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# Behaviors of Children with High-functioning Autism when Paired with Typically Developing Versus Delayed Peers

Smith, T., Lovaas, N. W., & Lovaas, O. I. (2002). Behaviors of children with high-functioning autism when paired with typically developing versus delayed peers: A preliminary study. *Behavioral Interventions, 17*, 129–143.

## Level II

Two groups, nonrandomized study

## Why research this topic?

Peer interaction is believed to be important to increasing the performance and learning of children with autism. A number of models for promoting peer interaction have been developed (e.g., inclusion classrooms and small group activities) that combine children with **autism** (see *Glossary*) and their typically developing peers. The goal of integration is to provide peer models for children with autism and to promote relationships between children with and without disabilities.

Variables that facilitate these goals (e.g., size of integrated group, role of adults, ages, functional levels) have not been investigated. This Level II study investigated the effect of peer characteristics and the child with autism's social interactions.

#### What did the researchers do?

These researchers paired children with **high functioning autistic disorder (HAD)** (see *Glossary*) with one peer who was lower functioning and one who was higher. They used a crossover **within group** (see *Glossary*) experimental design. The children with HAD were observed in unstructured play with (a) a typically developing peer and (b) a delayed peer with autism. The sample included 9 children with high-functioning autism disorder (HAD), 7 delayed peers with autism, and 8 peers who were typically developing.

Both groups with autism were enrolled in early intensive behavioral intervention (Lovaas-based discrete trial training 40 hours/week). They were diagnosed using the Autism Diagnostic Interview and all had major delays in social interaction, communication, and self-care. The children with HAD had IQs of 70 or higher and the delayed peers had IQs lower than 70. The parents of the children with HAD identified typical peers who were about the same age to participate as the third group.

The children with HAD were paired with a typically developing peer for a 15-minute play session, given a 5-minute break, and then paired with a delayed peer for a 15-minute play session. This sequence was repeated, alternating among the participants. The sessions were videotaped and scored twice, once to score the child with HAD and once to score the peer's behavior. Five behaviors were scored every 10 seconds: (a) interactive toy play, (b) interactive speech, (c) solitary toy play, (d) solitary speech, and (e) self-stimulatory behavior. The researchers hypothesized that the children with HAD would exhibit more interactive play and speech and less solitary play, solitary speech, and self-stimulation with the typical peers versus the delayed peers.

#### What did the researchers find?

As predicted, the children with HAD had **significantly** (see *Glossary*) more interactive play and interactive speech with the typical peers when compared to the delayed peers. Interaction was at high levels with typical peers and nearly absent with delayed peers. The children with HAD also exhibited fewer self-stimulatory behaviors when paired with the typical children; however, solitary play and speech did not differ between the sessions. The typically developing peers provided cues and consequences for social interaction at a high rate and the delayed peers rarely did. Five children with HAD seemed able to discriminate between a delayed and typical peer, initiating and sustaining interactions with the typical peers throughout the session.

## What do the findings mean?

All 9 children with HAD displayed more interaction and fewer self-stimulatory behaviors during free time with a typically developing peer compared to a delayed peer with autism. Pairing the child with a typically developing peer appeared to produce positive effects on social interaction, and pairing the child with a delayed peer had negative effects on behaviors.

Occupational therapy practitioners provide intervention to children in dyads or small groups. This study suggests that the occupational therapist should select higher functioning peers. Positive interactions may result when typical children are used as peer models. Conversely, when paired with a child with more severe delays, a child with HAD may exhibit negative behaviors.

#### What are the study's strengths and limitations?

This study provided detailed descriptions of the children's behavior and hypothesized reasons for the children's behavior. The sessions were videotaped for repeated rating to assure reliable measures. Although it appeared that the pairings with typically developing children were beneficial, only dyads were investigated and the sessions were short time periods. The results may not generalize to settings that include more children and longer periods. The short-term sessions should be increased to resemble the preschool setting (e.g., 2 to 3 hours). The sample may have been **biased** (see *Glossary*) because the parents chose the typically developing

children and may have selected children that they believed would interact in positive ways with their children.

# Glossary

Autism—Autism Spectrum Disorder—Pervasive Developmental Disorders (PDD) is the diagnosis used in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.), text revision (DSM-IV-TR; American Psychiatric Association [APA], 2000), and in the International Classification of Diseases (ICD-10; World Health Organization, 1993) to describe children with a cluster of symptoms that vary widely in type and severity. The symptoms are grouped into three broad categories: (a) qualitative impairment in social interaction; (b) communication disorders; and (c) stereotyped, repetitive patterns of behaviors or a restricted range of interests. Depending on the level and distribution of impairment across these categories, a child can be diagnosed with Autistic Disorder, Asperger syndrome, or Pervasive Developmental Disorder—Not Otherwise Specified (PDD—NOS). All three of these diagnoses are usually included under the umbrella term *autism spectrum disorders* (ASDs).

The Individuals with Disabilities Education Improvement Act of 2004 (IDEA, Pub. L. 108–446) also includes autism as a disability category under which children might be eligible for special education and related services. The IDEA regulations define *autism* as "a developmental disability significantly affecting verbal and nonverbal communication and social interaction generally evident before age 3 that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences" (34 C.F.R., §300.7[c][1][i]).

**Biased/biases**—Biases are systematic errors within a study. When a study is biased, the means of treatment and/or control groups are artificially inflated or reduced. This artificial inflation or reduction can cause the study's results to be incorrect; the treatment will appear to have an effect, when in reality it does not, or vice versa. Many of the limitations reported in these evidence briefs are related to biases.

**High-functioning autistic disorder (HAD)**—Individuals with autism spectrum disorder who score higher on tests of IQ (IQ > 70) and adaptive behavior.

**Significance (or significant)**—A statistical term that refers to the probability that the results obtained in the study are not due to chance, but to some other factor (e.g., the treatment of interest). A significant result is likely to be generalizable to populations outside the study.

Significance should not be confused with *clinical effect*. A study can be statistically significant without having a very large clinical effect on the sample. For example, a study that examines the effect of a treatment on a client's ability to walk may report that the participants in the treatment group were able to walk significantly longer distances than those in the control group. However, after reading the study one may find that the treatment group was able to walk, on average, 6 feet, whereas the control group was able to walk, on average, 5 feet. Although the outcome may be statistically significant, a clinician may not feel that a 1-foot increase will make his or her client functional.

Within group—Participants (children) in the study served as their own control. In a withingroup crossover design, subjects participate in two conditions in alternating sequences.

## References

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This work is based on the evidence-based literature review completed by Jane Case-Smith, EdD, OTR/L, FAOTA

For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.



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