

# Evidence Base for the DIRFloortime® Approach

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# What is DIRFloortime®?

- DIRFloortime® 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.
- It is from over 50 years of study/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.

## What is Evidence-Based Practice?

- A decision making process which incorporates the best available scientific research, clinical expertise, and the individual's characteristics
- An approach to treatment rather than a specific treatment.
- Promotes the collection, interpretation, integration, and continuous evaluation of valid, important, and applicable individual- or family-reported, clinically-observed, and research-supported evidence.

# What to Measure?

- First, one must determine the factors to be measured.
- This is a *major* challenge in the field of developmental disabilities.
- Behavioral approaches *typically* measure specific targeted behaviors.
- 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

- 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”

- An additional challenge for all researchers in the field is the **wide diversity of individuals** with a diagnosis of autism or a related/similar 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

# Research

- Research is challenging both because:
  - The factors being measured are complex
  - 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
  - “R”-relationship and affective interactions.



# “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.

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)

# “D” Developmental

- 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 results of a chart review of 200 children with autism who had received DIRFloortime
  - The goal:
    - To reveal patterns in presenting symptoms
    - Underlying processing difficulties
    - Early development
    - Response to intervention
  - The chart review show that a number of children with ASD 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
- 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.

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.

# “D” Developmental

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



# Developmental- Research Studies

The following research studies report the effectiveness of developmental approach:

- 20 authors, representing 17 major institutions, and 3 countries collaborated to write a paper which outlines principles of assessment and effective intervention for children with suspected autism under the age of 2.
- They concluded “Interventions should ultimately be directed toward specific functional concerns and be informed by key developmental principles, including the child’s role as an active learner, the social contexts of learning, and the pivotal role of the parent-child relationship.”
- These principles are basic tenants of the DIR/Floortime approach.

Zwaigenbaum et al (2009), Clinical Assessment and Management of Toddlers with Suspected autism spectrum disorder: Insights from studies of High-risk infants.

# Developmental- Research Studies

- In 2010, Wallace and Rogers published a review of controlled studies which identified four different factors which were most important for effective intervention for infants with autism.
  - “(1) parent involvement in intervention, including ongoing parent coaching that focused both on parental responsiveness and sensitivity to child cues and on teaching families to provide the infant interventions,
  - (2) individualization to each infant’s developmental profile,
  - (3) focusing on a broad rather than a narrow range of learning targets, and
  - (4) temporal characteristics involving beginning as early as the risk is detected and providing greater intensity and duration of the intervention.”



# Developmental- Research Studies

- In 2014, Solomon et al. reported their findings from a large randomized controlled trial with 128 children with autism, that used a manualized, parent-mediated intervention program called the **PLAY Project**, which is based on the DIR/Floortime approach.
- Parents showed improvement in the ability to read their child's cues, follow their child's lead, and circles of communication.
- Children showed improvement in engagement and initiation and functional development.

Solomon R, Van Egeren L, Mahoney G, Quon-Huber M, Zimmerman P. (2014) PLAY Project Home Consultation Intervention Program for Young Children with Autism Spectrum Disorders: A Randomized Controlled Trial. J Dev Beh Pediatrics. 35(8): 475-485.

# Developmental- Research Studies

- In June 2011, Pajareya published a pilot RCT of DIR/Floortime with preschool children with ASD. Results showed improvements in FEAS, CARS, and the functional emotional questionnaires, confirming the results of the Solomon 2007 study.

Pajareya and Nopmaneejumrulers, *Autism*, Vol 15(2) 1-15. June 2011.

# Developmental- Research Studies

- In a randomized controlled trial, Casenhiser et al. (2011) presented the results of a DIR/Floortime based, social-communication intervention.
- A significant association was found between improvements in caregiver behaviors and improvements in children's social-communicative measures.
- Results indicate that the treatment group showed significantly:
  - Greater enjoyment in interactions with their parents
  - More attentive and involved in interactions with their parents
  - Initiated more joint attention.
- Initiation of joint attention and involvement were predictive of increase in language skills.



# Developmental- Research Studies

- Casenhiser et. al. (2014) reanalyzed their data from their 2011 research, and documented that the children in the treatment group outperformed the community treatment group on measures of language including:
  - Number of utterances produced and
  - Various speech act categories such as sharing, commenting, rejecting/protesting, social conventions and responses to comments.

# Developmental- Research Studies

- Elder et. al (2010) demonstrated significant changes in child and parent behaviors as a result of training fathers in following their child's lead, imitating with animation, commenting on the child's actions and expectant waiting.
- There were significant changes in the child's behaviors:
  - Increase in child initiating and
  - Child's non-speech vocalizations.



# Developmental- Research Studies

- In 2013, Siller et. al. conducted a randomized, clinical trial with 70 children with ASD, 6 years of age or younger, using Focused Playtime Intervention (FPI).
- The intervention was designed to promote responsive parental behaviors in a family-centered intervention.
- The intervention focused on:
  - Play,
  - Social engagement
  - Encouraging increasingly complex child communication and play
- Results showed a significant treatment effect on responsive parental behaviors and a conditional effect on children's expressive language outcomes, showing that children with baseline language skills below 12 months are most likely to benefit from FPI.

Siller, M; Hutman, T & Sigman, M. (2013). A parent-mediated intervention to increase responsive parental behaviors and child communication in children with ASD: A randomized, clinical trial. *Journal of Autism and Developmental Disorders*. March. 43(3), 540-550.

# Developmental- Research Studies

- In 2014, Liao and colleagues conducted a study on the effects of the DIR/Floortime intervention with eleven children with autism (ages 45-69 months).
- The mothers were trained in DIR/Floortime during pre-intervention 1:1 counseling sessions and a three-hour lecture.
- Each parent conducted the intervention for at least 10 hours a week for ten weeks.
- There were significant improvements in each child's:
  - Two-way communication
  - Behavioral organization
  - Problem-solving and daily living skills with medium to large effect sizes.

# “I” Individual Differences

- In the 1970s Jean Ayres pioneered discoveries about innate sensory processing differences.
- This provided a new way of understanding movement and regulatory behaviors.
- This work showed that 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.

# “I” Individual Differences

- 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

# “I” Individual Differences- Research Studies

- 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
  - Social-emotional factors with a significant decrease in autistic mannerisms

# “I” Individual Differences

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



# “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.

# “R” Relationship and Affect

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

# “R” Relationship and Affect

- Gernsbacher has shown that intervention can change the way parents interact to increase reciprocity and that these changes are correlated with changes in social engagement and in language.

Gernsbacher M.A., (2006). Toward a behavior of reciprocity. *Journal of Developmental Processes*, 1, 139-152.  
[http://psych.wisc.edu/lang/pdf/gernsbacher\\_reciprocity.pdf](http://psych.wisc.edu/lang/pdf/gernsbacher_reciprocity.pdf)

## “R” Relationship and Affect- Research Studies

- Kasari et al. 2008 used a randomized, controlled trial looking at joint attention and symbolic play in 58 children with autism.
- Results indicate that expressive language gains were greater for treatment groups which used developmental approaches compared with the control group that was based only on behavioral principles.

## “R” Relationship and Affect- Research Studies

- 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
  - Suggestive of improvement in child language comprehension
  - And reduction in the severity of children’s autism characteristics.

## “R” Relationship and Affect- Research Studies

- A large review of over one thousand articles, found evidence of effectiveness for “Parent-implemented intervention.”
- Studies are documenting the importance of the key relationships in a child’s life as a focus of intervention.

# Current Research and New Technologies

- There is urgent interest and active research from a wide array of perspectives due to the increase in ASD diagnosis.
- Many researchers actively study methods which incorporate developmental principles and look at ways to measure social interactions
- Autism is now recognized as a disorder of various distinct brain functions. Research is focused on deficits in neuronal communication as a basis of the wide array of behavioral manifestations of the 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 now starting to be used in various research to provide ways of showing how different experience affects the developing brains.
- Siegel has shown how attuned relationships in infancy change brain structure in ways that later affect social and emotional development.

# 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.”



# Parent Choice

- Because of the wide range of individual differences in children with autism, and the unique relationships within all families, it is necessary for parents to have the information and options to make informed choices about which services their child should receive
- DIR/Floortime has a solid base of evidence, and is widely used for children of **all** ages and abilities.
- There is enough evidence for the effectiveness of DIR/Floortime to support an informed parent choice.