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The Role of Brothers and Sisters in the Gender Development of Preschool Children

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The study examined whether the sex of older siblings influences the gender role development of younger brothers and sisters of age 3 years. Data on the Pre-School Activities Inventory, a measure of gender role behavior that discriminates within as well as between the sexes, were obtained in a general population study for 527 girls and 582 boys with an older sister, 500 girls and 561 boys with an older brother, and 1665 singleton girls and 1707 singleton boys. It was found that boys with older brothers and girls with older sisters were more sex-typed than same-sex singletons who, in turn, were more sex-typed than children with other-sex siblings. Having an older brother was associated with more masculine and less feminine behavior in both boys and girls, whereas boys with older sisters were more feminine but not less masculine and girls with older sisters were less masculine but not more feminine.

Key Words: gender development; sex role; sex typing; siblings; brothers; sisters.

Interest in the influence of brothers and sisters on the sex role development of their same- and other-sex siblings dates back to the 1950s and the classic studies of Koch (1956) and Brim (1958). These researchers, reporting on the same data

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set, found that the sex-typed behavior of 384 5- to 6-year-old children with one sibling varied according to the sex of that sibling. Boys with a brother were more masculine, and girls with a sister more feminine, than their counterparts with a sibling of the other sex. That is, the presence of a brother was associated with more masculine behavior, and the presence of a sister with more feminine behavior, in both boys and girls. From his examination of the nature of these effects, Brim (1958) concluded that girls with brothers adopted additional masculine behaviors while continuing to show feminine characteristics, whereas boys with sisters tended to substitute masculine with feminine characteristics. The influence of an other-sex sibling was found to be greater for the younger child.

More recent studies have produced contradictory and inconclusive results. Bigner's (1972) and Stoneman, Brody, and MacKinnon's (1986) investigations of preschool children were consistent with the earlier research in that younger children in sibling pairs were found to be more masculine when the older sibling was male and more feminine when the older sibling was female. However, no significant differences in gender role behavior among preschool children were identified by Vroegh (1971) for either boys or girls according to the sex of their siblings, and Steegmiller (1980) reported the unexpected finding that girls with brothers were more feminine than girls with sisters and boys with sisters were more masculine than boys with brothers. Furthermore, in an investigation that included three-child families, Sutton-Smith and Rosenberg (1970) found that boys with two sisters were more masculine than boys with brothers. In a comparison of only-children with children with one sibling, girls without siblings (but not boys) were found to be more flexible in their gender role preferences (Katz & Boswell, 1984). However, the findings on gender role behavior were not presented according to the sex or birth order of siblings and thus were difficult to interpret.

From a theoretical perspective, both social learning and cognitive developmental explanations of the development of gender role behavior are consistent with the view that children may be influenced by the presence of same- or other-sex siblings in the family home. Social learning theorists have emphasized two key processes in the acquisition of sex role behavior; the differential reinforcement of boys and girls and children's modeling of individuals of the same sex as themselves. Although attention has largely focused on the role of parents in these processes, social cognitive theorists have come to view the idea that children acquire sex-typed behavior by directly imitating same sex parents as too simplistic (Bandura, 1986; Bussey & Bandura, 1984; Perry & Bussey, 1979). Instead, it is thought that children learn which behaviors are considered to be appropriate for males and which for females by observing many men and women and boys and girls and by noticing which behaviors are performed frequently by males and rarely by females and vice versa. Children then use these abstractions of sex-appropriate behavior as models for their own imitative performance. Thus children observe a wide variety of role models in their daily life, not just their

parents, and tend to imitate those whom they consider to be typical of their sex. Friends, in particular, appear to be important role models; school-age boys and girls show a strong preference for same-sex peers (Maccoby, 1998). In addition, they are important reinforcers of gender-related behaviors. Gender stereotypes also seem to be influential in the acquisition of sex-typed behavior, and children are aware of these stereotypes from as early as 2 years of age (Martin, 1991; Signorella, Bigler, & Liben, 1993; Stern & Karraker, 1989).

Although psychological theories point to the potentially important role of siblings, the influence of brothers and sisters on children's development of gender role behavior has largely been ignored, not least because of the failure of the more recent investigations to replicate the earlier findings reported by Koch (1956) and Brim (1958). However, a number of explanations can be postulated to account for the discrepancy between the earlier and later studies. First, the early studies assessed aspects of gender role behavior that are known to discriminate between the sexes such as for toy and activity preferences, whereas the more recent studies have tended to focus on more general measures that lack consistent empirical evidence of their ability to differentiate between boys and girls. Bigner (1972), for example, administered the It Scale for Children, a projective test with low reliability and validity, and Vroegh (1971) used peer ratings and teacher rankings of the appropriateness of gender role behavior. Assessment instruments that are unable to identify well-established behavioral sex differences will not be able to pick up the more subtle variation that exists within each sex (Collaer & Hines, 1995) and which is the focus of assessment in the investigation of the effect of one sibling on another. Thus the measures used in the more recent studies may lack validity with respect to their use in those cases.

Second, the studies differ on a number of key variables that are likely to affect outcome including number of siblings in the family, the sex of siblings in the family, and birth order. Whereas some investigations have focused on families with two siblings and have examined the influence of older siblings on younger siblings of both the same and the other sex, others have included three- and four-sibling families with different constellations of boys and girls. As a result, it is difficult to draw general conclusions about the influence of siblings on the sex role behavior of each other. A related problem has been the relatively small sample size and thus the low level of statistical power once samples are subdivided according to different sibling constellations. For example, Vroegh's (1971) preschool sample consisted of only 66 boys and 68 girls.

Third, insufficient attention has been paid to the mechanisms through which the sex of a sibling may influence a child's gender role behavior. In the literature on prenatal hormone influences on gender development (Collaer & Hines, 1995), a distinction has been made between the processes of demasculinization and feminization and between defeminization and masculinization. That is, children may acquire the behaviors of the other sex in different ways, either by showing

fewer behaviors that are typical of their own sex or by showing more behaviors that are associated with the other sex. Thus boys, in adopting female sex role behavior, may play less with cars and trucks and exhibit less rough-and-tumble play (demasculinization) or they may engage in more stereotypically female behavior such as doll and domestic play (feminization). Girls who adopt male sex role behavior may play less with dolls (defeminization) or become more involved in active, outdoor activities (masculinization).

It should also be noted that social learning and cognitive developmental theories lead to the prediction that older siblings influence younger siblings in the direction of their own gender. However, research on sibling differentiation (Grotevant, 1978; Schachter, 1982) and on the differential treatment of siblings by parents (Dunn & McGuire, 1992) suggests that processes of social comparison may be operating to produce increased differentiation in gender role behavior in sibling dyads. The findings of Steegmiller (1980) and Sutton-Smith and Rosenberg (1970) with respect to other-sex siblings may be explained in this way.

By overcoming some of the shortcomings of the earlier investigations, the aim of the present study is to reexamine the question of whether the sex of siblings influences children's gender development. This has become possible through the Avon Longitudinal Study of Pregnancy and Childhood (ALSPAC), a geographic population study of 14,000 mothers and their children beginning in pregnancy. Not only has ALSPAC produced a representative sample of families but it also provides a sufficiently large sample to examine specific constellations of sibling relationships. An additional advantage is that gender role behavior has been assessed using the Pre-School Activities Inventory (PSAI), a reliable and valid instrument for the assessment of gender role behavior that discriminates *within* as well as between the sexes (Golombok & Rust, 1993a, 1993b).

In order to avoid the possible confounding effects of different numbers of siblings in the family and different patterns of boys and girls, the present study focuses on families with two siblings to establish whether the presence of an older sibling of the same sex has a different effect on the gender development of the younger child than the presence of an older sibling of the other sex. It is predicted that boys with an older brother and girls with an older sister will be more sex typed than children with an older sibling of the other sex. A further aim of the study is to examine the processes through which the effect of the sex of an older sibling, if it exists, is operative. That is, to examine whether the effect of, for example, an older other-sex sibling on a younger sibling is to decrease sex-typed behavior (i.e., to demasculinize boys and defeminize girls), to increase other-sex behavior (i.e., to feminize boys and masculinize girls), or both.

METHOD

The sample was obtained from the Avon Longitudinal Study of Pregnancy and Childhood. The study enrolled any woman expecting a baby between April 1, 1991, and December 31, 1992, who was resident in Avon, a clearly defined area

of southwest England (Golding, 1996). The study area has a population of 1 million comprising the city of Bristol, with a population of 0.5 million; moderate-sized towns; and rural areas. The demographic characteristics of families in the study are closely comparable to those of families in the UK as a whole with respect to the type of area in which they live, the educational level of the parents, housing, and mobility (Baker, Morris, & Taylor, 1997). The children in the study are similar to children in the rest of the country with respect to the prevalence of preterm delivery, low birth weight, physical and mental disability, physical illness, and psychological disorder. Women were recruited to the study soon after the confirmation of pregnancy, and it was estimated that 85–90% of the eligible population took part. Parallel studies are being carried out in several European countries (ELSPAC) that will provide information on the generalizability of the findings from the ALSPAC sample.

The present investigation involved all ALSPAC children at age 3 years who had one older sibling age less than 12 years and a comparison group of all singleton ALSPAC children age 3 years. The upper age limit was chosen to ensure that the older sibling was still attending junior school. The sample consisted of 2170 sibling pairs and 3372 singletons. The mean age of the siblings was 6.45 years ($SD = 1.30$ years). Of the 1027 3-year-old girls with one older sibling, 527 had an older sister and 500 had an older brother. For the 1143 3-year-old boys with an older sibling, 561 had an older brother and 582 had an older sister. There were 1707 singleton boys and 1665 singleton girls. By the time the ALSPAC child was 3 years old, 71% of the families recruited to the study in pregnancy were still participating in the research. Those who remained in the study did not differ from those who were lost except for a slight shortfall in single and teenage mothers.

As part of the ALSPAC study, all mothers or primary caregivers were asked to complete the Pre-School Activities Inventory (Golombok & Rust, 1993a, 1993b) when the ALSAC child was age 3 years. This is the first general population data set to include a measure of childhood gender development. A particular advantage of the PSAI with respect to the present study is that, in addition to its ability to show differences between the sexes, the PSAI was developed specifically to identify variations in gender role behavior within each sex allowing "masculine" and "feminine" boys and girls to be differentiated within a normal population sample of preschool children. Thus it is an ideal measure for the present purpose; that is, to examine relations between the presence of a sibling of the same or other sex and within-sex variability in gender role behavior.

The PSAI is a psychometrically constructed instrument that has been standardized on more than 2000 subjects, predominantly in the UK but also in the United States and The Netherlands. It contains 24 items and is divided into three sections: *toys* (7 items), *activities* (11 items), and *characteristics* (6 items). Each section has its own stem. For the *toy* items this is "Please answer the questions

according to how often the child played with the following toys during the past month," and an example item is "Jewellery." For *activities*, the stem is "Please answer the questions according to how often the child engaged in the following activities during the past month" and an example item is "Fighting." For characteristics, the stem "Please answer the questions according to how often the child showed the following characteristics" is used, and an example item is "Interest in snakes, spiders or insects." Respondents are required to answer on a 5-point scale from *Never* through *Hardly Ever, Sometimes*, and *Often* to *Very Often.* Split-half reliability is 0.88 ($N = 2330$), and test–retest reliability over a 1-year period is 0.64 ($N = 33$) (Golombok & Rust, 1993b). Reliabilities were calculated separately for each sex and then pooled. In the standardization sample, the mean PSAI score for boys was 61.66 ($N = 1166$, $SD = 9.40$) and for girls was 38.72 ($N = 926$, $SD = 9.66$). The inventory has been validated on boys and girls attending day care in 5 different centers. The inventory was completed by the mother while the day-care teachers rated the boys independently on a 6-point scale ranging from *much more boyish than average* to *much less boyish than average.* The same procedure was followed for girls, but with *girlish* substituted for *boyish.* For boys, the correlation between the inventory score and the teachers' ratings was .37 ($p < .01$), and for girls the correlation was .48 ($p < .001$), showing the inventory to be a valid measure of gender role.

RESULTS

For boys and girls separately, mean scores on the PSAI were compared for the three groups (one older brother, one older sister, and singletons) using one-way analyses of variance (ANOVAs). Both ANOVAs were significant (for boys, $F = 61.59$, $p < .001$; for girls, $F = 44.19$, $p < .001$), showing that the sex of an older sibling was associated with the sex-typed behavior of younger siblings. Scheffe tests demonstrated that all group comparisons were significant at the .001 level. Thus boys with older brothers, and girls with older sisters, were more sex-typed than were children with other-sex older siblings. Singleton children obtained scores between the two. The mean PSAI scores for the groups are shown in Table 1.

For both boys and girls, the mothers of the singleton children were, as expected, significantly younger than the mothers of two children (for boys, $F = 61.20$, $p < .001$; for girls, $F = 51.28$, $p < .001$). For boys, the mean age of the mothers was 27.2 years ($SD = 4.57$) for the singletons, 29.2 years ($SD = 4.04$) for the boys with an older brother, and 29.0 years ($SD = 4.11$) for the boys with an older sister. For girls, the mean age of the mothers was 27.2 years ($SD = 4.42$) for the singletons, 28.8 ($SD = 4.12$) for the girls with an older brother, and 29.0 years ($SD = 4.14$) for the girls with an older sister. The above analyses were repeated using age of mother as a covariate, and all group differences remained significant. For those groups with older siblings, the effect of the age of the sibling was also investigated using GLM ANOVA with two factors, sex of

TABLE 1
Means, Standard Deviations, *F* Values, and Significance Levels for PSAI Scores for Boys and Girls Who Are Singletons, Have One Older Brother, or Have One Older Sister[a]

	Older brother			Singleton			Older sister			
	N	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*F*
Boys	561	65.26	8.20	1707	62.52	8.44	582	59.75	8.42	61.59***
Girls	500	39.81	9.71	1665	36.50	9.08	582	34.52	8.83	44.19***

[a] High scores on the PSAI represent male sex typing.
*** Significant at the <.001 level.

sibling and age of sibling. No significant differences between ages of siblings were found for either boys or girls. Neither was there any significant interaction between age of sibling and older brother vs older sister. The mother's level of education was also examined. No significant group differences were identified. Thus, the relationships identified between the sex of the older sibling and the gender role behavior of younger siblings were not accounted for by the mother's age or educational level or by the age of the older sibling.

In order to investigate the processes associated with the above effects, that is, whether within-sex variation in PSAI scores reflects changes in masculine behavior, feminine behavior, or both, two subscales were constructed from the PSAI items. These were "PSAI-male," including all the male items (with high scores representing male sex- typing), and "PSAI-female," including all the female items (with high scores representing female sex typing). The internal consistencies (coefficient alpha) for these two scales were 0.72 for the PSAI-male scale and 0.73 for the PSAI-female scale. The subscale scores for the three groups of boys and girls appear in Table 2. For boys, the overall ANOVAs for each subscale were significant (PSAI-male, $F = 11.054$, $p < .001$; PSAI-female, $F = 79.26$, $p < .001$). Individual Scheffe tests for PSAI-male scores showed that boys with older brothers obtained higher scores than both singleton boys ($p < .001$) and boys with an older sister ($p < .02$). However, there was no significant difference between singleton boys and boys with an older sister. For PSAI-female scores, individual Scheffe tests showed all group comparisons to be statistically significant at the <.001 level. Thus, boys with older brothers appeared to be both more masculine and less feminine, suggesting both masculinization and defeminization, whereas boys with older sisters were more feminine but not less masculine, suggesting feminization but not demasculinization.

For girls, the overall ANOVAs for each subscale were again significant (PSAI-male, $F = 37.09$, $p < .001$; PSAI-female, $F = 10.38$, $p < .001$). For PSAI-male scores, individual Scheffe tests showed all group comparisons to be statistically significant at the <.001 level. Individual Scheffe tests for PSAI-female scores showed that girls with an older brother obtained lower scores than

TABLE 2
Means, Standard Deviations, *F* Values and Significance Levels for PSAI-Male and PSAI-Female Scores for Boys and Girls Who Are Singletons, Have One Older Brother, or Have One Older Sister[a]

	Older brother			Singleton			Older sister			
	N	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*F*
PSAI-male										
Boys	561	3.62	0.512	1707	3.50	0.517	582	3.53	0.534	11.05***
Girls	500	2.87	0.467	1665	2.71	0.471	582	2.61	0.485	37.09***
PSAI-female										
Boys	561	2.33	0.457	1707	2.42	0.474	582	2.66	0.491	79.26***
Girls	500	3.50	0.592	1665	3.60	0.537	582	3.65	0.484	10.38***

[a] High scores on the PSAI-male subscale represent male sex typing. High scores on the PSAI-female subscale represent female sex typing.

*** Significant at the <.001 level.

both singleton girls ($p < .002$) and girls with an older sister ($p < .001$). However, there was no significant difference between singleton girls and girls with an older sister. Thus, girls with older brothers appeared to be both more masculine and less feminine, showing masculinization and defeminization, whereas girls with older sisters were less masculine but not more feminine, showing demasculinization but not feminization.

DISCUSSION

The findings of this general population study of sibling pairs indicate that the sex of older siblings is associated with the gender role behavior of younger siblings; both boys with older brothers and girls with older sisters were more sex-typed than same-sex singletons who, in turn, were more sex-typed than children with other-sex siblings. It seems, therefore, that brothers and sisters play a role in the gender development of their younger siblings. These findings lend greater support to social learning and cognitive developmental explanations of sibling influence on gender role behavior than to the sibling differentiation perspective, which would predict that younger other-sex siblings would be more sex-typed than singletons of the same sex as themselves. Similarly, the findings for same-sex sibling dyads provide no support for the process of sibling differentiation.

A more detailed examination of the data showed that having an older brother was associated with more masculine behavior *and* less feminine behavior in both boys and girls, whereas boys with older sisters were more feminine but not less masculine and girls with older sisters were less masculine but not more feminine. Thus the presence of an older brother is associated with both masculinization and defeminization for boys and girls, whereas the presence of an older sister is

associated with feminization but not demasculinization in boys and demasculinization but not feminization in girls.

Why is it that older brothers seem to influence their younger siblings not only toward more masculine behavior but also to engage in less feminine behavior while older sisters do not reduce masculine behavior in their younger brothers or increase feminine behavior in their younger sisters? A possible explanation for the apparently greater influence of older brothers than older sisters on the gender role behavior of their younger siblings relates to prevailing cultural attitudes. Stereotypically male behaviors are more highly valued than female behaviors in our society, and it is more acceptable for girls to behave like boys than it is for boys to behave like girls (Golombok & Fivush, 1994). Moreover, it has been shown among school-age children that girls will imitate male role models to a greater extent than males will imitate female models (Bussey & Bandura, 1984, 1992). Thus girls and boys may be more influenced by an older brother than by an older sister because the activities of older brothers are held in higher regard than those of older sisters.

Differences in interactional style between boys and girls may also play a part. Boys are more concerned than girls with achieving dominance, whereas girls are more concerned than boys with maintaining relationships and reaching agreement (Maccoby, 1998; Maccoby & Jacklin, 1987). Older brothers, therefore, may exert more pressure on their younger siblings than older sisters, and older sisters may be more concerned than older brothers about avoiding conflict. As a result, older brothers may be more successful than older sisters at directing play toward their own preferred activities. Certainly, in studies of peer group relationships among preschool children, it has been shown that boys are less influenced by girls than girls are influenced by boys (Fagot, 1985; Jacklin & Maccoby, 1978; Serbin, Sprafkin, Elman, & Doyle, 1984).

These explanations of why older brothers appear to have a greater influence on their younger siblings than older sisters are clearly speculative and demand further study. There are many other possibilities including girls' greater sensitivity to younger children, causing them to be less likely to impose their own views, and boys' greater discomfort with engaging in cross-gender activities.

To some extent, scores on sex-role scales are vulnerable to artifactual influences arising from the availability of sex-typed toys within the home. The presence of, for example, an elder brother in the household may mean that younger girls would be more likely to have guns and trucks to play with than singleton girls or girls with sisters only. Examination of the data in the present study showed that although such an effect appeared to be operating, it could not explain the findings. First, only 7 of the 24 items in the PSAI concern toys; second, the remaining items on activities and characteristics still showed the effect; and third, this phenomenon could not explain defeminization in boys and girls with older brothers or demasculinization in girls with older sisters.

It should be pointed out that the PSAI assesses parent rather than child ratings

of children's behavior and thus may to some extent be reflecting the adult's own gender role attitudes. As the sample comprised more than 10,000 children it was not possible to carry out direct observations of the children's gender role behavior. However, the scale has been validated against day-care teachers' ratings. It could also be argued that exposure to the sex-typed toys and activities of older siblings is of little developmental significance. However, it has been suggested that male and female toys are associated with the acquisition of different skills. Stereotypically masculine toys and activities encourage exploration of the physical world, whereas feminine toys and activities are more closely associated with social interaction (Block, 1983; Caldera, Huston, & O'Brien, 1989). Thus involvement with the sex-typed toy and activity preferences of an older sibling on a daily basis through play may have long-term effects on the gender development of a younger brother or sister.

The focus of the present study was on the influence of older brothers and sisters on their younger siblings as data on gender role behavior were available for the younger siblings only. However, it is important to point out that younger siblings may also influence the gender role behavior of their older brothers and sisters. Younger siblings, for example, may encourage their older siblings to play with their preferred toys and at their preferred games and activities. The family context may also be important. In a study of middle childhood, McHale, Crouter, and Tucker (1999) found fathers' gender role attitudes to be associated with the relationship between sisters' and brothers' gender role behavior.

The results of the present study relate to preschool children with one older sibling only. It should also be noted that the study's findings are limited to gender role behavior. Sibling influences on other aspects of gender development such as gender role knowledge, gender role attitudes, or interpersonal relationship styles may operate in different ways and at different periods of development. However, the findings have more general implications for research on gender development. At the very least, investigations of the processes involved in the development of sex-typed behavior should consider the potential effects of the presence of same- and other-sex siblings in the home. It should be emphasized that some of the effect sizes reported in the current study are not small. For example, the differences between girls and boys with older brothers versus older sisters are substantial ($d = 0.57$ for girls and $d = 0.66$ for boys). Thus it appears that older brothers and sisters have a marked influence on the gender development of their younger siblings.

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