Intervention Considerations in ASD: Individual Differences and Intensity

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Individual Differences in ASD

- Extreme heterogeneity of population
  - Spectrum disorder
    - Autism
      - “high” versus “low” functioning
    - Asperger syndrome
    - PDD-NOS
  - Cognitive differences
    - Range from well above average IQ to significant cognitive impairment

Individual Differences in ASD

- Sensory differences
- Possible co-morbid disorders
  - Seizure disorder
  - Down syndrome
  - Hearing impairment
  - Other psychiatric disorders, e.g.:
    - Attention deficit/attention deficit hyperactivity disorder
    - Tourette syndrome
    - Obsessive-compulsive disorder
    - Bipolar disorder
    - Depression
    - Anxiety

Individual Differences in ASD

- Language abilities
  - Expressive/receptive profile
  - Hyperlexia
  - Dyslexia/language learning disabilties
  - Presence/absence of phonological impairments
    - Apraxia

Individual Differences in ASD

- Neurobiology of ASD
  - Does not have a unitary cause
    - Genes & environment interact
      - Ronald, Happé, & Plomin, 2005
    - Involves multiple brain systems & their connections
      - Courchesne & Pierce, 2005; DiCicco-Bloom et al., 2006; Minshew & Williams, 2007

Individual Differences in ASD

- Predictor variables for intervention outcomes
  - Young children with highest IQ scores make most gains over time
    - Ben-Itzchak & Zachor, 2007; Magliati et al., 2007; Joseph, Tager-Flusberg & Lord, 2002
  - Problem: Is it IQ or is IQ measuring something else?
    - Some question validity of IQ measures for young children with ASD (Edelson, 2006)
      - May be indexing motivation, attention, social engagement instead

Individual Differences in ASD

- Predictor variables
  - number of words said, verbal imitation skills, pretend play with objects, and gestures to initiate joint attention
    - Most rapid vocabulary growth
      - Smith, Mirenda, and Zaidman-Zait (2007)
  - Non-verbal cognitive ability, joint attention, vocal and motor imitation at age 2
    - Language development at age 5
      - Thurm, Lord, Lee, & Newschaffer (2007)

What are the treatment issues re: autism?

- It is difficult to assess treatments because of:
  - Lack of control of:
    - Number of interventions the child is receiving
    - Individual differences in the population
    - Comorbidity of other disorders/medical conditions
    - Level of family support
    - Variability in administration
    - Measurement of success
      - generalization

Overview of current treatments

- Auditory integration
- Gluten free/ casein free diet
- Sensory Integration
- Facilitative Communication
- ABA/DTT early behavioral interventions
- PECS
- Floortime
- Hanen Program
- TEACCH
- Pivotal Response Training

Overview of current treatments

- Behavior-based treatments
  - Examples
    - ABA/DTT early behavioral interventions
    - PECS
  - Major tenets
    - Children with autism cannot learn in a "typical" environment
      - Need more structure
      - Need explicit teaching
    - Behavioral techniques can be used to shape coping, play skills and social interaction
  - Treatment is drill-based and intensive

Overview of current treatments

- Naturalistic treatments
  - Examples
    - Floortime (Greenspan)
    - Hanen Program (parent training) (Sussman, 1999)
  - Major tenets
    - Treatment should be based on typical development
      - Plays to child's strengths instead of focusing on deficits
      - Follows the child's lead in choosing activities
    - Naturalistic techniques can be used to address developmental delays in sensory modulation, motor planning and sequencing, and perceptual processing
  - Treatment is play-based

Overview of current treatments

- Middle-ground treatments
  - Examples
    - TEACCH
    - Pivotal Response Training (Natural Language Paradigm)
  - Major tenets
    - Treatment should be based on each individual's needs, interests and skills
      - Uses visual schedules
      - Activities are clinician-directed
    - Designed to help individuals with autism to function and live as independently as possible
  - Basis of treatment combines discrete trials and more naturalistic activities (e.g. play or work)

Things We Need to Know More About

- Understanding variability in motivation in ASD
- Role of sensory differences in response to intervention
- Role of environmental manipulations in supporting best outcomes
- Social engagement: how it develops, how to foster it
- Interventions beyond early childhood
- Working with non-verbal or minimally verbal individuals

Problems with Interpreting Intervention Studies

Individual differences in response not always clear

- Statistical tests done on group means
  - Individuals not studied
  - Sometimes individual differences mentioned informally
- For ideal treatment effectiveness, should be able to predict whether group results apply to particular individual cases
  - Single subject/single participant designs would help
  - Case studies also needed

Other considerations in individual differences

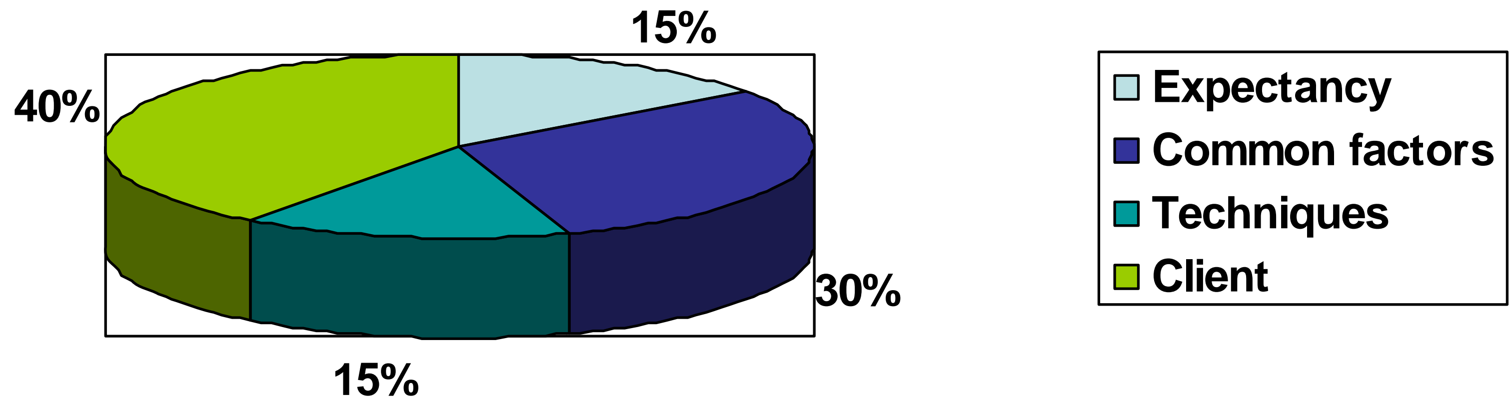
- Child factors
  - Temperament (Lahey et al., 2008)
- Family factors
  - Expectancy, hope (Thomas, 2006)
  - Culture, belief, experience…
- Clinician factors
  - Engagement, experience….
- Other environmental factors
  - Numerous, difficult to quantify—in ASD, some exs.:
    - Opportunities for social engagement
    - Amount of time spent per day in non-social activities
- Interactive factors
  - Child temperament influencing parenting behavior (Lahey et al. 2008)

What Causes Therapeutic Change?

- Psychotherapy literature
  - Lambert (1992) review, factors contributory to change:
    - Expectancy
      - Belief that intervention will work (placebo effect)
    - Common factors=Clinician-client Relationship
      - Independent of approach used
    - Techniques and/or models of intervention
      - Particular theories or practices used
    - Client & extratherapeutic factors
      - Everything else….

Lambert (1992) Review Findings

Percent of Improvement in Psychotherapeutic Patients as a Function of Therapeutic Factors



“Common Factors” in Therapeutic Relationships, Independent of Technique (cited by Lambert,1992)

- Empathy
- Warmth
- Acceptance
- Encouragement of risk-taking

Lambert (2007), p. 11

To give an example of the differences in outcomes for extreme groups, the upper 10% ($n = 7$) and lower 10% ($n = 7$) of therapists are contrasted here. The top-rated therapists' clients had an improved or recovery rate of 44% and a deterioration rate of 5%, whereas the clients seen by the bottom-rated therapists improved or recovered at a rate of 28%, with 11% deteriorating. One therapist who saw more than 160 patients had a 19% deterioration rate, whereas another saw more than 300 patients, with less than 1% deteriorating. For the purposes of quality improvement, such dramatic differences are well worth exploring with regard to how these individuals practice, an ongoing investigation. Such differences

Choosing Appropriate Interventions for Children ASD

- Lot of heat, maybe not so much light
  - Debates include
    - Controversial theories of causation & treatments
      - Special diets, dietary supplements
      - Auditory theories and treatments
      - Unusual treatments
        - » Swimming with dolphins (Hewitt, 2008)
      - Medical treatments
    - Naturalistic versus structured approaches
    - Amount and timing of intervention
    - Personnel to supervise/deliver intervention

Key Issues in Treatment Selection

- Does the intervention use a developmental model?

Key Issues in Treatment Selection

– Is the developmental model used appropriate for the unique challenges of children with autism?

Key Issues in Treatment Selection

- Is the treatment rooted in a valid theory of language?

Key Issues in Treatment Selection

- What is the context of the treatment?
  - e.g. Home-based? School-based? Clinic-based?

Key Issues in Treatment Selection

- What is the intensity of the treatment?
  - Can this be achieved?

Key Issues in Treatment Selection

– Who are the agents of the treatment? How will they be trained, monitored? Are trained personnel available?

Key Issues in Treatment Selection

- Is there current research supporting the intervention?
  - is the research “good”?
  - is there also research not supporting the treatment?

Key Issues in Treatment Selection

– What are the claims of the treatment? Are the claims realistic? Can they be recreated in “real life?”

Key Issues in Treatment Selection

– Does the treatment include plans for generalization?

Key Issues in Treatment Selection

- For what ages, levels of functioning is the treatment targeted?

Key Issues in Treatment Selection

– What is my role in the proposed treatment plan--how can my expertise and training best contribute?

Case Examples in Treatment Selection Relative to Individual Differences

- Parent variables
  - Parents with extremely contrasting views might not work together on a home-based, parent-delivered program (e.g., D.I.R.)
    - Selection of therapist-delivered intervention indicated
- Child variables
  - Child with extremely low motivation for social engagement, brief attention span, significant behavioral challenges
    - Two possible paths:
      - Intervention to improve social/play functioning
        - » Kasari et al. (2008)
      - Intervention working on external motivators
        - » Maurice et al. (1996)

Case examples, cont.

- Child with strong sensory aversions & interests, anxiety, difficulty separating from familiar caregivers
  - Treatment selected should be adaptable to sensory diet needs
    - Collaboration with OT, family
  - Most treatments use structure, routine, repetition to decrease extreme sensitivities, increase clarity of expectations, and provide sense of security and consistency
    - Home-based approaches may ease anxieties
      - Parent-centered treatment such as D.I.R. (Greenspan & Wieder, 2000)
      - Child-centered behavioral approach such as pivotal response training (Koegel & Koegel, 2006)
    - Center-based component may be essential to start building tolerance for diverse environments

Intensity

- Many guidelines and studies indicate intensive intervention is needed for young children with ASD
  - Lots of unknowns
    - How much qualifies as intensive?
    - How can you measure intensity?
    - What evidence exists for particular intensities?
    - Can eclectic approaches be considered intensive?

Studying Intensity

- Warren, Fey, & Yoder (2007)
  - Propose lack of coherence in measuring how much intervention a child is getting
    - Propose use of concept of "dose" from biomedical literature
    - Defined as
      - "number of properly administered teaching episodes during a single session" (p. 71)

Other concepts related to "dose"

- Dose form
  - e.g., direct versus indirect language stimulation methods
- Dose frequency
  - per day and week
- Total intervention duration
  - e.g., 6 months
- Cumulative intervention intensity
  - Product of frequency times duration times dose

What is a "dose"?

- How much of the "active ingredient" of intervention they are getting
  - What is the active ingredient?
    - In ABA
      - How many trials? OR
      - Number of trials to reach criterion?
        - » Might differ for different skills
    - In naturalistic approaches
      - Amount of high-quality input? OR
      - Amount of total time spent engaged with child?
        - » Former could be very hard to track

Intensity: Models

- EIBI
  - 40 hours per week of one-on-one for