Innovations in ASD Treatment:

The Importance of Play and the Early Start Denver Model

Dr. Kate Ballem Chase, M.Sc., D.Phil., RSLP

November 18, 2016

Learning Objectives

1. Describe the importance of early social referencing skills in autism treatment.
2. Provide a brief explanation of the Early Start Denver Model.
3. Demonstrate and carry out 2-3 strategies for promoting social referencing skills in young children with autism.

Social Referencing: Definition

- The ability to constantly monitor their own and other's behaviour and continue or alter their behaviour according to its effect. (Geraldine Dawson, Peter Mundy, Tony Charman).

- A group of cognitive skills emerging in a developmental sequence.

- Supported by complex neural substrates.

Typical Development of Social Referencing

Early Precursors

- Neonates: Quickly prefer faces over other visual stimuli

- 2 months: Engage in exchanges of facial expressions. Scan eye region of faces preferentially

- 3 months: Can match happy or sad affect on mother's face with appropriate voice (can match unfamiliar women before can match their father).

- 4 months: Discriminate gaze direction.

Emergence of Joint Attention

- 6-9 Months:
  - Ability to follow point and gaze begins to develop.
  - Infants will imitate familiar actions on objects.

- 9-10 Months:
  - Point and gaze following skills continue to develop.
  - Joint engagement with adult and object emerges: infants begin to "show objects" and alternate gaze between object and parent instead of pulling to request.

Established Joint Attention & Emerging Theory of Mind

- 12 months:
  - Consistent point and gaze following.
  - Begin to imitate novel actions.
    - Take other's perspective (unwilling/unable).

- Visual cliff experiment: babies asked to crawl across a glass table and reference their mother to decide whether to cross the perceived "cliff" - if mother has a happy affect, 90% crossed - if mother has an anxious or worried affect 100% turned back.

Established Joint Attention & Emerging Theory of Mind

- 14-18 months:

  - Precise point and gaze following.

  - Take other's perspective (preferences, knowledge, intentions/goals)

    (Fish cracker/broccoli video)

  -Symbolic Play emerges

  -Can be easily comforted by mother (14 months) and then slightly familiar adult (18 months) when experiencing separation anxiety.

Established Theory of Mind

By age two, children have learned about other people's diverse desires, diverse beliefs, knowledge access, and intentions.

- Sequential pretend play
- Cooperative play with mediation of adult
- Sharing still difficult

Established Theory of Mind

- Over the next 2-3 years, children also learn to understand that other's can have false beliefs and hidden emotions.
  - 30 months: able to distinguish when others are pretending.
  - 36 months: cooperative play without mediation. Children attempt to negotiate sharing. Play begins to take on a narrative quality with motives and feelings of characters

Implications for Language, Play, and Self-Regulation

Why is this so important?

"joint attention...provides the foundation for all subsequent communication and cultural learning..." (Carpenter, et. al., 1998)

A Developmental Perspective

Narrative Language, Academics, Advanced Social Referencing

Sentences, Dramatic Play, Established Theory of Mind

Word Combinations, Sequential Play, Understanding of Others

First Words, Early Symbolic Play, Early Understanding of Others

Social Engagement and Communication
(Eye contact, shared attention, point and gaze following, gestural communication, social imitation
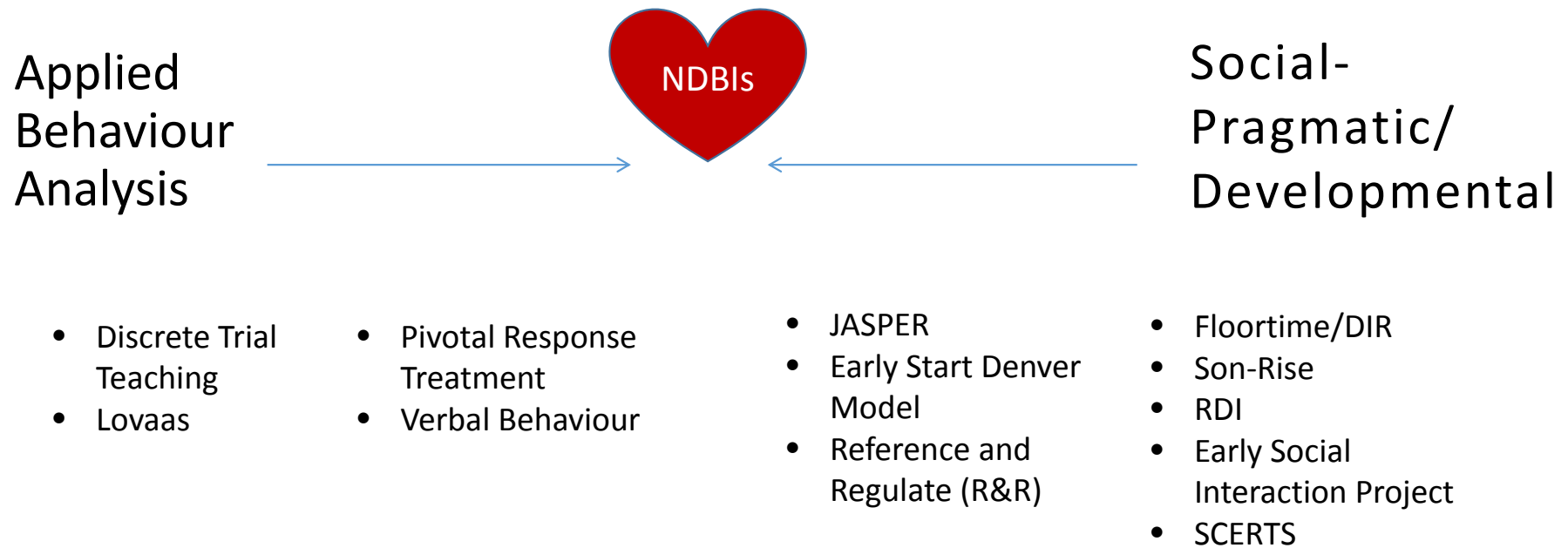
Social referencing & outcomes

- Language Development:
  - Tomasello & Todd (1983) Time engaged in joint attention with caregiver predicts vocabulary size.
  - Bopp & Mirenda (2011) Social game initiation and participation, use of gestures predicts production and comprehension in children with ASD.

- Play and Social Emotional Regulation:
  - Morales et al (2005) Two year olds reaction to frustration predicted by gaze following @ 6 months.
  - Rutherford et al (2007) Play complexity predicted by social referencing vs. language, executive function, or cognitive tasks.

The Spectrum of intervention

Applied Behaviour Analysis → NDBIs ← **Social-Pragmatic/Developmental**

- Discrete Trial Teaching
- Lovaas

- Pivotal Response Treatment
- Verbal Behaviour

- JASPER
- Early Start Denver Model
- Reference and Regulate (R&R)

- Floortime/DIR
- Son-Rise
- RDI
- Early Social Interaction Project
- SCERTS

Behaviour Analytic Approaches

- Traditional and predominant intervention approach to ASD.
- Data based decision making.
- Defined goals and mastery criteria
- Intensity
- Largest body of evidence.
- Challenges:
  - Very high intensity required.
  - Large group of non-responders.
  - Children often not engaged.
  - Generalization can be a challenge.

Social-Pragmatic/Developmental Approaches

- Identify social communication deficits as core of ASDs.
- Focus on relationship between adult and child.
- High level of responsivity by adult.
- Goals tend to be broader and harder to measure.
- With more open ended therapy, can be hard to achieve high fidelity intervention, and measure progress.
- Based on a large body of developmental science, but only recently have SPDs seen more intervention research.

Naturalistic Developmental Behaviour Interventions (NDBI): Schreibman et al (2015)

- Goals and growth integrated across developmental domains.
- Foundational/pivotal skills known to predict outcomes are a particular focus (e.g. JA, imitation)
- Naturalistic routines
- Incorporate 3 part contigency (ABC)
- Manualized practice
- Fidelity criteria
- Individualized goals
- Ongoing measurement of progress.

- Child initiated teaching episodes
- Environmental arrangement
- Natural reinforcement
- Prompting and prompt fading
- Balanced turns
- Modeling
- Adult imitation
- Broadening child's attentional focus.

The Early Start Denver Model

- Sally Rogers and Geraldine Dawson, UC Davis Collaborative Start Lab:

"ESDM uses a data based approach and empirically supported teaching practices that have been found effective from research in applied behaviour analysis (ABA). ESDM fuses behavioural, relationship-based, and a developmental, play-based approach into an integrated whole that is completely individualized and yet standardized".

ESDM Highlights

- Interdisciplinary, Generalist approach
- Developmental Framework
- "Parents at the Helm"
- Relationship-Based
- Multi-setting

ESDM Evidence

- Rogers and Dawson (2010):
  - RCT, ESDM vs. community based, n=48.
  - Average of 15 hrs tx/week over two years.
  - ESDM group demonstrated larger improvements in communication and adaptive skills than community group.

- Rogers et al (2012):
  - RCT, ESDM parent coaching 1 hr per week vs. community tx, n=98, 12 weeks
  - Both groups improved, showed fewer symptoms, despite larger tx hrs in community group.

- Vivanti et al (2014):
  - Controlled trial, group ESDM vs. community tx, 15-25 hrs/week.
  - ESDM group showed greater gains in developmental rate, receptive language, cognitive abilities.

- And others. Also in progress at UC Davis: RCT DTT vs. ESDM
- See Ryberg (2015) for helpful overview.

ESDM Videos

Video Links:

- http://www.interactingwithautism.com/section/treating/esdmod
- Patty Feet: https://vimeo.com/7984307
- Ball: https://vimeo.com/7983899

ESDM Training

- Introductory Workshop (now available online)
- Advanced Workshop
- Certification
- Parent Coaching
- Train the Trainer

- ESDM Canada: Mary McKenna, Janet Harder, Michaela Jelen

ESDM: Assessment

Curriculum Checklist:

- Levels 1-4, 9/12-18, 18-24, 24-36, 36-48
- Social, Communication vs Gross Fine Motor, ADL
- Observation, Parent Report, Teacher Report
- Play-based administration

ESDM: Goal Setting

- Goals written with ABC format
- "ESDM goals shouldn't sound weird"
- Goals consistent with checklist, but focus on moving children through developmental stages rather than checking off 1 item on the list.
- Goals set for 12 week quarters, with 6-8 teaching steps identified.
- Teach steps specify level of prompting, accuracy, generalization.
- Overview and daily data tracking sheet created.

ESDM: Treatment

- Environment
- Sensory Social Routines
- Object Routines
- Maintenance and Acquisition
- Child motivation, reciprocity, Affect
- Multiple Varied Communication Opportunities
- Multiple Targets through Activities

Social referencing Crash course

- Find something fun. Start doing it with the child.
- STOP! Wait for the child to look.
  - Stay quiet.
  - Get down at eye level.
  - Obstruct the child's line of sight if necessary.
  - If absolutely needed, put object behind your head (NOT next to your eyes).
- As soon as child looks, respond!
  - Model the appropriate word (or recast the child's question if older).
  - Start activity again.
- Repeat, repeat, repeat.

References

Rogers and Dawson (2010). Early Start Denver Model for Young Children with Autism: Promoting Language, Learning, and Engagement. (Manual)

Rogers, Dawson, Vismara (2012). An Early Start for Your Child with Autism (Parent Guide).

Dawson and Rogers (2010). Randomized Controlled Trial of an Intervention for Toddlers with Autism: The Early Start Denver Model. Pediatrics, 125(1).

Vivanti et al. (2016). Outcome for children receiving the Early Start Denver Model before and after 48 months. Journal of Autism and Developmental Disorders, 46.

Rogers et al (2012). Effects of a brief Early Start Denver model (ESDM)-based parent intervention on toddlers at risk for autism spectrum disorders: A randomized controlled trial. Journal of the American Academy of Child and Adolescent Psychiatry, 51, 1052–1065.

References

Rogers, S. J., & Vismara, L. (2014). Interventions for infants and toddlers at risk for autism spectrum disorder. In F. Volkmar, S.J. Rogers, R. Pelphry, & K. Paul (Eds.), Handbook of autism and developmental disorders (4th ed., pp. 739–769). Hoboken, NJ: Wiley.

Schreibman, L., Dawson, G., Stahmer, AC., Landa, R., Rogers, SJ., McGee, GG., Kasari, C., Ingersoll, B., Kaiser, AP., Bruinsma, Y., McNerney, E., Wetherby, A., Halladay, A. (2015). Naturalistic Developmental Behavioral Interventions: Empirically Validated Treatments for Autism Spectrum Disorder. Journal of autism and developmental disorders. 45(8):2411-28

Carpenter, M.; Nagell, K. & Tomasello, M. (1998). Social cognition, joint attention and communicative competence from 9 to 1 months of age. *Monographs of the Society for Research in Child Development,* **63**.
Kasari, C., Sigman, M., Mundy, P. & Yirmiya, N. (1990). Affective sharing in the context of joint attention interactions of normal, autistic and mentally-retarded children. J. *of Aut and Dev Dis*, **20**, 87-100.
Bloom, P. (2000) How Children Learn the Meaning of Words. MIT Press. Cambridge.

References

- Carpenter, M.; Nagell, K. & Tomasello, M. (1998). Social cognition, joint attention and communicative competence from 9 to 15 months of age. *Monographs of the Society for Research in Child Development,* **63** (Serial No. 255).

- Kasari, C., Sigman, M., Mundy, P. & Yirmiya, N. (1990). Affective sharing in the context of joint attention interactions of normal, autistic and mentally-retarded children. J*. of Aut and Dev Dis*, **20**, 87-100.

- Kasari, C., Paparella, T, Freeman, S.N., & Jahromi, L (2008). Language outcome in autism: Randomized comparison of joint attention and play interventions. Journal of Consulting and Clinical Psychology, 76, 125-137.

- Goods, K, Ishijima, E., Chang, Y-C, Kasari, C. (2013). Preschool based JASPER intervention in minimally verbal children with autism: Pilot RCT. Journal of Autism and Developmental Disabilities.