

Using the Dynamic Evaluation of Motor Speech Skill to Quantify Treatment Effects

Background: The Dynamic Evaluation of Motor Speech Skill (DEMSS; Strand, McCauley, Weigand, Stoeckel, & Baas, 2013) has been shown to distinguish childhood apraxia of speech (CAS) from other speech sound disorders. Moreover, scores on the DEMSS show good agreement with clinical judgements of apraxia severity. The current study explored the use of the DEMSS to characterize changes in motor speech skill as a result of speech and language therapy.

Methods: The participant is a female child (BT) with expressive language delay and a severe speech sound disorder judged to reflect CAS and phonologic impairment. The DEMSS was initially administered when BT was 3 years 3 months of age, and was readministered at three month intervals for the following year while she was receiving speech and language therapy. The current study was conducted to explore how well the following metrics included in the DEMSS reflected changes in motor speech skills resulting from speech and language therapy: overall accuracy, vowel accuracy, consistency, prosody, and maximum syllable complexity. The scores reported reflect percentage of total possible points, not percent accuracy across trials.

Results:

	October 2014	January 2015	March 2015	June 2015	November 2015
Overall Accuracy	5%	6%	19%	51%	77%
Vowel Accuracy	13%	30%	35%	73%	99%
Consistency	26%	10%	31%	69%	76%
Prosody	0%	4%	13%	33%	63%
Maximum Syllable Complexity	CVCV	CVC	C1VC2	C1VC2V2	C1VC2V2

Discussion: Improvement on all of the DEMSS metrics was observed over the 12 months of therapy. The author speculates that consistency decreased from October 2014 to January 2015 as BT's phonetic inventory and syllable complexity increased. The improvements in performance on the DEMSS corresponded to parent report of improved intelligibility and achievement of incremental treatment goals.

The current study is a single illustration of how the DEMSS might be used to quantify treatment effects for children with CAS. Additional study is needed to confirm the reliability of the pattern observed here, and to explore the range in speech skill to which the DEMSS is most sensitive to longitudinal changes. Two more data points from BT as well as data from up to four additional children may be available by time of the ICPLA meeting.

Strand, E. A., McCauley, R. J., Weigand, S. D., Stoeckel, R. E., & Baas, B. S. (2013). A motor speech assessment for children with severe speech disorders: reliability and validity evidence. [Clinical Trial Research Support, N.I.H., Extramural Validation Studies]. *Journal of speech, language, and hearing research : JSLHR*, 56(2), 505-520. doi: 10.1044/1092-4388(2012/12-0094)

