

Characterizing the complete language environment:

What could children learn by 'listening in'?

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Despite substantial prior work on:

- (a) differences in the (statistical) contributions of language that is **child-directed (CDL)** versus **overheard** to



suggesting that children learn exclusively from speech directed to them, not that they overhear...

- (b) the impact of **qualitative differences in CDL contexts** on vocabulary growth^{1,4}...



There has been little study of **overheard language quality**. This is important for understanding language development because overheard language is:

- (c) common across the world
(d) likely to be more **heterogeneous** than CDL.

1 How does the **quality** — in terms of hypothesized utility for language learning — of overheard language compare to the **quality** of CDL?

Data videos from the Providence corpus

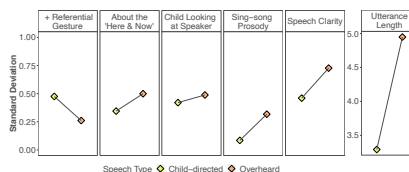
Method Qualitative coding scheme focused on referential transparency (word learnability in context)

Utterance-by-utterance coding including:

Audience	child, adult, phone...
Here & Now	reference to present
Referential Gesture	pointing, demonstrations....
Child Gaze	...to referent or speaker
Sing-song Prosody	acoustic exaggeration
Speech Clarity	unintelligible (1) to clear (3)
Utterance Length	in tokens



2 Is overheard speech more qualitatively **variable**?



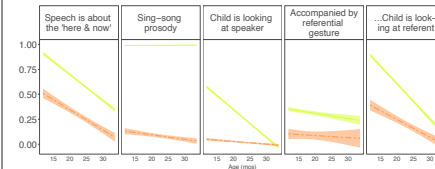
3 How **distinguished** are overheard speech & CDL?

Linear Discriminant Analysis

Variable	+ Prosody Loading	- Prosody Loading
Here & Now	0.19	1.57
Referential Gesture	0.07	0.86
Sing-song Prosody	7.91	---
Morph. Complexity	-0.06	-0.98
Utterance Length	-0.002	-0.08

Without prosody, linear discriminant function accuracy = 66% for overheard and 77% for CDL; error rate 24%

4 Does overheard language **quality change** with age?



5 Which dimensions are associated with **child attention**?

ME logistic regression predicting child gaze:
 Here & Now OR=3.83 [3.14, 4.68]
 Sing-Song Prosody OR=5.87 [4.34, 7.99]
 Speech Clarity OR=1.71 [1.48, 1.98]
 Age OR=0.90 [0.89, 0.91]

Ongoing work: characterizing speech to and from siblings & across diverse cultural contexts, predicting child language outcomes.