Prediction of Communication Risk Before 12 months with the ISCBS: Group Outcomes at 3 Years

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Background

- Most current assessments measure early communication beginning around 9-12 months, and very little is known about early signs of atypical development prior to this age.

- The amount of communicative interaction an infant engages in (i.e., duadic reengagement, rate of joint attention, rate of communication, and parental response contingencies) correlates to receptive and expressive language at 30-36 months of age (Brady et al., 2004; McCartney et al., 1999; Scoumer et al., 2011).

- Poor use of social-communicative behaviors (i.e., pointing and waving/nodding, gesture use, joint attention, sharing interest, gazing/sharing, gaze/point following, requesting attention) and oral/manual motor skills at 12 months have been associated with later autism diagnosis (Gernsbacher et al., 2007; Veness et al., 2012).

- An infant assessment is needed that includes a broad range of temptations for testing multiple sub-domains of communication in very early communicators (Saccomo, Waring, and Chan, 1996).

- The Infant Social and Communication Behavior Scales (ISCBS) is an assessment of early communicative interaction that is:
  - Based on research-based predictors of communicative behavior
  - Standardized for infants 2-12 months of age, in the process of norming
  - Applicable for pre-intentional communicators of any age
  - Scored using modality-independent behaviors
  - Assessed with practical dynamic/interactive temptations
  - Includes normative scores and latency measures
  - Includes multi-social and verbal temptations
  - Detailed in information on multiple communication skills
  - Appropriate for planning and tracking intervention progress
  - Discriminative between typical and at-risk development

Research Questions

- Does the ISCBS discriminate infants between 2-8 months who later demonstrate communication impairments (at 3 years) from those who do not?

- Which ISCBS communication behaviors and/or domains distinguish infants with communicative risk from preintentional infants with typical development?

Participants

106 infants at 2-12 months (mean = 6.63 months, s.d. 3.5) – 58 with no known risk factors at birth, 5 premature, 2 with severe physical impairments, and 1 with deafness and cochlear implant at 18 months.

By age 3, 61 children were within typical limits with no clinically significant risk, including 3 of the premature infants.

Out of 106 children, 27 had the following diagnosed disabilities: 10 had language and/or speech disorders, 7 had ASD, 5 had behavioral disorders, 3 had physical/sensory processing disorders, and 2 had complex communication needs.NAC.

An additional 18 children had low MLUs at least 1 s.d. below age expectations with no specific diagnosis.

Procedure

- Infant – Administration at home: 18 different ISCBS social, toy, and communicative temptations, and the Battelle Developmental Inventory

- Coding score presence or absence of 53 possible infant behaviors for each temptation administered in the ISCBS. Each raw score was converted to a ratio score.

- ISCBS behaviors scored by temptation were grouped into eight domains of social and communication skills: emergent communication, affect, attention, engagement, anticipation, reciprocity, mastery, motivation, and exploration.

- Follow-up at 3 years - Administration at home of:
  - Mullen Developmental Scales,
  - Clinical Evaluation of Language Fundamentals, Preschool (CELF-P)
  - Goldman-Fristoe Test of Articulation-2
  - Vineland Adaptive Behavior Scale,
  - Autism Diagnostic Observation Schedule, Second Edition (ADOS-2)
  - Language samples with parent and examiner, including SALT analysis

Group Results & Discussion

An ANOVA analysis shows significant post-hoc comparisons with combined categories for the following disorders: a) physical/sensory disorders and behavioral disorders (ISCBS), and b) Speech/language disorders and low MLU (SIMLUS).

- Additional ISCBS variables of interest were derived from visual tracking of adults in BD and PSD than ASD.

- Infants with S/L disorders or risk: Infants with speech/language disorders or risk may make frequent use of vocalizations to elicit social and communicative responses, and poor targeted play may reflect poor social skills integration.

- Infants with S/L disorders or risk: Infants with S/L disorders may take advantage of parent-directed behaviors such as acting expectantly in social contexts to elicit partner behaviors, and poor targeted play may result in greater vocalizing and interaction with objects and people.

- Infants with S/L disorders or risk: Poorer targeted play may reflect impairments in social and communicative skills, and may discriminate these groups at early ages.

- Significant reciprocity difficulties were seen in gesture, vocal, and play action imitation as well as taking any turns in interaction, showing a consistent pattern with that shown in little later childhood.

- Emotional concerns were shown in less positive affect toward people or objects and more negative affect toward objects, but gaze behaviors themselves were not impaired in most contexts. A combination of gaze and intent factors may distinguish infants at risk for ASD.

- Most early play schemes were within typical limits (e.g., banging), but poor targeted play may reflect early fine and/or gross motor limits often associated with infants with ASD.

- Limited visual tracking, object permanence, and gesture types may reflect a combination of language, cognitive, and social issues affecting early behavior of infants with ASD.

1. Subgroup Differences: Children with Autism (n=7)

- ANOVA: More vocalizing than children with speech/language issues
- Less attending to voice than all other groups
- Poorer gesture imitation than TD and low MLU groups
- More negative affect directed to objects than TD and PSBEH groups
- Better response to "where's mom/dad" than TD or SIMLUS groups

2. Subgroup Differences: Children with S/L disorder (n=10) and/or Low MLU (n=15)

- ANOVA: More vocalising in SL or SIMLUS than TD or ASD groups

3. Subgroup differences: Children with Physical/Sensory (n=3) or Behavioral Disorders (n=5) or combined (PSBEH)

- Improved skills in functional/symbolic play, object permanence, or play imitation may reflect general symbolic delays in children’s development associated with language impairment.

Clinical Implications

- These pilot results with only 5-6 infants per disability group (ASD and SL) show promising indications of identification of communication risk in infancy, consistent with characteristics associated with older children who have those disorders; ongoing research includes 3 larger norming cohorts of 100 infants each, which should provide more definitive risk factors.

- Children who had no diagnosed disability but low productive MLU scores showed significant differences in some infant skills from TD peers, and looked more like children with LI.

- Pilot results suggest that identification of risk factors is best determined separately for infants with different outcomes; risks may vary depending on the skills, needs, and disabilities together.

- It is possible to gain useful information about communication risk from children younger than 6-8 months using the ISCBS standardized play based communication assessment.

References


ISCBS Collaborators

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