

Phonological, lexical, and morpho-syntactic assessments within CHILDES/PhonBank

Recent developments in linguistic research call for increasingly complex assessments of child language productions. Analyses now incorporate considerations ranging from perceptual and articulatory factors to considerations the composition of the lexicon (e.g. Rose & Inkelas, 2011). Similarly, studies of speech dysfluencies examine factors beyond speech production, including morphosyntactic complexity and positional effects within sentence structure (e.g. Bloodstein & Ratner, 2008). This compels researchers and clinicians toward computer-assisted approaches to data analysis.

In this presentation, we highlight solutions developed within CHILDES/PhonBank for language assessments, emphasizing the delineation of clinical profiles. In order to illustrate these methods, we use a combination of data from typically-developing and phonologically-disordered learners.

For analyses of the lexicon, morphology, syntax, and discourse, we rely on methods implemented within the CLAN programs (MacWhinney, 2000). CLAN provides a clearly described transcription system called CHAT that can also be expressed through XML. We will illustrate how the MOR, POST, and MEGRASP commands can automatically construct a morphological analysis tier and a dependency grammatical relation tier for complete transcripts in 12 major languages in less than a second. Using this information, we will show how a researcher or clinician can then use the KIDEVAL program to automatically construct an analysis with scores for MLU, DSS, IPSyn, pause duration, Brown's 14 grammatical morphemes and a variety of other lexical, morphological, and syntactic indicators. The positioning of a child on each of these scales can then be automatically aligned with a comparison sample database, producing standard deviation scores that can indicate differences from the normally-developing comparison group or some clinical comparison group.

Using the PhonTalk program, XML data from CHAT can be automatically converted to Phon format for phonological and phonetic analysis. We will present an overview of data coding methods developed within Phon, useful to assess phonological abilities at different levels. At the segmental level, we will describe analyses phone production patterns, in combination with syllable-level considerations, useful to detect positional phenomena (within syllables or relative to stress). Among others, we note patterns of positional stopping (e.g. *sick* > [tk] vs. *kiss* > [kis]) and velar fronting (e.g. *go* > [do] vs *bag* > [bæg]; e.g. Marshall & Chiat, 2003). We also discuss syllable truncation, in relation to segmental and prosodic issues, including word shapes (e.g. *banana* > [nana]/[bana]; e.g. Pater, 1997).

Building on these individual methods, we will discuss automated assessments inspired by the now-deprecated PROPH+ program (Long & Fey, 1993). These assessments, especially useful in the context of clinical studies, include reports on phonological productive abilities at the levels of phones, syllables, and the word.

Finally, we demonstrate how Phon can support research in speech acoustics, for example on the development of phonological contrasts (Scobbie, Gibbon, Hardcastle, & Fletcher, 1996), through the integration of speech analysis functions developed within Praat (Boersma & Weenink, 2015).

In closing, we discuss how we can combine analyses performed in CLAN and Phon. These provide a broad range of measures relevant to the testing of current theoretical models of language and language development.

References

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