

Social Interaction Characteristics of Preschool Children
with High-Function Autism Spectrum Disorder:
Peer-Group Intervention Outcomes

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Abstract

Background: Social interaction is a vital constituent in children's development. Social impairment, a core characteristic of high-functioning children with autism spectrum disorder (HFASD; IQ>75), includes difficulties in developing and maintaining social interactions and in forming meaningful relationships with peers and significant others. Children with HFASD can benefit directly from social intervention programs, calling for intervention design that targets an integrated social-emotional capacity in children with ASD as early as preschool age, which would include both the social understanding and the behavioral repertoire necessary for social interactions. However, most interventions have focused on school-aged children and pre-adolescents (e.g., Bauminger, 2002, 2007; Kaat & Lecavalier, 2014; Rao, Biedel & Murray, 2008; Wong et al., 2015).

Objectives: The current study's main aim was to examine the efficacy of a manualized-ecological intervention for preschoolers with HFASD, targeting their social interaction skills with typically developing age-mates. This "social interaction intervention" focused on skills to promote, develop, and maintain social interaction with peers, with an emphasis on sharing, prosocial skills, and conflict resolution. The intervention's effectiveness was measured versus two comparison groups: an active "social play intervention" group where participants received an alternative intervention focusing on learning specifically how to develop social and social pretend play with peers and a "delayed-treatment" control group. Additionally, the study aimed to examine the extent to which participants generalized their newly acquired skills to the natural preschool setting and to their family environment. The study also investigated the contribution of children's personal characteristics – age, IQ, and ASD severity – to their social skill gains. Finally, the social validity of the intervention program was examined.

Method: Participants comprised 50 preschoolers with HFASD (IQ>75) age 3-6 years who attended special education preschools throughout the country specializing in the ASD population. Preschoolers were randomly assigned to the social-interaction study group ($n=15$), social-play active comparison group ($n=20$), or waitlisted control group ($n=15$) receiving delayed intervention. No significant group differences emerged for children's age (CA); general, verbal, or nonverbal IQ; ASD severity; or socioeconomic status. In line with the ecological model, the manualized "interaction" and "play" interventions were conducted in children's preschools. Each 6-month intervention comprised three 45-min sessions per week: In the first weekly session, the child with HFASD was trained individually on the weekly topic, then, during the second and third weekly sessions the child practiced the learned topic in small mixed groups ($n=3$) together with 2 typically

developing peers from an adjacent inclusive preschool. Sessions were facilitated by trained, supervised therapists, under the guidance and supervision of the researcher. Data were collected via a multidimensional assessment procedure that included validated questionnaires, additional questionnaires developed for this study, and observations of children's free-play within their assigned small groups coded by an evaluator who was blind to the study's objectives and group assignments. Study questionnaires were collected at pretest and posttest from three different reporters: the therapists who facilitated the intervention program (to measure effectiveness) and the preschool teachers and parents (to measure generalization). Children's social capability was evaluated by the following instruments:

1. Vineland-II - Vineland Adaptive Behavior Scales (Sparrow, Cicchetti, & Balla, 2005).
2. Social Responsiveness Scale (SRS; Constantino & Gruber, 2005).
3. Social Engagement Questionnaire (Eytan & Bauminger-Zviely, 2013a).
4. Social Cognition Questionnaire (Eytan & Bauminger-Zviely, 2013b).
5. Observation of Social Interaction Skills (Eytan & Bauminger-Zviely, 2013c).

Research results: Main research findings indicated significantly greater pre-post improvement in the socialization domain (Vineland standard score) for the "social interaction" group compared to the "waitlisted" control group. The social interaction group also showed improvement on the Vineland coping skills subdomain, whereas the waitlisted group showed a significant decrease in that subdomain. Also, the social interaction group was the only group whose observations demonstrated a significant reduction in non-adaptive behaviors. In addition, the social interaction group showed a significant increase in high-level adaptive behaviors on the observational scale. In terms of social responsiveness (SRS), the social interaction group scored significantly higher than the waitlisted group in social cognition as reported by the intervention facilitators (therapists) and the preschool teachers. Furthermore, the therapists also reported preschoolers' significant improvement in reciprocal and coordinated social interaction (Social Engagement Questionnaire). Both social intervention groups ("social interaction" and "social play") improved their social capabilities in comparison to the waitlisted control group.

Also, according to teachers' and parents' reports, the children appeared to generalize some, but not all, of their skills beyond the intervention setting. Some instruments revealed improvement in the preschool and home, whereas others did not, and differences emerged between reporters. The preschool teachers' reports closely matched the intervention facilitators', whereas parents' reports differed. Mainly, parents in the two intervention groups (social interaction and social play) reported improvement in social responsiveness (SRS), whereas the waitlisted group did not. However, only parents of children in the social interaction group reported improvement in the social-motivation SRS subcategory.

In terms of the associations between preschoolers' background characteristics and social skill gains, results were inconsistent except for ASD severity, where lower severity was linked with greater improvement in children's social capabilities. Lastly, the social interaction skills intervention program demonstrated a high level of social validity.

Conclusions and implications: This study implemented a comprehensive intervention program to uniquely promote the ability of preschoolers with HFASD to interact socially with their typically developing peers. Deriving from an ecological model, the current intervention in these young children's natural everyday setting incorporated the acquisition and practice of social skills via a manual-based protocol and detailed lesson plans over a 6-month period. Overall, results indicated this early childhood "social interaction" intervention program's effectiveness, suggesting the program's promise for improving children's core deficit in social interaction skills and alleviating non-adaptive behaviors. Inasmuch as interventions targeting the core social deficits of young children with HFASD are crucial for later development and social competence, this study's findings offer significant clinical applications, accentuating the need for such ecologically based peer interventions. The results also hold great importance for the staff members working in special education preschools, who reported the intervention program's benefits and also recommended universally implementing it into ASD special education and treatment centers. An intervention program backed by research, operated in the educational and treatment centers, can help children to avoid adaptive and social difficulties as they grow up and contribute to their social functioning and their ability to integrate into society.