Investigating the relationship between infant learning and measured effect size in preferential looking paradigms

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INTERPRETING LOOKING TIMES

How should we interpret *the magnitude of looking time differences* in infant learning studies?

Quantitative differences in looking time are assumed to be meaningful in most analytic approaches, but how these measures map onto learning is unclear.

These questions are especially relevant for
- using participant-level looking time differences as an individual difference measure
- interpreting meta-analyses

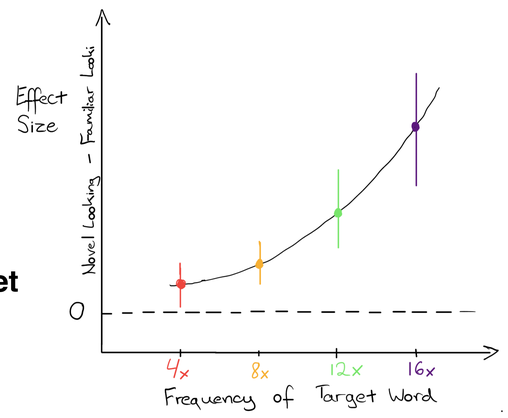
EXPERIMENTAL APPROACH

Test whether <u>frequency of exposure</u> systematically affects effect size in a novel word recognition study

Training study testing infants' recognition of familiar words (e.g., Jusczyk & Aslin, 1995) presented in citation form.

Frequency of novel word occurrence during training manipulated across groups (~ strength of learning)

<u>Possible pattern of results:</u>
Effect size (in terms of looking time difference) **scales with frequency of target word exposure**



DESIGN

Initial experiment to test the feasibility of training paradigm

Participants: 51 6-9-month-olds (M = 7.4 months; 26 F)
Pre-registered: n = 64, 32 per condition

https://osf.io/j49gr

Training Phase
8 nonse words presented in citation form, 80 total tokens
Frequency of target words manipulated between groups
<u>4 Occurrences Condition:</u> target words occur 4 times
<u>16 Occurrences Condition:</u> target words occur 16 times

Test Phase (Head-Turn Preference Procedure)
2 familiar (target words) vs. 2 target words
12 test trials across 3 blocks

	<u>List 1 - 16x</u>	<u>List 1 - 4x</u>
16x	manu	doopy
16x	kita	virdex
12x	fiffin	fiffin
12x	pizer	pizer
8x	tosip	tosip
8x	regli	regli
4x	doopy	manu
4x	virdex	kita

	<u>List 2 - 16x</u>	<u>List 2 - 4x</u>
16x	sarel	doopy
16x	boskot	virdex
12x	fiffin	fiffin
12x	pizer	pizer
8x	tosip	tosip
8x	regli	regli
4x	doopy	sarel
4x	virdex	boskot

TEST ITEMS
identical across participants

manu

kita

sarel

boskot

manu, kita are familiar if trained on List 1 and novel if trained on List 2

sarel, boskot are familiar if trained on List 2 and novel if trained on List 1

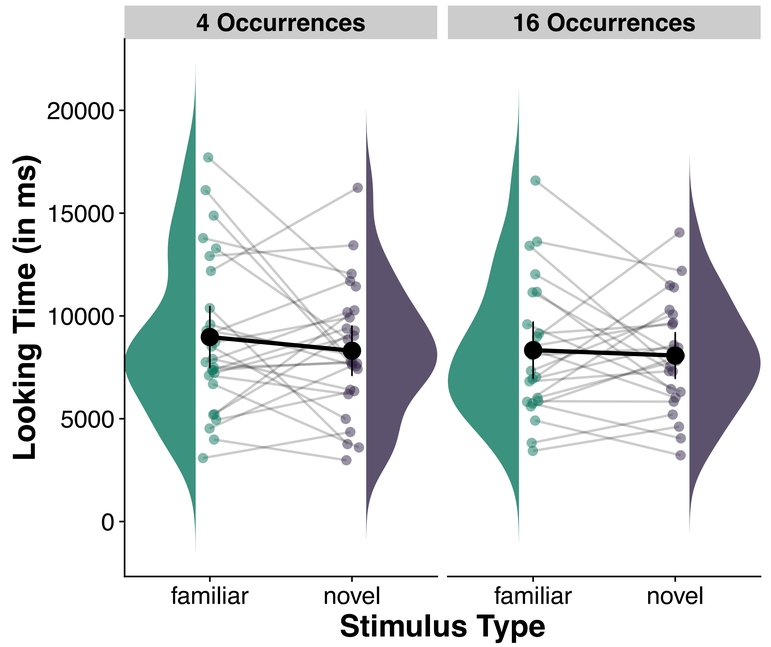
Link to stimuli and experimental materials:

https://github.com/mzettersten/effie

PRELIMINARY RESULTS

No evidence of learning in either condition or evidence of differences between conditions.

<u>4 Occurrences:</u> no preference, $t(26) = 0.95$, $p = .35$
<u>16 Occurrences:</u> no preference, $t(23) = 0.41$, $p = .69$
No condition difference, $t(49) = -0.42$, $p = .67$



NEXT STEPS

Revisit paradigm
Ideal paradigm will yield strong effects and allow for parametric manipulation of factor known to influence learning.

<u>Looking for collaborators</u>
Large sample size will be key.

References
Jusczyk, P., & Aslin, R. (1995), *Cog Psych*