**Title:** Concurrent Validity of the MacArthur-Bates Communicative Development Inventory for 48-month-olds with Williams Syndrome: Relations to Naturalistic Language Sampling and Standardized Language and Intellectual Ability Assessments

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**Introduction:** The ability to communicate linguistically is an important component both of successful day-to-day (adaptive) behavior at home and in the community as well as success in the classroom. Language skills also underlie literacy skills so are crucial for academic success. For these reasons, language outcome measures are likely to be included in many clinical trials involving children with developmental and intellectual disabilities. As clinical trials often include children from multiple countries with varying native languages, an outcome measure that is available in a large number of languages is particularly valuable. One such measure is the MacArthur-Bates Communicative Development Inventories: Words & Sentences (CDI; Fenson et al., 2007), a parent-report measure of early language abilities, which is available in more than 60 languages (CDI Advisory Board, 2015). The purpose of the present study was to assess the concurrent validity of the CDI in relation to measures derived from naturalistic language samples and to performance on standardized assessments of language and intellectual abilities, for 48-month-olds with Williams syndrome (WS).

**Methods:** Participants were 68 48-month-olds with WS (29 girls, 39 boys) whose parent completed the MacArthur-Bates Communicative Development Inventory: Words & Sentences (CDI; Fenson et al., 2007) and participated with the child in a 30-minute videotaped play session with developmentally-appropriate toys during the same laboratory visit. Children ranged in age from 47.57 – 48.99 months (mean = 48.48, SD: 0.30). Play sessions were transcribed using Systematic Analysis of Language Transcripts (SALT; Miller, 2016), allowing for determination of the number of different (non-imitated) root words that the child produced and the child’s mean length of utterance in morphemes (MLUm). Fifty-four of the children also completed the Differential Ability Scales-II (DAS-II; Elliott, 2007), a measure of intellectual ability that provides standard scores (SS) for Verbal, Nonverbal Reasoning, and Spatial abilities as well as an overall SS (General Conceptual Ability [GCA], similar to IQ); the Peabody Picture Vocabulary Test-4 (PPVT-4; Dunn & Dunn, 2007), a measure of receptive vocabulary; and the Expressive Vocabulary Test-2 (EVT-2; Williams, 2007), a measure of expressive vocabulary. For all of the standardized assessments, the general population mean = 100 and SD = 15.

**Results:** Despite the very narrow age range, there were large individual differences in both CDI expressive vocabulary size (EV) and CDI sentence complexity score (SC). Mean EV was 400.96 words (SD: 207.04, range: 9 – 679 out of 680 possible) and mean SC was 15.71 (SD: 14.36, range: 0 – 37 [maximum possible]). The mean number of different root words produced during the play session was 89.69 (SD: 56.55, range: 0 – 204) and mean MLUm was 2.25 (SD: 0.86, range: 0 – 3.96). Both CDI EV and CDI SC were very strongly correlated (all ps < .0001) with both play session variables; correlations ranged from r = .76 for CDI SC and play session number of different root words to r = .89 for CDI EV and play session MLUm. Mean DAS-II GCA was 63.02 (SD: 13.14, range: 33 [lowest possible] – 88), mean PPVT-4 SS was 80.80 (SD: 22.14, range: 20 [lowest possible] – 113) and mean EVT-2 SS was 79.26 (SD: 20.97, range: 30 [lowest possible] – 111). Once again, all correlations between CDI EV and CDI SC and the assessment SSs were strong (all ps < .0001). The smallest correlations were with DAS-II Spatial SS (r = .55 with SC and r = .56 with EV); the remaining correlations ranged from r = .68 for SC with DAS-II Nonverbal Reasoning SS to r = .87 for EV with EVT-2 SS.

**Discussion:** Scores from the CDI Vocabulary Checklist and Sentence Complexity components showed very strong concurrent relations with measures derived from naturalistic language sampling, SSs from standardized vocabulary assessments, and overall IQ. Although correlations with nonverbal abilities were somewhat lower, they were still highly significant. These findings indicate that the CDI, which is available in more than 60 languages, has considerable promise as an outcome measure for clinical trials.

**References/Citations:**