

# Characterizing the complete language environment: What could children learn by 'listening in'?

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1 Ramirez-Esparza, Garcia-Sierra, & Kuhl (2014)

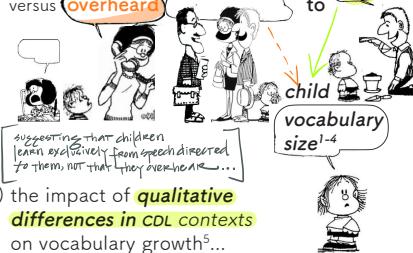
2 Shneidman & Goldin-Meadow (2012)

3 Shneidman, Arroyo, Levine, & Goldin-Meadow (2013)

4 Weisleder & Fernald (2013)

5 Cartmill et al. (2013)

Despite substantial prior work on:

- (a) differences in the (statistical) contributions of language that is child-directed (CDL) versus overheard
- 
- 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<sup>5</sup>
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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) in tokens
Utterance Length	

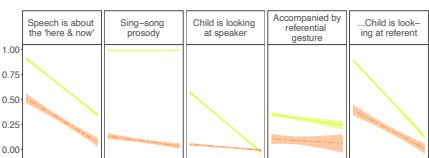
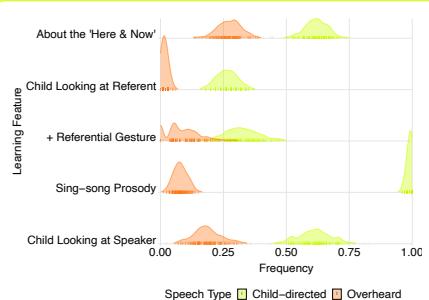
## 3 How distinguished are overheard speech & CDL?

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?

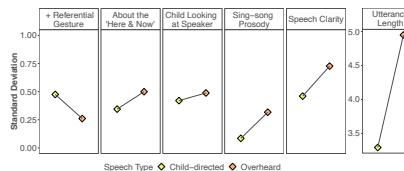


## 5 Which dimensions are associated with child attention?

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]

## 2 Is overheard speech more qualitatively variable?



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