**Objectives**

- Learners will be introduced to the evolution of early intervention for infants and toddlers at-risk for autism spectrum disorder (ASD) and the ethical imperatives for improvement of these services.
- Learners will gain knowledge of the core components of naturalistic developmental behavioral interventions (NDBIs), including the Early Social Interaction (ESI) Project.

**Challenges of Autism Spectrum Disorder**

- Intervention has the greatest impact on autism if it begins before 3 years of age.
- 80% of children who need early intervention are missed.

(CDC, 2009; Filipek, Accardo, Baranek et al., 1999; NRC, 2001; USDOE 2011)

**Challenges of Autism Spectrum Disorder**

- 61% of children under the age of five are in regular childcare, with the remaining percentage of children primarily being cared for at home by parents or caregivers.
- Therefore, parents and childcare providers are the most community viable agents of change at the front line of both detecting and providing appropriate supports and services for young children at risk for ASD.


**Historical Perspective**

- Prior to the 60s, many believed that children with ASD could not learn.
- Ferster and DeMyer (1961) demonstrated that children with autism could learn via an operant discrimination paradigm.
**Historical Perspective**

  - Discrete Trial Training (DTT)
  - Intense early intervention with ASD
  - Reported 48% achieved ‘normal’ functioning
  - Parents began advocating for this treatment for their children

**DTT Limitations**

- Failure to generalize newly learned skills across environments and circumstances
- Avoidance and escape challenging behaviors
- Lack of spontaneity and dependence on prompts
- Can be unsuitable for very young children

**Improvement and Expansion of Autism Interventions**

- During the 1980s and 1990s, intervention research in the area of ABA combined with research on infant and child development:
  - Led to new understanding of core social and communication deficits of autism
  - Led to emphasis on incorporating developmental principles and sequences into early autism intervention
  - Discrepancies between highly structured DTT and principles

**Limitations of Behavioral Intervention**

- Many states with mandated autism intervention required ABA based in operant conditioning
- Cost of ABA is $30,000–$60,000/year per child
- Shortage of trained ABA professionals
- Behavioral research largely focused on language and cognition as primary outcomes
- DSM-5 emphasis on social impairment
  - Needed focus on social reciprocity in intervention

**Naturalistic Developmental Behavioral Interventions (NDBIs)**

- Theoretical underpinnings
  - Piaget (1952), Bruner (1978), Vygotsky (1962), Snow (1977), Gibson (1973), and others
- Constructivist approach
  - Strategically designed learning experiences in order to:
    - engage child’s attention, help connect new experiences to previous knowledge, teach developmental sequences, systematically increase complexity of learning experiences
  - Emphasis on affectively engaged social exchanges for learning

**NDBIs**

- Implemented in natural settings
- Involve shared control between child and therapist/caregiver
- Utilize natural contingencies
- Utilize a variety of behavioral strategies to teach developmentally appropriate and prerequisite skills
Children with ASD should receive 25 hours per week of active engagement in systematically planned, developmentally appropriate educational activities.

Parent-Mediated Interventions

- Several controlled, single-subject and quasi-experimental studies and more recent randomized clinical trials suggest that including a parent-coaching component accelerates developmental progress in ASD
- Typically less costly and more easily implemented
- Focused on social reciprocity
- NRC (2001) recommends that intervention include a family component

Parent-Mediated NDBIs

- ESDM (Early Start Denver Model)
- Project ImPACT (Improving Parents as Communication Teachers)
- EMT (Enhanced Milieu Teaching)
- PRT (Pivotal Response Training)
- JASPER (Joint Attention Symbolic Play Engagement Regulation)
- ESI (Early Social Interaction)

NDBI “Secret Sauce”

- Three part contingency
- Manualized practice
- Fidelity of implementation criteria
- Individualized treatment goals
- Ongoing measurement of progress

NDBI “Secret Sauce”

- Following the child’s lead and interests
- Environmental arrangement
- Natural reinforcement
- Use of prompts and prompt fading
- Balanced turns within object or social play routines
- Modeling
- Contingent imitation
- Broadening attentional focus of the child
**EARLY SOCIAL INTERACTION PROJECT**

- An approach for toddlers (under the age of 3) who are at risk or have a diagnosis of ASD and their families
- Originally developed as a model demonstration project funded by the Office of Special Education Programs of the U.S. Department of Education (2002-2006) (Wetherby & Woods, 2006)

**ESI Project at Marcus**

Currently, funded under the ACE grant at the Marcus Autism Center to be implemented with infant siblings beginning at 12 months of age and their families.

**ESI Project**

- Provides in-home and community-based services through two parent intervention approaches:
  - Parent-implemented in-home support
    (Two 75-minute sessions per week)
  - Parent-implemented playgroup
    (One 75-minute session per week)
- Targets active engagement skills & transactional supports within everyday activities
- Utilizes a continuum of parent-clinician collaborative supports for coaching

**Shared Agenda**

<table>
<thead>
<tr>
<th>Active Engagement</th>
<th>Transactional Supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Well regulated</td>
<td>1) Motivating activity</td>
</tr>
<tr>
<td>2) Productive</td>
<td>2) Productive roles</td>
</tr>
<tr>
<td>3) Socially connected</td>
<td>3) Predictability</td>
</tr>
<tr>
<td></td>
<td>4) Positioning</td>
</tr>
<tr>
<td></td>
<td>5) Following child’s focus</td>
</tr>
</tbody>
</table>

**Social Reciprocity**

<table>
<thead>
<tr>
<th>Active Engagement</th>
<th>Transactional Supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>4) Looking at faces</td>
<td>6) Promoting initiation</td>
</tr>
<tr>
<td>5) Responding to bids for interaction</td>
<td>7) Creating a balance of turns</td>
</tr>
<tr>
<td>6) Initiating directed communication</td>
<td>8) Using natural reinforcers</td>
</tr>
<tr>
<td></td>
<td>9) Giving clear messages to ensure comprehension</td>
</tr>
</tbody>
</table>
**Better Skills**

**Active Engagement:**
- 7) Flexible
- 8) Using generative language

**Transactional Supports:**
- 10) Modeling language, play, and interaction
- 11) Extending the activity, child’s roles, and transitions
- 12) Adjusting expectations and supports
- 13) Creating a balance of interaction and independence

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**Books: 1 Month into Treatment**

**Everyday Activities**

<table>
<thead>
<tr>
<th>Play with Toys</th>
<th>Play with People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blocks, Puzzles, Sand box, Pencils, Cars and Trucks</td>
<td>Social Games like Peek-a-boo, Rough and Tumble, Songs &amp; Rhymes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meals and Snacks</th>
<th>Caregiving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation, Eating, Cleanup</td>
<td>Dressing, Diaper Change, Bath, Washing Hands, Brushing Teeth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Book Sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Chores</td>
</tr>
<tr>
<td>Mailbox, Laundry, Care for Pets, Plants</td>
</tr>
</tbody>
</table>

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**Shared Agenda**

**Active Engagement:**
- 1) Well regulated
- 2) Productive
- 3) Socially connected

**Transactional Supports:**
- 1) Motivating activity
- 2) Productive roles
- 3) Predictability
- 4) Positioning
- 5) Following child’s focus

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**Books: 8 Months into Treatment**
**Social Reciprocity**

**Active Engagement:**
4) Looking at faces
5) Responding to bids for interaction
6) Initiating directed communication

**Transactional Supports:**
6) Promoting initiation
7) Creating a balance of turns
8) Using natural reinforcers
9) Giving clear messages to ensure comprehension

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**Shared Agenda**

**Active Engagement:**
1) Well regulated
2) Productive
3) Socially connected

**Transactional Supports:**
1) Motivating activity
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5) Following child's focus

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**Social Reciprocity**

**Active Engagement:**
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6) Initiating directed communication

**Transactional Supports:**
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**Diaper Change: 1 Month into Treatment**

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**Diaper Change: 7 Months into Treatment**

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**Directed Communication**
Early Social Interaction (ESI) treatment model teaches families to use transactional supports and strategies (TS) in everyday activities in natural environments to achieve needed intensity for ASD.

- ESI for Toddlers with ASD: RCT Findings
  - Collaborative experimental treatment study using an RCT with a crossover design directed by Wetherby & Lord and funded by NIMH & Autism Speaks
  - Compared effects of Parent-implemented Individualized sessions (PII condition) with Individual, Education, and Support group sessions (IES condition) for 9 months
  - N=82 toddlers diagnosed with ASD referred from community screening, M= 19.6 months at start of treatment; PII was 3x week for 6 months & 2x for 3 months; IES was 1x for 9 months
  - Significant time by condition interaction on proximal measures of social com (CSBS Social) and distal measures with MSEL (Receptive Language) and VABS (Comm & Daily Living) and significant time effects on other measures
  - Transactional Support (TS) used by parents was significant mediator of child change at crossover with group differences in parent TS detected by 3 months of treatment.

Emory Ace Project 3: Changing Developmental Trajectories through Early Treatment
- RCT design with research aims to compare ESI model using PII plus IES with IES alone for 9 months and examine mediators and moderators of treatment effects
- N=108, recruitment from Emory ACE with red flags for ASD at 12 months beginning Aug 2013
- Findings will determine whether changing parent TS can lead to changes in child developmental trajectories
- Findings will document the effectiveness of a parent-implemented treatment to improve outcomes of young toddlers with ASD that is viable for most communities

THANK YOU!

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