A Short-term Longitudinal Study of Children’s Playground Games Across the First Year of School: Implications for Social Competence and Adjustment to School

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This longitudinal study describes playground games of children progressing across their first year of schooling. Boys, in comparison with girls, played more games, especially chase and ball games, and played a greater variety of games. Also, the variety of boys’ games increased across the school year. Girls played more verbal games than boys. The study found that facility with games forecast boys’ social competence and both boys’ and girls’ adjustment to first grade. Children’s groups remained ethnically segregated across the school year. Results are discussed in terms of the role of games as an important developmental task during middle childhood.

KEYWORDS: games, peer relations, play, recess, social competence.

In this study we analyze children’s games on the playground at recess during their first year of full-day mandatory schooling. Children’s games, surprisingly, have not received extended empirical attention from psychologists or educators for a number of years. We say surprisingly because at least one influential theory (Piaget, 1965) suggests that games have important implications for children’s, and especially boys’, social and cognitive development. Correspondingly, there have been repeated calls for more research on games over the last 50 years (e.g., Gump & Sutton-Smith, 1953; Hart, 1993; Rubin, Fein, & Vandenberg, 1983; Sutton-Smith, 1973, 1975; Sutton-Smith, Rosenberg, & Morgan, 1963). Indeed, the latest volume of the Handbook of Child Psychology, on social and personality development (Eisenberg, 1998), does not have a single reference in the subject index to games or games with rules, down from the rather sparse six references in the 1983 Handbook (Hetherington).

By way of framing this work, it is important to differentiate games from play because the two sometimes are confused, possibly because they share...
some design features (Garvey, 1977). For example, both play (e.g., fantasy play) and games (e.g., soccer) are rule governed. The rules governing games are a priori and codified while the rules governing play are flexible, negotiated by players in different ways, and not set in advance. For example, in a play episode where two children are pretending to cook a meal, they can negotiate rules and roles regarding what is to be cooked (e.g., Let's cook stew. No, let’s have cake), how it is to be cooked, and who does it (I want to be the cook now). Once these issues are agreed upon, play behavior follows these rules, until the rules are challenged, at which time the rules are often re-negotiated (Fein, 1981; Garvey). Indeed, more time is typically spent negotiating and re-negotiating rules in play than in play per se (Garvey).

Games, on the other hand, are guided by explicit rules that are set in advance and violation of these rules usually results in some form of sanction, not re-negotiation (Garvey, 1977). So, for example, in a game of basketball, a child running with the ball, without dribbling, would be told by peers to forfeit the ball.

One possible reason for the paucity of research on children's games may relate to availability of and access to a research sample of young children at a time when they typically engage in games (i.e., primary school). Compare the ease with which infants and preschool children can be observed in university laboratory schools and the massive amount of research on the modal forms of play for children of these ages, sensorimotor and fantasy play (Rubin,

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Fein, & Vandenburgh, 1983). Primary school children, on the other hand, are less accessible for study and proffer fewer opportunities for observations of peer interaction, as much of the primary school day is tightly scheduled around regimens of solitary and sedentary academic work (Pellegrini & Blatchford, 2000).

The school playground at recess does, however, provide an interesting and under-used venue for the study of school-age children’s peer interaction, generally (Boulton & Smith, 1993; Hart, 1993), and games with peers (Boulton, 1992), more specifically. Further, participation in recess is, by most school standards, required for all children; thus, problems associated with self-selection out of recess are minimal. Most important for our purposes is the fact that recess is one of the few places during the mandatory school day where children are free to interact with their peers in games with relatively few restrictions (Boulton & Smith). From this view, it is an ideal venue for studying a relatively large and diverse sample of children engaging in activities that they enjoy: games and interacting with peers.

Correspondingly, observations of children at recess probably yield valid information on their competence because interaction with peers at recess is both motivating and demanding for children (Waters & Sroufe, 1983). That is, children typically enjoy recess and games and to successfully engage in games requires a fair level of social and cognitive sophistication (Sutton-Smith, 1975). For example, children must know the rules of the games and subordinate their personal views and desires to those rules and to the positions of their peers. That they enjoy these interactions motivates them to exhibit the high levels of competence required to participate in games. Children’s behavior in playground games then should provide valid insight into their competence.

We defined competence for first graders in terms of forming and maintaining peer networks (e.g., being liked by peers and having friends) and adhering to group norms within organized peer groups (such as playing games with rules with peers). To these peer competencies we added adjustment to the demands of school (Sroufe, Egelund, & Carlson, 1999). This definition is derived from developmental theory suggesting that competence is defined differently at different ages (Bjorklund & Pellegrini, 2000) and competence can be represented by corresponding “developmental tasks” (Waters & Sroufe, 1983), such as games with peers in a school setting. Competence with peers, according to this orientation, is rooted in earlier relationships (such as the attachment relationships) and should reflect the confidence and ability to get along with a variety of individuals (peer popularity) and to form close relationships (such as friendships).

Interaction with peers, especially around games in a school setting, is an especially interesting developmental task for studying social competence during middle childhood. Engagement in games with peers requires the sorts of social facility (e.g., cooperation, turn-taking, rule-governed behavior) necessary for competence with peers. Additionally, social engagement with peers during the school day, at recess, should also be indicative of one’s efficacy in one dimension of early schooling. Specifically, in both the very early primary
grades and at recess children's social competence with peers and learning to follow rules is stressed. In later grades the classroom climate is characterized by much less peer interaction (Pellegrini & Blatchford, 2000).

The complexity of specific types of games that young primary school children play varies from turn-taking games, such as tag and chase, to typically more complex games with a variety of roles and rules, such as ball games and verbal games (Borman & Kurdek, 1987; Sutton-Smith, 1973, 1975). Though chase games can be complicated (Finnan, 1982) the relative simplicity of most chase games is reflected in the fact that they have been observed among primary school children at the start of the school year more than at the end (Thorne, 1986). Children also find them “boring” after they have been played repeatedly (Blatchford, 1998). Ball games, on the other hand, often involve a variety of roles and, consequently, children do not become bored with them very easily (Blatchford). For example, in basketball, there are forwards, guards, and a center with each of these having both offensive and defensive realizations. Further, there is a wide catalogue of rules governing ball games. Clapping, jump rope, and hopscotch games, too, have multiple roles, such as jumper and rope spinner, and numerous rules (Opie & Opie, 1969).

In the first goal of the present study we describe the frequency of occurrence of children's games on the school playground during recess across the entire first grade year. While there is a general lack of recent descriptive data on children's games, there is information from the more general literature on children's peer relations and older work on games that enables us to generate hypotheses.

Regarding gender, it has been clearly documented that boys, relative to girls, are more physically active (Eaton & Enns, 1986) and correspondingly, they prefer outdoor, relative to indoor, play space (Harper & Sanders, 1975) because this venue affords opportunity to engage in physically vigorous activity. Consequently, we expect boys, more than girls, to engage in physically vigorous games, like chasing and ball games. Further, boys should exhibit a more varied repertoire of games given their preference for games and for the outdoors. That boys, in comparison with girls, are more facile at games has also been reported by Goodwin (1990) in her ethnography of urban African American children.

Girls, relative to boys, however, should more frequently be observed in games requiring verbal facility, such as chanting, hopscotch, and jump rope games (Goodwin, 1990; Heath, 1983; Janikas, 1993; Lever, 1976; Maccoby, 1998; Thorne, 1986), given the reliable gender differences in children's oral language production (Maccoby & Jacklin, 1974). Consistent with this view, the ethnographic literature also reports similar gender differences in children from both European American (Janikas; Lever) and African American backgrounds (Goodwin; Heath).

The frequency with which certain games are observed should also vary across the school year. Specifically, those games typically requiring the greatest coordination of social, cognitive, and physical skills, such as ball games, should increase as the year progresses. It also requires time and maturation
for children to learn the rules of games played at school, which are sometimes idiosyncratic to a specific location (Blatchford & Sumpner, 1998). Playing these games requires learning the rules, applying them, and recognizing violations. Correspondingly, children must also learn to subordinate their perspectives to the rules of the games and the perspectives of their peers. Given the finite amount of time at recess, typically less complex games, such as chase, should decrease with time as children spend time in typically more complicated games, such as ball games.

In the present study we also examined the role of facility at games in children's social competence and adjustment to the first year of mandatory, full-day schooling. Specifically, we document the predictive relations between children's facility with playground games and their subsequent social competence with peers in school and to their more general adjustment to early schooling. Results from our earlier pilot work (Blatchford, 1989) suggest that children who are facile at games, or "game leaders," are the individuals who initiate, maintain, and terminate games. Case studies indicated that these children are likely to be popular and to be seen by peers as group leaders.

To maximize the validity of the construct "facility with games," it was defined from a multi-method, multi-informant perspective using peer nominations, teacher ratings, and direct observations (Cronbach, 1971). Children were asked to nominate peers who suggested things to do at recess and were facile at games and sport. Teachers and research associates also rated youngsters on games and sport. Behaviorally, game facility was defined in terms of the relative frequency with which children played games and by the number of peers observed in their immediate game group.

Game leadership, or facility, was also defined in terms of the number of children in the focal child's immediate peer group. This idea of facility is derived from the ethologically oriented work on leadership and dominance (Chance, 1976; Vaughn & Waters, 1981). Dominance is an ethological construct indicative of an individual's status in a social group. Dominance is typically achieved by a combination of prosocial and assertive strategies (Pellegrini & Bartini, 2001) with an aim toward accessing some resource, such as access to a toy or a piece of playground equipment. Peer groups have dominance hierarchies that range from most to least dominant where most dominant individuals are leaders and are sought after and attended to by peers.

Children want to be around leaders for a number of reasons. For example, by affiliating with leaders youngsters may learn valuable social skills from or form alliances with leaders. Alliances with leaders can also protect more vulnerable children from bullying and victimization (e.g., Hodges & Perry, 1999; Pellegrini, 2002). Thus, the number of individuals surrounding an individual is an observational indicator of leadership status.

In our examination of the role of game leadership, or facility, in children's social competence and adjustment to school we propose that games support, or scaffold, initial interactions between children at recess. Our use of the term "scaffold" originated in studies of play (Bateson, 1976) and problem solving.
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(Wood, Bruner, & Ross, 1976) where a scaffolding behavior is used in the early developmental history of another, more mature behavior. When that stage of development has been reached, the scaffold is disassembled and disappears. Simple games can act as a scaffold during those stages of interaction when peers are not familiar with each other. That is, knowledge of relatively simple and routinized games is probably shared by many children and serves as a way in which children can interact with each other with limited social skills and shared knowledge of basic games.

In short, knowledge of the most rudimentary games can be used as a basis for initial interaction between relatively unfamiliar and relatively immature children. After repeated interactions in such games, children become familiar with each other and can then interact in other, more complex ways. Similar arguments for the role of simple and routinized behavioral scripts in learning more complex skills have been made by Corsaro (1985) regarding young children's social competence and by Snow (1989) regarding children's language learning.

Being facile with games on the school playground at recess should also predict adjustment to the very earliest school years because game facility is an indicator of children's engagement in one important dimension of the school day. Being engaged in this context with peers should generalize to school adjustment in first grade because it is an indicator of children's sense of efficacy in first grade. Specifically, games at recess represent a transition point from the relatively unstructured and peer-oriented regimen of most preschools and very early primary school (kindergarten and first grade) to the adult-provided structure of most elementary school classrooms. Positive, rule-governed peer interaction is valued by educators both on the playground at recess and in the first grade classroom (Pellegrini & Blatchford, 2000). From this view, and consistent with ethological models of domain-specific cognition (Bjorklund & Pellegrini, 2000), the playground and the first grade classroom are relatively similar niches, with similar demand characteristics; thus competence in one area (the playground) should relate to competence in the other (school, more generally).

Adjustment to school was assessed from the perspectives of both adults and the children themselves because they provide complementary perspectives on adjustment. Adults rated children on their general adjustment to school (e.g., Copes well with school), in academic skills (e.g., Can concentrate on any task), and in their relationships with the teacher (e.g., Has friendly and responsive relationship with teacher). Thus, adults’ ratings reflected the extent to which children adjusted to the social conventions imposed by this social institution. Additionally, children rated themselves on how much they liked school (e.g., Going to school makes me happy; I enjoy school). Self-reports provide an “insider’s view” of adjustment that is typically not accessible through other means, such as teacher reports or direct observations (Pellegrini & Bartini, 2000).

A final dimension of social competence and adjustment to schooling, especially in diverse societies such as those in the United States and the United
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Kingdom, involves children interacting in ethnically diverse peer groups. A basic aim of school desegregation in the United States has been to provide opportunities for students from diverse backgrounds to interact with each other in integrated schools, resulting in fading racial divides (see Schofield, 1981, for a discussion).

The extent to which this ideal corresponds to the empirical record is, however, questionable. In a study of an American middle school, Schofield (1981) observed youngsters at various venues and found that peer groups were by and large segregated. Similar results were reported by Boulton and Smith (1993) in their observational study of a group of ethnically diverse primary school children on playgrounds in the north of England. Only one study (Blatchford, 1996) found that children's playgroups became more ethnically diverse with time. In the present study we examined the extent to which peer groups became more ethnically integrated with time, but in light of the equivocal findings we did not pose a directional hypothesis.

In the current study we extended earlier research in the following ways. First, we studied children as they entered their first year of mandatory, full-day schooling and observed them across the entire year, documenting changes in games and peer groups across that period. Most previous studies documented peer interaction in well-established social groups, well after children entered school. Second, we studied a group of predominantly low-income, urban children. Descriptive information on the games for these groups is an important complement to extant descriptions of predominantly middle-class children (e.g., Blatchford, 1989; Sluckin, 1981). The relation between games and adjustment to school is especially important as low-income children often have difficulty adjusting to and succeeding in school (Heath, 1983). Third, we maximized the validity of our constructs by defining them using multiple methods and multiple informants.

Method

Participants

Children in this study were recruited from two urban primary schools in a large American Midwestern city. In this school system, first grade was children's first experience with full-day compulsory schooling. All of the first grade classrooms in two schools agreed to participate. Both schools were in close geographic proximity (less than 1 mile apart) and ethnically diverse places, with the following groups being represented: African American children comprised 33%; European Americans, 31%; Latinos, 22%; Asian Americans, 9%; American Indians, 2%. Over 75% of all children received free or reduced lunch assistance. Consent forms were sent out to all students during the first week of the school year. For students whose first language was Spanish, consent forms were written in Spanish. The overall consent rate was 71%. The sample consisted of 77 children (30 males and 47 females), and had a mean age of 6.4 years. No American Indians volunteered to participate in the study.
Procedures

A total of four research associates, all female graduate students, worked on this project. One of the three was a native Spanish-speaker and interviewed children whose first language was Spanish. She also, in conjunction with a school-provided translator, helped to translate parental consent forms and research protocols into Spanish. Logistically, each of two research associates was assigned to separate schools to conduct behavioral observations. The other assistant alternated between sites. To minimize bias, research associates did not interview children whom they observed.

By way of preview, the following methods were utilized: Direct behavioral observations, peer nominations, self-reports, and teacher and research associate ratings of children.

Behavioral Observations

Before the start of the school year research associates were trained in the use of the observational protocols. Initial training involved discussions of the definition of behaviors, use of the coding sheets, review and discussion of videotapes, and practice sessions using the coding sheets on videotapes. After this training, research associates spent two weeks on the school playgrounds where they practiced coding, under the supervision of the first author. At the end of this period, reliability checks were made and the \textit{kappas} for individual categories all exceeded acceptable levels of .60 to .90 (Pellegrini, 1996). Thereafter, reliability checks (where all checks continued to exceed acceptable levels) and training were conducted on alternative months across the duration of the whole project.

Observations were conducted following two formats: focal child sampling with continuous recording and scan sampling with instantaneous recording (Pellegrini, 1996). We chose to use both focal child and scan sampling strategies because they provide complementary data in field studies (Martin & Bateson, 1993). Specifically, focal child sampling is the preferred sampling strategy for studying groups because it enables the observer to sample continuously rather large, uninterrupted streams of behavior as well as the social context of the interactions. Further, when used with a continuous recording regimen, it yields true frequency data.

Problems arise with focal child sampling and continuous recording, however, when individuals who are being observed go places where they cannot be observed during the sampling interval (such as in a tunnel slide or behind a larger group of children). This problem is compounded by the fact that focal child sampling with continuous recording is time consuming; thus, relatively few samples can be taken. Scan sampling can be used as a complement because it provides a general "census" of a limited number of behaviors. Because the scans are instantaneous, a relatively large number of samples can be taken in short period of time. Scan samples are also useful in providing time budget information on individuals across a variety of times of the day and sea-
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Twelve individuals were observed. Thus, when focal child and scan sampling are combined we have a robust, and relatively low biased, picture of the time individuals spend in games. Separate counterbalanced lists for each procedure were kept and followed. When a child was absent, he/she was skipped. Twelve focal and 12 scan samples per child were used in data analyses.

For the focal child sample procedures, children were observed for 3 minutes (minimally, once per month) and their behavior was continuously recorded on coding sheets. If a child “disappeared” for 30 seconds, the observation was terminated and the observer moved down the list to the next focal child.

The following information was recorded in the focal child samples. At the beginning of each focal sample, the composition of the focal child's immediate peer group was coded in terms of each child's identity (if they were study participants), ethnicity (African American, Asian American, Latino, European American), and gender. Regarding the ethnic makeup of the peer groups, we were interested in deriving a measure of the ethnic integration of the group. Scores varied from zero (where the group was comprised of children from the same group as the focal child) to 4 (where there were individuals from each of the four ethnic groups).

Across the 3-minute sampling interval behaviors were recorded in order of occurrence. Although we recorded a number of different behaviors (i.e., locomotor behavior, fantasy play, rough-and-tumble play, aggression, submit, unoccupied, and other) into mutually exclusive categories, we will describe only game behavior in this report. The sum of all behaviors coded was, however, used as the denominator to derive the relative frequency of total games played.

Games were coded as interactions following a priori rules and they could be social or solitary. Based on earlier pilot work (Blatchford, 1989) the coded games included chasing games, ball games, and verbal games. Chasing games were defined as simple games involving alternating reciprocal role-taking and locomotion; for example, tag and It. Ball games were defined as rule-governed activities with a ball as the central object of activity; for example, basketball, soccer, and baseball. Verbal games were interactions that centered on rule-governed interactions where verbalizations were a central part of the interaction; for example, hand clapping games, jump rope games, and hopscotch games.

Observed games were scored at two levels. First, we derived a relative frequency of total games, relative to all other behavior scored, by dividing the frequency of observed games by the total number of focal behaviors recorded. Second, we derived a frequency score of the types of games observed in each of the three time intervals (fall, winter, spring) across the school year.

Children were also observed using scan-sampling, instantaneous recording rules. As with the focal observations, the order in which children were observed was counterbalanced. Behaviors recorded instantaneously in the scans were similar to those recorded in the focal samples. Unlike the focal samples, the identity of peers in proximity to the target children was not included in the scan. Children were also scan-sampled across the whole year.
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As with the focal sampling data, the number of individual games, relative to all other behaviors scanned, was derived by dividing the observed frequency of games by the total number of scanned behaviors recorded (frequency/scan). Additionally, we also scored the number of types of games/scan for each of the time periods across the school year. As noted above, scans were averaged with focal samples to yield a frequency/time measure.

A variety-of-games measure was also derived from both focal child and scan data by tallying, 0/1, the nonoccurrence/occurrence of each of the three types of games. For example, if a ball game was observed on one occasion, a tally of 1 would be scored. The same score of 1 would be assigned even if that one game was observed in all 12 observations. If no games were observed in any of the observations, a zero score would be assigned. Scores could range from zero, where no games were observed during any of the observations, to 3 (where each of the different types of games were observed at least once across all observations).

Peer Nominations and Self-Reports

Children were interviewed twice during the course of the school year: in the late fall and in the late spring. To minimize bias, children were not interviewed by the same researcher by whom they were observed. Children whose first language was Spanish were interviewed by a native speaker of Spanish. For the peer nomination procedures, researchers interviewed individual children in a quiet place in the school. The research associate read a list of the names of the children in the classroom to each child. She then asked the child to nominate three peers they like most, who were friends, and who were very good at sports and games, as well as a series of other questions not used in this study.

Children were also asked to rate the extent to which they liked school. Individual children were interviewed and the items were read to them. The school liking measure consisted of 12 items (e.g., Going to school makes me happy, School is boring) and children were asked to rate each as yes, no (scored 3, 2, 1); the alpha for this measure was .85.

We used both individuals and their peers as informants because they provide complementary information and this procedure also minimizes bias. Specifically, peers provide normative information on status while minimizing self-inflation biases associated with self-reports. Self-reports, however, provide valuable information about how individuals feel about status and adjustment. This level of information is especially important for constructs such as adjustment to school to the extent that individuals’ feelings about school are crucial and difficult for an outsider to assess.

Teacher and Research Associate Rating Scales

Teachers and research associates were also asked to rate children’s adjustment to school and their facility in games; these scores were aggregated.
Research associates rated the children they observed. Adults as informants provide information that complements both the individuals' and the peer groups' perspectives to the extent that they too are normative; but their ratings are probably more in tune with institutional expectations, rather than peer group expectations.

Teachers and research associates completed well-established rating scales (Pupil Behavior Scale and Teacher Checklist) for each child in late fall and spring. The Pupil Behavior Scale is a 54-item rating scale (1–3) with many questions compiled from Ladd and Profilet's (1996) Child Behavior Scale. Empirically derived factors were used in this study and, for the purposes of this report, we were interested in the school adjustment factor (e.g., Copes well with school; Has friendly and responsive relationship with teacher; with an alpha of .95).

They also completed the Teacher Checklist, developed by Dodge and Coie (1987). It has a total of 45 items, scored 1–7. In the present study we utilized the item rating facility in sports and games.

**Results**

This section is organized around the two general goals of this study. First, we describe the frequency, variety, and complexity of boys' and girls' games as they progressed across their first year of full-time schooling. Second, we examine the degree to which facility with games forecast boys' and girls' social competence and adjustment to school. As part of the latter section, results on the ethnic integration of peer groups are presented.

**Occurrence of Games for Boys and Girls Across the School Year**

In this series of analyses, using aggregated focal and scan-sampled data, we describe the occurrence of games played by boys and girls across their first year of school. The results in this section are presented in three parts. First, we examine the variation in the occurrences of total games, relative to all other behavior, observed for boys and girls across the whole school year. Second, variation in the frequency of occurrence of individual types of games and occurrence of variety of games for boys and girls across the whole school year are examined. The scores for individual types of games represent frequencies/observation period. Descriptive statistics for total games (expressed as relative frequencies), types and variety of games (expressed as frequencies), and variety of ethnicities in groups are presented in Table 1.

**Total Games**

The frequency of total games, relative to other behavior, observed (from both scan and focal child samples) was examined with a repeated measures analysis of variance (ANOVA). We examined the extent to which total games varied by time of the year (3:3 month intervals from September–May) and gender (2), with the first factor being a within-subjects factor and the second
Table 1
Descriptive Statistics for Observed Games by Time and Gender*

<table>
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</tr>
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<td>.28</td>
</tr>
<tr>
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<td>.19</td>
<td>.50</td>
<td>.03</td>
<td>.36</td>
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<td>.55</td>
</tr>
<tr>
<td>SD</td>
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<td>.46</td>
<td>.44</td>
<td>.45</td>
<td>.36</td>
<td>.44</td>
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<tr>
<td>Variety of ethnicities</td>
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<td></td>
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<tr>
<td>Range</td>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Median</td>
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<td>1</td>
<td>1.10</td>
<td>1.00</td>
<td>1.10</td>
<td>1.20</td>
</tr>
<tr>
<td>Mean</td>
<td>.98</td>
<td>1.14</td>
<td>.97</td>
<td>1.32</td>
<td>1.00</td>
<td>1.34</td>
</tr>
<tr>
<td>SD</td>
<td>.64</td>
<td>.66</td>
<td>.44</td>
<td>.59</td>
<td>.59</td>
<td>.48</td>
</tr>
</tbody>
</table>

*N = 30 boys and 47 girls.

***All games values are relative frequencies, and type and variety values are frequencies.

a between-subjects factor. The dependent measure represented the frequency of games, relative to all other behavior. Significant main effects were observed for gender, F(1, 76) = 20.65, p < .0001, d = .37, and time, F(2, 75) = 8.30, p < .0006, d = .26. The frequency for boys was significantly more than for girls; frequency at Time 3 was greater than at either Times 1 or 2 and Time 1 was greater than Time 2. There was also a significant gender-by-time interaction, F(2, 76) = 2.87, p < .05, d = .17, which showed that there were no significant gender differences at Times 1 and 2, but boys exhibited more games than girls at Time 3. Further, the frequency with which girls played games did not
change significantly across the school year, but boys' games were significantly greater at Time 3 than at Time 1, and were lowest at Time 2.

Types of Games

Regarding the frequency of occurrence of individual types of games, we next examined the effects of gender and time on each of the three types of games observed from the combined focal and scan sampling data (chase, ball games, and verbal games) with a repeated measures ANOVA. The values of the dependent measures represent the mean frequencies of types of games observed in scan and focal child samples for each of the time periods across the year.

For chase, significant main effects were observed for both gender, \(F(1, 76) = 5.90, p < .01, d = .15\), and time, \(F(2, 75) = 30.65, p < .0001, d = .56\). Boys engaged in significantly more chase games than girls, and there was a significant decrease in chase from Time 3 to Time 2 to Time 1. The time-by-gender interaction was not significant.

For ball games, significant main effects for gender, \(F(1, 76) = 19.52, p < .0001, d = .28\), and time, \(F(2, 75) = 12.11, p < .0001, d = .33\), were observed, as was a significant gender-by-time interaction, \(F(2, 75) = 6.68, p < .002, d = .23\); boys engaged in significantly more ball games than girls; more ball games were observed at Time 3 than at either Times 1 or 2, which were not significantly different from each other. The interaction clarified these main effects to the extent that the frequency of boys’ ball games increased from Time 1 to 2 to 3, but girls’ did not vary across time.

Verbal games varied significantly by gender, \(F(1, 76) = 19.10, p < .0001, d = .27\); girls exhibited significantly more verbal games than boys. The time-by-gender interaction was not significant.

Variety of Games

For variety of games, analyzed with a repeated measures ANOVA, significant main effects were observed for gender, \(F(1, 76) = 18.55, p < .0001, d = .27\), and time, \(F(2, 75) = 3.43, p < .03, d = .15\). Boys exhibited a more varied repertoire of games than did girls. In terms of time, the greatest variety of games was observed during Times 2 and 3, relative to Time 1; there was no difference between Times 2 and 3. The time-by-gender interaction was not significant.

Game Facility as a Predictor of Social Competence and School Adjustment

Facility with games, or game leadership, was defined using a variety of measures: peer nominations (being good at games and sport), adult ratings from the Teacher Checklist (good in games and sport). Both measures were administered during the late fall/winter of the school year. We also included behavioral observations (using the relative frequency of children's engagement in total games and the average size of their playgroups during games across the first two thirds of the year). The descriptive statistics for these individual measures are presented in Table 2.
Table 2
Descriptive Statistics for Components of Game Facility, Social Competence, and School Adjustment

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observed games</td>
<td>.35</td>
<td>.24</td>
<td>.28</td>
<td>.24</td>
</tr>
<tr>
<td>Observed group size</td>
<td>2.54</td>
<td>1.50</td>
<td>2.17</td>
<td>1.70</td>
</tr>
<tr>
<td>Athletic peer nominations</td>
<td>2.10</td>
<td>2.16</td>
<td>2.70</td>
<td>2.65</td>
</tr>
<tr>
<td>Adult-rated games</td>
<td>4.41</td>
<td>1.58</td>
<td>4.11</td>
<td>1.60</td>
</tr>
<tr>
<td>Social competence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Like most&quot; nominations</td>
<td>2.74</td>
<td>1.84</td>
<td>3.11</td>
<td>1.80</td>
</tr>
<tr>
<td>&quot;Friend&quot; nominations</td>
<td>3.18</td>
<td>1.95</td>
<td>3.29</td>
<td>1.85</td>
</tr>
<tr>
<td>School adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher rating</td>
<td>2.05</td>
<td>.33</td>
<td>4.76</td>
<td>.84</td>
</tr>
<tr>
<td>Self-report</td>
<td>1.36</td>
<td>.40</td>
<td>1.46</td>
<td>.45</td>
</tr>
</tbody>
</table>

These measures were standardized and aggregated as the measure of game facility. The behavioral measures for total games and group size at Time 1 (September–November) and Time 2 (December–February) were each aggregated as they were significantly inter-correlated, respectively, $r = .33, p < .002,$ and $r = .61, p < .0001.$ The inter-correlations among the variables constituting the game facility construct are presented in Table 3.

Social competence for this age group was defined in terms of popularity (like most nominations) and reciprocated friendship nominations. These measures were administered in the fall (and used as a control for stability of social competence) and spring (used as the criterion variable) of the year; these scores were standardized and aggregated. The inter-correlations between these measures in the fall were $r = .70, p < .0001,$ and in the spring were $r = .80, p < .0001.$

In light of the gender differences on total games, types of games, and variety of games reported above, we adopted the following analytic strategy in game leadership predicting social competence and adjustment to school.

Table 3
Inter-correlations Between Measures of Game Facility

<table>
<thead>
<tr>
<th>Observed games (1)</th>
<th>Observed group size (2)</th>
<th>Athletic peer nominations (3)</th>
<th>Adult-rated games (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td>.60**</td>
<td>.24**</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>.29**</td>
<td>.28**</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>.35**</td>
</tr>
</tbody>
</table>

**$p < .01.$
Children’s Playground Games Across the First Year of School

First, we tested separate models for boys and girls. In each case models were tested using hierarchic regression procedures. Control variables were entered first, followed by the game leadership variable. The control variable for the model predicting end-of-year social competence was the beginning-of-year social competence, and the control variable for the school adjustment model was the beginning-of-year school adjustment. Second, we tested for gender differences within each of the criterion variables by testing the difference in the regression planes across gender.

The separate regression models for boys’ and girls’ game leadership predicting end-of-year social competence and school adjustment are presented in Table 4. Beginning with social competence we see that game leadership did not predict girls’ social competence but did predict boys’ social competence. For school adjustment, game leadership did not predict girls’ adjustment, but did predict boys’ adjustment, though the girls’ model was approaching statistical significance with a p value of .08.

Next, we tested for gender differences within social competence and within school adjustment, by fitting regression models with boys’ and girls’ data combined. Model 1 contains only the control and game leadership variables as in the previous analyses. Model 2 contains a main effect for gender and interactions of gender with the control and game leadership variables, in addition to the variables in Model 1 on each of the dependent variables. For social competence, Model 1 had the following predictors: the intercept (I), social competence at Time 1 (SC1), and game facility (GF). For Model 2, the following predictors were used: the intercept (I), gender (G), SC1, and two interactions, G × SC1 and G × GF1. As displayed in Table 5, each of the

Table 4
Regression Models for Game Facility Predicting Social Competence and School Adjustment for Boys and Girls

<table>
<thead>
<tr>
<th>Variable</th>
<th>Order</th>
<th>Df</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social competence</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SC</td>
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<td>1</td>
<td>7.82</td>
<td>.0001</td>
</tr>
<tr>
<td>Time 1 game facility</td>
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<td>1</td>
<td>-.36</td>
<td>.7192</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SC</td>
<td>1</td>
<td>1</td>
<td>3.25</td>
<td>.002</td>
</tr>
<tr>
<td>Time 1 game facility</td>
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<td>1</td>
<td>4.77</td>
<td>.0001</td>
</tr>
<tr>
<td>School adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SA</td>
<td>1</td>
<td>1</td>
<td>.23</td>
<td>.82</td>
</tr>
<tr>
<td>Time 1 game facility</td>
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<td>1</td>
<td>1.82</td>
<td>.08</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 SA</td>
<td>1</td>
<td>1</td>
<td>1.01</td>
<td>.31</td>
</tr>
<tr>
<td>Time 1 game facility</td>
<td>2</td>
<td>1</td>
<td>2.54</td>
<td>.01</td>
</tr>
</tbody>
</table>

Note. SC = social competence; SA = school adjustment.
models was significant, and the incremental change in $R^2$ from Model 1 to 2, $R^2 = .06$, $F = 12.22$, $p < .0008$, was statistically significant. That the $G \times GF$ interaction was statistically significant indicates that game leadership was more important in predicting boys' social competence, relative to girls' social competence.

Next, we tested for gender differences between the boys' and girls' models of game leadership predicting adjustment to school. Adjustment to school for Model 1 had the following predictors: the intercept (I), school adjustment at Time 1 (SA1), and game facility (GF). For Model 2, the following predictors were used: I, gender (G), SA1, and two interactions, G × SA1, and G × GF1. As displayed in Table 6, each of the models is significant, but the incremental

<table>
<thead>
<tr>
<th>Variable</th>
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<th>$t$ value</th>
<th>$p$ value</th>
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<tr>
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<td>Game facility</td>
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<td>.004</td>
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<td>Model 2 ($R^2 = .16$)</td>
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<tr>
<td>Intercept</td>
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<tr>
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<td>.75</td>
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<tr>
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<td>.82</td>
</tr>
<tr>
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<tr>
<td>G × SA</td>
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<td>.64</td>
</tr>
<tr>
<td>G × GF</td>
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<td>−.66</td>
<td>.51</td>
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</table>

Note. G = gender; SA = school adjustment; GF = game facility.
change in $R^2$ from Model 1 to 2 was not significant, $R^2 = .02$, $F = 1.76$, $p < 0.18$, indicating no gender difference in games predicting school adjustment.

**Ethnic Integration in Groups**

In this analysis we examined the extent to which the ethnic variety of peer groups changed across the school year. Variety of ethnicities (0, 4) was coded at the beginning of each focal sampling interval. A score of zero indicated that only members of the focal child’s ethnic group were present and a score of 4 indicated that all four were present. When we used a time (3) × gender (2) × ethnicity (4) repeated measures ANOVA, where time was the within-subjects variable, no significant main or interaction effects were observed.

**Discussion**

**Occurrence of Games for Boys and Girls Across the School Year**

The frequency with which children engaged in games across the first year of schooling varied by gender and time. First, regarding gender, boys engaged in more games and in a greater variety of games. Girls, however, engaged in more verbal games, such as jump rope and clapping games. This gender difference probably reflects the finding that boys are more physically active than girls as a result of both hormonal and socialization events (Hines & Kaufman, 1994; Maccoby, 1998). When boys are put into a context that affords opportunities for physically vigorous activity, such as an outdoor playground, predictable and robust gender differences are observed (Harper & Sanders, 1975).

Girls, compared to boys, were more frequently observed in verbal games, such as jump rope chanting and clapping games. This probably reflects girls’ verbal facility, relative to boys. This finding, as discussed in more detail below, is also consistent with ethnographic studies of children from a variety of ethnic groups (e.g., Goodwin, 1990; Heath, 1983; Lever, 1976; Thorne, 1986, 1993). While this finding has been replicated across a variety of research teams with different theoretical and methodological orientations, it should be noted that all studies, including the present one, had relatively small samples. Thus, the generalizability of these findings is still limited.

The gender differences in games may be further interpreted in a number of ways. First, it may be that girls are less concerned with games, generally, than boys, because games are competitive. That is, boys may play games more than girls because the competitive nature of games is more in keeping with the hierarchic and competitive nature of male peer groups (Maccoby, 1998). This view is consistent with Piaget’s (1965) observations of children’s games and with some ethnographic descriptions of the games of urban children (Goodwin, 1990).

Second, it may be that our coding scheme was too gross to detect girls’ engagement in games. Perhaps if we had used more fine-tuned coding and recording strategies (such as coding game complexity using audio-video recording devices), gender differences in the observational data would have been less robust. This explanation is not, however, consistent with Goodwin’s
(1990) ethnographic study of African American urban children. Using more micro-analytic ethnographic techniques, she too found that boys played games more frequently than girls. Additionally, Thorne's (1993) ethnographic research also found boys engaging in chase more frequently than girls.

Time interacted with gender on the occurrence of games such that gender differences emerged as the school year progressed. Specifically, no significant gender differences were found in the relative frequency of total games during the first part of the school year, but they became apparent by the end of the year. Boys engaged in more games and in a greater variety of games at the end of the year, relative to the beginning. Girls' participation in games remained flat across the year. These results confirm the socialization expectation that the playground is a venue that affords males opportunities to engage in locomotor and competitive activities.

The observed time changes of individual types of games were consistent with these expectations as well. Chase games decreased across the year and ball games increased. During Time 1, chase games occurred with greatest frequency and declined across the year. Similarly, Thorne's (1986) ethnographic study of primary school children in Michigan playgrounds also found that chase games tended to be observed at the start of the school year and decreased as the year progressed.

Chase games may have declined with time because of the relative simplicity of these games. The simplest variants of chase games involve only the most basic rules: chase and be chased. The possible simplicity of chase is further evidenced by the fact that most simple variations are commonly observed in even very young preschool children (Pellegrini & Smith, 1998). Many of these games require little background knowledge or negotiations about interpretations, thus children can interact with each other in these games from the very earliest phases of social group formation. With repetition, chase, unlike ball, games become boring to children of this age (Blatchford, 1998).

It may be the case that children used chase games as opening gambits in initiating interaction with new and unfamiliar peers and as bases for playing new and more complex games, like ball games. Indeed, as the year progressed chase games declined and ball games increased. The ball games that boys played most often were soccer, basketball, and football. These sorts of games are cognitively and socially more complex than chase. That is, in ball games there are numerous roles and rules in each game that children must comprehend, follow, and negotiate with their peers. Not only are there offensive and defensive sides, but there are sub-roles within each, such as being a forward or a center. When there is a perceived infraction, such as an offside or a foul, the rule must be articulated and negotiated. The complexity of these games is further evidenced by the fact that children do not get bored easily playing them (Blatchford, 1998). Thus, with increasing social cognitive development, familiarity with peers, and practice playing a variety of simpler games, the complexity of the games they played also increased.

Our level of description of these games, however, prevents us from concluding that chase games were simpler or less complex than ball games,
though our time analyses and earlier research are suggestive. More detailed descriptions of these games are needed so that we can gauge the progression from “simple” to “complex” games.

Further, the time data in this study were conflated with seasonal variation. That is, the observed time effects may in fact have been influenced by seasonal effects, such that in the upper Midwest in the United States we might expect winter (Time 2 in this study) to inhibit games. While we recognize this possibility, we also think that some of our data support the interpretation that boys’ engagement in ball games increased monotonically. Specifically, ball games (for boys) increased from Time 1 to 2 to 3. This increase corresponds to a monotonic drop in chase games from Time 1 to 2 to 3. A similar finding was reported on Michigan playgrounds as well (Thorne, 1986). In order to more convincingly eliminate seasonal variation as a confound of time, children should be observed across the school year in a climate that is less variable and less extreme (e.g., San Diego).

Game Facility, Social Competence, and Adjustment to School

We considered games as an important developmental task for children, and especially boys, entering primary school. They used their facility with games as a way in which they could achieve social competence with their peers and adjust to very early schooling. This finding is consistent with the theoretical assumption that the social rules and roles that children learn in one niche (with their peers on the school playground) should predict competence in related niches, with their peers and in school in first grade. Both niches are similar to the extent that they encourage rule-governed behavior and cooperative interaction with peers. As children progress through school, however, the similarities between the playground and the classroom diminish. Social competence in this study was defined following Sroufe and colleagues (Sroufe, Egelund, & Carlson, 1999) at both the group (being liked by peers) and close social relationship levels (reciprocal friends).

Game facility for boys during the first part of year predicted end-of-year social competence and school adjustment after controlling for social competence and school adjustment, respectively, at the beginning of the year. These relations, however, differ for boys and girls, especially in the case of social competence. For boys, game facility was a more powerful predictor of social competence than it was for girls. This finding is consistent with the view that the playground affords boys opportunities to express those competitive skills important in male peer groups (Maccoby, 1998).

Similarly, game leadership predicted boys’ school adjustment but not girls’, though the role of game facility predicted school adjustment at the .08 alpha level for girls. The amount of variance in the male model was not significantly greater than that in the female model.

These results do reinforce earlier research where children’s peer relations in school predicted school success (e.g., Ladd & Price, 1987). The results of the present study, however, extend this earlier work in that the
majority of the students in the current study were low-income children. It is well known that children, and again boys especially, from economically disadvantaged groups have difficulty adjusting to and succeeding in school (e.g., Heath, 1983).

We have demonstrated that success in one part of the first grade school day (games at recess) can predict more general school adjustment. The mechanisms by which this happens, however, are not clearly understood. That the $R^2$ for each model was rather low suggests that most of the variance in adjustment to school is still unexplained. Future research should also examine the extent to which game leadership predicts school adjustment in later grades, when the niches of the playground and the classroom are more different (i.e., solitary academic work replaces more socially interactive instructional modes).

The way in which we defined and measured game facility also merits discussion. First, the measure was conceptually based on peer leadership and dominance. It was defined from a multiple informant, multiple measure perspective, thus maximizing its construct validity (Cronbach, 1971; Rushton, Brainerd, & Pressley, 1983).

Peer nominations and teacher ratings are commonly used to assess peer status while behavioral observations are used much less frequently (Englund et al., 2000; Pellegrini & Bartini, 2000). We used two behavioral measures: relative frequency of engagement in games and the size of the peer group in which the focal child was embedded. The use of this latter measure was derived from ethological studies of dominance status (e.g., Chance, 1976; Vaughn & Waters, 1981). In the ethological literature, dominance is defined as leadership, which relates to access to resources (Dunbar, 1988; Pellegrini & Bartini, 2001). One way in which dominance has been behaviorally defined in this literature is in terms of the extent to which conspecifics direct their attention to leaders. Attention can be defined as individuals looking at a leader and by their spatial proximity to a leader. Subordinate individuals track leaders so as to monitor alliances and possible power shifts (Chance, 1976). With preschool children, attention structure is highly related to other measures of peer status, such as positive peer nominations ($r = .79$ in Vaughn & Waters, 1981). In the present study we extended this notion of attention structure by defining leadership in terms of number of peers who are attracted to leaders. The correlation between this measure and other measures of peer status supports this judgment. Future research should extend this work by examining the social dynamics of group formation. Does the focal child join an existing large group? Alternatively, do children join the focal child at the start of games? Do the leaders have preferred roles in games and do their peers obey them?

Last, we examined inter-ethnic interaction on the playground across the year. The level of ethnic variety in playgroups did not vary by either time or gender. As in other observational research, primary school children prefer to interact with peers of the same race (Boulton & Smith, 1993). It is probably the case, following Contact Theory, that desegregation may actually entrench
Children's Playground Games Across the First Year of School

segregation unless existing stereotypes are changed (Allport, 1954). This seems to be especially true when children are placed and observed in unstructured settings.

Future research should examine the effectiveness of policies that foster inter-ethnic interaction. Research with adolescents has shown that school policy (e.g., where differences are minimized and similarities are maximized) can increase interaction among different ethnic groups (Schofield, 1981). It is also important, however, to examine the maintenance of effects as these biases, though they are less persistent than sexual segregation biases, can be very difficult to change without adult-provided structure and support (Maccoby, 1998; Serbin, Tonick, & Sternglanz, 1977).

Limitations

There were a number of limitations in this study. First, we only studied the games of children on the playground at recess. As noted above, this choice may have underestimated the occurrence and sophistication of girls' games, relative to boys'. More work in this area is needed and future research should examine games in different venues, such as in all-girls schools.

Another limitation relates to our choice of sampling and recording methods. We chose a strategy that would provide a rather general metric of children's game involvement across the school year. This strategy, however, did not allow us to conduct more in-depth descriptions of the games played. For example, while we were able to document the frequency of games played by boys and girls we were not able to describe in detail the nature or complexity of the games. Future research might use ethnographic and folklore methods (e.g., videotape games and conduct linguistic analyses of the games) to provide in-depth descriptions of the structure and complexity of games.

Policy Implications

This work also has educational policy implications. Recess is a ubiquitous part of the school day, yet it is incredibly under-studied (Pellegrini & Smith, 1993). Despite the paucity of data, many policy makers are currently advocating the elimination of recess from the school day (Pellegrini, 1995). For example, many school districts in Twin Cities metropolitan area are considering the elimination of recess as one way to address budget shortfalls.

The results from this study suggest that the games played at recess are implicated in children's social competence and adjustment to first grade. The finding that children's social competence develops in the context of interacting with their peers is especially important as children are rapidly losing opportunities to interact with peers. There are signs that children of primary school age have fewer opportunities out of school for interacting freely with peers and thus developing social skills and competence. For example, after school many American children enter empty homes, waiting for their parent(s) to return from work (Steinberg, 1986). Recess may be one of the few
times during the day when children have the opportunity to interact with peers and develop social skills.

There are also policy implications for our finding that peer groups are not ethnically integrated. Adult intervention has been used successfully to encourage the integration of peer groups by gender, a task more difficult to accomplish than ethnic integration (Maccoby, 1998). In these cases integration is facilitated when adults model and reinforce integration. The presence of trained adults both in the classroom and on the playground may result in children choosing to model these adults and to integrate their peer groups. The positive role of trained adult models also points to the importance of having teachers, not aides, on the playground. An additional benefit of having teachers on the playground is that their presence minimizes bullying (Pellegrini, 2002).

Notes

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1To our knowledge this use of the term "scaffolding" first appeared in print in these two sources at different institutions in England, with slightly different meanings. Wood, Bruner, and Ross (at Oxford and Nottingham) were working on social support for children's learning and problem solving. At the same time, Patrick Bateson (at Cambridge) was working on animal play and used the term to describe a way in which a behavior (play) could support the learning of a new skill. When the skill was learned, the scaffold (in this case, play) disappeared.

References


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