

THE 30 MILLION WORD GAP

COMD570: Language Development

Sign(s) of the day

- Questions
 - Non-manual markers (posture, head/face movement) important!
 - Yes/no questions
 - Raised eyebrow, lean forward
 - Say normal declarative sentence
 - WH questions
 - Furrowed eyebrow, lean forward
 - Why
 - Who
 - What
 - When
 - How
 - Where

Child-Directed Speech and Word Learning

Child-directed speech & word learning

- 21-month-olds learn words better from child-directed speech as compared to regular adult-directed speech
- Mothers who expanded more of the utterances directed at children between the ages of 24 and 33 months really gave those children a boost when learning words
- Parents who repeat words more often to their infants have children with better language skills a year and a half later

Newman, Rowe, & Bernstein Ratner (2015)

Ma, Golinkoff, Houston, & Hirsh-Pasek (2011) Taumoepeau (2016)

Child-directed speech & word learning

- Quantity of speech is the strongest predictor of vocabulary growth in the **second** year of life
- Diversity of vocabulary used by parents predicts vocabulary growth in the **third** year of life
- The complexities associated with narratives and **decontextualized speech** predict vocabulary growth in the **fourth** year of life
 - Decontextualized speech: Things that aren't about the “here” and “now” of the current context (roughly, displacement)

Differences by socio-economic status (SES)

- Children from lower-SES families (on average) show slower vocabulary growth compared to higher-SES peers
 - Differences persist into school years
- Variation in child-directed speech relates to children's language development
- Child-directed speech predicts some aspects of children's language development, e.g. vocabulary growth, speed in processing familiar words

Differences by socio-economic status (SES)

- SES is related to both quantity and quality measures
 - More highly educated parents use more words overall and more diverse kinds of words
- By 18 months, group differences in vocabulary and language processing between lower-SES and higher-SES toddlers are apparent
- By 24 months, the gap between SES groups in language processing efficiency predicts later language learning (e.g. grammar)
 - Downstream effects of word learning on more complex language development

Differences by socio-economic status (SES)

- Differences by SES in syntactic bootstrapping for grade-school age children (ages 8-15):
 - Low SES children not as effective at leveraging known vocabulary to identify the meaning of an unknown word

Differences within SES

- Within low SES group, the quality of mother–child communication was a better predictor of the child’s expressive language a year later than the total number of words spoken by the mother
- More complex language by mothers at 18 months was significantly associated with faster comprehension at 24 months
- **Quality** is important, not just quantity

Interactive input

- Richness of conversation may be the more critical factor relating to language development than simple number of words
- Children between 4 and 6 years old: amount of conversational turns accounted for a large portion of the variance in brain and language measures
 - Effect happens regardless of parental income or education

Interactive input

- 17-month-olds can learn words from video chats, but only interactive chats where the on-screen partner responded to them in real-time, as opposed to prerecorded ones without that interaction

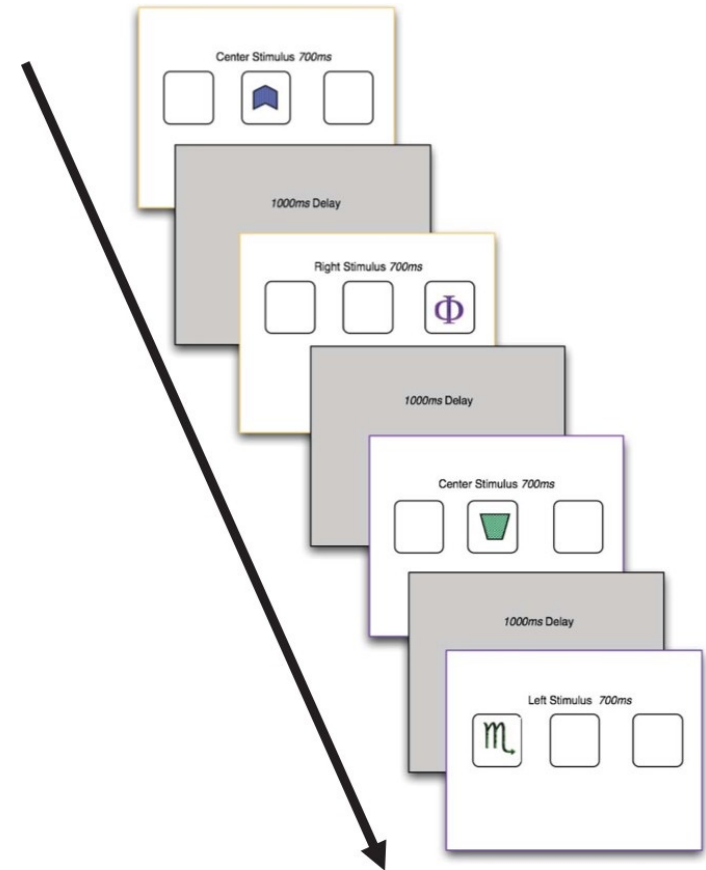


Joint attention

- 10- and 11-month-old infants who follow gaze and pointed themselves had faster vocabulary growth (Brooks & Meltzoff, 2008)
- 10-month-old ability to follow pointing correlates with current non-noun (verb, adjective, etc.) vocabulary (Bergelson & Swingley, 2013)
- 14-month-old tendency to look at objects after being encouraged to do so (*infant follow-in*) strongly related to vocabulary size and growth (Scott, Sakkalou, Ellis-Davies, Hilbrink, Hahn, & Gattis, 2013)
- 16-month-olds learned the labels for new objects best when labels were provided in response to child's own pointing (Wu & Gros-Luis, 2015)

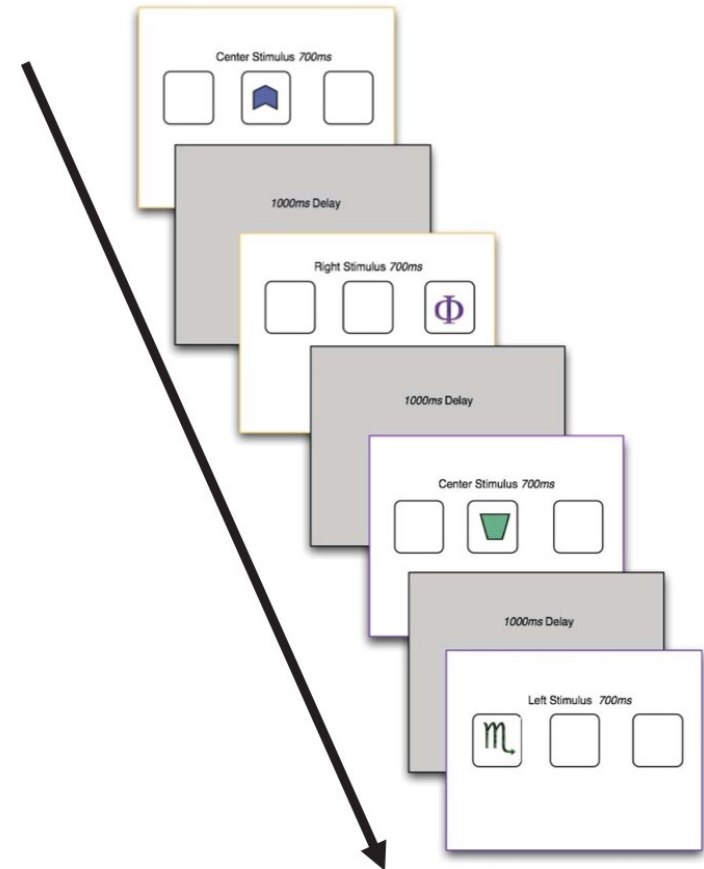
Statistical learning

- Statistical learning matters for early word learning
- 6-month-old capacity to respond to novel but predictable events robustly predicted both receptive and productive vocabulary at 22 months



Statistical learning

- For children with high statistical learning abilities, SES had less of an effect on language abilities compared to children with low SL ability
- Suggests that statistical learning abilities underlie some of the association between SES and language learning



Siblings

- Laing & Bergelson 2017: Number of siblings affects input quality (not just quantity)
 - Child-directed speech is related to number of siblings
 - More siblings was associated with less child-directed speech by primary caretaker and slower lexical development
- But, siblings also provide additional relevant speech input (Sperry et al., 2019)

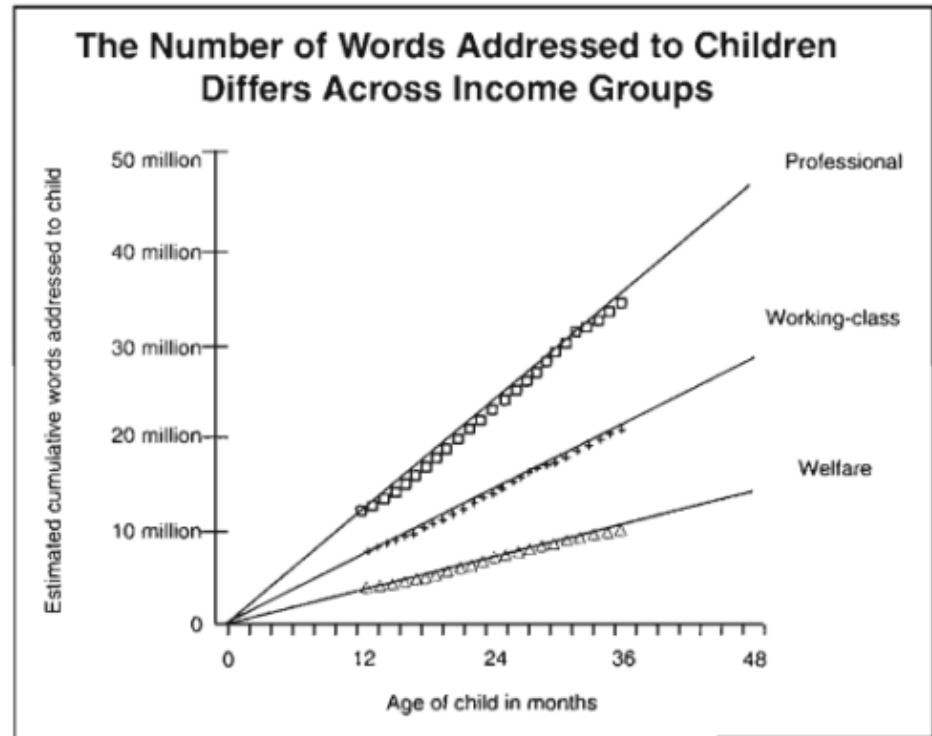
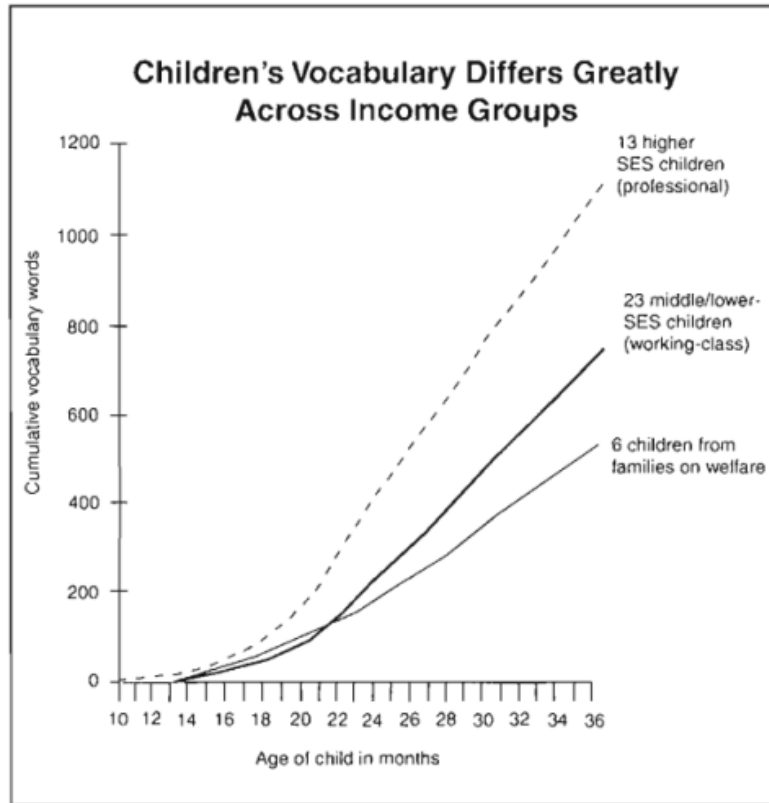


Recap: child-directed speech & SES

- The quantity and quality of language experiences (especially as transmitted by child-directed speech) impacts lexical development
- There are significant differences in child-directed speech both across SES classes and within SES classes
- Social cues and statistical learning abilities impact children's vocabulary development

The Word Gap: effects of race and income disparity

Original study: Hart & Risley (1995)



Original study: Hart & Risley (1995)

Families' Language and Use Differ Across Income Groups

Measures and scores	Families					
	<u>13 Professional</u>		<u>23 Working-class</u>		<u>6 Welfare</u>	
	Parent	Child	Parent	Child	Parent	Child
Pretest score ^a	41		31		14	
Recorded vocabulary size	2,176	1,116	1,498	749	974	525
Average utterances per hour ^b	487	310	301	223	176	168
Average different words per hour	382	297	251	216	167	149

Since Hart & Risley: major policy implications

Full Obama discussion on the “word gap”:

<https://youtu.be/gu5P5NbGxEY>

Reporting on the “word gap”: <https://youtu.be/kkzAm5pn4J4>

30 million words project: <https://youtu.be/7qESE2GeZxo>

Critique of the “word gap”

Curt Dudley-Marling and Krista Lucas

Pathologizing the Language and Culture of Poor Children


This article will help teachers resist deficit discourses that pathologize the language and culture of children living in poverty.

What Counting Words Has Really Taught Us: The Word Gap, A Dangerous, but Useful Discourse

Stephanie Abraham 

Rowan University

Reexamining the Verbal Environments of Children From Different Socioeconomic Backgrounds

Douglas E. Sperry 
Saint Mary-of-the-Woods College

Linda L. Sperry
Indiana State University

Peggy J. Miller
University of Illinois at Urbana-Champaign

Sperry et al. (2019)

- Critique of Hart & Risley:
 - H&R conflate race and economic class
 - Low SES group was entirely African American; only one family in upper SES group was African American
 - Researchers were a kind of “alien presence” inside the home; families may have acted differently and in complicated ways with somebody they didn’t know/trust
 - E.g., middle and upper class families might have “put on a show” for the researchers, whereas lower class families might have felt uncomfortable not acted as they normally would have
 - Very limited dataset: only a single geographical area (Kansas City, Kansas), small numbers of families in each group
 - Ignore the complexity and richness of narratives as additional dimensions of language ability beyond vocabulary

Sperry et al. (2019)

- Sperry et al. (2019) improve on all of these dimensions
 - Researchers well integrated into social groups; spent much time getting to know the community; more naturalistic interaction with family
 - Wider range of race/social class groups and geographical areas

Sperry et al. (2019)

Updated methods: better estimates and less difference between groups

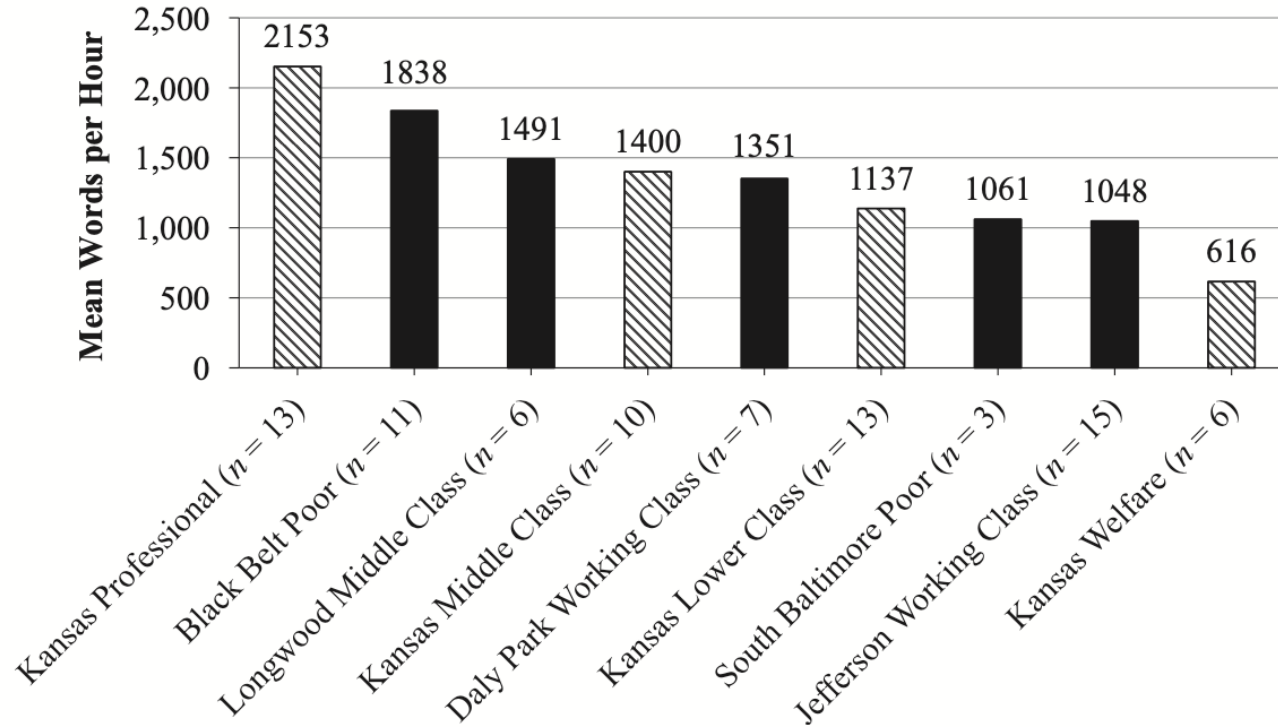
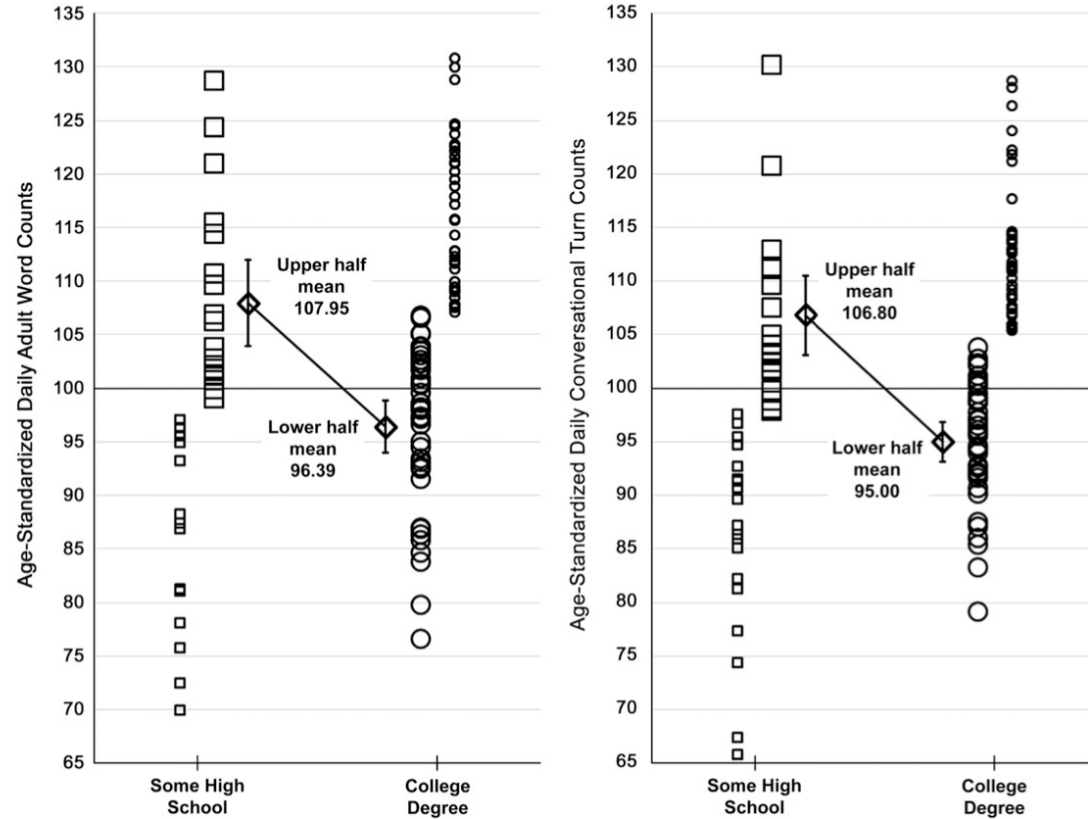


Figure 1. Mean number of words spoken by primary caregivers to children. Data collected for the present analysis are presented in solid bars. Data collected by Hart and Risley (1995) and used here for comparison are presented in hashed bars.

Gilkerson et al. (2018)

Tons of variability within
group; much more so
than between groups

Figure 3. Median group comparison of daily AWC and CT for least versus most educated parents. Values shown are age-standardized (to $M = 100$, $SD = 15$), daily (12-hr) adult word and conversational turn counts averaged within families to illustrate the full range of values within socioeconomic groups. Parents in the upper half of the least educated group demonstrate significantly more talk and engagement with their children than parents in the lower half of the most highly educated group.



Dudley-Marling & Lucas (2009)

What is particularly striking about Hart and Risley's data analysis is their willingness to make strong, evaluative claims about the quality of the language parents directed to their children.

Failing to consider the language of poor families on its own terms is the fatal flaw of the Hart and Risley study.

There is little to be gained, however, by pathologizing the language and culture of children living in poverty.

The claim that there is a *culture of poverty* that limits the academic and vocational success of poor people is based on a flawed theory of culture.

The discourse of "scientifically based research," . . . has led to a body of research that is resistant to meaningful (theoretical) critique.

As Gloria Ladson-Billings's (1994) research reminds us, respect is the key to successful teaching. Ultimately, this is about respect for students' knowledge, who they are, and where they come from.

What Counting Words Has Really Taught Us: The Word Gap, A Dangerous, but Useful Discourse

Stephanie Abraham  (2020)

Rowan University

ABSTRACT

For the past two decades, a claim of a word gap between the vocabulary sizes of poor children and their wealthier peers has inundated educational policy. In this article, I use critical discourse analysis to show how the word gap theory is a dangerous, but useful, discourse that continues to be produced as a scientific explanation for the cause of poverty and that closing the word gap will be the ultimate remedy for poor people. The word gap is a discourse that arose to explain away poverty, while supposedly countering deficit discourses about the innate unintelligence of poor people. It has relocated the problem with poor people from innate incompetence and laziness to social incompetence that was produced by a word deficit. The analysis showed that those who adhere to the word gap discourse are absolved from any critical questioning of the oppressive workings in American society.

Golinkoff et al. (2019)

There are definitely achievement gaps correlated with SES

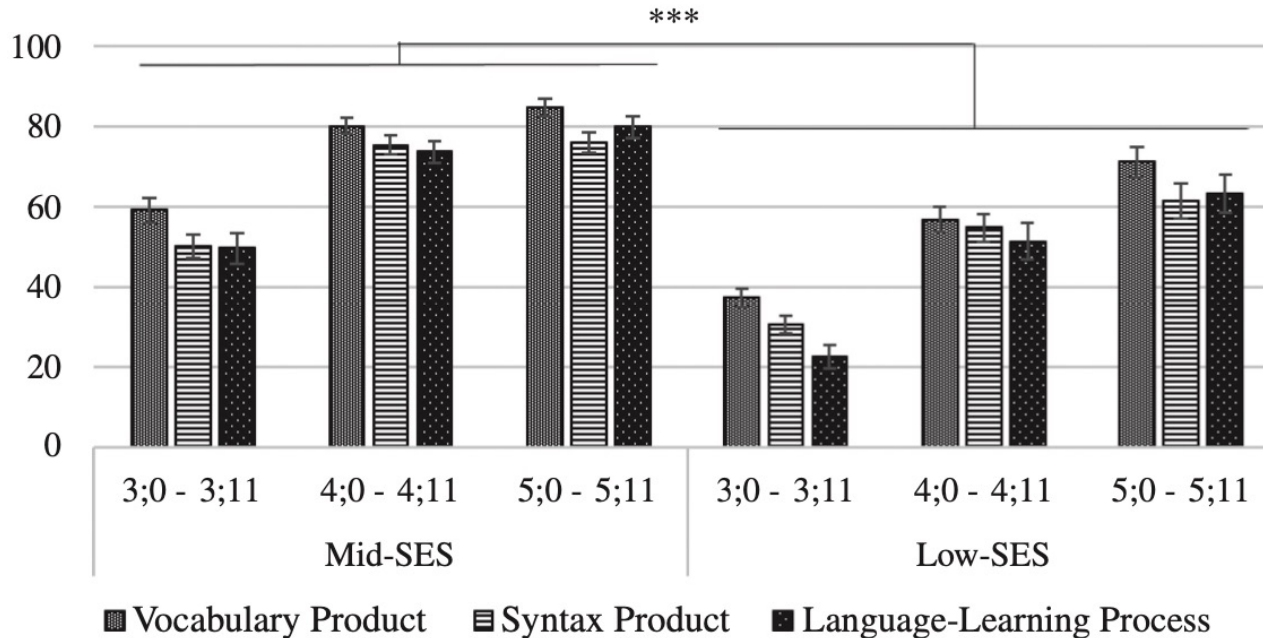


Figure 1. Monolingual children's scores on the Quick Interactive Language Screener (QUILS) by social class (maternal education) plotted by age and by area on the QUILS. The main effect of socioeconomic status (SES) was significant, and there were no significant interactions with age or QUILS area. $***p < .0001$. (From Levine, Pace, Hirsh-Pasek, & Golinkoff, under review.)

Golinkoff et al. (2019)

- “Perhaps years ago, when schools moved more slowly and we were not in a knowledge economy, having fewer conversations and poor school achievement was less of a problem.
- “Now however, as the evidence mounts that language skill is implicated in school achievement, and as kindergarten has become the new first grade (Bassok, Latham, & Rorem, 2016), children are under increasing pressure to perform.”

Golinkoff et al. (2019)

- “To summarize, rolling back an emphasis on the 30-million-word gap might have unfortunate consequences for children who already have to cope with the deleterious effects of poverty.
- ”There is little question that the language addressed to children matters for language development per se and for all its collateral benefits—for acquiring information about the world, developing self-regulation skills and executive function, and engaging with teachers and peers.”

Recap

- Original Hart & Risely (1995) “30 million word gap” study showed very strong differences in children’s vocabulary based on social class, correlated with strong differences in amount of adult language input to children
- Issues with original study; understate within group variability, perhaps overestimate real group differences
- Dilemmas based on how to address issues: social-political solutions vs. interventions/placing burden on parents/families