



# Stranger Things: Parents and Strangers Demonstrate Different Fine-Tuning in CwLLE

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## Background and Innovation

- Prior research has investigated the positive effects of parental input on language development, including the use and quantity of child-directed speech (CDS).
  - CDS is simpler in syntactic complexity than adult-directed speech (ADS) with generally shorter utterances (Ratner, 2013).
  - It is generally "fine tuned" to a child's current level of language development (Snow & Ferguson, 1977).
  - Evidence suggests that CDS impacts language acquisition more than language "overheard" ADS language in the child's environment (Shneidman et. al, 2009).
  - The use of CDS has a positive impact on children's vocabulary acquisition over time (Rowe, 2012).
- However, few studies have analyzed how CDS varies to children with language impairments, including children with late language emergence (CwLLE).
  - No studies appear to have compared parents' speech to children who are classified as CwLLE with that of adults less familiar with the child's language skills.
- We analyzed children classified as either typically-developing or CwLLE and the parents and clinicians that the children interacted with to determine if there were differences in utterance length and complexity.
  - We investigated three measures of CDS utterance length and complexity, including Mean Length of Utterance (MLU) in words, Developmental Sentence Score (DSS), and the Index of Productive Syntax (IPSYn).
  - The Number of Different Words (NDW) was also utilized to measure lexical complexity.

## Research Questions

- Is there a difference in utterance length and complexity of parents and investigators between late talkers versus typically developing children?
- Is there a difference in complexity of the child-directed speech produced by the parent versus the investigator?

## Methods

### Data Collection:

- Data used in this project were previously collected from 60 parent-child dyads in the Ellis Weismer corpus at CHILDES/TalkBank [an open access research archive]; these included 30 typically developing children and 30 Children with Late Language Emergence (CwLLE).
- The children were matched for age and observed at both 30 and 42 months. Mother-child and investigator-child sessions were recorded and transcripts were made in CHAT, the TalkBank standard format.

### Procedures:

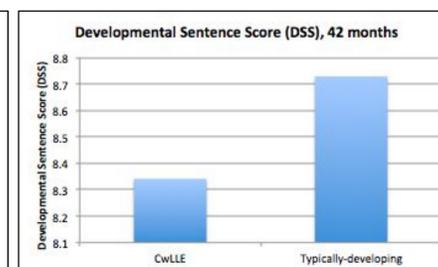
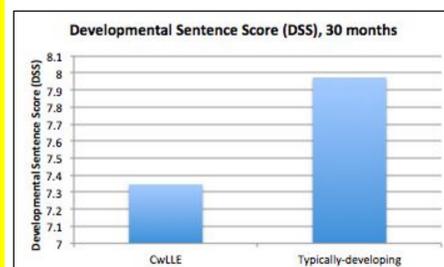
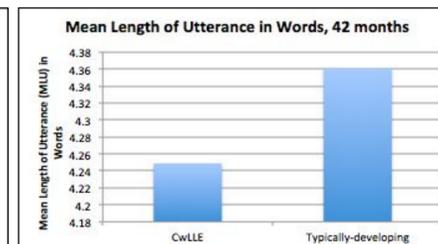
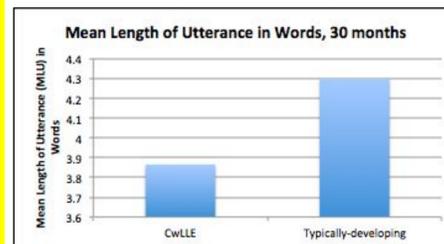
- The language used by the mothers and research investigators was compared to evaluate the difference, if any, in lexical complexity. Three CDS (child-directed speech) measures were computed using the KIDEVAL command in CLAN; Developmental Sentence Score (DSS), Mean Length of Utterance (MLU), and the Index of Productive Syntax (IPSYN).
- The children's language was also analyzed to characterize lexical and grammatical development.

### Data Analysis

- We compared mothers' and investigators' language to typically developing children and CwLLE, using a two-sample T-test with a significance level of  $p=0.5$ .
- An ANOVA was also conducted to compare properties of child-directed speech by age and adult speaker (parent or investigator).

## Results

- CwLLE received shorter input than typically-developing children
  - Both parents and investigators produced significantly ( $p = .00008$ ,  $ec\ p = .00005$ ) shorter utterances using MLU in Words when conversing with CwLLE compared to typically developing children at 30 months.
  - This effect disappeared by 42 months.
- CwLLE received simpler input than typically-developing children
  - When using DSS to measure CDS complexity, mothers talking to 30 month-olds ( $p = .02133$ ), investigators talking to 30 month-olds ( $p = .00167$ ), and investigators talking to 42 month olds ( $p = .02399$ ) all gave simpler language input to CwLLE than to typically-developing children.
  - However, mothers did not simplify DSS when speaking to the two groups of children at 42 months.



- Experimenters used simpler, less varied language than parents.
  - At 30 months, the experimenters spoke more simply to both groups of children, as measured by IPSYN.
  - At 42 months, IPSYN showed a different profile, with both groups of adults speaking more simply to CwLLE.
  - At 30 months, investigators consistently used more varied vocabulary than did parents, but CwLLE received less varied vocabulary from both adults.
  - At 42 months, investigators consistently used more varied vocabulary to both groups of children than did their parents ( $p = .0014$ ).

## Discussion

- While both of the adults CDS had less complex input and less lexical complexity to the CwLLE compared to typically developing children at 30 months, we did not find a difference between the mothers and investigators at this age.
  - Investigators also used a more varied vocabulary base than the parents did.
  - These variations between parents and investigators disappeared by 42 months. This suggests that the adults had more confidence in the children's comprehension by this age in both child groups.
- At 42 months, the investigators used varied vocabulary towards both of the child groups compared to the parents which led them to be inconsistent in their simplification of vocabulary and grammar.
  - This may suggest that the parents of the 42 month olds are taking into account what they know about their children's language skills and unconsciously simplifying the complexity of their language based on what they know their child understands.
- The differences between a child's parent and an investigator, a stranger, suggest that parents use their child's recent language over the past year as a basis for their fine-tuning in CDS.

## References

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## Acknowledgements