Test-retest reliability of independent phonological measures of 2-year-old speech

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**Test-Retest Reliability of Independent Phonological Measures of 2-year-old children**

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### Background

**Informal Assessment Measures**
- Assessment tool not intended for comparison to larger group
- Often used along with standardized, norm-referenced assessments in a comprehensive evaluation of speech-language skills
- E.g., analysis of communication samples, observational measures

**Independent Phonological Measures**
- Measure speech-sounds without comparison to adult standard
- Used to obtain descriptive information to establish baseline
- E.g., *Phonetic inventory* (PI); Record of different sounds used, even sounds not produced in appropriate word positions (“at” for “cat”)
- E.g., *Word Shape Analysis* (WS); Record of sound combination complexity used to form words (e.g., “cat” represents CVC shape)

**Test-Retest Reliability**
- Degree to which a measurement is stable over time
- Short-term reliability critical for indications of baseline performance and progress tracking over the course of treatment

**Significance**
- ASHA acknowledged need for evidence-based practices in assessment and treatment (ASHA, 2004, 2005) to satisfy eligibility guidelines and provide effective services
- SLPs may assume commonly used informal measures are reliable, but little evidence to support.

**Existing Literature**
- Morris (2009) found test-retest (within one week) instability for PIs with typically developing 18- to 22-month-olds.
- Preston, Ramsdell, Oller, Edwards, and Tobin (2011) found that weighted measures of sound accuracy has similar reliability and validity as a relational phonological measure (PCC-R) for a variety of normative and clinical child populations.
- Heilmann, DeBrock, and Riley-Tillman (2013) noted test-retest reliability for other informal measures calculated from communication samples obtained from kindergarten-age children.

**Aim of current study**
- Pilot the extension of Morris (2009) work for determining test-retest reliability of independent phonological analyses over time for slightly older child population, 24- to 36-month olds.

**Research Question**
- What is the test-retest reliability (within one week) of the phonetic inventory and word shape analysis measures calculated using intelligible words produced during a 20-minute conversational speech sample for 24- to 36-month old children?

### Method

**Participants.** (n = 3); Ages 29 months to 33 months (M = 30.66, SD = 2.08); mono-lingual English speaking

- Identified as typically developing using the following criteria: SS > 85 on Preschool Language Scale-5 (PLS-5); > 25th percentile on MacArthur Bates Communicative Development Inventory (CDI)

**Procedures.** Parent-child dyads participated in two 20-minute play sessions one week apart in a university clinical setting. Toys for each session were randomly assigned and communication samples were obtained during play sessions.

- Sessions were video recorded for later viewing and transcription using the international phonetic alphabet (IPA). Transcribers were the 1st author and two trained student research assistants majoring in speech-language pathology. Following procedures used by Morris (2009), initial inter-rater reliability was just above 62%; however, the transcribers re-watched each instance of disagreement up to three times, discussed, and reached agreement. Transcribers agreed on 100% of re-watched instances.

**Results**

**Phonetic Inventory.** Initial consonants; P1 was consistent (15 in S1; 14 in S2; P2 and P3 were inconsistent (15;18 and 4;10, respectively)

- Final consonants (productive) - all relatively consistent (14;13, 12;10, 7;7)
- Consonant clusters (productive) – P1 and P2 were inconsistent (16;12, 5;13) P3 was consistent (4;0)

**Word Shape Analysis.** No substantive differences noted across sessions; all produced at least two different words in each of eight target word shape categories (V, CV, CVCC, VC, CVC, CCVC, CVCC, CVCV).

**Conclusions and Implications**

- Some support for extension of Morris (2009) findings to older child population. Two of three participants obtained consistent Word-Initial PIs, differences were noted for one participant.