

The development and standardization of a speech production test for children: The Computer Articulation Instrument (CAI)  
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#### Aim of the study

A standardized, norm-referenced articulation test for children in Dutch is lacking. The aims of the study were to develop a test that (1) differentiates children with a speech delay from typically developing children, (2) contributes to diagnostic differentiation between phonological disorders and motor speech disorders, and (3) yields procedures that can be applied across languages.

#### Methods

A battery of speech production tasks in Dutch for children between 2 and 7 years, was constructed, consisting of (1) picture naming, (2) word and (3) pseudoword repetition, (4) consistency of production, and (5) maximum repetition rate (MRR). Normative data were collected on a representative sample of 1400 typically developing children. The analyses of the children's speech productions were based on phonetic transcription, and on acoustic measurements (for MRR).

Software was developed that automatically compares speech targets and realizations, thereby following programmable analysis rules. Over 20 measures were extracted; percentile scores per age group were calculated according to Tellegen and Laros (*Eur.J.Psychol.Ass.*; 9(2), 147-157, 1993). To make a start with developing differential diagnostic criteria the CAI is used in several clinical settings.

#### Results and Discussion

At the conference, results of the normative data will be available. Analyses so far show distinctive developmental trends for –among others-- percentage consonants correct (PCC), syllable structures correct, syllable-initial consonant cluster reductions, and number of syllables per second on the MRR task. The typically developing children show a significant developmental trend, with distinctive distributions per age group. This allows for interpretation of the results in terms of number of standard deviations above or below the mean, as well as age reference. Speech samples of children with speech difficulties are currently under analysis.