

Jump Start Vocabulary: Teaching Shape Bias to Increase Expressive Vocabulary

Tim
Brackenbury

Hannah
Niese



Early word learning

Typically developing 22-month-olds like Nicole are ready to learn and use new words. A trip to the garden center can be an opportunity for new words like *mulch*, *spade*, and *fertilizer*. Her parents do not even have to teach these words. She can acquire them through general exposure.



Unfortunately, not all children are as adept at word learning as Nicole. Between 10 and 15% of two-year-olds have identifiable difficulties expressive language

(Zubrick, Taylor, Rice, & Slegers, 2007).

Can the expressive vocabularies of toddlers with language delays be improved by an intervention that does not directly teach new words?

How do young children learn new words so quickly and easily?

Late Talkers

Young children with: below average expressive vocabularies (< 50 words or < 15 percentile, and/or no two-word combinations)
normal receptive language skills, including receptive vocabularies
no obvious cognitive, sensory, or other identifiable impairments

Many researchers and clinicians consider Late Talkers a diagnostic category (e.g., Rescorla & Dale, 2013). Some, however, suggest a moratorium on the term as a category until we better understand the occurrences of "recovery" (e.g., Dollaghan, 2013), while others view the label as a risk factor (e.g., Paul, 1997, Finestack & Fey, 2013).

Interventions for Late Talkers have nearly exclusively focused on teaching specific vocabulary items. Although a variety of methods have been evaluated, results have varied, especially as related to generalization to non-targeted words (Cable & Domsch, 2011).

Are there alternative forms of intervention that can assist Late Talker's with vocabulary development?

Lexical Principles & Shape Bias

Lexical principles are mental constructs that help children become more effective and efficient word learners (e.g., Golinkoff et al., 2000; Markman, 1990). They are predictions that guide children towards potential meanings and referents for new words.

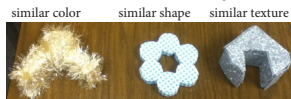
They may be the result of Statistical Learning: the ability to identify patterns within the normal language exposure, make predictions based on those patterns, and use those predictions to become more efficient language learners

Mutual Exclusivity (Markman, 1989) - Objects have only one name. Lead to a prediction that a novel word should be associated with an unknown referent over a nameable item.

Shape Bias (Landau, Smith, & Jones, 1988) - Here is a *Wif*.



Which of these is another *Wif*?



Shape Bias predicts that count nouns generalize by the shape of the object. Once the phonological form is mapped to the referent, further exposures are not needed for the child to apply the novel word to similarly shaped objects. Shape Bias typically appears around 24 months of age, about the same time as large increases in expressive vocabulary and two-word combinations.

Smith, Jones, Landau, Gershkoff-Stowe, and Samuelson (2002) experimentally trained 17-month-olds to acquire the Shape Bias early. After 8 weeks, their expressive noun vocabularies increased significantly above those of non-trained peers (41 vs. 14 nouns).

Late Talkers, and children with SLI, perform significantly more poorly than their peers on Shape Bias tasks (Collison, Grela, Spaulding, Rueckl, & Magnuson, 2014; Jones, 2003).

Research Question & Methods

Will Smith et al.'s intervention on Shape Bias training increase the expressive vocabularies of 2-year-old Late Talkers? If so, will the improvements match the Shape Bias' prediction of occurring primarily in count nouns?

Participants:	Codename	Age (in Months)	Diagnosis	Pretest CDI Words	Pretest CDI Percentile Score
	David	27	Late Talker	89	< 10
	Nigel	23	Late Talker	25	< 5
	Derek	25	Late Talker	29	< 5
	John	33	Late Talker	232	< 15 based on 30 month norms
	Jeanine	23	Late Talker	79	< 15
	Eric	23	Typical Jeanine's twin	167	> 40

Intervention: 8 weekly sessions, ~ 30 minutes each

4 nonsense words, each paired with an unfamiliar object.

5 minutes of play with: 2 objects associated with a nonsense word, differing by color and texture

1 object with a different shape that matched one of the target object's color and the other's texture.

Wif *Wif* not a *Wif*



Zup *Zup* not a *Zup*



Lug *Lug* not a *Lug*

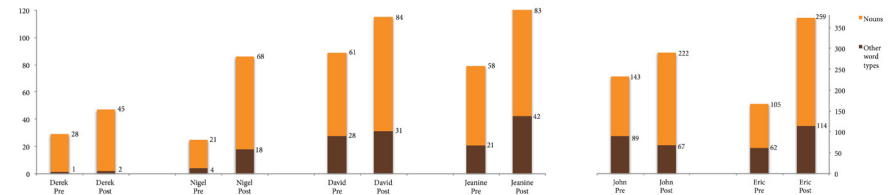


Dax *Dax* not a *Dax*



Spontaneous play that included at least 10 productions of the target label and 5 productions of "not a ____." For example, "The *zup*. The *zup* on your head. Uh oh. The *zup* fell off. Check it out. That's not a *zup*. It fell too."

Results & Discussion



In two months time, the expressive vocabularies of the children in the experimental group were 1.5 and over 3 times higher than at the start. In comparison to the results from Smith et al.'s study, Nigel and John's vocabulary changes were consistent with the average changes of the experimental group. Jeanine and Derek made changes that were below the average of their experimental group, but above that of their control group (17-month olds who started with expressive vocabularies ~ 40 words and did not receive the intervention). Derek's improvements matched those of their control group. Despite this progress, all of children in our experimental group continued to have expressive vocabularies below the average range at the end of the intervention. Only Nigel increased his expressive vocabulary enough to show an improvement in his post-intervention percentile score (from < 5 to < 15). None of the children in the experimental group matched the progress of Eric, the control case. His development may not be typical, however, as his percentile score performance on the CDI increased in the two months from > 40 to > 60.

Derek, David, and John's improvements followed the predicted pattern of nouns over other word types. Nigel and Jeanine showed growth across categories.

These results suggest that an intervention that addressed an underlying skill related to word learning, without directly teaching vocabulary items, can have a positive affect on expressive vocabulary development. The next steps in this research will focus on the inclusion of control measures/participants, exploring alternative forms of the intervention (e.g., video game presentation), increasing and expanding the dosage, and including multiple lexical principles and/or other semantic features.

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