

Evidence Base for the DIRFloortime® Approach

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DIR/Floortime is a way of relating to a child in which we recognize and respect the emotional experience of the child, shown in their actions, ideas, and intentions, and interact in a way that helps the child to achieve a greater sense of purpose, building their capacity to engage and communicate at increasingly complex levels of functional development. DIR/Floortime is derived from over 50 years of study and research about child development from the fields of psychology, medicine, and education, and includes the areas of language, attention, mental health, infant development, sensory processing, and motor development.

“Evidence-based practice” means a decision making process which integrates the best available scientifically rigorous research, clinical expertise, and individual’s characteristics. Evidence-based practice is an approach to treatment rather than a specific treatment. Evidence-based practice promotes the collection, interpretation, integration, and continuous evaluation of valid, important, and applicable individual- or family-reported, clinically-observed, and research-supported evidence. The best available evidence, matched to infant or toddler circumstances and preferences, is applied to ensure the quality of clinical judgments and facilitates the most cost-effective care. [CA Trailer Bill 2009]

What to measure?

A starting point to measure effectiveness of intervention is to determine the factors to be measured. This is a major challenge in the field of developmental disabilities. Generally, behavioral approaches measure specific targeted behaviors. More recently, there has been a focus on measuring spontaneous interactions and generalization of skills, which presents new challenges in measurement. In contrast, developmental programs target underlying capacities, or ‘core deficits’ as the focus of intervention, with progress evident in a complex array of changes in interactive behavioral patterns.

Developmental approaches seek to measure changes in an individual’s capacity for:

- *Shared attention*
- *Ability to form warm intimate and trusting relationships*
- *The ability to initiate(rather than respond) using intentful actions and social engagement; spontaneous communication*
- *The ability to participate in reciprocal (two-way, mutual) interactions while in a range of different emotional states*
- *Problem solving through a process of co-regulation, reading, responding and adapting to the feelings of others*
- *Creativity*
- *Thinking logically about motivations and perspective of others*
- *Developing an internal personal set of values*

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These developmental measures are more closely aligned to the diagnostic criteria for autism spectrum disorder than those often used in older research such as IQ, performance on early academic skills and responsive behaviors. The National Research Council stated in 2001: “More appropriate outcome measures are improvement in initiation of spontaneous communication in functional activities, and generalization of language across activities people, and settings”

Lord, Catherine; McGee, James (Editors). Committee on Educational Interventions for Children with Autism. *Educating Children with Autism*. Division of Behavioral and Social Sciences and Education, National Research Council. Washington, DC: National Academy Press (2001) p 217

An additional challenge confronting all researchers in the field is the wide diversity of individuals with a diagnosis of autism or a related disorder.

Warren, Z. et. al. in “*A Systematic Review of Early Intensive Intervention for Autism Spectrum Disorders*” stress the need for further research “to better characterize subgroups of children who respond differently to individual approaches” and conclude that “There is not yet adequate evidence to pin-point specific behavioral intervention approaches that are the most effective for individual children with ASDs.”

Warren, Z. et al, *Pediatrics*, Vol 127 No5 May 2011

Developmental models emphasize individual differences and the need to tailor intervention to the unique biological profile of the child and to the unique characteristics of the parent-child interaction.

Research is challenging both because both the factors being measured are complex and because of the wide range of individual differences in the population. In considering the evidence for DIR/Floortime, it is important to appreciate the challenges to studying a complex model, and to consider the long history of study on the effectiveness of various facets of a developmental framework. These can be summarized by looking at the three major aspects of the DIR/Floortime approach: “D”- developmental framework, “I”- individual differences, and “R”-relationship and affective interactions. While randomized controlled trials are held as the gold standard, because of the wide range of individual differences in autism, there is more interest in using single-subject research design.

“D” Developmental

A developmental approach is founded on work by major developmental theorists such as Piaget, Vygotsky, Erikson, and Kohlberg. A developmental approach considers behavior and learning in the greater context of a developmental or changing process. DIR theory was first described by Dr. Greenspan in 1975 and was further developed over the next 20 years. He received high honors and acclaim for his work including American Psychiatric Association's highest award for child psychiatry research.

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Greenspan, S.I, A Consideration of Some Learning Variables in the Context of Psychoanalytic Theory, (1975)
Greenspan, S.I. Intelligence and Adaptation, (1979)
Greenspan, S.I. Psychopathology and Adaptation in Infancy and Early Childhood (1981)
Greenspan, S.I. First Feelings (1985),
Greenspan, S.I. The Essential Partnership (1989)
Greenspan, S.I. The Development of the Ego (1989)
Greenspan, S.I. Infancy and Early Childhood (1992)

In 1997, Dr. Greenspan and Serena Weider published, The Child with Special Needs: Encouraging Intellectual and Emotional Growth and in 2006 they published, Engaging Autism.

In 1997, they reported the results of an extensive chart review of 200 children with autism who had received DIRFloortime. This showed the promise of the DIR/FT approach:

The goal of the review was to reveal patterns in presenting symptoms, underlying processing difficulties, early development and response to intervention in order to generate hypotheses for future studies. The chart review suggests that a number of children with autistic spectrum diagnoses are, with an appropriate intervention program, capable of empathy, affective reciprocity, creative thinking, and healthy peer relationships; that an intervention approach that focuses on individual differences, developmental level, and affective interaction may be especially promising;

Greenspan, S.I. and 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.

8 years later, they reported the follow-up of a subgroup of children, showing that it is possible for children with autism to become empathetic, creative, and reflective thinkers.

Greenspan, S.I. and Wieder, S. (2005) Can Children with Autism Master the Core Deficits and Become Empathetic, Creative and Reflective? A Ten to Fifteen Year Follow-up of a Subgroup of Children with Autism Spectrum Disorders (ASD) Who Received a Comprehensive Developmental, Individual-Difference, Relationship-Based (DIR) Approach. *The Journal of Developmental and Learning Disorders* 9.

Previous approaches using behavioral principles relied upon outside motivators on the premise that children with autism did not have their own motivation to participate in social interaction or to learn. The DIR/Floortime approach revealed that all children will show purpose and initiative, and will seek close social relationships when provided with interactions which respect their interests and are tailored to their individual differences.

The DIR/Floortime approach has provided a developmental framework that has been studied and found to be accurate and effective in understanding behavior. The widely used *Bayley Scales of Infant development* has adopted the DIR

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milestones as the measure of social-emotional development through a process of careful standardization across populations.

Note: Developmental Relationship Based Interventions (DRBI) refers to those interventions which are primarily or wholly developmental in nature and these interventions include the DIR model. A number of studies over the past three decades has demonstrated the efficacy of DRBI. Please see the 2017 paper following this paper in this “The Action Is in the Interaction” handbook for a list. (Cullinane,D, Gurry,S, & Solomon,R, 2017)

“I” Individual Difference

In the 1970s Jean Ayres pioneered discoveries about innate sensory processing differences.

Ayres JA. (1979). *Sensory Integration and the Child*. Western Psychological Services. Los Angeles, CA.

This provided a new way of understanding movement and regulatory behaviors. In addition this work showed that these biological differences could be influenced and changed by specific therapeutic interventions. Over the past 40 years, a huge body of research has further described not only biological differences in sensory-motor processing but further differences in emotional-regulatory processing.

The National Research Council of the National Academy of Sciences, in their 2001 landmark report, “Educating Children with Autism,” called for tailoring the treatment approach to the unique features of the individual child.

Lord, Catherine; McGee, James (Editors). Committee on Educational Interventions for Children with Autism. *Educating Children with Autism*. Division of Behavioral and Social Sciences and Education, National Research Council. Washington, DC: National Academy Press (2001) p 217

A (2011) pilot randomized control study showed the effectiveness of sensory integration treatment for children with autism. Results showed improvement in social responsiveness, sensory processing, functional motor skills, and social-emotional factors with a significant decrease in autistic mannerisms.

Pfeiffer, B. A., Koenig, K., Kinnealey, M., Sheppard, M., & Henderson, L. (2011). Research Scholars Initiative—Effectiveness of sensory integration interventions in children with autism spectrum disorders: A pilot study. *American Journal of Occupational Therapy*, 65, 76–85

DIR/Floortime places great emphasis on tailoring intervention to individual differences, consistent with the knowledge gained from this research.

Note: please refer to the Neuroscience Research Handout in the Individual Differences Section of this “ The Action Is In the Interaction “ training handbook for further resources and research in relation to the Individual Differences aspect of the DIR/floortime model.

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“R” Relationship and Affect

Developmental models have evolved from many years of discovery in the field of infant mental health. Beginning in the 1950s, there was a new understanding of the importance of parent-infant interaction, known as attachment theory.

Bowlby, J. (1951). *Maternal care and mental health*. World Health Organization (WHO). Monograph Series, no. 51. Geneva: World Health Organization.

Ainsworth, M., Bell, S.M., & Stayton, D. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M. Richards, ed., *The Integration of the child into a social world*. Cambridge: Cambridge University Press.

Stern, D. (1974). Mother and infant at play: The dyadic interaction involving facial, vocal, and gaze behaviors. In M. Lewis and L. Rosenblum, eds., *The effect of the infant on its caregiver*. New York: John Wiley & Sons, Inc.

Dr. Greenspan and Serena Wieder contributed to the field with their study of the importance of mother-child interactions in high risk infants.

National Center for Clinical Infant Programs (1987). *Infants in Multirisk Families. Case Studies in Preventive Intervention*. Stanley I. Greenspan, Serena Wieder, Robert A. Nover, Alicia Lieberman, Reginald S. Lourie, Mary E. Robinson, eds. Clinical infant Reports, Number three. International Universities Press.

Note: There is abundant research confirming the importance of parent-child interaction and the value of intervention programs focused on supporting parent-child relationships. This work has become highly sophisticated in research methodologies examining joint attention and emotional attunement. See the list of DRBI Interventions in the following paper in this handbook (Cullinane, D, Gurry, S, & Solomon,R, 2017).

Evidence continues to support parent-mediated intervention as effective for the treatment of children with autism. A review of the literature, which included only randomized controlled trials found evidence for positive change in patterns of parent-child interaction, parent synchrony and suggestive of improvement in child language comprehension and reduction in the severity of children's autism characteristics.

Current research and new technologies

Because of the alarming increase in incidence of autism, there is urgent interest and active research from a wide array of perspectives. There are many researchers actively studying methods which incorporate developmental principles and are looking at ways to measure complex social interactions.

Autism is now recognized as a disorder of integration of various distinct brain functions. Research investigation is focused on deficits in neuronal communication as a basis of the wide array of behavioral manifestations of the

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disorder. Developmental intervention is based upon the use of affective interactions to enhance integration of sensory-regulatory, communication and motor systems. Neuro-imaging techniques and EEG are beginning to be used in research to provide important ways of showing how experience affects developing brains.

Siegel has shown how attuned relationships in infancy change brain structure in ways that later affect social and emotional development.

Siegel, D. (2001). Toward an interpersonal neurobiology of the developing mind: attachment relationships, “mindsight,” and neural integration. *Infant Mental Health Journal*, 22, 67-94.

Parent choice

Part of the definition of “evidence base” is clinical experience. While research efforts continue to explore the etiology, biology, and efficacy of treatment approaches for autism, clinical experience also continues to accumulate. DIR/Floortime programs have high family satisfaction ratings and are widely utilized throughout the world as an effective framework for assessment and intervention.

A review by the National Institute of Mental Health (NIMH) states, “There is no single best treatment package for all children with ASD. Decisions about the best treatment, or combination of treatments, should be made by the parents with the assistance of a trusted expert diagnostic team.”

NIMH. (June 2, 2009). *Autism Spectrum Disorders (Pervasive Developmental Disorders)*. Retrieved June 8, 2009, from <http://www.nimh.nih.gov/health/topics/autism-spectrum-disorders-pervasive-developmental-disorders/index.shtml>

Because of the wide range of individual differences in children with autism, and the many unique relationships within families, it is necessary and proper for parents to have the information and options necessary to make informed choices about the type of services their child will receive. DIR/Floortime has a solid base of empirical evidence, and is widely used for children of all ages and abilities. Evidence based practice means the clinician can utilize all types of information including clinical expertise, and a family’s individual values and preferences, in addition to published research. There is ample evidence for the effectiveness of DIR/Floortime to support an informed parent choice.

Please note that segments of this paper have been edited to reduce size for this training handbook. The full paper is available online:
http://pcdateam.org/2015/Evidence_Base_for_DIR%202015.pdf

Ref: Cullinane, D., Gurry, S., Solomon, R. (2017) Research evidence re: Developmental-Relationship Based Interventions for Autism
<http://circlestretch.com/>

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