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Improving Social Engagement and Initiations Between Children With Autism Spectrum Disorder and Their Peers in Inclusive Settings

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Abstract

Research suggests that incorporating the circumscribed ritualistic interests of children with autism as a theme of activities can improve their socialization. The current study assessed whether socialization would improve if more general interests of children on the autism spectrum that would also be of interest to their typical peers were incorporated into activities. Three children with autism, who were included in regular education classes but did not seek out or interact with peers prior to intervention, participated. Data were collected in the context of a multiple baseline across-participants design, with a reversal for one child. Activities that were identified to be of interest to the study participants and their typical peers were implemented as clubs twice weekly during regular lunchtime periods. Results showed that all three children demonstrated large increases in their time engaged with peers as a result of the activities, with minimal training of the interventionist and without any specialized training of the children with autism or their peers. Furthermore, their untargeted verbal initiations greatly improved over baseline levels and often approximated the levels of their peers. Implications for further improving peer social interactions for children with Autism Spectrum Disorder are discussed.

Keywords

initiations, inclusion, peers, socialization, social communication, autism

The diagnostic criteria for Autism Spectrum Disorder (ASD) include difficulties with socialization (American Psychiatric Association, 2000). Research suggests that even children who progress well with the acquisition of age-appropriate language structures may continue to have difficulties with social communicative interactions with peers that can persist through the life span. For example, McGee, Feldman, and Morrier (1997) found that children with autism spend less time in proximity to other children and both receive and make fewer initiations with these peers. These challenges often result in an inability to create stable friendships and relationships (Bauminger & Kasari, 2000; Howlin, 2000; Stewart, Barnard, Pearson, Hasan, & O'Brien, 2006; Strain & Schwartz, 2001).

A number of studies have focused on formal skill–teaching techniques to increase social interactions of children with ASD. Many of the successful programs have been based in natural environments, such as school and community settings, and focus around the framework of actively recruiting and training typical peers to interact with the child who is having social difficulties (cf., Chan, Lang, Rispoli, O'Reilly et al., 2009; Koegel & Koegel, 2006; McConnell, 2002; Rogers, 2000). If carefully applied, these techniques can improve the communication and social interactions of children with ASD and can help with their immersion into mainstream settings (Kalyva & Avramidis, 2005).

Within the social skills literature, however, there is an important distinction between skill and performance deficits (Gresham, 1981a, 1981b; Gresham, Sugai, & Horner, 2001; Gumpel, 2007; Kavale & Mostert, 2004). With a skills deficit, a child does not yet exhibit the requisite behaviors or responses to adequately meet the demands of a given situation. With a performance deficit, however, the

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Table 1. Child Characteristics

Child	Age	Grade	Sex	Ethnicity
1	9	3	Male	Hispanic
2	12	6	Female	Euro-American
3	10	5	Male	Euro-American

child has acquired these necessary skills but does not use them. Thus, their lack of performance within a given social situation may be misconstrued as a lack of social knowledge.

When children with autism demonstrate a primary skill deficit, intervention programs have appropriately focused on teaching these children key social skills, such as how to share, imitate, ask for help, greet, and respond to conversation while playing with toys, while also teaching the typical peers about disabilities and basic behavior management procedures to effectively increase the duration and frequency of peer interactions (Garrison-Harrell, Kamps, & Kravitz, 1997; Gonzalez-Lopez & Kamps, 1997; Morrison, Kamps, Garcia, & Parker, 2001). For children with performance deficits, however, a different approach is warranted, and the emphasis must be shifted on overcoming the barriers that inhibit the actual use of these skills in peer social situations.

A large number of children with autism spectrum disorder exhibit circumscribed interests (Klin, Danovitch, Merz, & Volkmar, 2007). A performance-oriented social intervention component that has been effective in improving socialization is the incorporation of the child with autism's ritualistic and circumscribed interests into activities. Specifically, the literature suggests that playground activities that use the circumscribed interest as the theme of games can improve the social engagement of the child with autism with his or her typically developing peers (Baker, Koegel, & Koegel, 1998).

In addition, studies suggest that social interventions are most successful when they are implemented in natural and inclusive settings (cf., Ingersoll, 2009). There is evidence to suggest that the incorporation of circumscribed interests into activities may be so powerful that they can produce changes without the need for a specific social skills intervention. The question remains as to whether it would be possible to use more general interests of the child with autism that also would be of interest to their typical peers in order to have an effect on social interactions. Therefore, the purpose of this study was to assess whether incorporating the general interests of children with autism spectrum disorder (ASD) into activities in natural inclusive settings, with no direct social skills training for the child, would result in improved engagement and verbal initiations between children with ASD and their typical peers.

Method

Participants

Three children with autism participated in this study. All were diagnosed with an autism spectrum disorder before the age of 3 years by an outside agency and were referred to our center for intervention services. All three qualified for state-paid services for children with severe disabilities and all three qualified for special education services with associated Individualized Education Plans (IEPs). At the point in time of this study, the children's primary language deficits were in the area of pragmatics, although the children had significant language delays as preschoolers and in the early elementary years. In addition, all participants had Full-Scale IQs in the average range (FSIQs above 90). These children, however, continued to exhibit severe social difficulties and all three had social goals on their IEPs. The children were reported not to have peer relationships appropriate to their developmental level and reportedly had no play dates outside of the school setting. All three children ate lunch with their peer groups and were provided with opportunities to engage in existing formal and informal social interactions and activities at their schools following the lunch period throughout baseline and intervention, but instead the children socially isolated themselves. Specific child characteristics are listed in Table 1 and below.

Child 1 was fully included in a day camp and public elementary school and had a full-time aide. He ate lunch with his peers, and in spite of being offered social opportunities after lunch, he spent his lunch period pacing the school yard alone while engaging in delayed echolalia (i.e., repeating lines from preferred cartoons and movies). He was diagnosed with Pervasive Developmental Disorder, Not Otherwise Specified.

Child 2 was also fully included in a public elementary school and had a part-time aide to facilitate her completion of academic assignments. In spite of being offered opportunities to engage in social clubs and other school activities, she typically left her peer group and spent her lunch periods in the library alone reading books. She was diagnosed with autism.

Child 3 was included for most of his school hours in a public elementary school, with the exception of pull-out resource services for math and speech/language therapy. Child 3 was also offered opportunities to engage in social clubs and informal activities after lunch; however, he chose to spend his lunch and recess periods reading alone in the library. He was diagnosed with autism.

Settings

Settings for all children were selected to represent contexts where social interactions are typically experienced by children. In all settings, the children sat at picnic tables with

peers to eat lunch for 15 min (eating period) and then were dismissed to play for the remaining 30 to 45 min of the lunch recess (free play period).

For Child 1, baseline and the first seven intervention sessions took place at a summer day camp program. This was a day camp program in which children participated in a variety of activities, including arts and crafts, swimming, field games, and gymnastics. Children were placed in groups of 6 to 10 same-aged peers, but they ate lunch with the entire camp (approximately 80–100 children). Additional baseline and intervention sessions were conducted at the child's school as part of the experimental design (see Design section below).

Child 1's school lunch period was shared for all students in the lower grades (Grades 1–3), with a total of approximately 100 to 150 children. For Children 2 and 3, all sessions took place on their public school campus during their designated lunch periods. For both children, the upper grades (Grades 4–6) had their lunch periods concurrently, with approximately 100–150 children. In all three school settings, children also had access to informal activities, such as playground equipment, blacktop play surfaces (e.g., handball, basketball, dodge ball), school libraries, and sports fields.

Experimental Design

A nonconcurrent multiple-baseline across-participants design was used to assess change in the social behavior of the three participants (Kazdin, 1982). In accordance with the multiple baseline design, the intervention was systematically applied to one participant at a time, with a staggered number of sessions for each child. A nonconcurrent multiple-baseline design was implemented to demonstrate internal validity by showing that there was stable data for all participants before the introduction of the independent variable and functional relationships when the independent variable was systematically introduced (Christ, 2007; Hayes, Barlow, & Nelson-Gray, 1999). In addition, a reversal was conducted as part of the experimental design for Child 1 in order to further strengthen the internal validity. Specifically, a second baseline and intervention was conducted for Child 1 in his school setting.

Procedure

Baseline. During baseline, data were collected while each child participated in his or her natural social environment. All children ate their lunches at picnic tables with their peers. At the start of the free play period of their lunch, the participants were briefly informed of the various playground and club activities that were taking place and were then allowed to engage in whatever activity they desired. Existing clubs were held in all three children's settings, but these preexisting clubs were not specifically designed to be aligned with the participants' preferred interests (see intervention section below for each individual child's preferred interest). During baseline, the participants did not participate in any of these existing clubs.

Intervention. Following the baseline sessions, clinicians met with the participants and their parents to conduct an activity preference assessment. After gathering a list of the interests of each child, the clinicians and the parents jointly determined which interest would have mutual appeal with the child's peers. Next, the details of each structured social club were created using a preferred interest of each targeted child as the theme.

As in the baseline, club activities were briefly announced to the children at the beginning of their free play periods. Participation was strictly voluntary for all children, including the target participants. Each club usually lasted the duration of the free play period. Generally, about 6 to 10 typically developing peers in the same grade also chose to participate in the clubs, but no clubs ever had fewer than 5 children and some club meetings had up to 20 children. Adult facilitators (undergraduate university students) were responsible for introducing the daily club activity and organization of materials, but then faded their presence once the activity began.

The social facilitators had taken an introductory autism course and were introduced to behavioral strategies. They were recruited specifically for this project and did not serve other roles at the camp/schools. The facilitators were aware that the club was intended to promote social interaction in the children with autism. Two of the three facilitators did not know what data were being collected or the specific independent/dependent variables. The facilitators were available to clarify instructions, answer questions, and announce the transition to the next step of any multiphase activity, if necessary. They did not provide any direct social skills instruction or feedback to any of the children before, during, or after the club activities. Individual club activities are described below.

Child 1 enjoyed animated television characters and playing board games. To capitalize on both of these preferred interests, a social club was implemented that focused on board and table games that incorporated his favorite television shows and preferred characters (e.g., *SpongeBob SquarePants*, *The Simpsons*, various Disney characters). A variety of special cartoon versions of common board games (e.g., Ants in the Pants, Uno, Trouble, Checkers) were selected for use in the board game club. Games were played according to the regular game rules.

Child 2 reported that she enjoyed cooking, arts, and crafts. Based on these interests, a Cooking and Crafts Club was formulated. Activities included friendship bracelet making, origami, and no-bake cooking. At the start of each club, the art and cooking materials were divided up among

the participants to provide opportunities for social interaction around the child's preferred interests.

Child 3 liked playing video games and looking at video game strategy guides. Therefore, for Child 3, we created a Video Game Trivia Challenge Club. As these activities did not have previously developed rules, a set of guidelines was created for this club. The children were asked to divide themselves into teams and each team generated questions for the trivia portion of the game. Teams were asked to develop a series of game-related questions using provided video game magazines (approximately 10 min). Once all teams had created their questions, they took turns asking and attempting to answer questions about the latest video games to accumulate points for their team.

Data Collection

All dependent measures were coded in vivo. Data were gathered for 15 min during each session, 5 min after the children's free play period had begun. Data collection was conducted by undergraduate university students not serving as club facilitators.

Dependent Measures

Data were collected on two dependent measures: Engagement with Peers and Unprompted Verbal Initiations.

Engagement with Peers. Engagement with Peers was defined as the child with ASD remaining in proximity (i.e., 5 feet) to peers *and* participating in one of the following social activities with at least one peer: talking, playing a game, creating something together, discussing the activity, or listening to a peer while making sustained eye contact. Data on engagement were collected using 1-min intervals. For each minute-long interval, a child received a (+) if he or she remained engaged for the entire minute. If the child did not remain engaged for the full minute, the interval was scored as a (–). At the conclusion of the session, the number of (+)s were divided by the total number of intervals then multiplied by 100 to yield a percentage.

Unprompted Verbal Initiations. Unprompted Verbal Initiations were defined as appropriate spontaneous verbal utterances made by the participant directed toward a peer, which were either related to the club activity or general social conversation. These included questions (e.g., "What color are you going to use now?"), comments (e.g., "Wow!" That's cool!), or activity directions (e.g., "Let's make earrings now.") that were initiated while physically orienting one's body toward a peer and/or making eye contact with him or her. Utterances were not considered to be initiations if they were elicited by a peer's comment or question. In addition, scripted (echolalic) phrases were not included. In order to obtain an estimate of how the child with ASD's initiations compared with the typical peers, data were collected for a different randomly selected typical peer during each activity, typically the third peer to enter the group activity. Total Unprompted Verbal Initiations were determined using a frequency count.

Interobserver Reliability

Interobserver reliability was calculated using data independently recorded by a second observer coding simultaneously for 33% of the sessions for both engagement with peers and unprompted verbal initiations using the same definitions used by the primary data recorder. Percentage agreement was calculated by dividing agreements by agreements plus disagreements then multiplying by 100 to yield a percentage. For engagement with peers, an agreement was defined as both observers recording a plus (+) or both recording a minus (–) for the interval. A disagreement was defined as the two observers recording a different mark in a given 1-min interval. For unprompted verbal initiations, a commonly used, though less rigorous, definition of agreement was used. The total number of unprompted verbal initiations for each observer was divided and multiplied by 100, to yield a percentage agreement for each session. The average percentage agreement for Engagement with Peers was 99% (range 94%–100%), and the average percentage agreement for Unprompted Initiations was 95% (range 82%–100%).

Results

Engagement with Peers

Figure 1 shows the results for the *Engagement with Peers* measure. Throughout the baseline condition, none of the children spent any time engaged with their peers, remaining stable at 0%. Following the start of intervention, Child 1 showed an immediate increase in his engagement, with all but two of the sessions well above the baseline levels. During the second baseline sessions, Child 1 again returned to 0% engagement. Finally, during the last intervention condition, Child 1 immediately increased his level of engagement to 100% and remained at 100% throughout the entire condition.

Similarly, Child 2's baseline condition, which was longer as per the multiple-baseline design, also showed zero percent engagement. In contrast, at the designated start of intervention, she began to engage with her peers at high levels, with the exception of 2 of the 22 lunch periods when she left the area for brief periods of time. Specifically, Child 2 remained engaged with peers for a mean of 98.5% of the consecutive 1-min intervals in the intervention condition, with a range of 73.3% to 100%.

Child 3's results were also similar, but even more consistent. During the baseline condition collected over 19 sessions, he exhibited no engagement with peers whatsoever. At the designated start of the intervention condition, Child 3 began to engage with his peers during 100% of the intervals throughout the entire condition.

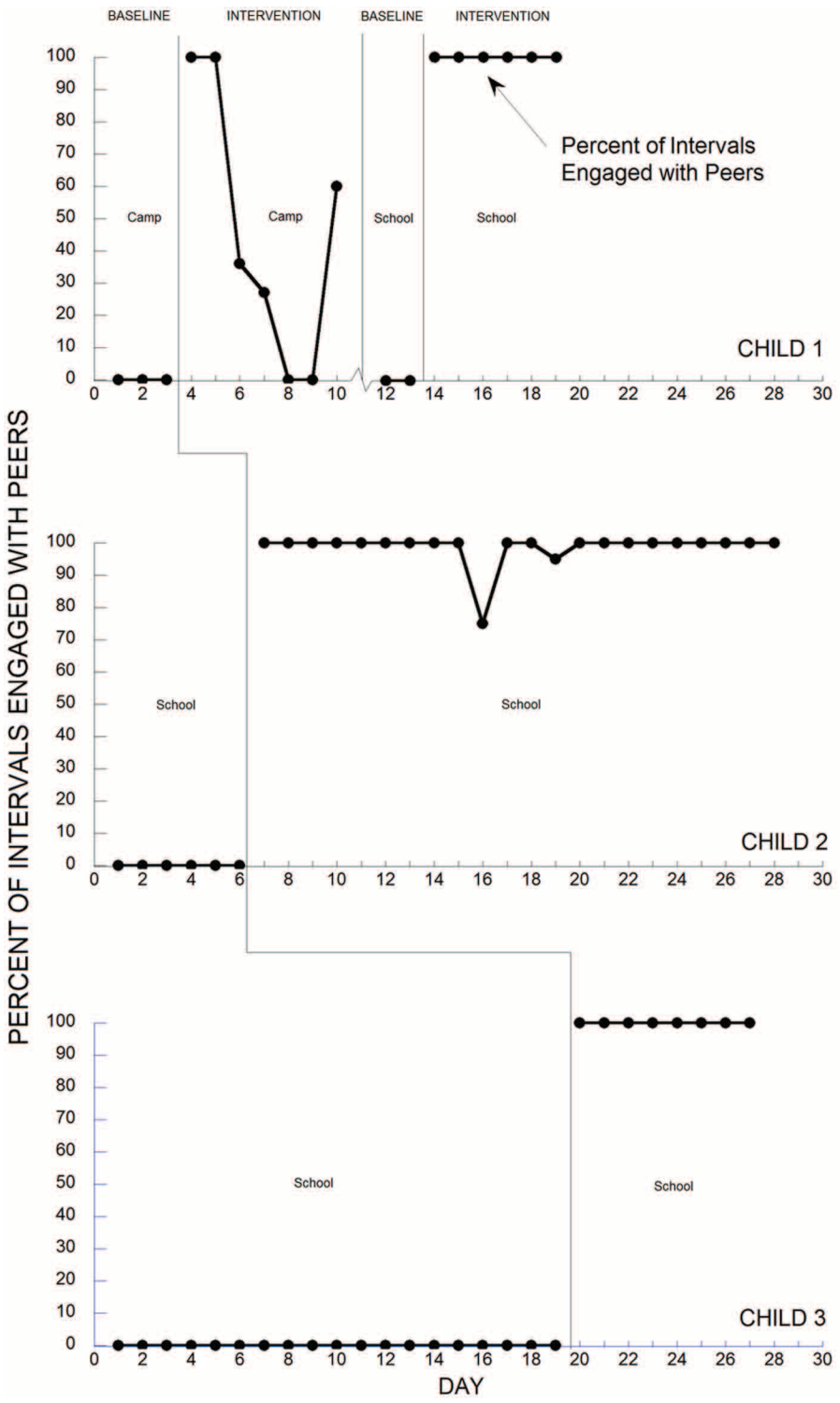

Figure 1. Amount of time the children were engaged with their typical peers.

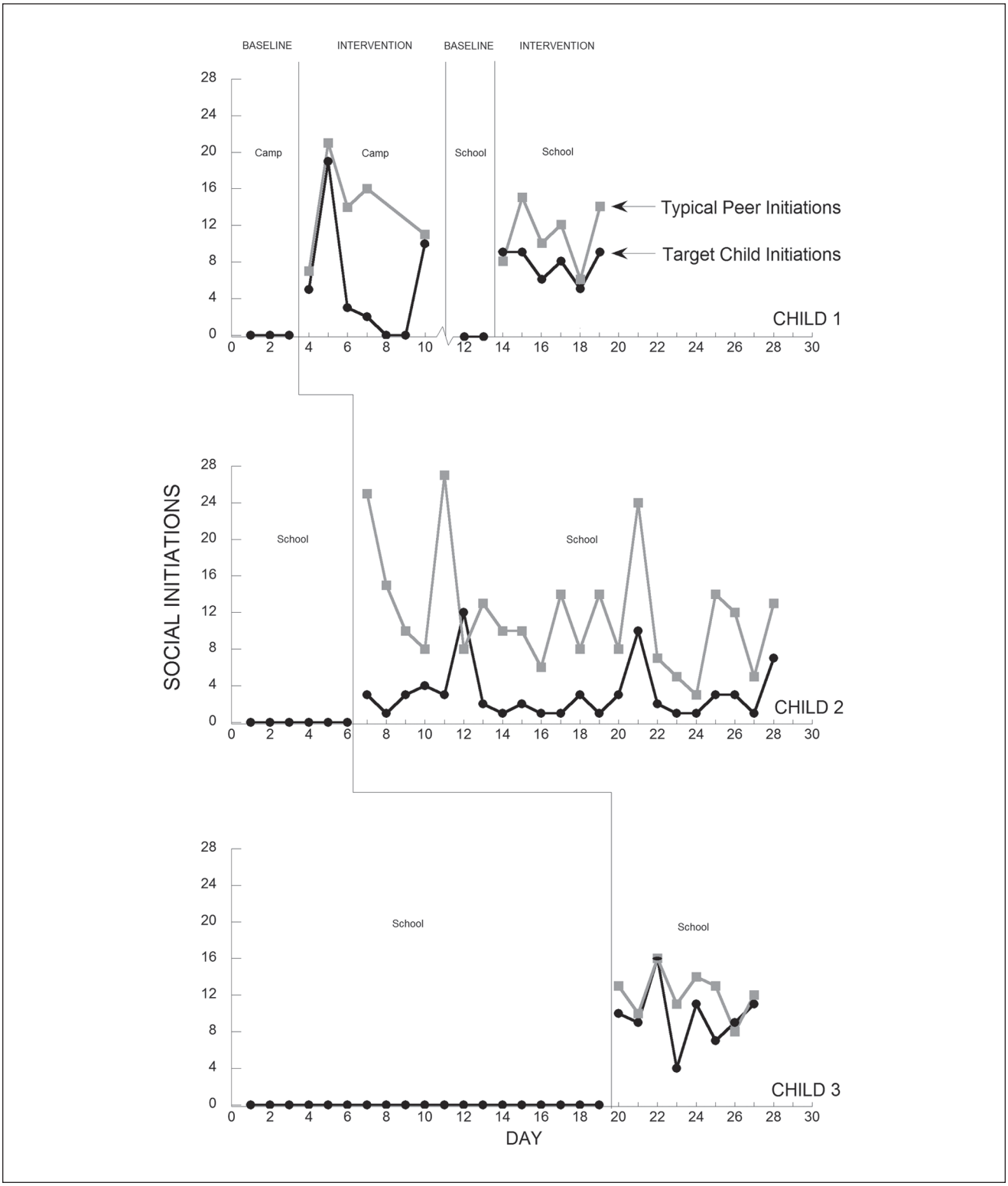

Figure 2. Number of initiations per session.
Note. Dark circles represent the initiations of the child with autism and the squares represent the number of initiations by randomly selected typical peers.

Figure 2 shows the results for the Unprompted Verbal Initiations measure for both the target children and, as a comparison, for randomly selected typical peers. During baseline, the target children did not make any unprompted

verbal initiations with their peers, with all sessions at zero percent.

In contrast, all three targeted children increased their number of unprompted verbal initiations following the start of intervention. At the designated start of intervention, Child 1's unprompted verbal initiations immediately increased and reached levels as high as 19 (which was in the range of his typical peers who made 6 to 21 initiations with a mean of 12.2). During his return to the baseline condition, Child 1 again did not make any unprompted initiations to his peers. Following the start of the second intervention condition, his initiations again increased and remained relatively stable and near the number of initiations made by his typical peers.

Child 2's initiations similarly increased from a baseline level of zero, to a range of 1 to 13 during intervention. This level was slightly below her peers, who ranged from 3 to 27.

Finally, Child 3's data were similar to the other participants. He had no initiations at baseline, but showed an immediate increase in unprompted verbal initiations during intervention with a mean of 9.6 and a range of 4 to 16. This was similar to his typical peers who made a mean of 12 initiations with a range of 8 to 16 across sessions.

Discussion

The results of this study showed that developing activities that incorporated the child with autism's interests resulted in increases in social engagement and verbal initiations without direct intervention on social skills, per se. This is consistent with other research showing that children with ASD's thematic ritualistic activities, used as themes in group games, can result in improved levels of engagement (Baker et al., 1998). In the present study, the children with ASD actively participated in the activity with their peers when a social club was crafted around their general interests. In addition, research suggests that the most successful social outcomes for children on the spectrum occur when both the child with ASD and the typically developing peers are targeted together (cf., Ingersoll, 2009; Pierce & Schreibman, 1997). This study was conducted in an inclusive setting, with activities that were likely to be mutually reinforcing to the child on the spectrum and the typical peers.

These results suggest the possibility that the lack of social behavior in the children with autism may have reflected a performance deficit rather than a skill deficit (Gresham, 1981a). Although direct social skill instruction is often necessary for children with autism, it is equally important to evaluate possible environmental manipulations that may be less intrusive and less costly to implement.

Although children with ASD often fail to develop peer relationships appropriate to their developmental level, research suggests that most have a desire for friendships (Howlin, 2000; Jennes-Coussens, Magill-Evans, & Koning, 2006; Jobe & White, 2007; Jones & Meldal, 2001). The social club activities seem to have provided a positive forum for facilitating interactions with peers (Scott, 2007), as suggested by the increase in the social engagement and number of unprompted verbal initiations by the child with autism spectrum disorder. The repeated social exposure and practice that these social clubs afforded may serve as an important initial step in establishing positive peer relationships.

There are a number of areas that warrant further research. Although this study resulted in rapid improvements in social engagement, generalization of socialization outside of the intervention sessions was not assessed. Moreover, although anecdotally we noticed that the children tended to continue to play together throughout the remainder of the period after the club activity finished, no systematic data were collected. Furthermore, future research assessing the feasibility of using school staff or parent volunteers to implement the social activities would be interesting. Finally, assessing the possibility of transferring the club facilitator role to the target children and their peers, thereby eliminating the need for adult facilitators, would be an interesting area of future research. Given that the role of the facilitator was very minimal in this study, we suspect that for some children on the spectrum, the activities could easily be transferred to peers. In summary, at this point, the results of the present study provide data suggesting that rapid improvements in social behavior are possible for children with autism, with minimal direct intervention efforts when their preferred interests are considered, and that the above areas are likely to be productive areas for future research.

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Declaration of Conflicting Interests

Drs. Robert and Lynn Koegel are partners in Koegel Autism Consultants, LLC, a private company.

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