The Accessibility & Influence of Taxonomic & Thematic Information on Novel Word Learning in Preschoolers

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Introduction

Two lexical skills that have been repeatedly demonstrated in young children are the acquisition of novel words through incidental learning (e.g., Rice, 1990) and the development of categorical associations between items within the lexicon (e.g., Waxman & Namy, 1997). To date, Markman and Hutchinson (1984) is the only study that has examined the integration of novel words with taxonomical and thematic associations, yet their exposure protocol was based on direct teaching and required a forced choice between the two associations. The present investigation builds on this work by examining preschoolers' abilities to incidentally learn new words and connect them with familiar taxonomic and thematic associates.

Method

Participants:

	Control (n = 10)	Experimental, Stories with associates (n = 22)	Experimental, Stories without associates (n = 22)
Mean age	4 yr; 9 mo (SD = 6.1 mo)	4 yr; 10 mo (SD = 5.6 mo)	5 yr; 1 mo (SD = 6.2 mo)
Gender	4 males, 6 females	11 males, 11 females	13 males, 16 females
Audiometric Screening (ASHA, 2007)	Within normal limits	Within normal limits	Within normal limits
Mean Standard Score CELF:P - 2 (Wiig, Secord, & Semel, 2004)	100 (SD = 6.6)	103 (SD = 9.8)	102 (SD = 9.3)

Target Words:

Novel Image	Nonsense Label	Taxonomic Associate	Thematic Associate	Novel Image	Nonsense Label	Taxonomic Associate	Thematic Associate
	bave	vehicle	dirt		kibe	food	toast
	daivik	clothes	ball		paydil	animal	cracker
	faus	tool	nail		puth	toy	stick
	golave	furniture	box		togud	instrument	water

Exposure Stories: Two stories, presented via computer with narration, provided indirect visual and verbal exemplars of the target items to the two experimental groups.

Stories with associates

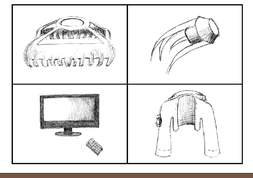
Suzie thought this would be a good time to get out her **puth**. She quickly pulled the **toy** out of her backpack. "Mom, do you want to play with it too?" asked Suzie. "No thanks, I think I'll just watch you." Suzie's mom said. "Okay, but it's really fun!" said Suzie, smiling. Suzie found a **stick** on the ground. She used it to send the **puth** high into the air.

Stories without associates

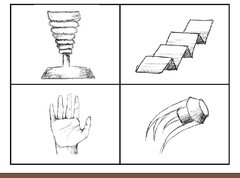
Suzie thought this would be a good time to get out her **puth**. She quickly pulled **an object** out of her backpack. "Mom, do you want to play with it too?" asked Suzie. "No thanks, I think I'll just watch you." Suzie's mom said. "Okay, but it's really fun!" said Suzie, smiling. Suzie found **something** on the ground. She used it to send the **puth** high into the air.

Assessment Task: Identification of each target object based on its nonsense label, taxonomic associate, and thematic associate. The Control group was tested once, without exposure to the stories. The Experimental groups were tested immediately after exposure (Time 1) and 1 week later (Time 2).

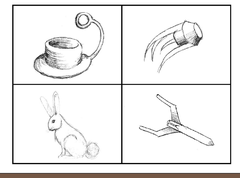
Point to the puth.



Show me the toy.



Show me what belongs with a stick.



Were the children able to learn the novel words and connect them with familiar taxonomic and thematic words?

Paired sample t-tests within each group, at both times

Group	Novel Word		Taxonomic Associate		Thematic Associate	
Control	equals chance	$t(9)<0.01$, $p=1.00$	above chance	$t(9)=13.50$, $p<0.01$	below chance	$t(9)=-6.00$, $p<0.01$
Stories With	above chance	$t(21)=4.30$, $p<0.01$	above chance	$t(21)=8.47$, $p<0.01$	above chance	$t(21)=2.18$, $p<0.04$
Stories Without	above chance	$t(21)=7.88$, $p<0.01$	above chance	$t(21)=12.56$, $p<0.01$	equals chance	$t(21)=1.03$, $p=0.32$

Did performance differ by group, across the three word types?

MANOVA: 3 groups x 3 word types, Time 1 only

Main effects

Word Type	Results	
Novel	Significant	[F(2)= 11.51, p<0.01, $\eta^2=0.30$]
Taxonomic	Non-significant	[F(2)= 2.83, p=0.07, $\eta^2=0.10$]
Thematic	Significant	[F(2)= 7.87, p<0.01, $\eta^2=0.24$]

Post hoc Tukey HSD

Word Type	Results [all significant ps.<0.05]
Novel	Stories Without > Stories With > Control
Taxonomic	Stories Without = Stories With = Control
Thematic	Stories With > Stories Without > Control

Repeated Measures ANOVA: Time 1 & Time 2

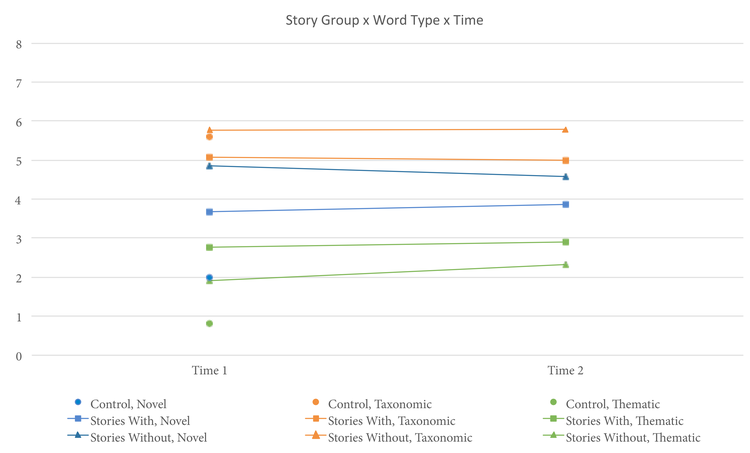
(stories with n=22, stories without n=19)

Main effects & Interactions

Comparison	Results	
Word type	Significant	[F(2)= 101.57, p<0.01, $\eta^2=0.72$]
Word type x Group	Significant	[F(2)= 10.28, p<0.01, $\eta^2=0.21$]
Time	Non-significant	[F(1)= 0.81, p=0.78, $\eta^2<0.01$]
Time x Group	Non-significant	[F(1)= 0.21, p=0.65, $\eta^2<0.01$]

Post hoc t-tests

Word Type	Results
Novel	Stories Without > Stories With [p=0.03]
Taxonomic	Stories Without > Stories With [p=0.02]
Thematic	Stories Without = Stories With [p=0.11]

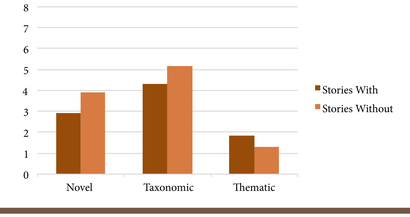


How stable was learning across time for the experimental groups?

Stability = correct responses for individual items at time 1 and time 2.

MANOVA: 2 groups x 3 word types

Word Type	Results	
Novel	Non-significant	[F(1)=3.59, p=0.07, $\eta^2=0.08$]
Taxonomic	Non-significant	[F(1)=2.83, p=0.08, $\eta^2=0.08$]
Thematic	Non-significant	[F(1)=7.87, p=0.26, $\eta^2=0.03$]



Conclusions

Children associate unfamiliar referents with novel labels and familiar taxonomic and thematic words, following limited exposure.

These associations persist across at least a week's time, without additional exposure.

Taxonomic associations were consistently stronger than novel labels, which were consistently stronger than thematic associations.

Exposure to familiar taxonomic and thematic words was mildly detrimental to novel word learning.

Next step: examine the performances of children with SLI.

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