Naturalistic, Focused Stimulation Interventions for Communicative Impairments in Autism

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Models of Practice

- How do we serve autistic children?
  - Working with parents
    - e.g., Hanen type programs (Sussman, 1999)
  - Providing direct services
    - traditional, 2 to 3 times per week for 20 to 60 minutes, individual or small group, focusing on specific language/communication deficits
      - e.g., apraxia, vocabulary, pragmatics
  - Consulting as a team member
    - transdisciplinary diagnostics
    - providing expertise on generalization, functional communication (Parker, 1996; Rappaport, 2001) to EIBI programs

SLP's and Autism

- Strengths of our profession re: autism
  - Specialized training in language & communication
    - sophisticated models of language & its development
    - training across lifespan
      - Pre-symbolic to literacy to logical inferencing
    - expertise in AAC
  - Expertise in working with parents

SLP's and Autism

- Problems affecting our role in intervention for children with autism:
  - Lack of efficacy data
  - Challenges from ABA practitioners (Maurice, Green, & Luce, 1996)
  - Service delivery models
  - Funding

Claim

- Only behavioral interventions have a scientific basis for increasing communicative competence in autism

Problem

- Purely behavioral approaches to language have not been preferred practice for young children for at least 2 decades

Defining scientific evidence

- Treatment literature for all techniques is sparse
  - Support exists for both naturalistic and discrete trial approaches
  - Naturalistic not clearly superior
    - Few studies directly compare DTT & naturalistic interventions in children with ASD, however
  - Should we become behaviorists, then?

Behaviorism

- Building blocks--operant conditioning
  - Stimulus
  - Response
  - Reinforcement
- Translation into Lovaas-type treatment
  - Discrete trial training
    - Each trial is independent of other trials
    - Each trial has an immediate consequence

Behaviorism

- Additional concepts important to behaviorism
  - Independence
    - avoidance of prompt-dependency
  - Generalization
  - Extinction

Classic criticisms of behaviorism

- Language is hierarchical, S-R-R is linear
- Language learning involves developing complex cognitive models
  - These are more than networks of associations
- Discrete trial teaching exhibits poor generalization and may lead to prompt dependency

Contemporary behaviorism

- Adult-directed teaching methods are “tried & true”—that is, have extensive research support
  - Goldstein (2002); Odom et al. (2003)
- Contemporary approaches incorporate generalization aspects
  - Transfer to natural contexts
  - Fading of prompts

DTT Approach to Pragmatics: Example

- Goal: Discriminates when to ask/when to reciprocate
  - Procedure: sit in chair facing child. Establish attending, present either vague statement or statement for reciprocation. Reinforce response (if child asks question, answer). Fade prompts over trials. Differentially reinforce responses made with lowest level of prompting. Finally, reinforce only correct, unprompted responses.*

*Source: Maurice, Green, & Luce,(1996).

What behavioral approaches have to offer

- Intensity
- Teaching technologies with extensive support in the literature
- Planned generalization
- Training of multiple intervention agents

Potential sources of communicative impairment in autism: How might an intervention work?

- Cognitive
  - Attention
  - Memory
  - Social cognition
    - including theory of mind
  - Executive functioning
  - Linguistic processing
- Emotional
  - arousal
- Sensory
  - inability to process info. from environment

Behaviorism, Theories of Autism, & Language Learning

- Lack of Theory of Mind
  - Children with autism:
    - May have difficulty understanding thoughts and feelings of others
    - May not attend to social cues
      - E.g. eye gaze, pointing, joint attention, etc.
    - Are unable to detect the intentionality in other's words/actions
  - Behaviorism makes the intent behind words/actions explicit

Behaviorism, Theories of Autism, & Language Learning

- Inability to learn language through social cues
  - Normal children learn language at least partly from a social drive
  - Without this drive, need another way to motivate children with autism to pay attention to language
- Behaviorism
  - Uses external motivators
  - Can be used as an initial way to get children to attend to language
  - Mix rewards with tangibles and highly desirable social interactions

Behaviorism,Theories of Autism, & Language Learning, cont.

- Statistical learning in language
  - Associative learning may be an early stage of word learning for all children
  - Eventually children learn to use social cues
  - Children with autism may be unable to use social cues, but can use associative cues
- Behaviorism
  - Plays on this learning strength by making input very regular and predictable

Limitations of behavioral approaches

- Best outcomes achieved with 30-40 hours per week
- Replication studies have not yet confirmed Lovaas (1983) results of high rates of recovery
- Not all behavioral programs plan carefully for generalization
- Behavioral plans may not take full advantage of incidental learning contexts
- Not easy to incorporate suggested intensity of treatment in home context
- Emphasis on recovery
  - Intensive behavioral approach not as successful with older children

Basis for naturalistic intervention models

- Language is learned in complex social contexts
- Language learning requires generalization across many examples
- Typical children learn most of their language based on incidental learning
  - S-R-R model not supported by input studies
  - Impossible to teach each and every word
    - ~10,000 words by age 9

Coexisting

- Behavioral teaching and naturalistic focused stimulation share elements in common
  - Intervention should start as early as possible
  - Intervention with young children should take place in the home
  - Intervention should be as frequent and intensive as possible
  - Children with autism do not always respond to typical learning environments
    - Managing complexity of input key to success
      - Matching child's developmental level to input

Where do naturalistic and behaviorist intervention theories differ?

- Behaviorism does not articulate a theory of child-driven learning
  - If recovery takes place, has to be because ability to learn in natural contexts was somehow "jump-started"
- Naturalistic approaches emphasize improving natural learning contexts
  - Minimalist approach to engineering learning context: just enough to help child
    - If successful, child develops skills for learning in more and more typical contexts
- Naturalistic approaches emphasize intrinsic, not extrinsic motivators
  - Child who is intrinsically motivated will learn in many environments, not only within discrete trial framework

Aspects of Successful Communication

- Ability to process auditory input
- Ability to attend for extended periods
- Ability to formulate goals and plans and carry them out
- Desire to communicate
  - to obtain desired ends
  - to socialize
- Repertoire of language knowledge
  - Linguistic forms & structures, rules for their use
- Repertoire of world knowledge
  - General facts, what people know, what they are likely to know
- Repertoire of social knowledge
  - How people respond to different events, social rules & expectations
  - Awareness of what is worth talking about
  - Means for getting and keeping partner's attention
  - Rules for turn-taking
  - Politeness and other group-identity indicators
- Ability to detecting, repair breakdowns
  - Need linguistic, world, & social knowledge to handle these
- Discourse planning to meet task demands
  - Again, competence in many domains needed

Means to increase communicative success typically employed by SLP's

- Social-developmental approach
  - naturalistic focused stimulation
    - includes caregiver training
  - incidental teaching
- Behavior modification
  - massed, discrete trials to train specific behavior
    - e.g., learn a phoneme, increase use of grammatical morphemes
- Other approaches
  - Use of pictorial communication systems
    - AAC (including PECS)
    - Social stories

Naturalistic Approaches to Communication Intervention for Autism

- Assumptions:
  - Autism affects development of entire system--not overlay on otherwise normal individual
  - "autistic" features derive from underlying organization of cognitive system
  - Person's behavior is rooted in the way they perceive the world
  - Normal development is useful guide

Naturalistic Approaches, cont.

- Drawing on language acquisition literature:
  - Language must be learned in real contexts of use, thus:
  - Intervention/support activities must
    - take place in contexts that are as close to natural as possible
    - elicit and model functional communication
    - employ a wide variety of communicative situations and partners

Naturalistic intervention, cont.

- respect meaningfulness of child's behavior
- draw from best practices in family-centered and curriculum-based approaches
  - environmental modifications as needed
  - eliciting support and involvement from caregivers

Criticisms

- Are natural learning contexts good learning contexts for child with ASD?
- Is there evidence for effectiveness in working with children with ASD?

Some responses to criticisms

- Some use naturalistic approaches in combination with structured approaches
- Address behaviors impacting quality of life
  - Most advocates of naturalistic approaches also advocate tolerance of diverse social profiles
- There is only one way to learn to functionally communicate: engage in functional communication
  - Leads back to a developmental model.

Situated Pragmatics Intervention

- Base intervention on:
  - close observation
  - respect for individual as functioning whole
    - avoids "parceling out" symptoms
    - belief in meaningfulness of child's behavior
  - consider functional implications of intervention goals & settings
    - Family-centered, child-centered
  - developmental/life span perspective

Situated pragmatics, cont.

- Primary intervention tool: naturalistic focused stimulation
  - key: devising natural contexts that are not too complex
    - challenges:
      - managing complexity and naturalness
      - devising need for child to use new pragmatic ability being modeled
      - achieving sufficient intensity
      - ensuring child attends
      - motivating child beyond his or her "special interests"

Increasing child's motivation to communicate

- Child-centered
  - Following child's lead, but not passively waiting for child
  - Prompt response to child's initiations
  - Continual monitoring for child's response to environment
    - Language environment
    - Physical environment
    - Social environment
    - "Fine tuning"
- Engineer environment to promote optimal communication
  - Classics: withholding; communicative temptations
  - Going beyond requesting: provide models, opportunities for commenting
    - Considerations: child's strongest interest; providing means for communicating non-request intents
- Training of significant others to provide optimal communication environments
  - Modeling, planned waiting, decreasing sensory or other distractions, responsivity

Diversifying child's repertoire

- Focused stimulation
  - Provide motivating event to participate in
  - Intensively model desired communication
    - Selected to be within child's zone of proximal development
    - Continuously seek ways to engage child's attention.
    - Fine tuning input to respond to child's signals
  - Continuously "up the ante"
  - Provide positive social support
  - Plan for providing novel experiences
  - Expect growth trajectory to be slow

Pivotal Response Training (Koegel et al., 1999)

- Outgrowth of behaviorist theory
  - Concern: avoid prompt dependency, explicitly teach skills that foster independent learning
    - Pivotal skills:
      - responsivity to multiple cues
      - motivation to initiate and respond appropriately to social and environmental stimuli
      - self-regulation of behavior
    - Approaches:
      - Teach responding to multiple cues by prompting, conditional discrimination.
      - Motivate child by:
        - offering choice
        - use of natural (intrinsic) reinforcers
        - interspersed maintenance trials
        - reinforcing attempts

Other aspects of pivotal response training

- Close cousins: milieu teaching, incidental teaching
- Has also been considered part of Natural Language Paradigm (Goldstein, 2002)
- Important concerns:
  - Help child succeed in inclusive environment
  - Avoid prompt dependency
- Some work has used trained peers (Pierce, 1995)
- Koegel & colleagues have collected efficacy data

Floortime (Greenspan & Wieder, 2000)

- 2 to 5 hours per day of home-based intervention.
- Provide interactive experiences known as "Floor-time", using DIR Model
  - Developmental
  - Individualized
  - Relationship-based
- Key concepts in developmental hierarchy:
  - Attention & focus
  - Engaging & relating
  - Nonverbal gesturing
  - Affect cuing
  - Complex problem-solving
  - Symbolic communication
  - Abstract & logical thinking
- Goal: mediate environment to provide natural input from caregivers, taking into account:
  - Child's neurobiological readiness
  - Family patterns
  - Larger society patterns
- Some efficacy data, long-term, uncontrolled, case review-based

Best Practices for Autism (NRC, 2001)

- Early, year-round, intensive intervention
- One-to-one, planned teaching
- Instruction individualized to child's developmental level
- Priorities: functional spontaneous communication; social instruction; cognitive development & play skills; proactive approach to behavior problems
- Opportunities to interact with typical peers

Naturalistic, child-centered approaches: The Future or the Past?

- Odom et al. (2003) characterized Lovaas-style behaviorism as "tried & true", naturalistic approaches as "cutting edge".
- Neurobiological understanding continues to grow
  - Frontal lobe-cerebellar connection model
    - supports need for special learning contexts.
- Behavioral approaches have evolved to be more person-centered
  - Positive behavioral support
- Maybe the future will draw on the strengths of both, as Pivotal Response Training has done

Handout Information

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Appendix: Case study

- Child with official diagnosis of severe receptive and expressive language disorder, hyperlexia
- CARS score 39.5 (severe range for autism)
- PPVT-R 76
- Shows following behaviors
  - Difficulty separating from mother
  - Screaming, etc., in new environments
  - Rote, overlearned language patterns
  - Difficulty forming social relationships

Case study, cont.

- Intervention targeted commenting
  - Techniques: intensive modeling in one-on-one therapy context
    - used "Nature Table" context
    - changing display of natural objects to provide things worth commenting on
      - modeled after preschool science curriculum ideas of exploration
  - Intensity: twice weekly sessions, two academic semesters in university clinic (43 videotapes)

Case study 1, cont.

- Intervention drew on TEACCH ideas (Watson et al., 1989).
  - Specifically:
    - building on existing strengths
    - selecting functional target that will have impact on communicative competence
    - consulting parent
  - (Treiber, 1999)

Case study, cont.

- Findings
  - Baseline and through session 14, no commenting
  - Sessions 15 onwards, at least one comment per session
    - high of 7 in session 39
  - Generalization probe of home environment after 2nd semester revealed one comment

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