 Return to representative papers

Developmental Findings of Relevance to Intensive Intervention with Autism Spectrum Disorder Children

I. LANGUAGE (cf. J. Berko-Gleason, 1997; D. Carroll, 1994; H. Tager-Flusberg, 1995, 1996, 1997)

1. AMotherese.@ Speech to infants is characterized by slow rate, exaggerated intonation, high fundamental frequency, repetitions, simple syntax and simple and concrete vocabulary.

(e.g., Asee the birdie,@ look at the birdie,@ Awhat a pretty birdie@, Ahi birdie@, Aallgone birdie@).

2. Babbling. Infants start by making vegetative sounds, then cooing, then vocal play (babbling) characterized by open syllables (CV), then on to reduplicated syllables (CVCV), then on to jargon babbling (random phonemic sequences said with the prosody of adult speech).

3. First words. Holophrases. Open syllables (CV) referring to things in the child=s environment. Uttered one word at a time. Words are concrete content words (kitty, mommy, etc.) and not function words (of, the, a, etc.). Words function as sentences. Mean:

Negation (no)

Recurrence (more)

Non-existence (allgone)

notice (hi, look, see)

4. Problem of reference. First words and parental speech pitched at Abasic-object level.@ Children first learn Adog@ before Acollie@ and Aanimal.@ Fundamental law of conceptual development.

5. Parental speech assists in reference in denoting wholes before parts. When parts of objects are mentioned they are followed by the wholes of which the part is a part.

6. Parents do not generally correct for syntax, but do aid in syntactic development by:

recasting the original child-uttered phrase, amplifying, and segmenting the speech stream.

7. Overextensions. (e.g., Adoggie@ for Acow@). Estimates that over 1/3 of children=s words are over-extended. But underextensions are present too (e.g., Pekinese is not a Adoggie@), but less noticeable. Children=s words become more exclusive and inclusive as they develop.

8. When vocabulary hits 50-60 words, start to see two-word utterances. Same kinds of meanings as in holophrastic stage

Negation (no bed, no milk)

Recurrence (more milk)

Nonexistence (allgone cookie)

Notice (hi daddy)

9. Second stage of 2-words utterances:

Actor-action (daddy eat)

noun modifiers (bad doggie)

Possession (Danny shoe)

Location specifiers (kitty table)

Action-Location (go store)

Action-Object (eat lunch)

Speech is telegraphic and NON SYNTACTIC for number, gender, tense, case, mood, etc.

10. Early grammar.

Function words (prepositions): in & on, then under

tense: -ing before -ed

past -ed before -s(third person singular present); plural -s before possessive -s

auxiliary verbs (is walking) come later

Average order of acquisition of major grammatical (bound) morphemes:

a. Present progressive

b. Prepositions (in/on)

c. Plural

d. irregular past tense

e. possessive

f. copula (uncontractible) (e.g., Ais@)

g. articles

h. regular past tense

i. third person present regular tense

j. third person present irregular tense

k. auxiliary, uncontractible

l. copula, contractible (e.g., Athe apple=s red@)

m. auxiliary, contractible (AI=m@)

In mid-toddlerhood, overregularizations are common: He eated, he goed, mouses.

The normal developmental pattern is: Awent, goed, went@

11. Evolution of negation:

a. negation + utterance (no car there, not johnny read it)

b. as MLU approaches 3, negations follow main verb I affirmative structure (that not mine, I no eat it)

c. As MLU hits 3.5 to 4 negations placed appropriately and they start to place negative markers on the auxiliaries (he isn=t my friend)

12. Asking questions:

1. where I should put it? (wh-pre-posing plus SAAD)

2. what will you do now (wh-pre-posing plus inversion for negative sentences only)

3. why won=t you let me go? (pre-posing + inversion + negation)

Well formed questions precede wh-questions

what, where, who precede why, when, how

13. SVO pattern learned quite early and prevent children from understanding structures that violate this order (passives and datives, e.g., Athe mother showed the girl the baby.@)

14. Combining sentences: forward deletion precedes backwards deletion:

AI like cookies and cake@ (i.e., I like cookies and I like cake) before ADanny and Johnny want to come@ (i.e., Danny wants to come and Johnny wants to come).

15. Acquisition of phonemes:

vowels vs. consonants before

oral stop vs. nasal consonants (papa vs. mama) before

labials vs. apicals (papa vs. tata) before

low vs. high vowels (/a/ vs. /i/)

II. READING:

One central pre-requisite to reading is Aphonological awareness (Stanovitch, Cunningham & Cramer, 1984).@

Tasks in order of difficulty:

1. Supply rhyme (What rhymes with fish?).

2. Identify different initial consonant (Given 4 words, choose the word w/ different initial sound).

3. Supply initial consonant (Given 2 words, supply sound that is present in one but not other).

4. Identify different final consonant (same as #2 but w/ final phoneme).

5. Strip initial consonant (identify what is left after first phoneme removed; task --> ask).

Teach segmenting by phonemes as opposed to by syllables.

Teach grapheme-phoneme matching. (e.g., cow vs motorcycle; which is longer?)

III. STAGES OF SYMBOLIC PLAY:

Stereotypic play:Mouthing, waving, banging, or fingering an object.
Relational play:The simultaneous association of two or more objects in a nonfunctional manner.
Functional play:The use of a realistic toy in a functional or conventional manner (e.g., using a spoon to feed a doll, dialing the telephone, and bringing the receiver to one's ear).
Symbolic play:Three different types of acts are included in this category: use of one object to represent another different object; acts that imply that a doll is an agent of action; and acts that imply the existence of imaginary objects.
IV. PRINCIPLES OF COUNTING LEADING TO THE CONCEPT OF NUMBER (Gelman & Gallistel 1978:)

1. The 1-1 Principle: Each object in a set should be counted once and only once.

2. The Stable Order Principle: Always assign the numbers in the same order.

3. The Cardinal Principle: A single number can be used to describe the total of a set.

4. The Abstraction Principle: The other principles apply to any set of objects.

5. The Order-irrelevance Principle: The order in which objects are counted is irrelevant.

V. REPRESENTATIVE STAGES IN THE DEVELOPMENT OF AA THEORY OF MIND@ (BARON-COHEN) OR PERSPECTIVE-TAKING (PIAGET) OR RULE-SWITCHING (ZELAZO):

Child looks in direction of mother=s gaze.
Child facing mother. Mom looking in direction X. Child is turned, looks in direction where mom was looking.
Child shown photograph. Asked to show mom. Child turns photo to show mom.
a) Hide x so someone can=t find it.
b) Make it so someone can=t find x

Johnny wants to play with his truck. He thinks it=s under the piano. Where will he look?
Crayon task (Zelazo; false belief)
Susie task (Baron-Cohen; false belief)
Tank task (from Dan Rosenn)
VI. A SAMPLE OF FINDINGS OF DIFFERENCES BETWEEN AUTISTICS AND IQ-MATCHED CONTROLS (cf., S. Baron-Cohen, U. Frith, et al.)

I. Cognition

Imitation. Especially weak compared to controls.
Cross-modality matching weaker (visual-tactual and visual-auditory).
Relatively higher Performance IQ than Verbal IQ.
Especially weak in sequencing.
Strong spatial skills.
No deficits in object permanence or in other sensorimotor knowledge.
Distribute play time less in true symbolic play (see scale).
Sorting and classification behaviors comparable when categories are concrete as opposed to social.
Especially weak in joint attention and social interaction.
Recognition of emotions weaker than controls (also in cross-modal tasks: auditory-visual).
Attend to lower part of face for facial recognition.
Attachment: Show differential attachment to primary caregivers.
Self-recognition (ARouge on nose task@) normal.
Weakest skill is perspective taking and imputing emotional states to others (cf, ATheory of Mind@).
Autistic females as a group are more impaired on every measure of cognitive functioning.
II. Perception

Visual fixations are brief, often include background and non-essential features of displays (Astimulus over-selectivity@).
In general lower-level perceptual processing intact.
When given a choice of storing perceptual information spatially or temporally, they use spatial cues (like deaf children or like blind children depending on the task and not like MR matched controls).
Autistics in general, show no right-ear advantage in dichotic listening tasks of language.
Often immune to context and organization (not assisted in memory recall; i.e., recall words by natural groupings).
Difficulty in detecting age differences in adults (e.g., sort young to old pix).