close spatial proximity. Close spatial proximity was

considered to be within two children's arm lengths, as this meant that the children were close enough to touch one another.

The kindergarten teacher was recorded as present when she was a member of the observed group and as absent when only children were present in the group. A child was considered to *approach* another child or group of children when it moved within two arm lengths of them and to leave when it moved two arm lengths away. When a child approached another child or group, participated in the same activity, and was accepted, it was scored as having *joined*. However, if it approached, but was not actually observed to enter, then it was considered to be *exploring*. Exploration occurred in two ways, actively and passively or by watching. In *active* exploration the child either engaged in an activity similar to that of the other child or group or in an activity two which one or more members responded but did not join. In *passive* exploration or watching, the child just stood and looked, but did not make any effort to engage in similar play or invite comment from the other child or group members.

Results

Table 1 and figs. 1 and 2 reflect the fact that the teacher can have a marked impact on boys' and girls' activity choices. As can be seen, the presence of the kindergarten teacher reduces the differences in preference for certain activities between boys and girls. That is, if she is absent, boys engage significantly more than girls in constructive play and rough and tumble play, whereas girls engage more in art (Mann-Whitney *U* test, two-tailed). In table 1 (B) and fig. 2 one can see that boys were observed participating in constructive play with a median value of 18 (40.5 median percentage of boys' activities, 210 total observations) when the kindergarten teacher was absent, whereas girls were observed participating with a median value of 5 (16.5 median percentage of girls' activities, 73 total observations). Conversely girls participated in art with a median value of 8.5 (37 median percentage of girls' activities, 96 total observations) and boys only with a median value of 3 (7 median percentage of boys' activities, 43 total observations). In contrast, when the kindergarten teacher was present, her influence drew boys and to a lesser extent girls from constructive play into art, thereby obscuring boys' preference for constructive play and

girls' for art (see table 1 (A) and fig. 1). To see if boys and girls were homogeneously drawn to groups where the teacher was absent or present, the Wilcoxon matched pairs test was run for each activity with each child used as its own control. That is, each child was matched with itself under the conditions of being in groups with the teacher absent and in groups with the teacher present. The results showed a significant trend for boys and girls to be found more frequently in groups without the teacher in constructive play ($p < 0.002$, two-tailed for boys; $p < 0.02$, two-tailed for girls) and in role play ($p < 0.002$, two-tailed for boys and the same for girls). In rule play there was a significant trend for boys and girls to be found more frequently in groups where the teacher is present ($p < 0.002$, two-tailed for boys and girls). However, no such significant trends for boys and girls exist for reading, nor were

Table 1
Kind of activity of boys and girls in groups with and without the kindergarten teacher.

Kind of activity	Boys ($N = 12$)		Girls ($N = 10$)		Statistical ^a significance Mann-Whitney U test (two-tailed)
	Median number	Median %	Median number	Median %	
<i>(A) Kindergarten teacher present</i>					
Constructive play	3.5	15.5%	2.5	10%	n.s.
Art	8	30.5%	10	36%	n.s.
Role play	0.5	1.5%	0	0%	n.s.
Rule play	10.5	51%	10	43.5%	n.s.
Reading	1	4%	2	6.5%	n.s.
Rough and tumble play	–	–	–	–	–
<i>(B) Kindergarten teacher absent</i>					
Constructive play	18	40.5%	5	16.5%	$p < 0.02$
Art	3	7%	8.5	37%	$p < 0.002$
Role play	12	24%	4	13.5%	n.s.
Rule play	3	7%	4	13.5%	n.s.
Reading	1	2%	1	3.5%	n.s.
Rough and tumble play	8.5	18%	1	3.5%	$p < 0.002$

Note to median number and median %: members of the observed groups engaged in the given activity.

^a The figures entered in the tests are the percentages of observations each child, separately, was engaged in a different form of play. If the test is run with absolute numbers of observations of each child in different activities, significant and non-significant results are found for the same activities other than boys' role play with the teacher absent which occurs significantly more frequent than girls' ($p < 0.02$, two-tailed).

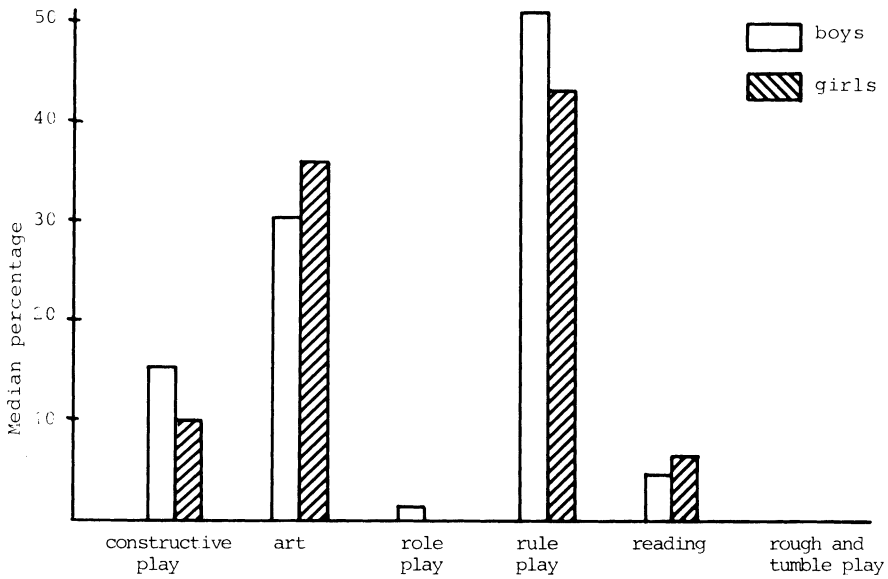


Fig. 1. Kind of activity of boys and girls in groups with the kindergarten teacher present. (Note to median percentage: members of the observed groups engaged in the given activity.)

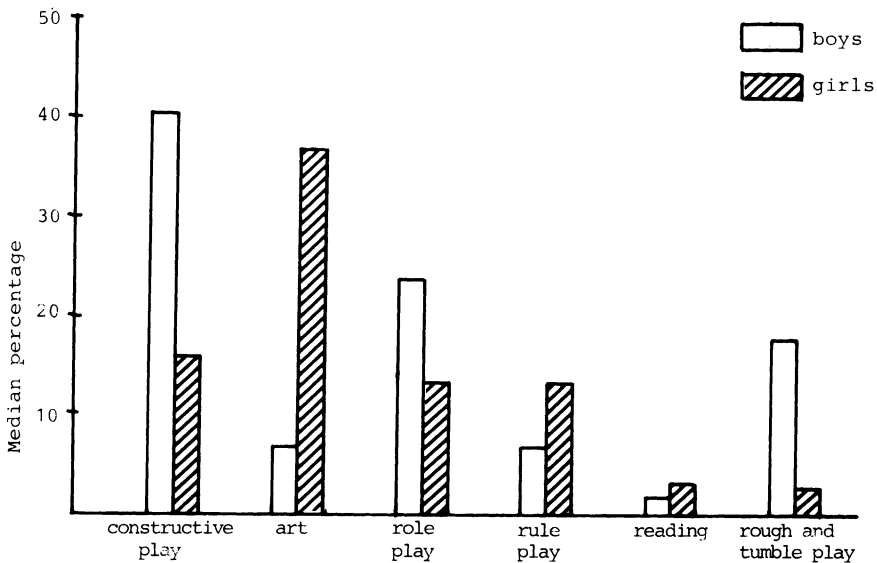


Fig. 2. Kind of activity of boys and girls in groups with the kindergarten teacher absent. (Note to median percentage: members of the observed groups engaged in the given activity.)

Table 2

Boys' and girls' preference for groups where the kindergarten teacher is absent and present.

	Boys ($N = 12$)			Girls ($N = 10$)			Statistical ^a significance Mann-Whitney U test (one-tailed)
	Total	Median number	Median %	Total	Median number	Median %	
Teacher absent	530	46	64%	312	29	52%	$p < 0.05$
Teacher present	274	25	36%	274	26.5	48.5%	$p < 0.05$

Note to total, median number and median %: observations in which boys and girls were found in groups with teacher absent and present.

^a The figures entered in the tests are the percentages of observations each boy and girl were found in groups with and without the teacher.

any found for girls in art. Interestingly, boys uniformly were found to engage more in art when the teacher was present ($p < 0.02$, two-tailed), reflecting the fact that the teacher sometimes encourages the boys to complete art projects during the free play period, while some of the girls are drawn to art without her organizing influence.

The teacher not only has an effect on the activities which boys and girls choose, but also on their frequency of participation in groups in which she is present. In other studies, it has been shown that girls tend to associate more with adults than do boys (Serbin et al. 1973; Lawrence 1975; Maccoby 1979; Draper 1980; Hinde et al. 1983).

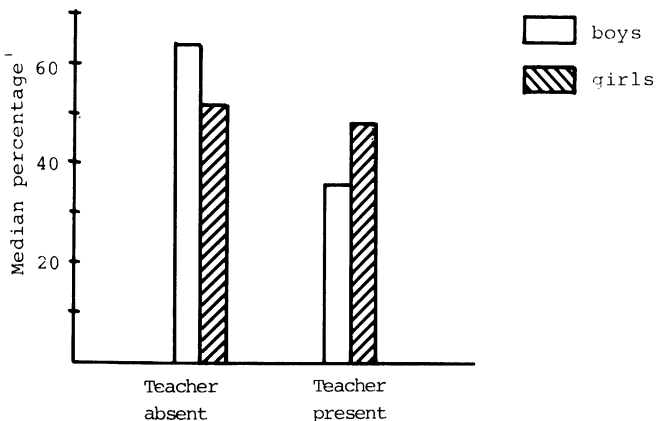


Fig. 3. Boys' and girls' preference for groups where the kindergarten teacher is absent and present. (Note to median percentage: observations in which boys and girls were found in groups with teacher absent and present.)

Thus, to test the hypothesis that boys prefer groups without the teacher and girls groups with the teacher the Mann-Whitney U test was run. The results support the hypothesis (see table 2 and fig. 3). Subsequently the Wilcoxon matched pairs test was run as above to see if boys homogenously preferred groups without the teacher and girls homogenously preferred groups in which she was present. The results were significant for boys ($p < 0.001$, one-tailed), indicating that boys as a whole were not drawn to groups with the teacher, while they were non-significant for girls, indicating mixed preferences among girls. The attraction of boys and girls to groups with and without the teacher was then looked at by age. Interestingly, preferences of 3–4-year-old boys and girls were not significantly different (Mann-Whitney U test) and the Wilcoxon matched pairs test run as above for all 3–4-year-old children was significant ($p < 0.025$, one-tailed), indicating that 3–4-year-old children showed a homogenous trend playing in groups without the teacher. The comparison of 5–6-year-old boys and girls yielded quite different results, with 5–6-year-old boys preferring significantly more than 5–6-year-old girls groups in which the teacher was absent (Mann-Whitney U test, $p < 0.001$, one-tailed), and 5–6-year-old girls preferring significantly more than 5–6-year-old boys groups in which she was present (Mann-Whitney U test, $p < 0.01$, one-tailed). The Wilcoxon matched pairs test for 5–6-year-old children was not significant which means that 5–6-year-old children do not show a homogenous trend in preferring groups with or without the teacher. The ratio of number of times all 3–4-year-old children were present in groups with the teacher to number of times they were found in groups without the teacher is 1.6, (for 3–4-year-old boys 1.5, for 3–4-year-old girls 1.8) whereas for 5–6-year-old boys it is 2.7 and for 5–6-year-old girls it is 0.9. Although the results must be taken with caution because of small sample sizes (3–4-year-old girls $n = 3$; 3–4-year-old boys $n = 7$; 5–6-year-old girls $n = 7$; 5–6-year-old boys $n = 5$), they suggest that the greater attraction of the teacher for girls and her lesser attraction for boys become accentuated with age.

Finally, the presence of the kindergarten teacher in the group has an influence on the amount of exploration by girls. The Wilcoxon matched pairs test was used for boys and girls matching each child with itself under the conditions of exploring groups with the teacher absent and groups with the teacher present. It was significant for girls ($p < 0.02$, two-tailed), showing girls' preference for exploring groups where the

kindergarten teacher was present, whereas the boys did not show a significant trend for exploring groups either with or without the teacher.

Discussion

In summary, the presence of the kindergarten teacher has a pronounced effect on the results of the study in two areas. The first was to reduce the differences between boys' and girls' choice of activities in groups in which she was present. She drew more boys into art as there are some projects such as making seasonal decorations, presents for parents, or pictures for a portfolio – which she strongly encouraged all children to do each week – thereby making girls' pronounced preference appear less pronounced. She also affected activity choice by drawing both boys and girls into rule play, which both sexes engaged in equally, but found hard to play without her organizing influence. Boys' and girls' preferences for different activities were so strong however, that even when all cases with and without the teacher are considered together, these differences are still statistically significant ($p < 0.02$, Mann-Whitney U test, two-tailed).

The second and perhaps most interesting effect of the teacher was her greater attraction for girls than for boys, particularly for older girls. The 5–6-year-old girls played more in groups where the teacher was present and 5–6-year-old boys where she was absent, while 3–4-year-old girls and boys did not show these differences in preferences. In addition girls showed a significant trend to explore groups, where the teacher is present, while boys did not show a preference for exploring groups with or without the teacher. It is possible, that the above results are due to the personality and training of the teacher and consequently they should be examined in other kindergartens, particularly in those where the teachers are male. They may also be influenced by differences in the socioeconomic background of the children and in the possibly more advanced stage of development in the girls. However I doubt that the latter findings are only due to specific characteristics of the kindergarten teacher or of the children in that particular school. Rather I would like to suggest that they may partly be due to a more general behavioral phenomenon found by numerous researchers, that is, that girls spend more time in contact with adults and have a closer relationship to adults than boys who play more with their peers. For instance Hinde et

al. (1983) found in English nursery school children that girls spent more time with adults than did boys. Lawrence (1975) showed that in preschool children's free play periods boys play more interactively with peers than girls and that girls spend more time in contact with adults. Maccoby (1979) found that on the average American girls have closer relationships with adults than boys do. Draper (1980) in her work among the !Kung san, found that boys turn away from adults with age, while the girls showed greater preference for the close company of adults and less for peer involvement.

Why is this so? Do teachers show different behavior towards boys and girls? Serbin et al. (1973) found in 15 American preschool classes that teachers gave girls more attention when they were physically proximal but did not do so for boys. This could be one reason for closer proximity between girls and teacher. She also found that teachers were likely to respond more frequently and loudly to boys' than to girls' aggressive behavior, which might discourage boys from close proximity. But why do teachers act in this differential way? Could one factor be that teachers fear to lose control of boys more than of girls? This suggestion is supported by Serbin et al.'s finding that the teacher used more instructions for boys than for girls when responding to solicitation and to appropriate behavior in class activities; in other words when instructions are not really necessary. There is further evidence in Dweck et al.'s (1978) study on failure feedback from teachers of fourth and fifth grade American school children. She found that teachers were generally much more critical of boys' works than girls'; in particular they were more likely to emphasize violations of rules in boys. Different behavior of adults towards boys and girls can even be strongly linked to similar behavior of the children. Simpson and Stevenson-Hinde (in press) showed for English nursery school children in their homes that shyness in boys was correlated with negative family interactions, shyness in girls, however, was correlated with positive interactions. This trend became more pronounced with the children's increasing age. As in the present study, these findings become stronger the longer the adult-child pairs have been together.

While the findings of this paper must be regarded as speculative rather than conclusive they can nevertheless suggest useful directions for further study: teachers' control behavior towards boys and girls in relation to children's proximity and compliance are being further investigated in a present study with an increased sample size.

In conclusion, the effect of the kindergarten teacher in children's behavior may be a variable worth taking into account in other studies both because the presence of the teacher in a play group can obscure certain aspects of children's behavior, and because obtaining some understanding of how children are influenced by the teacher, under what circumstances and how this is interwoven with teachers' response patterns may give us important insights into children's relationships.

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