GIRLS' AND BOYS' CHOICES OF PEER BEHAVIORAL CHARACTERISTICS AT AGE FIVE

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We analyzed age differences in the behavioral profiles of the girls and boys chosen as play partners by same- and cross-sex peers at age 5 and the influence of these choices on subsequent behavior at 9 in a sample of 107 Spanish children. Girls chose girls who had an interest in resources and affective leadership, whereas boys chose boys interested in sport and rejected those preferring role-taking play. Both girls and boys who were preferred by boys at 5 showed low levels of maladaptive behaviors. We suggest that children's selection of the type of play and behavior of their same-sex peers could be considered a relevant mechanism for explaining the adaptive role of sex segregation during childhood.

Keywords: children, peer groups, behavioral characteristics, sex-segregated play.

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Sex segregation (the separation of boys and girls into same-sex groups) has been referred to as one of the most persistent and reliable developmental phenomena (Mehta & Strough, 2009). During childhood, it seems to be a basic component of the social organization of humans across different cultures (Aydin & Corsaro, 2003; Munroe & Romney, 2008). Children begin to play with same-sex peers at about 30 to 36 months of age, and this preference increases throughout childhood (Fabes, Martin, & Hanish, 2004). Pellegrini (2004) calls attention to the adaptive role of sex-segregated playgroups, stating that they are important contexts for both boys' and girls' development. Pellegrini also claims that energetic and social roles are proximate causes of sexual segregation. According to the energetic approach, boys and girls choose different niches in order to maximize their physical growth. According to the social role hypothesis, boys and girls segregate themselves in order to learn and practice behaviors associated with the future reproductive roles that are the result of sexual selection pressure.

A large body of research has been focused on finding factors associated with children's peer acceptance or rejection (see e.g., Vannatta, Gartstein, Zeller, & Noll, 2009). Among these factors, behavior has been considered a relevant predictor (for a review see Rose & Smith, 2009); however, few researchers have analyzed the behaviors associated with children's peer acceptance or rejection in children sex-segregated playgroups (Fabes et al., 2004). Furthermore, as Oberle, Schonert-Reichl, and Thomson (2010) have pointed out, there is a clear need for more research on gender-specific peer acceptance. In addition, direct observational studies are relatively rare and direct observations are important because they provide relatively bias-free measures of social behaviors in the contexts in which they develop (Pellegrini & Long, 2003).

The primary school years (especially ages 5 to 9) have been characterized as a period during which children experience a growing need for peer acceptance and a heightened fear of peer rejection (Buhrmester & Furman, 1986). Therefore, the main aim in this study was to analyze, through direct observation of social behaviors, whether or not there are differences in the individual behavioral profiles of the girls and boys chosen as (preferred) play partners by same-sex peers at age 5.

Socialization pressures reinforce sex differences in behavior from a very early age, for instance when fathers engage in rough and vigorous play with their sons much more frequently than with their daughters (MacDonald & Parke, 1986). In addition, peer socialization pressure on children appears to be as great as, or even greater than, family socialization pressure on children (Ruble & Martin, 1998). Furthermore, boys' and girls' sex-differentiated experiences in sex-segregated groups probably have an impact on their social development. The experiences that girls and boys have in their sex-segregated groups may promote different

skills and foster different interaction styles (Rose & Smith, 2009). Girls are more prosocial and spend more time in dyadic and more intimate interactions, and these characteristic relationship processes place the girls at risk of developing emotional problems, such as low self-esteem, anxiety, and depression (Rose & Rudolph, 2006). In contrast, boys' social networks are dense and have well-defined dominance hierarchies. Boys are more likely than girls to engage in competitive and rough-and-tumble play, and these characteristic relationship processes could enhance the boys' likelihood of developing behavioral problems, such as aggression and other antisocial conduct (Rose & Rudolph, 2006).

However, if sex segregation in childhood has an adaptive role, as suggested by Pellegrini (2004), it would be reasonable to expect there to be mechanisms reducing the possible negative effects of the sex-linked relationship processes. We hypothesized that the socialization pressures same-sex peers exert on children's behavior would minimize the expected impact sex-linked relationship processes have on the development of future social problems. Thus, a further aim in this study was to carry out a longitudinal analysis to explore whether children chosen (preferred) by their same-sex peers at kindergarten will develop maladaptive behaviors at age 9.

Furthermore, the participants in this study were observed in a mixed-sex context, which is normal in the current Spanish schooling system. Mixed groups exist in this context, although they are much rarer than same-sex groups (Fabes, Martin, & Hanish, 2003). Therefore, we also explored the behavioral profiles and the behavioral development of boys and girls chosen (preferred) by cross-sex peers at kindergarten (i.e., the behaviors of boys chosen by girls and the behaviors of girls chosen by boys).

Method

Participants

Participants were 107 children (48 boys and 59 girls) aged between 5 and 9 years, from three Spanish schools. The study was explained to the directors, teachers, and parents, and their informed consent was requested. The children's parents were provided with detailed information about the study and all gave their written consent. The sample families' socioeconomic status was categorized as medium to medium-high, based on our knowledge of the area in which participants lived. Among the group of parents of the participant children, 65% had secondary or university-level education, and 96% of the children were living in two-parent families. Although the tests used in this study were not invasive, the project was preapproved by the ethics committees at the Universities of Cádiz and Basque Country.

Behavioral Characteristics at Age Five

The observations took place when the children were aged 5 years, in open-air playgrounds where children of both sexes could interact freely during recess without adults present, although teachers watched them from the entrance of the playground. Segregation most commonly manifests itself in children choosing to interact with same-sex peers during their free periods where there is little adult supervision (Blatchford, 1998; Thorne, 1993), such as recess (Pellegrini & Long, 2003). Children were filmed at least twice a week with a video camera during the central 15 minutes of the daily half-hour free play period from November 2002 to June 2003. Behavior was recorded using focal sampling and continuous recording methods (Martin & Bateson, 1986) and each child's behavior was sequentially analyzed. Each participant was filmed for two minutes on a rota basis, with no participant being filmed again until all the other participants on the list had been filmed. This procedure resulted in a total of 15 minutes of film for each child. The analysis and quantification of the behavioral patterns were accomplished using Observer 4.1 behavior analysis software.

Four play patterns (time participants spent in rough-and-tumble play, sport play, role-taking play, and play with rules) and eight behavioral patterns (number of times participants engaged in affection, talking, asking for resources, sharing resources, physical aggression, verbal aggression, ordering an activity, and organizing an activity) were considered. Given the limitations imposed by behavioral observation with regard to the sample size, a principal components analysis (PCA) of the behavioral patterns was performed, using a factor analysis with varimax rotation, yielding four main factors with eigenvalues of over 1.0, which together explained 72.40% of the variance. Those behaviors loading more than .5 and less than -.5 in each factor were considered to represent their factors. The first factor (25.70% of variance) included talking (.81), order (.80), and affection (.73), and was called Affective Leadership. The second factor (19.20% of variance) included physical aggression (.84) and verbal aggression (.79), and was called Aggression. The third factor (14.80% of variance) consisted of asking for resources (.85) and sharing resources (.72), and was called Interest in Resources. The fourth factor (12.90% of variance) included organizing an activity (.94), and was called Organizing.

In order to analyze the behavioral data, the first and last authors recorded the behaviors of each child (after extensive practice recording behavior). In addition, at three time points during the study period, these two observers simultaneously coded the behaviors of 10 children. Agreement between the two coders was assessed and any discrepancies were discussed. Agreement was never lower than

85%, with an average of 90.67%. Kappa was never lower than .80.

Social Preference at Kindergarten

In order to determine the behavioral characteristics of girls and boys chosen by same- and cross-sex peers, we needed a social preference score for each child. Sociometric interviews were, therefore, administered in each child's classroom in order to obtain social preference scores. Each child was asked to nominate up to three playmates they liked and three playmates they disliked; both same- and cross-sex nominations were allowed. We counted the number of like and dislike nominations each child received from both boys and girls. These nominations were then standardized within the classroom. Finally, we calculated two preference scores (one from boys and one from girls) for each participant by subtracting the standardized dislike score from the standardized like score (Coie, Dodge, & Coppotelli, 1982); again, the resulting scores within classrooms were standardized. For the purposes of this study, we measured both indices of preference at age 5 and again at age 6. Average scores for both years ($r = .28, p < .01$ for the preference from boys, and $r = .58, p < .0001$ for the preference from girls) yielded the overall preference scores. This research design was adopted because averaging across both years provided a more accurate reflection of the children's peer relationships during this period (Criss, Pettit, Bates, Dodge, & Lapp, 2002).

Maladaptive Behaviors at Age Nine

Child Behavior Checklist (CBCL). The CBCL is a 113-item parent rating scale. Internalizing and externalizing behaviors were rated during 2007, the final year of the study, as *not true* (0), *somewhat or sometimes true* (1), or *very true or often true* (2). Scores for both types of behavior were transformed and were found to be normally distributed (Shapiro test for girls and boys, respectively: externalizing, $W = .98, p = .43$; $W = .93, p = .05$; internalizing, $W = .99, p = .78$; $W = .99, p = .98$).

Statistical Analyses

All the variables were transformed into z scores in order to cancel the effect of the range disparity problems. A one-way analysis of variance (ANOVA) was conducted to analyze sex differences for different variables. The relationships between the different variables considered were examined using Pearson correlation coefficients. We used the general linear model (GLM) to analyze the potential predictor role of children's behavioral characteristics at age 5 regarding same- and cross-sex preferences at the end of kindergarten. GLM was also used to analyze the potential predictor role of same- and cross-sex preferences at kindergarten regarding maladaptive behavior exhibited at age 9.

Results

Preliminary Analyses

As expected, even in a mixed-sex context, both girls and boys in this sample preferred same-sex play partners. Girls obtained higher preference scores from girls than they did from boys ($F(1, 107) = 61.37, p < .0001$). Similarly, boys obtained higher preference scores from boys than they did from girls ($F(1, 107) = 42.29, p < .0001$).

At age 5, sex differences were detected in the four play types. Girls spent more time engaged in play with rules and role-taking play than did boys ($F(1, 107) = 6.77, p = .0106$; $F(1, 107) = 9.73, p = .0023$, respectively), and boys spent more time engaged in rough-and-tumble play and sport play than did girls ($F(1, 107) = 9.92, p = .0021$; $F(1, 107) = 36.56, p < .0001$, respectively). In addition, girls scored higher for the affective leadership factor than did boys ($F(1, 107) = 6.53, p = .012$).

For both girls and boys, girls' preferences were positively related to boys' preferences. Affective leadership was positively related to play with rules and internalizing was positively related to externalizing behavior. For girls, the behavioral factors of Interest in Resources and Organizing were positively related to girls' preferences. For boys, role-taking play was negatively, and sport play positively, related to boys' preferences. Furthermore, for boys, the behavioral factor of Aggression was negatively related to girls' preferences and the behavioral factor of Organizing was positively related to girls' preferences. Rough-and-tumble play was positively related to Aggression and negatively related to girls' preferences. Boys' preferences were negatively related to internalizing and externalizing behavior at age 9.

Girls' and Boys' Choices of Peer Behavioral Characteristics at Kindergarten

As shown in Table 1, girls preferred girls with high scores for the behavioral factors of Affective Leadership and Interest in Resources ($R^2 = 5.04$; $\chi^2 = 14.36$; $p = .0729$). Boys preferred boys who were more involved in sport play and rejected boys who were more engaged in role-taking play ($R^2 = 10.45$; $\chi^2 = 25.15, p = .0015$). Considering the cross-sex choices (see Table 1), girls chosen by boys had high scores for the behavioral factor of Affective Leadership and low scores for play with rules ($R^2 = 2.45, \chi^2 = 8.12, p = .0420$), while boys chosen by girls had low scores for the behavioral factor of Aggression and high scores for the behavioral factor Organizing ($R^2 = 7.2095, \chi^2 = 17.63, p = .0242$).

Table 1. *GLM Analyses of the Influence of Girls' and Boys' Characteristics on Individual Scores Preferences Received From Girls and Boys*

		Choosing girls			Choosing boys		
		Estimate (SE)	X ²	p	Estimate (SE)	X ²	p
Girls chosen as partners							
Behavioral factors	Play						
	Role-taking	.145 (.52)	.077	.781	-.157 (.50)	.100	.752
	Rough-and-tumble	-1.018 (1.62)	.396	.529	-.806 (1.54)	.273	.601
	Sports	-.514 (.70)	.543	.461	.355 (.66)	.285	.593
	Play with rules	-.365 (.39)	.873	.350	-.781 (.37)	4.274	.039*
	Affective Leadership	.178 (.09)	4.022	.045*	.197 (.08)	5.358	.021*
	Aggression	.022 (.09)	.061	.805	-.010 (.09)	.014	.904
	Interest for Resources	.168 (.08)	4.493	.034*	.086 (.07)	1.341	.247
Boys chosen as partners							
Behavioral factors	Play						
	Role-taking	-.614 (1.42)	.187	.666	-3.609 (1.37)	6.517	.011*
	Rough-and-tumble	-1.240 (.75)	2.649	.104	-1.084 (.72)	2.198	.138
	Sports	.2630 (.31)	.707	.400	1.017 (.30)	10.309	.001**
	Play with rules	.809 (.43)	3.420	.064	.658 (.41)	2.472	.116
	Affective Leadership	-.022 (.10)	.052	.819	.088 (.09)	.891	.345
	Aggression	-.175 (.08)	4.367	.037*	.001 (.08)	.000	.986
	Interest for Resources	.0471 (.09)	.282	.596	-.010 (.09)	.0153	.902
Organizing							
		.237 (.08)	7.548	.006**	.110 (.08)	1.884	.170

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$.

Do Girls and Boys Chosen by Same- and Cross-sex Peers at Kindergarten Develop Maladaptive Behaviors at Age Nine?

GLM analyses were performed to examine the predictive role of preference received by same-sex peers at kindergarten in relation to maladaptive behavior at age 9. We found a significant interaction between the preferences by boys and

the sex of the child in terms of maladaptive behaviors ($R^2 = 6.34$, for internalizing behavior; $R^2 = 12.67$, for externalizing behavior). Being preferred only by boys at kindergarten had a negative significant relationship to internalizing and externalizing behavior at age 9 (estimate = $-.33$, $SE = .16$, $p = .0471$; estimate = $-.37$, $SE = .15$, $p = .0166$, respectively). Thus, both girls and boys with high scores for the preference received from boys at kindergarten showed low levels of these maladaptive behaviors at age 9.

Discussion

As expected, although boys and girls shared the playground during recess, the sex of the child appears to be, in this age range at least, an important criterion for selecting social partners. Consistent with findings in other studies (see e.g., Martin & Fabes, 2001), boys tended to choose boy play partners and girls tended to choose girl play partners.

Moreover, for girls, it was behavior rather than play that was found to be relevant, with girls choosing girls who scored highly on the behavioral factors of Affective Leadership (talking, order, affection) and Interest in Resources (both asking for and sharing). For boys, play rather than behavior was found to be more relevant, with boys choosing boys who scored highly on sport play, and rejecting those who often engaged in role-taking play. These results suggest that, at this age, playgroups are clearly segregated, with girls preferring to interact with other girls involved in intimate and collaborative relationships and boys preferring to play with boys interested in competitive types of play. Thus, these results suggest that boys at age 5 are more involved in organized group games, whereas girls of this age are more often engaged in acting reciprocally in a collaborative way.

Our findings also appear to support Pellegrini's (2004) hypotheses regarding the evolutionary adaptive origin of sex-segregated playgroups. The choice of sport-interested partners would maximize boys' physical growth (energetic hypothesis) and would allow training in competitive behavior, useful in relation to adult dominance for access to mates and resources (social roles hypothesis). It should also not be forgotten that boys' positive assessment of sports directly facilitates the development of muscle systems, and boys' groups may provide the opportunity for refining these skills (Byers & Walker, 1995). On the other hand, girls' preferences for partners interested in resources and affective-organized relationships could be related to future female nurturing behavior. Moreover, the importance girls placed on affective-organized activities and sharing resources may be a way of consolidating alliances (social roles hypothesis). In this sense, some authors (e.g., Jarvis, 2006; Kyratzis, 2000) have suggested that cooperative structures strengthen alliances among girls. The pathway to

successful reproduction for females is through building and maintaining strong relationships with other females in their kin group.

According to the model proposed by Rose and Rudolph (2006), the girls' relationships in girl groups place them at risk of developing emotional problems, such as low self-esteem, anxiety, and depression, but also inhibit antisocial behavior. In contrast, relationships that are characteristic of boys in boy groups increase the likelihood that boys will develop behavioral problems such as aggression and other antisocial behaviors, but also help prevent the development of emotional problems. Although sport play helps to establish hierarchies, it may also play a role in the ritualization of boys' aggressive behavior, thus reducing the risk of behavioral problems in their future social adjustment. So, boys' skill at playing sports and games with a wide variety of rules, appears to be an important factor in peer-group integration and is significantly correlated to an attention structure measure of dominance (Pellegrini, 2004; Pellegrini, Kato, Blatchford, & Baines, 2002). Furthermore, Martin and Fabes (2001) showed that the more time boys spent playing with other boys, the more positive emotions they expressed. This positive emotional development could be seen as another mechanism for reducing antisocial conduct, by fostering the expression of more prosocial behavior in boys in competitive social situations (Mostow, Izard, Fine, & Trentacosta, 2002). In relation to girls' groups, our results suggest that their choice of affective-organized activities, as well as their cooperative style of resource management with girl partners, may be linked to well-being in intimate relationships (Bouchard, Lussier, & Sabourin, 1999), and could be seen as a mechanism for reducing emotional problems.

A negative relationship between the preference received from boys and the internalizing and externalizing behavioral problems exhibited at age 9 was detected for both girls and boys. That is, being preferred by boys at kindergarten predicted low levels of maladaptive behaviors at age 9 for both girls and boys.

Referring to cross-sex choices, girls' preferences for high play-organizing boys at kindergarten may facilitate their integration in larger groups. This may, in turn, increase their assertiveness in social interactions (Goodwin, 1990), which could reduce their risk of developing the emotional problems that are characteristic of girls' more dyadic interactions. We find it interesting that girls who were preferred by boys at kindergarten showed low levels of both internalizing and externalizing behavior at age 9. In addition to this likely benefit to girls, their rejection of aggressive boys may moderate the latter's tendency to develop antisocial behaviors. As Leaper, Tenenbaum, and Shaffer (1999) point out, participation in mixed gender interactions may be a useful strategy for reducing boys' aggression. In any case, the few mixed groups that are formed when children interact freely in the playground not only do not seem to impair the

adaptive benefits of same-sex groups, but actually appear to provide positive effects.

In conclusion, we suggest that children's selection of the type of play and behavior of their same-sex peers could reduce the potential negative effects of the sex-linked relationship, and the choice could be considered a relevant mechanism for explaining the adaptive role of sex segregation during childhood. In addition, our findings highlight the importance of considering the child's sex and the 5- to 9-year-old age group as relevant factors in understanding peer socialization pressure.

Even though observations in naturalistic settings allowed us to identify the social behaviors that characterize children's daily lives, our study had some limitations. The participants were all Spanish children, which limits the generalizability of the findings. Although a similar number of girls and boys participated, if the size of our study sample had been larger we could have explored a greater range of behaviors, and we may have detected a greater number of adaptive cues. In spite of these limitations, our findings highlight the importance of focusing on how the evolutionary history of our species interacts with both the current and the developmental circumstances of our behavior.

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