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Short-Term Test-Retest Reliability of Informal Phonological Analysis for 2-year-old Late Talkers

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Background and Significance

Late Talkers
- 2-year-old children identified with expressive language delay without a causal factor (e.g., autism spectrum disorder, intellectual deficits)
- Few words; limited to no two-word utterances (“Mommy eat”)
- Approximately 10-15% of all 2-year-old children

Phonological Skills
- Correlation between the size of a child’s phonological repertoire and expressive vocabulary
- Late talkers may exhibit deficits in phonological skills (e.g., fewer complex syllable structures in words, limited speech sound repertoires)

Speech-language pathologists (SLPs) in Practice
- Planning appropriate intervention begins with comprehensive evaluation of both speech and language skills
- Often collect and analyze conversational speech samples using informal measures (i.e., those not compared to normative group; used for descriptive purposes)

Two Types of Informal Phonological Measures

Independent
- Allow for speech sound analysis that is descriptive rather than comparative (e.g., what the child DOES produce instead of what child DOES NOT produce)
- Includes Phonetic inventory (PI) and Word shape analysis (WS)

Relational
- Used to evaluate ability to produce sounds in a word compared to the adult form (e.g., comparing a child’s production of “tatt” to the adult form, “cat”)
- Includes Place-manner voice analysis (PMV) and Percent consonants correct-revised (PCC-R)

Test-Retest Reliability
- Measurement stability over time; short-term (i.e., one-week) reliability important for accurate baseline performance indicators and tracking treatment progress

Significance
- Need for evidence-based practices in assessment (ASHA 2004, 2005)
- SLPS may assume informal measures are reliable, but lack of evidence

Aim of current study
- Extension of Morris’ (2009) procedures for determining test-retest reliability of phonological analyses with a clinically-relevant population (e.g., late talkers); inclusion of relational analyses

Research Question
- What is the short-term test-retest reliability (over a one-week time period) of independent and relational informal phonological analyses calculated using intelligible words produced during a 20-minute speech sample for young children identified as late talkers?

Method

Participants
- (n = 3); Ages 24 months to 31 months (M = 26.67, SD = 3.79)
- Identified as a late talker: (1) <10th percentile on the MacArthur Bates Communicative Development Inventory: Words and Sentences (CDI) test. (2) one standard deviation below the mean on the Preschool Language Scale-5th edition (PLS-5) Expressive Communication subtest.

Procedures
- Modeled after Morris (2009) study procedures
- Two 20-minute conversational speech samples were obtained from each child while interacting with his/her parent and playing with age-appropriate, researcher-supplied toys
- Each speech sample was transcribed by the first two authors using the International Phonetic Alphabet (IPA); Inter-rater reliability was 81.83% (range = 72-91%).
- The first author calculated PIs and WS analyses for each participant session based on final agreed-upon transcriptions. Inter-rater reliability for independent analyses was established with the faculty advisor on 20% of the data. PI Inter-Rater Reliability was an average of 96% (range = 89-100%); WS Inter-Rater Reliability was 100%.
- The second author calculated all PMV and PCC-R analyses. Inter-rater reliability was established with faculty on 20% of the data. PMV Inter-Rater Reliability ranged from 84-93%; PCC-R Inter-Rater Reliability ranged from 89-95%.

Results
- Phonetic Inventory
  - Initial consonants: P1 and P2 were reliably consistent for productive initial consonants (6 in S1; 7 in S2; 6 in S1; 6 in S2); however P3 was not (2 in S1; 7 in S2)
  - Final consonants: P1 was reliably consistent with productive final consonant sounds, but not for emerging (0 in S1, 3 in S2), P2 was consistent in that he did not produce any in either session; P3 was not consistent for productive final consonants (2 in S1; 4 in S2)

- Word Shape Analyses
  - Findings indicated substantive unreliability for two of the three participants. P1 (33% consistency; 2/6 word shapes produced consistently across the two data collection sessions), P2 (50% consistency; 2/4), P3 (80% consistency; 4/5)

- Place Manner Voice Analysis
  - Findings indicate a discrepancy between session one and two for all three participants: at least 2 phonemes differed for each session

Selected References

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