AOTA Evidence Briefs
Autism Spectrum Disorder

*A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project

Developmental Patterns and Outcomes in Infants and Children with Autistic Spectrum Diagnoses

Greenspan, S. L., & Wieder, S. (1997). Developmental patterns and outcomes in infants and children with disorders in relating and communicating: A chart review of 200 cases of children with autistic spectrum diagnoses. *Journal of Developmental and Learning Disorders, 1*, 87–141.

Level III

One group, nonrandomized

Why research this topic?

Developmental, Individual-Difference, Relationship-Based intervention (later abbreviated DIR and also termed the "floor time" model) emphasizes adult and child affect and relationship, the child's developmental level and individual differences in motor, sensory, affective, cognitive, and language functioning. This intervention is designed specifically for children with **autism spectrum disorder** and **pervasive developmental disorders** (see *Glossary*) and involves intense floor-time interaction sessions at home, ranging from 2 to 5 hours a day. In addition, children receive complementary services from a multidisciplinary team. The occupational therapy focus is primarily sensory processing and motor planning, which are recognized as important aspects of engaging the child in play and understanding the child's arousal and affect. The goal of floor time interactions is to begin at the child's developmental level, understanding his or her individual differences, and to follow the child's lead in play activities. The caregiver imitates the child and makes efforts to interact. Through this engagement, the adult introduces challenges and attempts to expand the child's play to higher developmental levels.

Greenspan and Wieder believe that the unique feature of their floor time model is its focus on the caregiver–child affect and interaction and the child's developmental levels and individual differences. The approach is comprehensive, incorporating one-on-one therapies and special education as well as intensive floor time interaction. The goal of this report was to describe outcome patterns for children with autism spectrum disorder who had received this floor time model of interactive intervention in the authors' clinic over an 8-year period.

What did the researchers do?

Outcomes from pretests and posttests for the relationship-based floor time intervention were examined in this Level III study of 200 children who had had the intervention for at least 2 years. The children were compared to a matched-age sample of 20 children who were typically developing and a sample of 53 children with autism spectrum disorder who received behavioral therapy. Standardized measures, including the Childhood Autism Rating Scale, the Vineland Adaptive Behavior Scales, and the Functional Emotional Assessment Scale, were used. The initial level of impairment was reviewed to determine what child characteristics appear to influence intervention outcomes.

What did the researchers find?

Of the 200 children who completed at least 2 years of floor time intervention, 116 (58%) were in the "good to outstanding" outcome group, 50 (25%) were in the "medium" outcome group, and 34 (17%) continued to have significant difficulties. The children who had less severe (milder) autism, as measured by the Childhood Autism Rating Scale (CARS), were more likely to have good to outstanding outcomes. Although initial degree of impairment appeared to be an important influence on outcome, it did not determine outcome, and good outcomes were experienced by children with a range of initial impairment levels.

The children who received relationship-based intervention were compared to children who received traditional services (speech therapy, occupational therapy, and special education approaches or behavioral therapy). Compared to the children who received the floor time model—58% with good to outstanding outcomes, 24 with medium, and 17% with no change—2% of the children who received traditional services achieved good to outstanding outcomes, 40% achieved medium, and 58% did not change. The children were not compared beyond this description of their overall outcomes.

The 20 children who had made the most progress through the floor time model were compared to a group of 20 children of similar ages who were typically developing. For the children in the best outcome group, all scored above their chronological age levels on the Vineland Adaptive Behavior Scales. They were also above their age level on the Functional Emotional Assessment Scale and scored the same as the typical children in the comparison group. Typically, children with autism spectrum disorders score higher in communication than in social-emotional functioning. Children in the good outcome group were rated above average in social skills. The authors concluded that this best outcome group of 20 children obtained interpersonal, communicative, coping, and logical capacities similar to their typical peers.

The authors also documented the sequence of improvement observed in the children who received the floor time model. Initially, the children were avoidant and self-absorbed. They first demonstrated engagement in simple activities. After achieving initial engagement, they began to show pleasure and affect, followed by more complex emotional and motor gestures. The next step was to demonstrate long sequences of reciprocal affective interaction where children would engage in extended two-way, purposeful communication, both initiating and responding to a parent or other adult. This step appeared to be necessary for the child to demonstrate symbolic play, language with social communication intent, and elaborate language.

The rate of this sequence was quite varied and required an intense, long duration of intervention for certain children.

What do the results mean?

This Level III study describes the floor time model of relationship-based intervention and identifies the range of outcomes from a sample of 200 children. Because the study is descriptive, the results do not provide strong research evidence. This report suggests that most children can achieve good to outstanding outcomes after participating in an extended period of floor time intervention. A surprising result is that children appeared to improve substantially in affect and social-emotional skills, which are identified as a primary innate characteristic of autism and are assumed to be difficult to learn.

Assessment by the occupational therapist was helpful in planning the floor time sessions, because individual differences in sensory processing, motor planning, and muscle tone influence play and interaction. These aspects of interaction were specifically addressed in the floor time activities. In addition, many of the children received direct occupational therapy services as part of the floor time program.

The authors view social-emotional development as core to cognitive and language development. Floor time intervention focuses on social-emotional development, with a goal of improving affect and social-emotional functioning but also increasing the child's cognition and abstract thinking. These preliminary results suggest that social-emotional development is linked to the child's ability to problem solve, understand symbols, and think abstractly.

What are strengths and limitations of the study?

This study provided in-depth description of the initial and outcome performance in a large sample of children with autism spectrum disorder who participated in floor time model intervention. Although this retrospective review included a number of measures, it provides weak research evidence as a Level III study. The authors also noted that the sample represented families who were motivated to become involved in an intense relationship-based intervention. The families were well educated and highly motivated to improve their child's development.

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]).

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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