

# How Lesbian and Heterosexual Parents Convey Attitudes about Gender to their Children: The Role of Gendered Environments

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**Abstract** We studied associations among parents' gender role attitudes, gender stereotyping in children's environments, and children's gender role attitudes and whether these associations were similar for families with lesbian and heterosexual parents. Fifty-seven 4- to 6-year-olds and 114 parents from the US participated. Parents completed self-report questionnaires and responded to interview questions. Researchers collected data regarding the child's environment and attitudes about gender. Results revealed that children with lesbian mothers had less stereotyped environments and less traditional attitudes. Parental attitudes were associated with stereotyping in children's environments and with children's attitudes about gender. Both for lesbian and heterosexual parents, the impact of parents' attitudes on children's attitudes was partially mediated by the nature of children's environments.

**Keywords** Children's gender development ·  
Lesbian parenting · Gender stereotypes

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## Introduction

Research has consistently found differences in the behavior of boys and girls, even from early in life (for reviews, see Beal 1994; Liben and Bigler 2002; Martin et al. 2002; Ruble et al. 2006). When investigating these early differences, researchers have focused on differential treatment of sons and daughters by parents (Leaper et al. 1998; Lytton and Romney 1991). This research has concentrated on areas such as parents' verbal interactions, stimulus of motor behavior, nurturance, discipline, and joint play. However, very little research has considered the physical environments that surround children as possible contributors to differences in boys' and girls' gender role development. These physical environments, which are at least in part provided by parents, may be informative indicators of parents' own attitudes, as well as real influences on children's gender role development. However, little is known about whether the physical environments in which children spend a considerable amount of time are: (1) reflections of parents' attitudes about gender, and (2) influences on children's own attitudes about gender. The extent to which the associations between parental attitudes, children's physical environments, and children's own attitudes differ as a function of parental sexual orientation has yet to be studied.

In the present study, we explore associations among parents' attitudes, parents' sexual orientation, the nature of the environments they create for children, and children's own attitudes about gender. We propose that parental attitudes about gender will be related both to children's physical environments and to children's own attitudes about gender. We hypothesize these associations will be similar in families with heterosexual parents and those with lesbian parents.

## Children's Attitudes about Gender

The process through which children develop gender roles is well underway during the preschool years. According to gender schema theory (Martin 1993), as children begin to label their own genders, they begin organizing their experiences into gender schemas (masculine and feminine categories). It is through these gender schemas that children view the world and sort information. During this age period, children tend to be relatively rigid in their attitudes about gender. As discussed in detail below, there are many environmental influences on children's attitudes about gender, including their physical surroundings and their parents' own attitudes about children's gender-related behavior.

## Children's Physical Environments

The family represents a particularly important context in which gender socialization takes place (Leaper 2002). One way that parents may play an important role in their children's gender development is by structuring children's environments. Rheingold and Cook (1975) suggested that the ways in which parents furnished their children's bedrooms convey information to their children about what is appropriate for boys and girls. In fact, they used the furnishings of children's bedrooms as indications of parental attitudes about gender (Rheingold and Cook 1975). However, no studies have actually measured the relation between parents' gender role attitudes and children's physical environments. This study will add to the existing literature by assessing whether parents' attitudes about children's gender roles are related to the gender-stereotyped nature of their children's bedrooms.

Although little is known about the ways in which parents' attitudes are related to children's physical environments, there has been some research on children's immediate physical surroundings. Rheingold and Cook (1975) studied the toys and décor of the bedrooms of 96 upper middle class infants and young children, and reported substantial differences between the bedrooms of boys and girls. Boys' bedrooms contained more types of toys overall, and specifically, more sports equipment, vehicles, toy animals, machines, and military toys. In general, their bedrooms were likely to be decorated with some kind of animal theme. Girls' bedrooms, on the other hand, contained more dolls, doll accessories and domestic toys. Their bedrooms were often decorated with floral designs, lace and ruffles. Pomerleau et al. (1990) reported a comparable study that involved families from a broader range of socioeconomic backgrounds and described results similar to those of Rheingold and Cook. In short, the physical environments of boys and girls seem to vary in accordance with traditional sex-role stereotypes.

Given that environments vary as a function of children's gender, what impact might this have on children's development? The social cognitive theory of gender development (Bussey and Bandura 1999) suggests that as children interact with their environment they build feelings of efficacy for the tasks they perform. As children play with the different toys they are offered, they build efficacy for skills associated with these toys. Pomerleau et al. (1990) suggested that repetitive play with objects promotes differential skills and behaviors in boys and girls; for instance, they suggested that girls who play with dolls practice different skills than boys who play with trucks. According to Block (1983), masculine toys encourage manipulation and offer the opportunity to invent; whereas feminine toys promote imitation and are typically used in close proximity to a caretaker. Consistent with such views, Liss (1983) found that among kindergarten children, boys' toys promoted motor activity, whereas girls' toys fostered nurturing behavior, social proximity and role playing. In addition, different types of toys may promote different types of play interactions. Caldera et al. (1989) found that regardless of the parent's or the child's gender, children who played with feminine toys asked more questions and stayed closer to caregivers than did those who played with masculine toys. If children are offered only gender appropriate materials in their environment, boys and girls will develop feeling of efficacy for different skills and tasks, and indeed Bussey and Bandura found this to be true. Feelings of efficacy for a task increase effort and perseverance while attempting the task and may lead to more feeling of efficacy for those who succeed. In addition, feelings of efficacy for an activity heighten interest in and selection of the activity in the future. Thus, over time, when children select toys themselves or request toys that are gender appropriate they may be responding to feelings of efficacy created by early play with gender-typed toys.

In short, existing research suggests that boys and girls are surrounded by physical environments that differ from one another in predictable ways. Consistent with expectations based on social cognitive theory (Bussey and Bandura 1999), these different environments may promote different kinds of skills and different types of knowledge in boys and girls. Environments that are highly stereotyped may also contribute to an increased salience of gender in the lives of children. Therefore, the characteristics of children's physical environments may contribute to the process of the differential socialization of boys and girls. In this study, we explore questions about the association between the gender stereotypicality of children's bedrooms and their own attitudes about gender roles, as well as about whether the characteristics of children's bedrooms mediate the association between parents' and children's gender role attitudes.

### Parental Attitudes about Children's Gender-related Behavior

Because parents are at least in part responsible for structuring their children's home environments, it is important to consider parental contributions to this process. Robinson and Morris (1986) collected data on the types of Christmas gifts that parents bought for their 2- to 6-year-old children and whether or not the toys had been requested by children. The results of this study revealed that about 50% of the toys purchased by parents were requested by children. Of those that were requested, 63% were gender-stereotyped. Of those toys that were not requested, 37% were gender-stereotyped. The remainder were almost all neutral toys; only 4% were cross sex-typed. Rarely do parents buy toys for their children that would challenge the boundaries of traditional sex-roles. Whether or not parents consider their children's requests when buying toys, it is important to note that parents do in fact have the ultimate authority. Rheingold and Cook (1975) state, "children so young may indeed express their preferences and wishes, but it is the parents...who decide which toy to buy or to place in the child's room (if a gift from others), as well as the kinds of curtains, pictures, etc., that furnish the room" (p. 459).

If, as Rheingold and Cook (1975) have suggested, the furnishings in children's bedrooms are influenced by parents' attitudes, then it is important to consider the role of these attitudes. Social cognitive theory (Bussey and Bandura 1999) suggests that parents' attitudes about gender may be transmitted to children in a variety of ways, including modeling gender-typed appropriate behavior, reacting to children's gender-typed behavior, and directly instructing children as to what is appropriate. Children's physical environments provide opportunities for the transmission of gender-role attitudes through all of the aforementioned modes. Parents can model behavior through play with gender-specific toys, they can respond to the child's own play, and they can instruct children as to which toys are or are not appropriate for play. Therefore, children's physical surroundings provide a wealth of opportunities for parents to transmit their own beliefs about gender to their children.

### Parental Sexual Orientation

The study of parents' influence on gender development needs to consider contemporary changes in family structures (Bussey and Bandura 1999). A substantial number of American children are being reared in families headed by lesbian women and gay men (Patterson and Friel 2000). As Bussey and Bandura suggest, the types of models available to children will be different in diverse types of families. For example, in two parent lesbian-headed families, women do

most, if not all, of the modeling in the home. Research has shown that in families with heterosexual parents, mothers and fathers have different attitudes about children's gender role development, with fathers typically exhibiting more traditional attitudes about gender (Fagot and Leinbach 1995; Langlois and Downs 1980; Ruble et al. 2006). Therefore, in families with two mothers, modeling and direct teaching may reflect more liberal attitudes than in families that include resident fathers.

Although research on lesbian mothers' attitudes about children's gender-related behavior has been rather sparse (Patterson 2006; Patterson and Sutfin 2004), results of a few studies suggest that lesbian mothers may have more liberal attitudes about children's gender-related behavior than do heterosexual mothers (Green et al. 1986; Hoeffler 1981). For instance, Green and his colleagues (1986) found that lesbian mothers were more encouraging of their daughters' (but not of their sons') play with toy trucks than were heterosexual mothers. Hoeffler (1981) found that although heterosexual mothers preferred their sons play more with masculine toys than did their daughters, and that their daughters play more with feminine toys than did their sons, lesbian mothers did not report such preferences. These findings suggest that lesbian mothers may have more liberal attitudes about children's gender-related behavior than do heterosexual mothers. However, as Stacey and Biblarz (2001) noted, "differences in parental concern with children's acquisition of gender and in parenting practices that do or do not emphasize conformity to sex-typed gender norms are understudied and underanalyzed" (p. 172). If there are differences between lesbian and heterosexual parents in their attitudes towards children's gender-related behavior, these may have an impact on children's environments, as well as on children's attitudes about gender.

Research on children born or adopted to lesbian parents shows that these children develop normally, showing no particular behavioral, social, or emotional problems (for a review see Patterson and Sutfin 2004). Research on these children also reveals that they show typical development of gender identity, as well as of sex-typed behaviors and preferences (Patterson 2000; Perrin 2002; Tasker and Golombok 1997).

Although the research is limited, it suggests that lesbian mothers may have more liberal attitudes about children's gender-related behaviors than heterosexual parents. If, as Rheingold and Cook (1975) proposed, parents' attitudes are reflected in the toys and décor of children's bedrooms, then one might expect the bedrooms of children with lesbian parents to differ in predictable ways from those of children with heterosexual parents. If liberal attitudes are related to less stereotyped physical environments, then children of lesbian mothers may be exposed to less stereotyped physical surroundings, on average, than are other children.

If this exposure is related to children's own ideas about gender, then their gender role development may be less tied to traditional gender role stereotypes. The process through which parents' attitudes are associated with the nature of children's and children's own attitudes is likely similar for both types of families.

In this study, we assessed the extent to which parental sexual orientation and parental attitudes about children's gender-related behavior were associated with sex-role stereotyping in children's environments and with children's attitudes about gender. Based on results of earlier studies, we hypothesized that: (1) children's bedrooms would be stereotyped according to their gender (Pomerleau et al. 1990; Rheingold and Cook 1975); (2) lesbian mothers would hold more liberal attitudes about children's gender-related behavior than would heterosexual parents (Green et al. 1986), (3) parents' attitudes about children's gender-related behavior would be associated with the kinds of environments that they provided for their children. Specifically, we expected that parents who reported more conservative attitudes about children's gender-related behavior would provide their children with environments that were more stereotyped according to traditional gender roles. Our fourth hypothesis was that, consistent with social cognitive theory, children whose environments were decorated in highly stereotyped ways would hold more traditional views about gender. Our fifth hypothesis was that that parents' attitudes about children's gender-related behavior would be directly associated with their children's own attitudes about gender. Our sixth and final hypothesis was that parents' attitudes about children's gender would also exert influence on children's gender development indirectly through the level of stereotyping in children's bedrooms and that this relationship would be the same for both types of families.

To provide a unified test of all our expectations, while simultaneously controlling overall alpha levels, our principal data analyses used structural equations modeling procedures, as recommended by Judd and Kenny (1981). Using a mediation model, we first assessed the effect of parental attitudes on stereotypicality of children's bedrooms. Next, we assessed the effect of stereotypicality of children's bedrooms on children's attitudes about gender. Finally, we assessed whether stereotypicality of children's bedrooms mediates the relationship between parental attitudes and children's gender role attitudes.

## Method

### Participants

Fifty-seven 4- to 6-year-old children and their 114 parents participated in this research. The sample was drawn from the

Atlantic Coast Families Study, a study of two-parent heterosexual and lesbian couples rearing children who were either born to or adopted early in life into their current relationship. It included 29 families headed by lesbian couples (20 families with girls and 9 families with boys) and 28 families headed by heterosexual couples (15 families with girls and 13 families with boys). Participating families were recruited via announcements at childcare centers, parenting groups, religious organizations, and through word of mouth.

The overall Atlantic Coast Families Study sample was comprised of 66 families, but not all could be included in this current study. In four families, children shared a bedroom with a sibling of the other sex, so assessments of physical environments were confounded. In three homes, technical problems with our equipment resulted in low quality pictures and precluded adequate assessments. Two families did not consent to collection of the data relevant to this report. Without these families, the sample consisted of 57 families.

We considered the possibility that differences existed between families from the larger Atlantic Coast Families Study and families included in the sub-sample used in this study. We compared the two groups on household income, parental education, parents' age, parents' race, children's age, children's gender, children's race and whether or not the children had been adopted. Results revealed no significant differences between the two groups.

Demographic characteristics of the participating children and parents are shown in Table 1. As can be seen in Table 1, most children came from middle class backgrounds. Most parents were in their late 30s or 40s, were well-educated and almost all were European American. Lesbian parents were 2–3 years older, on average, than heterosexual parents,  $t(55) = -2.19$ ,  $p < .05$ , but otherwise the two groups were well-matched.

Children averaged 5 years, 3 months of age ( $SD = 10$  months), and there were no differences in this regard as a function of family type. Children of lesbian mothers were, however, more likely to be adopted,  $\chi^2(1, 57) = 10.46$ ,  $p < .05$ , and less likely to be European American,  $\chi^2(1, 57) = 13.53$ ,  $p < .05$  than children of heterosexual parents. Of the 29 children with lesbian parents, 14 were European American, 8 were Asian, 4 were biracial, and 3 were of another racial category. Of the 28 children of heterosexual parents, 26 were European American and 2 were Asian. The greater likelihood of adoption among lesbian versus heterosexual parents is consistent with what is known about patterns of family formation in the two groups (Morris et al. 2002).

### Procedure

Two trained researchers visited each family's home. Parents were asked to complete several questionnaires and to

**Table 1** Means and standard deviations for sample demographics.

Demographic variables	Lesbian couples	Heterosexual couples	Lesbian couples vs. heterosexual couples
Household income	6.8 (.50)	6.8 (.65)	n.s.
Parents' education	5.2 (.95)	5.0 (1.05)	n.s.
Parents' race <sup>a</sup>			
Percent European American	95%	96%	n.s.
Parents' age	42.9 (4.9)	40.2 (4.4)	$t(55)=-2.19, p<.05$
Child's age (in months)	62.7 (9.8)	62.7 (10.8)	n.s.
Child's gender			
Boys	9	13	n.s.
Girls	20	15	
Child's race			
Percent European American	48%	93%	$\chi^2(1)=13.53, p<.05$
Child's biological/adopted status			
Percent adopted	55%	17%	$\chi^2(1)=10.46, p<.05$

Standard deviations are given in parentheses.

Parents' education: 1, no high school; 2, high school diploma; 3, some college; 4, college degree; 5, some graduate school; 6, graduate degree. Household income: 1, less than \$10,000; 2, \$10,000–\$20,000; 3, \$20,000–\$30,000; 4, \$30,000–\$40,000; 5, \$40,000–\$50,000; 6, \$50,000–\$60,000; 7, greater than \$60,000.

<sup>a</sup>Chi Square test of independence could not be computed for this variable because of small cell sizes. A Fisher's Exact test was used instead.

respond to interview questions posed by one researcher, while the other researcher collected data regarding the child's environment and indices of children's gender development.

## Measures

### Parental Attitudes

To assess parents' attitudes about children's gender-related behavior, each parent was asked to complete the Sex-Biased Parenting Sub-Scale of the Parenting Ideas Questionnaire (PIQ) (Gervai et al. 1995). This is an 18-item measure that consists of statements to which parents must indicate their degree of agreement on a 5-point scale from 0 (strongly disagree) to 4 (strongly agree). Higher scores indicate more conservative viewpoints on gender-related behavior. Sample items include "rough and tumble play is more acceptable to me in boys than in girls" and "it is more acceptable to me for girls to be shy than for boys." Both parents completed the PIQ, except for three families headed by heterosexual couples for which only the mother's scores were available.

Scores on the PIQ were analyzed with the rating scale model (RSM; Andrich 1978), an Item Response Theory (IRT) model in the Rasch family (Rasch 1960/1980; Rost 2001), using the FACETS computer program (Linacre 2000). The RSM is described in detail in the Appendix. We used RSM rather than simple sums of ratings because of the desirable measurement properties of the RSM, including adjustment for missing data (Andrich 1978). The model-based reliability of the PIQ was .93.

### Children's Physical Environments

In order to assess the gender stereotypicality of children's physical environments, color photographs were taken of children's bedrooms and of the toys within their rooms. Children's bedrooms were chosen as the unit of analysis to provide consistency across the sample. In order to capture the overall look of each room, pictures were taken from all possible angles. No pictures were taken of any children or children's clothing. Any identifying information, such as children's names or family photos, was removed from the pictures using computer software. Depending on the size and contents of the bedroom, between 6 and 12 photographs were taken of each child's bedroom. On average, nine or ten pictures were taken of each bedroom. Each participating child had her or his own bedroom or shared with a sibling of the same gender.

After the home visit, photographs of each child's bedroom were compiled into slide shows, one for each child's bedroom. Eighty college students, from Introductory Psychology courses, blind to children's gender and to parental sexual orientation, participated as raters in this phase of the study. There were 34 male raters and 46 female raters with a mean age of 19.26 (SD=1.33) years.

Due to constraints of time, raters were not able to rate every bedroom; instead, each rater was randomly assigned to rate 10–12 bedrooms. The raters saw each picture of the assigned rooms once, for eight seconds, and all pictures of a particular bedroom were shown consecutively. After seeing all the pictures of a child's bedroom, each rater completed a rating form for that particular bedroom. Four items were used as indicators of room stereotypicality. First, raters

identified the gender of the child living in that room. This question was scored 1 if the rater was correct and 0 if the rater was incorrect. Raters were also asked to identify both how masculine the room appeared and how feminine the room appeared, using a 5-point scale ranging from 1 (not at all) to 5 (extremely). Masculinity scores were reverse scored for female children, and femininity scores were reverse scored for male children, in both cases so that higher scores indicated more gender stereotypicality. Finally, some raters also rated the rooms on overall gender stereotypicality using a 5-point rating scale ranging from 1 (not at all stereotyped) to 5 (extremely stereotyped). This question was not originally part of the rating form, but was added about half way through the study. Thus, ratings for half the raters were considered missing data. Therefore, the four items used for stereotypicality of bedroom décor were: gender of child living in the room, masculinity rating, femininity rating, and stereotypicality rating.

The raters also responded to two additional questions. Raters were asked to determine the quality of the pictures on a 5-point scale from 1 (extremely poor quality) to 5 (excellent quality), and to indicate to what degree, on a 5-point scale, the number and quality of the pictures provided an adequate overall impression of the child's room from 1 (inadequate) to 5 (very adequate). These two questions were added together to form an overall quality score. The mean overall quality score was 8.25 (SD=1.03) out of a possible score of 10. Any bedroom that was rated as being two standard deviations below the mean on this combined measure of quality was excluded from further analysis. As explained above, data for three children's bedrooms were excluded based on this criterion.

In order to guarantee linking among the bedrooms and raters (Kolen and Brennan 1995; Smith and Wilk 1996), four bedrooms were rated by all 80 raters. The bedrooms were divided into four groups: lesbian parents with daughters, lesbian parents with sons, heterosexual parents with daughters, heterosexual parents with sons. One bedroom was chosen at random from each of the groups to form the linking set. The data on children's physical environments were analyzed using an extension of the RSM, the Multifaceted Rasch Model (MRM; Linacre 1989). The MRM allows for multiple facets of measurement, in this case adding rater severity effects to the standard trait level (i.e., stereotypicality of the physical environment) and item rating scale effects. Because each item had a different rating scale, we also allowed rating scale effects to differ across items (Masters 1982). Typically, when raters are used to measure a psychological trait, rater effects are assessed with some form of interrater reliability, with the goal of maximizing the reliability, or equivalently, the interchangeability of the raters. With the MRM, reliability can be estimated directly, and raters can

differ in severity, so that interchangeability is not a concern.

In addition to the room stereotypicality ratings, raters also completed a demographic questionnaire, as well as the PIQ (see above). They were also asked to indicate their previous experience with children by indicating in which, if any, of nine child-related activities they had participated. The activities included helping care for a sibling, baby-sitting, and coaching children's sports teams. These measures were included to evaluate whether students' ratings were associated with demographic variables, experience with children, or with their own attitudes about children's gender-related behavior.

### *Children's Gender Role Attitudes*

In order to measure children's attitudes about gender, we used the Gender Transgressions Measure (Smetana 1986), which assesses the seriousness that children attribute to gender transgressions committed by other children. Children were shown pictures of other children their age involved in gender transgressions. Children were shown two examples of gender transgressions committed by boys (a boy with fingernail polish and a boy playing with a doll) and two examples of gender transgression committed by girls (a girl playing football and a girl with very short hair). Children were asked several questions about the transgressions committed in each of the photographs. Children were first asked if it is alright for the child to be committing the gender transgression (for example, is it alright for girls to play football?). If the child answered in the affirmative, they were next asked if it was bad. Again, if they answered in the affirmative, they were asked how bad, a little bad or very bad. If the child answered any of the questions in the negative, the interviewer went on to the next item. Scores ranged from 0 to 3, with higher scores signifying the child found the transgression to be more serious, thus indicating more traditional gender attitudes. We combined the four items using confirmatory factor analytic techniques with a single latent variable, gender attitudes, reflecting a child's traditional gender attitudes.

### *Statistical Models*

To examine the role of stereotypicality of bedroom décor as a mediator of the relation between parental attitudes and children's attitudes, we used a structural equation modeling approach, based on the recommendations of Judd and Kenny (1981). We began by testing the total effect (i.e., without the mediator) of parental attitudes on children's attitudes. Then we added stereotypicality of bedroom decor as a mediator, and examined the direct effect of parental

attitudes on children's attitudes, as well as the indirect effect through stereotypicality of bedroom decor. Although our sample size was relatively small for typical recommendations with structural equation models, the model we examined was not complex. Simulations of the model, supported by some prior research (Hoogland and Boomsma 1998), indicated that the type I error rate (i.e., alpha level) was maintained despite the sample size. Details on the simulations are available from the authors. Furthermore, as described below, all effects in the mediation model were significantly different from 0, indicating that we had sufficient power to examine our research questions.

## Results

We present results under four major headings. First, we present results for parental attitudes. Next we describe findings for stereotypicality of children's environments. A third section presents the findings for children's attitudes. In the final section, we present results from the mediation analyses that are intended to draw together data from each of the three domains into a single overall model.

### Parental Attitudes

Fit of the PIQ data to the RSM was adequate; fit statistics were generally within the acceptable range of .6–1.4 (Wright and Linacre 1994). Eliminating items that had fit statistics outside the bounds had no appreciable effect on the results, so we included all items. The parental attitudes associated with each child as estimated using the RSM were used in all further analyses. Model-based reliability of parental attitudes from the PIQ was .93. Means and standard deviations can be found in Table 2.

To assess the second hypothesis, that lesbians would report more liberal attitudes than did heterosexual parents, we examined differences in parental attitudes across parental sexual orientation, parental identity (lesbians:

genetic/legally adoptive mother, non-genetic/non-adoptive mother; heterosexuals: mother, father), and child's gender, utilizing the anchoring procedure of Linacre (2004), which allows for estimation of group effects within the RSM, analogous to an analysis of variance. We report standardized differences that are analogous to the  $d$  from Cohen (1988). As expected, lesbian parents tended to be more liberal than heterosexual parents ( $d=.75$ ,  $\chi^2=146$ ,  $df=1$ ,  $p<.01$ ). Unexpectedly, parental identity also affected parental attitudes ( $\chi^2=199$ ,  $df=3$ ,  $p<.01$ ), even after adjusting for differences due to sexual orientation ( $\chi^2=62$ ,  $df=3$ ,  $p<.01$ ). Heterosexual mothers and lesbian genetic/legally adoptive mothers were more liberal than heterosexual fathers and lesbian non-genetic/non-adoptive mothers ( $d=.38$ ,  $\chi^2=59$ ,  $df=1$ ,  $p<.01$ ). In addition, parents of female children reported more liberal attitudes than did those with male children ( $d=.41$ ,  $\chi^2=44$ ,  $df=1$ ,  $p<.01$ ). None of the interactions were significant. Thus, the main result was that, as expected, lesbian parents reported more liberal attitudes than did heterosexual parents.

### Stereotypicality of Children's Environments

The data for stereotypicality of children's environments generally fit the multifaceted Rasch model (MRM) well, with almost all items, raters and bedrooms within the .6–1.4 bounds. Deleting misfitting raters had no effect on the results, so all raters were included. Raters differed in severity, meaning some raters were more likely than others to rate all rooms as being more stereotyped (test of equality of all raters:  $\chi^2=151$ ,  $df=78$ ,  $p<.01$ ); the standard deviation of rater severity was .32 compared to an average standard error of .24. Therefore, it was important to adjust for differential rater effects by using the MRM. Rater severity was not significantly correlated with rater's age, race, attitudes towards children's gender-related behavior, or experience with children. Overall, raters were accurate in their judgments of the gender of the child who lived in each room ( $M=91.4\%$ ,  $SD=16.63$ ), suggesting that children's environments were highly gender stereotyped, as predicted

**Table 2** Means and standard deviations for variables as a function of parental sexual orientation and children's gender.

Variable	Lesbian parents		Heterosexual parents	
	Boys	Girls	Boys	Girls
Children's average attitudes about gender transgressions <sup>a</sup>	.58 (.94)	.21 (.49)	1.23 (1.02)	.58 (.78)
Stereotypicality of bedroom décor <sup>b</sup>	10.65 (2.16)	8.84 (1.81)	11.06 (1.71)	10.26 (1.74)
Average parental attitudes about gender <sup>c</sup>	9.49 (2.04)	9.14 (2.23)	11.17 (1.25)	10.44 (1.68)

Standard deviations are given in parentheses beside means.

<sup>a</sup> Higher numbers indicate more traditional gender development.

<sup>b</sup> Higher numbers indicate more stereotypical bedroom décor, on a mean = 10, SD = 2 scale.

<sup>c</sup> Higher numbers indicate more traditional gender attitudes, on a mean = 10, SD = 2 scale.

in the first hypothesis. Means and standard deviations can be found in Table 2.

To test the third hypothesis, that parents' attitudes about children's gender-related behavior would be associated with the kinds of environments they provided for their children, we assessed stereotypicality of children's environments as estimated with the MRM in all further analyses. Model-based reliability of these stereotypicality scores was .93. Stereotypicality of bedroom décor was associated with both parental sexual orientation and gender of the child. As expected, children of heterosexual parents had more strongly stereotyped bedrooms than did children of lesbian parents ( $d=.45$ ,  $\chi^2=63$ ,  $df=1$ ,  $p<.01$ ). Male children also had more strongly stereotyped bedrooms than did female children ( $d=.59$ ,  $\chi^2=109$ ,  $df=1$ ,  $p<.01$ ). Quality of the pictures was associated with stereotypicality ( $r=.59$ ,  $p<.01$ ). However, neither sexual orientation nor child gender was related to picture quality, indicating that picture quality did not confound group differences in room stereotypicality. Thus, the main result was that bedrooms of children with heterosexual parents were decorated in more gender stereotypic ways than were those of children with lesbian parents.

#### Children's Gender Attitudes

We measured children's gender attitudes using confirmatory factor analysis in the computer program AMOS 5.0 (Arbuckle 2003). Fit of a single factor model was very good ( $X^2=.08$ ,  $df=2$ ,  $p=.69$ ). The boy playing with the doll was the strongest indicator of gender attitudes (standardized factor loading:  $\lambda=.95$ ), followed by the boy with nail polish on his fingernails ( $\lambda=.74$ ), the girl with short hair ( $\lambda=.69$ ), and the girl playing with the football ( $\lambda=.46$ ). Higher scores indicated more traditional attitudes. Means and standard deviations can be found in Table 2.

Children's attitudes about gender differed both as a function of parental sexual orientation and child's gender. We found that children of lesbian mothers showed less traditional gender attitudes than did children of heterosexual parents ( $d=-.72$ ,  $p<.01$ ). We also found that boys showed more traditional gender attitudes than did girls ( $d=.67$ ,  $p<.01$ ). Thus, the main result was that, as expected, children of heterosexual parents reported more traditional attitudes about gender transgressions than did children of lesbian parents.

#### Mediation Model

We also tested our fourth, fifth, and sixth hypotheses using a mediation model. The fourth hypothesis suggested that the stereotypicality of children's environments would be associated with children's own attitudes about gender. The fifth hypothesis predicted that parents' attitudes would be

directly related to children's own attitudes about gender and the sixth hypothesis predicted that associations between parent and child attitudes would be mediated by stereotypicality of children's bedroom décor. We found that the total effect of parental attitudes predicting children's gender attitudes was significant ( $\beta=.36$ ,  $p<.01$ ,  $R^2=.13$ ). The regression coefficients from parental attitudes to stereotypicality of bedroom décor ( $\beta=.28$ ,  $p<.01$ ) and from stereotypicality to gender attitudes ( $\beta=.28$ ,  $p<.05$ ) (4th hypothesis) were also significant. Thus, based on the Judd and Kenny (1981) mediation approach, there was at least partial mediation. The direct mediated effect of parental attitudes on children's gender attitudes remained significant ( $\beta=.30$ ,  $p<.05$ , partial  $R^2=.09$ ), indicating that stereotypicality of bedroom décor did not fully mediate the relation. The partial  $R^2$  of the mediator was .08, so the mediator accounted for  $(.13-.09)/.13=34\%$  of the effect of parental attitudes on traditional gender attitudes. We conclude that associations between parent and child attitudes were partially mediated by stereotypicality of bedroom décor (sixth hypothesis). These findings are displayed in Fig. 1.

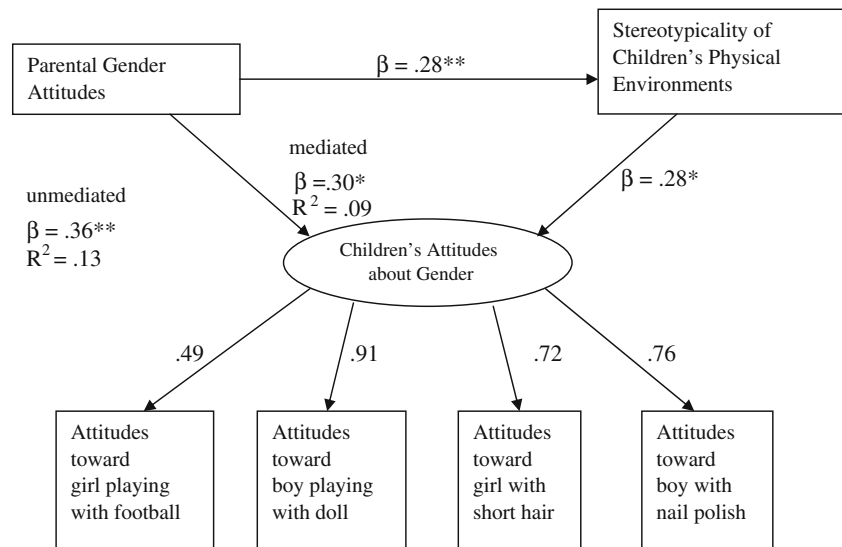
As part of our sixth hypothesis, we also tested whether the nature of the mediational relationship differed depending on parental sexual orientation. We tested this using a multigroup structural equation model, with parental sexual orientation defining the groups. We first constrained all factor loadings on the gender attitudes factor to be equal across groups in order to test factorial invariance. Results indicated that there was no evidence for group differences in the way gender attitudes was measured ( $\Delta\chi^2=7$ ,  $\Delta df=3$ ,  $p=.08$ ). Furthermore, constraining all three regression coefficients in the mediation model to be equal in both groups did not reduce fit ( $\Delta\chi^2=2$ ,  $\Delta df=3$ ,  $p=.56$ ). This suggests that, although lesbian mothers and their children had less traditional attitudes about gender and their children had less gender stereotyped rooms, the relations among these variables and the mediational structure were not different between families. That is, we conclude that there was no evidence that the effects of parental attitudes on traditional gender attitudes, both mediated and unmediated, are different for families headed by heterosexual versus lesbian parents.

#### Discussion

The results of our study indicate that, even many years after the seminal investigation of Rheingold and Cook (1975), gender stereotyping remains an important characteristic of children's environments. Our results add to those of earlier research by showing that lesbian parents held less traditional views about gender-related issues than did hetero-



**Fig. 1** Parents' gender attitudes as a predictor of gender stereotyping in children's physical environments and children's attitudes about gender: Pictorial representation of the mediation model.



Note. Residuals and uniquenesses are suppressed. Betas are standardized regression coefficients. \* $p < .05$ ; \*\* $p < .01$ .

sexual parents, and were less likely than heterosexual parents to create gender-stereotyped physical environments for their children. We also found that the association between parental attitudes about gender, on the one hand, and children's attitudes about gender, on the other, was partially mediated by the degree of gender stereotyping in children's physical environments. Our data suggests that this was true for both types of families. Regardless of sexual orientation, parents who held liberal attitudes about children's gender-related behavior were less likely to provide their children with physical environments that were highly gender stereotyped and had children whose own attitudes about gender development were less stereotyped as well.

As did Rheingold and Cook (1975), we found that the great majority of children in our sample inhabited physical environments that had been decorated in ways that were consistent with traditional gender roles. For instance, in our sample, most boys lived in bedrooms that were decorated in primary colors, whereas most girls lived in bedrooms that were done in pastels. As a result, the gender of the child who inhabited a given space was generally clear from photographs of that environment, and the accuracy of untrained college students in making these judgments was very high.

We also found, however, that lesbian mothers were less likely than heterosexual parents to create highly gender-stereotyped physical environments for their children. Even though many gender-stereotypic features (e.g., color schemes) appeared in bedrooms of children with lesbian as well as heterosexual parents, the environments fashioned for their children by lesbian mothers were less clearly dominated by gender-related decorations. Thus, heterosex-

ual parents were more likely than lesbian parents to provide their children with physical surroundings that drew attention to the child's gender.

In our study, lesbian mothers not only provided less gender-stereotyped physical environments for their children, but they also reported less conservative attitudes about children's gender-related behavior than did heterosexual parents. Consistent with results from earlier research on divorced lesbian mothers (Patterson and Sutfin 2004), lesbian mothers in the present sample were more likely than heterosexual parents to agree that it is just as acceptable for boys to be shy as for girls, or that active play is just as acceptable for girls as for boys. At the same time, although group differences as a function of sexual orientation were statistically significant, and although both heterosexual and lesbian women's attitudes were less conservative than those of heterosexual men, it is also important to note that there was considerable overlap between attitudes of heterosexual and lesbian women.

We found that parents' gender role attitudes were significantly associated with children's gender role attitudes, and this linkage was partially mediated by the gender stereotypicality of children's physical environments. These associations emerged for both types of families. Thus, parental attitudes were a key variable accounting for variations in children's gender role attitudes and in the qualities of children's physical environments. This finding is consistent with a variety of related results that point to the importance of attitudes, behaviors, and relationships in the family of origin, rather than to structural features of the family such as parental sexual orientation, as the crucial

factors that influence children's development (Chan et al. 1998a,b; Patterson 2006).

Without question, the most powerful forces studied here are those that push young children in the direction of traditional gender roles (Ruble et al. 2006). Regardless of parental attitudes or parental sexual orientation, children's rooms were so clearly decorated according to gender stereotypes that college student raters were able to identify the gender of the child living in a bedroom with more than 90% accuracy, simply by glancing at snapshots of the bedroom. Thus, children in our sample, like middle class children across the country, woke up each morning and went to sleep each night in bedrooms that served to remind them of their gender and of the roles customarily associated with their gender.

The different physical environments in which boys and girls are living may contribute to the process of gender differentiation, and in this way influence future choices (Pomerleau et al. 1990). As suggested by Bussey and Bandura (1999), children build efficacy for the tasks in which they are involved and this efficacy may lead to later preferences for such tasks. Children practice culturally-prescribed adult roles and behaviors through their play, and thus, their play with different types of toys may give rise to different types of adult behavior (Bussey and Bandura 1999; Caldera et al. 1989; Marcon and Freeman 1996). For instance, Hiss (1992) reported that women who became corporate executives in adulthood were more likely than women in other occupations to recall having played with more masculine toys as children. Coats and Overman (1992) found that women who pursued nontraditional occupations as adults recalled having played more with opposite-sex playmates as children. Therefore, play with exclusively gender-stereotypic toys may limit the development of skills, interests, and efficacy, and may ultimately lead to a narrowing of occupational choices. Thus, many facets of children's physical environments would appear to push children's gender development in conventional directions.

Some limitations of our study should be acknowledged. We studied a relatively homogeneous sample of lesbian and heterosexual couples and their children, living in a single geographic area of the United States. The relatively high SES of this sample should also be noted. In lower-income families, children would be less likely to have their own bedrooms and may share with an opposite-sex sibling; therefore the relationships studied in this investigation may not apply to children living with opposite-sex siblings. These children may routinely be exposed to cross-sex typed toys and may have less stereotyped attitudes about gender. Future research should explore this possibility. Only one aspect of the physical environment was studied intensively here and not every aspect of children's gender development was investigated. In addition, our cross-sectional design did

not allow us to track changes over time. Though our results indicated that parents' attitudes were more important than sexual orientation, it is important to note that this finding is based on a small sample and should be viewed as preliminary. Additionally, it would also be interesting to include a sample of gay fathers in future research. This would allow a better understanding of how parental sexual orientation and attitudes are related to children's environments and gender development. Future research might explore the issues studied here in a greater variety of settings and over greater periods of time. The results of this study showed that children's physical environments may be important influences on children's own attitudes about gender. These physical environments were associated with parents' own attitudes about gender and they also partially mediated the relationship between parents' attitudes and children's own attitudes. In short, by structuring children's environments in gendered ways, both lesbian and heterosexual parents conveyed their attitudes about gender to their children.

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## Appendix

We analyzed some of our data with Item Response Theory (IRT) models. IRT is a set of models and associated statistical techniques for analyzing questionnaires, tests, and other instruments containing multiple items with ordered categorical data. IRT is often considered the dominant form of contemporary psychological measurement of latent traits (Embretson and Reise 2000). Despite the long history of IRT (Rasch 1960/1980; Lord and Novick 1968), its heavy use in such fields as educational testing and rehabilitation medicine, and its many theoretical and statistical advantages (Embretson 1996), the use of IRT in psychological research has been limited, especially in developmental psychology (although see, e.g., Wellman and Liu 2004). Therefore, we provide a brief introduction to IRT. More complete introductions are available (Bond and Fox 2001; Embretson and Reise 2000; Hambleton et al. 1991).

The most common IRT models have several features in common. First, there is an object of measurement, usually a person, with an unknown level of a single trait of interest, such as an ability or a psychological attribute. The trait level is usually symbolized by  $\theta$ . Second, there is an instrument of measurement, such as a questionnaire or raters, or both. The instrument of measurement is described

by one or more unknown parameters that reflect aspects of the instrument, such as item difficulty or rater severity, that affect the observed response. Finally, there is a model, that is, a functional form, relating the unknown trait level and instrument parameters to the probabilities of observed response (Embretson and Reise 2000, chs. 4 and 5). In practice, the observed responses are used, in the framework of the model, to estimate the unknown parameters, yielding estimates of the level of the trait for each person, as well as information on the functioning of the measurement instrument.

Consider, for example, the Rasch (1960/1980) model, which is the simplest IRT model, appropriate for tests or questionnaires with dichotomous item responses (e.g., correct/incorrect or endorsement/non-endorsement). Under the Rasch model, each item on the test can be described by a single parameter, item difficulty. The model is of logistic form:

$$P(X_{in} = 1) = \frac{\exp(\theta_n - \beta_i)}{1 + \exp(\theta_n - \beta_i)}$$

where  $P(X_{in}=1)$  is the probability of a correct response or endorsement of an item by person  $n$  on item  $i$ ,  $\theta_n$  is the trait level of person  $n$ , and  $\beta_i$  is the item difficulty of item  $i$  (i.e., difficulty of a correct response or of endorsement). Data from a test or questionnaire can be analyzed using the Rasch model, using any of several commercially available software packages (e.g., FACETS, Linacre 2000; Winsteps, Linacre and Wright 2003; ConQuest, Wu et al. 1998) to yield estimates of the trait level of each person and estimates of the difficulty of each item, as well as such information as the appropriateness of the Rasch model to describe the response process (i.e. fit of the model to the data).

In this paper, we employed two extended versions of the Rasch model that incorporate more complicated measurement instruments. First, we employed the rating scale model (RSM; Andrich 1978) to analyze data from the PIQ. The RSM allows for rating scale instruments, instead of just items with dichotomous outcomes as with the Rasch model. Under the RSM, all rating scales are assumed to have the same parameters. The formula for the model is:

$$P(X_{in} = x) = \frac{\exp\left(\sum_{k=0}^x [\theta_n - \beta_i - \tau_k]\right)}{\sum_{r=0}^m \exp\left(\sum_{k=0}^r [\theta_n - \beta_i - \tau_k]\right)}$$

where  $\sum_{k=0}^0 [\theta_n - \beta_i - \tau_k] = 0$ ,  $P(X_{in} = x)$  is the probability of a response in category  $x$  by person  $n$  on item  $i$ , the set of  $\tau_k$ s are category threshold parameters (i.e., rating scale effects; similar to item difficulty, but indicative of the difficulty of being in the higher of two adjacent categories; see Andrich 1998), and all other parameters have the same interpretation as

with the Rasch model. For the PIQ,  $\theta_n$  is interpreted as the strength of parental traditional gender attitudes.

Second, because data for the stereotypicality of bedroom décor involved not just multiple items, but also multiple raters, we used the multifaceted Rasch model (MRM; Linacre 1989) incorporating the partial credit model (Masters 1982), which allows for multiple independent facets of measurement beyond person trait level and item difficulty. In our case, we employed three facets of measurement: person trait level, rating scale effects, and rater severity. The version of the MRM used in this article is:

$$P(X_{ijn} = x) = \frac{\exp\left(\sum_{k=0}^x \theta_n - \gamma_j - \tau_{ik}\right)}{\sum_{r=0}^m \exp\left(\sum_{k=0}^r \theta_n - \gamma_j - \tau_{ik}\right)}$$

where  $\gamma_j$  is the severity of rater  $j$ , and the  $\beta_i$ s and  $\tau_{ik}$ s are collapsed into a set of item-specific rating scale thresholds,  $\tau_{ik}$ .

The fit of IRT models is an important concern, and can be assessed in many ways. With the RSM and MRM (as well as other models in the Rasch family, Rost 2001), model fit is generally assessed at the facet level. The fit of individual items, individual persons, and individual raters is examined, using two fit statistics, Infit and Outfit (Wright and Masters 1982). Both statistics are based on the residual scores, that is, the differences between the observed score and the predicted score. Outfit is relatively more sensitive to outliers, where the observed score is very different from the predicted score. Infit, on the other hand, is relatively more sensitive to patterns of minor misfit. Both statistics are reported two ways, as a mean-square and standardized. The expected value of the mean-square fit statistics is 1.0, whereas the standardized fit statistics have an expected value of 0. Higher values than expected indicate that the data are more random than predicted, whereas lower values indicate overfit, where the item, person, or rater is providing less information than expected. Overfit can be from any of a number of sources (Wright 1991) including multidimensionality (Masters 1988) and differential usage of the rating scale (Bowles 1999). The standardized fit statistics have associated statistical tests for significant misfit, based on a  $z$ -test. The mean-square fit statistics have associated rules of thumb for indicating when misfit or overfit is substantial enough to cause problems (Wright and Linacre 1994). When an item (or person or rater) is identified as having issues with fit, the data for that item are examined for anomalies, such as obvious miscoding, and either the anomalous data is removed, or the item is deleted. The analysis is then rerun to see if removal of the data or item affected the results.

The RSM and MRM have several important features that were useful here. First, the MRM, as well as most IRT models, is essentially unaffected by missing data. Estimates of trait levels are approximately the same with data missing as with complete data. Therefore, for example, raters need not rate every object of measurement. Second, because error is modeled explicitly, measurement reliability can be estimated directly, instead of the typical practice of estimating reliability indirectly with a statistic designed to assess a related concept (such as internal consistency with coefficient alpha). Finally, the MRM adjusts trait level estimates for rater severity. Typically, when raters are used to measure a psychological trait, rater effects are assessed with some form of interrater reliability, with the goal of maximizing the reliability, or equivalently, the interchangeability of the raters. With the MRM, raters can differ in severity, so that interchangeability is not a concern. Furthermore, other rater effects beyond variability in severity, such as differential interpretation of the rating scale, will appear as misfit and can therefore be identified. Thus, the many strengths of IRT models were especially valuable for use with the data presented here.

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