

**Phonological Factors in Language Emergence & Specific Language Impairment  
Poster presented at the PSHA Convention, April, 2010  
State College, PA**

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**Abstract**

The assumption in the literature on specific language impairment (SLI) has been that children with SLI had a late emergence of language—were “late talkers” at age 2. This study examined a large longitudinal data set to determine the early language history of children identified with SLI in grade school. More than half of children with SLI in grade school had typical language abilities at age 2. The study then considered an ability associated with early language development, the ability to perceive and manipulate the sounds of language or phonological processing.

Children with SLI and late language emergence (LLE) were found to perform more poorly on a task involving phonological processing than children with SLI and typical language emergence (TLE). The findings suggest that the developmental trajectories of children with SLI may be quite varied.

**Background**

Specific language impairment (SLI) is a developmental disorder characterized by a substantial deficit in the ability of children to use and understand language. The disorder is not associated with a clear cause for the deficit, such as deafness, mental retardation, or injury. A consensus view expressed in the research on SLI is that late language emergence (LLE) should be considered characteristic of the developmental pattern of SLI (Tager-Flusberg & Cooper, 1999).

LLE has been identified at age 2 by parent report measures. One leading criterion for LLE is the absence of word combinations or an expressive vocabulary of fewer than 50 words (Rescorla, 1989)

Studies that have followed late talkers indicate that too few of the late talkers (7-20%) persist in having language deficits at school age to account for the overall prevalence of SLI at school age (7.4%, Tomblin et al., 1997). If there exists among children with SLI a group that had a history of late language emergence (LLE) and a second group with typical language emergence (TLE), a difference between the groups might be an ability related to early language learning, such as phonological processing (Kuhl & Rivera-Gaxiola, 2008).

## Research Questions

1. What is the prevalence of a late language emergence (LLE) history among children with SLI in grade school?
2. Do children with SLI and LLE differ from children with SLI and a history of typical language emergence (TLE) in phonological processing ability?

## Methods

- Group observational study.
- Children were identified with SLI at grade 3.
- The age 2 language ability of the children was identified.
  - One group was identified as having late language emergence (LLE).
  - A second group was identified as having typical language emergence (TLE).
- The LLE and TLE groups were compared on a measure of phonological processing.

## *Participants*

- 1015 children with data available at grade 3 from the NICHD Study of Early Childcare.
- Participants enrolled at birth at 10 hospitals in United States.
- Excluded children born to mothers younger than 18 years or non-English speakers. Also excluded children with serious medical issues at birth.
- All participants included in analyses scored at or above 74 on Performance Scale of Wechsler Abbreviated Scale of Intelligence (WASI) to rule out mental retardation.

## *Criteria for Group Assignment*

- Late Language Emergence (LLE) =
  - At age 2 parents report no word combinations OR fewer than 50 words in child's expressive vocabulary.
- Typical Language Emergence (TLE) =
  - At age 3, child was combining words and has more than 50 words in expressive vocabulary.

## *Standardized Language Measures*

- Woodcock-Johnson Psychoeducational Battery Revised (WJ-R) Picture Vocabulary

- WJ-R Memory for Sentences
- Wechsler Abbreviated Scale of Intelligence (WASI) Verbal IQ
- Narrative—wordless picture book story, standardized on study participants

Qualified as specifically language impaired (SLI) by 2 criteria:

- Score of 1 *SD* or more below mean on 2+ standardized language measures.
- Score of 2 *SD* or more below mean on 1+ standardized language measure.

#### *Measure of Phonological Processing*

- The Woodcock-Johnson Psychoeducational Battery-Revised Word Attack subtest.
- Administered at grade 3.
- Participants read nonwords such as “lish.”

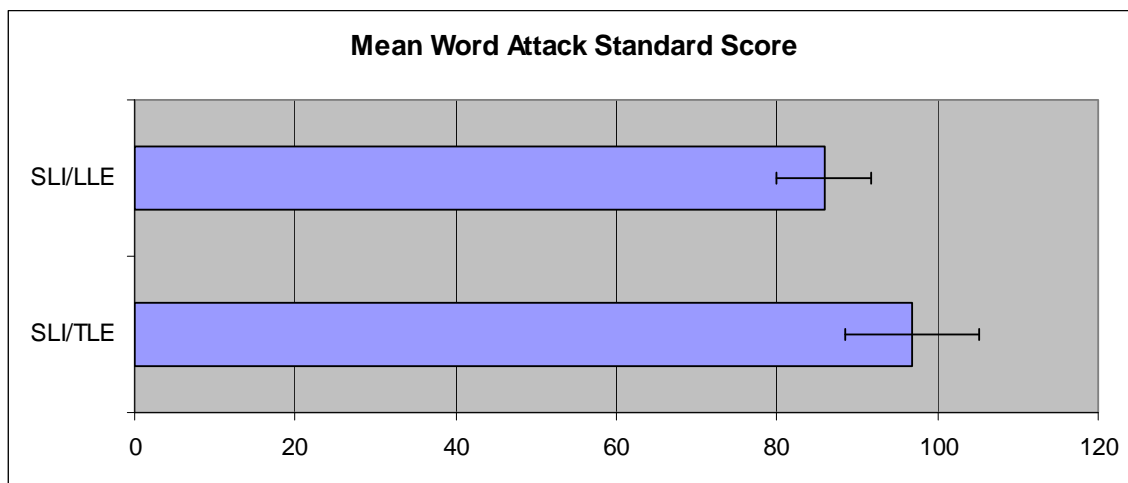
#### Results

##### *Language Emergence History of Children with SLI at Grade 3*

- 52 children were identified with SLI at grade 3 for whom age 2 language history data were available.
- 71% of children with SLI in grade 3 experienced typical language emergence (TLE) at age 2. 29% had late language emergence (LLE).

##### *Phonological Processing Performance*

- For the group mean Word Attack standard score:
  - SLI/LLE < SLI/TLE
  - $t(37) = 2.63, p = .012$
  - $d = .76$
  - Error bars represent 1 *SD* around the mean.



## Discussion

- *Limitations.* Findings should be considered preliminary in light of the small samples and the fact that significant differences in phonological processing were not replicated when an alternate criteria for LLE was used (below 10th percentile on MacArthur Communicative Development Inventory).
- The results of this study converge with the findings of a preliminary study in which  $SLI/LLE < SLI/TLE$  on a measure of nonword repetition, also a measure tapping phonological processing.
  - Nonword repetition involves repeating auditorily-presented made-up words.
  - Nonword repetition has also distinguished late talkers from typical talkers (Stokes & Klee, 2009).
- In future research, a measure of phonological ability taken at a younger age, and using auditory input, would provide stronger evidence for the role of this factor in early language learning.
- The findings of this study suggest that the developmental path for children with SLI may vary (see Thomas et al, 2009).
  - **Delayed onset:** Some children have late language emergence and do not catch up to peers: the SLI/LLE group.
  - **Premature asymptote:** Some children have typical language emergence yet fall behind peers in grade school: the SLI/TLE group.

## ACKNOWLEDGMENTS

This research was supported by funding from the Center for Language Science at the Pennsylvania State University. This study was conducted by the NICHD Early Child Care Research Network supported by NICHD through a cooperative agreement that calls for scientific collaboration between the grantees and the NICHD staff.

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