

# Beyond frequency: Does verb class affect order of learning?

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# Introduction

Factors that influence the order of acquisition

- Frequency (Goodman, Dale, & Li, 2008; Hansen, 2017)
- Syntactic class (Gentner, 1982; Goodman et al., 2008; Hansen, 2017)
- Imageability (Hansen, 2017; McDonough, Song, Hirsh-Pasek, Golinkoff, & Lannon, 2011)

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- Imageability (Hansen, 2017; McDonough, Song, 15 Hirsh-Pasek, Golinkoff, & Lannon, 2011)

Insufficient in their explanatory power

# Introduction

Hartshorne, Pogue, & Snedeker (2015)

*John* frightened *Mary*.

*Mary* feared *John*.

# Introduction

Hartshorne, Pogue, & Snedeker (2015)

*John frightened Mary.*

*Mary feared John.*

- Frequency: frighten-type verbs < fear-type verbs
- Order of acquisition: frighten-type verbs > fear-type verbs

So ... why?

# Introduction

Hartshorne, Pogue, & Snedeker (2015)

*John* frightened Mary.

Experiencer

Mary feared *John*.

Experiencer

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Mary feared *John*.

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- Linking rule: agents of caused events <-> sentential subjects  
--> frighten-type > fear-type

# Introduction

What drives the difference in the order of acquisition?

- Linking rule: agents of caused events <-> sentential subjects

Alternatives:

- Verb-class size: frighten-type (253) > fear-type (57)\*
- Cognitive salience: caused changes > persistent attitudes?

\*University of Colorado Boulder, (2021, June 1). *Unified Verb Index*. [https://uvi.colorado.edu/uvi\\_search](https://uvi.colorado.edu/uvi_search).



# The current study

Three experiments with three different pairs of verb classes

- Frighten-type vs. fear-type
- Chase-type vs. flee-type
- Give-type vs. receive-type

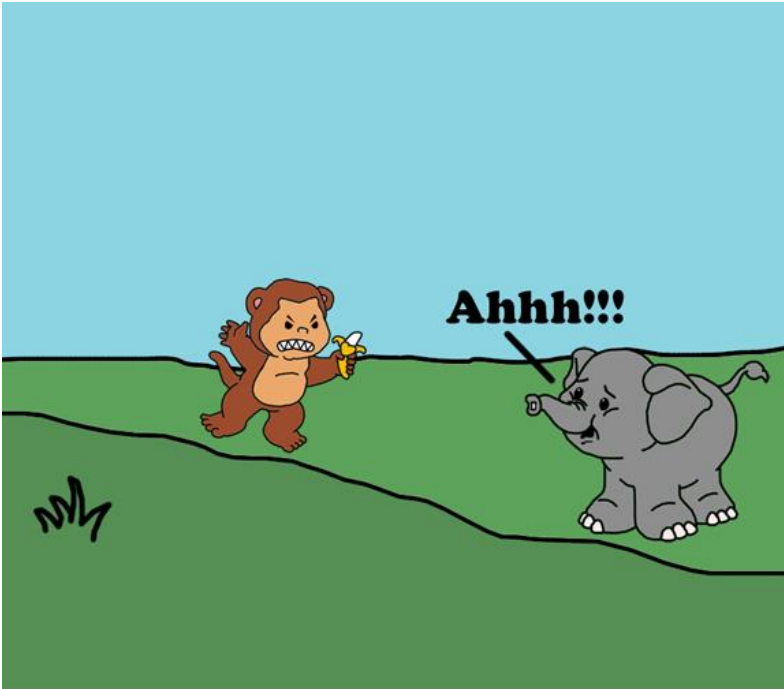
# Experiment 1: frighten-type vs. fear-type

Predictions:

	Frighten-fear	Chase-flee	Give-receive
Frequency	fear		
Verb class	frighten		
Causality	frighten		
Saliency	--		

# Experiment 1: frighten-type vs. fear-type

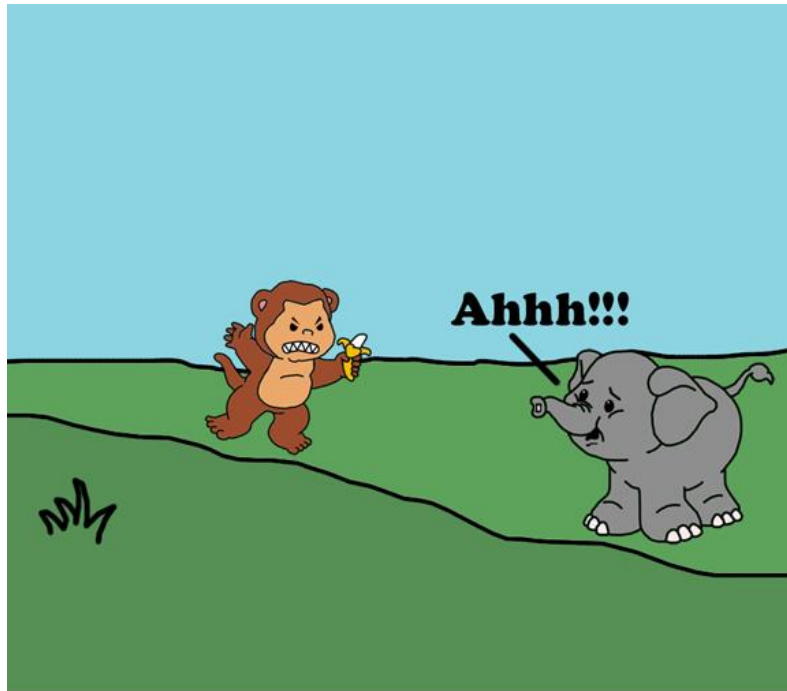
Experimenter 1



See Elephant? Elephant is playing outside. Then he sees Monkey. Elephant screams. Then he runs away and hides.

# Experiment 1: frighten-type vs. fear-type

Experimenter 1



See Elephant? Elephant is playing outside. Then he sees Monkey. Elephant screams. Then he runs away and hides.

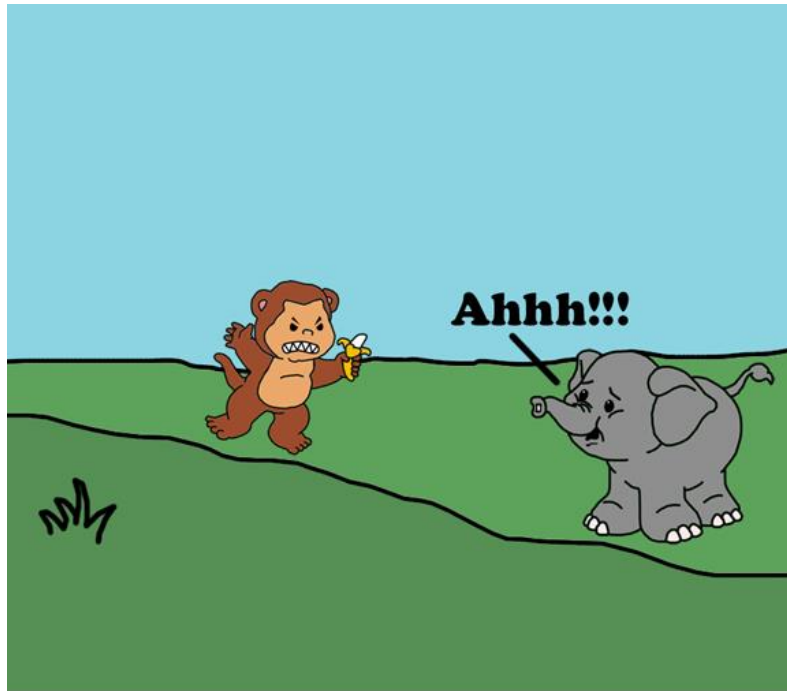
Experimenter 2



I know what happened.  
The elephant fears the  
monkey.

# Experiment 1: frighten-type vs. fear-type

Experimenter 1



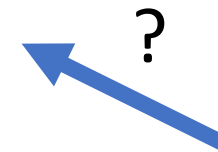
See Elephant? Elephant is playing outside. Then he sees Monkey. Elephant screams. Then he runs away and hides.

Experimenter 2



I know what happened.  
The elephant fears the monkey.

Child



# Experiment 1: frighten-type vs. fear-type

## Materials:

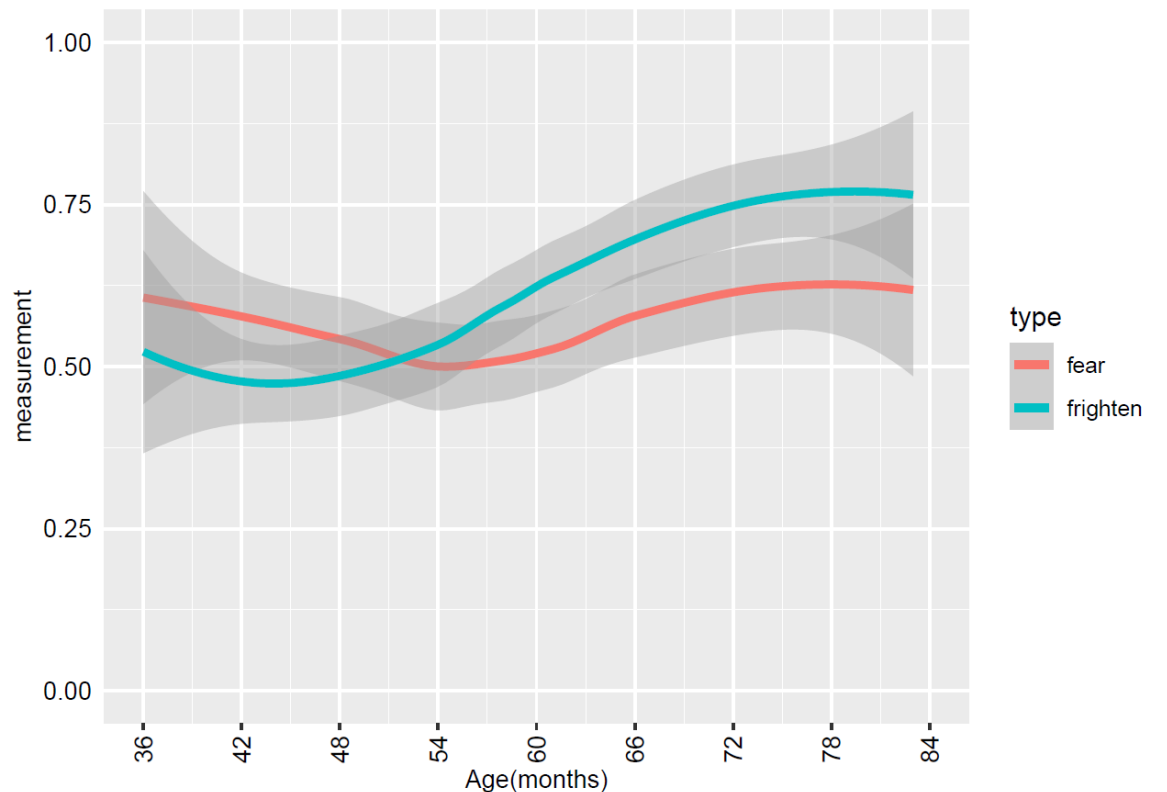
- 8 frighten-type vs. 8 fear-type

## Participants:

- 3 year-olds (54)
- 4 year-olds (73)
- 5 year-olds (82)
- 6 year-olds (34)

## Results:

- Frighten-types > fear-type



# Experiment 1: frighten-type vs. fear-type

	frighten vs. fear	chase vs. flee	give vs. receive
Frequency	N		
Verb class	Y		
Causality	Y		
Salience	--		

# Experiment 2: chase-type vs. flee-type

Predictions:

	Frighten-fear	Chase-flee	Give-receive
Frequency	fear	chase	
Verb class	frighten	chase	
Causality	frighten	neither	
Salience	--	chase?	

- Chase-type more salient (Landau & Gleitman, 2015; Fisher, Hall, Rakowitz, and Gleitman, 1994)
- Mixed (Gleitman, January, Nappa, and Trueswell, 2007):



# Experiment 2: chase-type vs. flee-type

Experimenter: story

Tiger chased  
Giraffe.

Child: act out



# Experiment 2: chase-type vs. flee-type

## Materials:

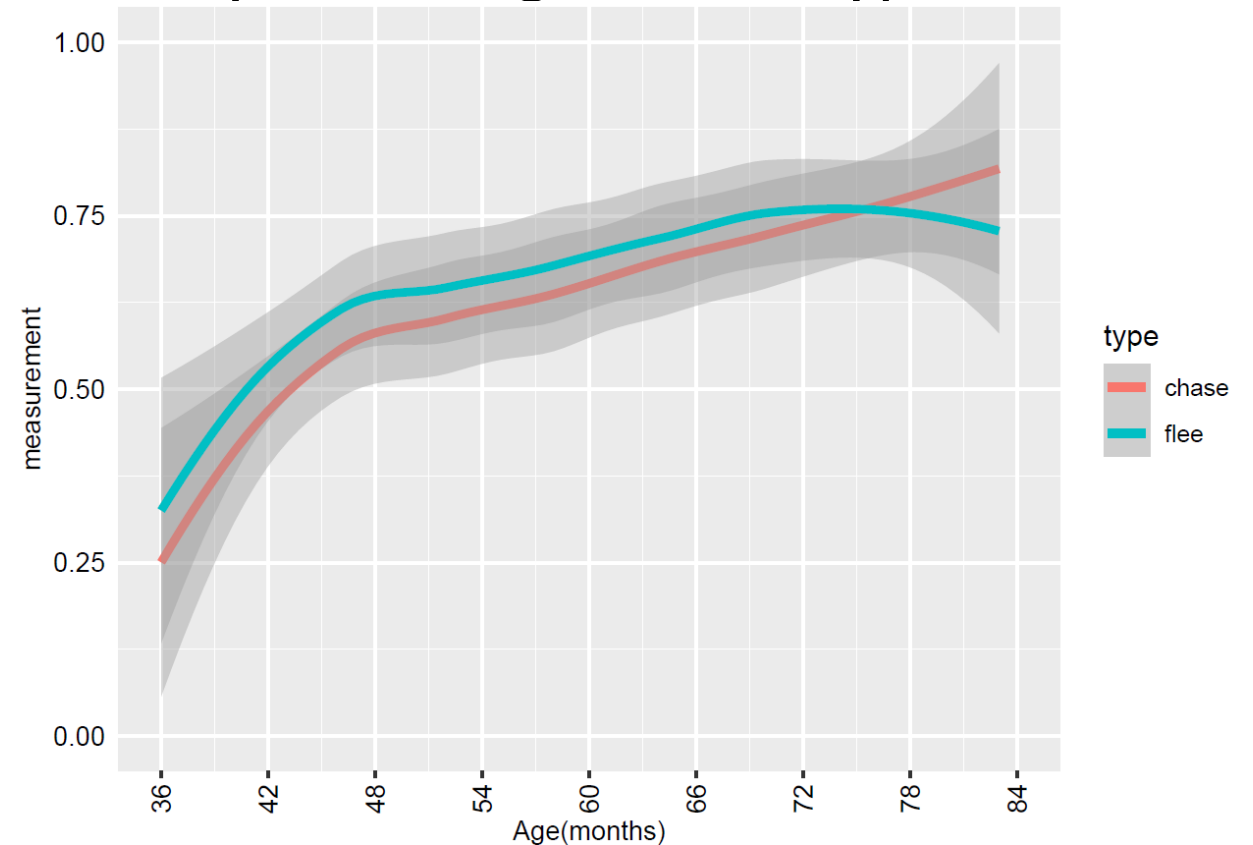
- 3 chase-type vs. 3 flee-type

## Participants:

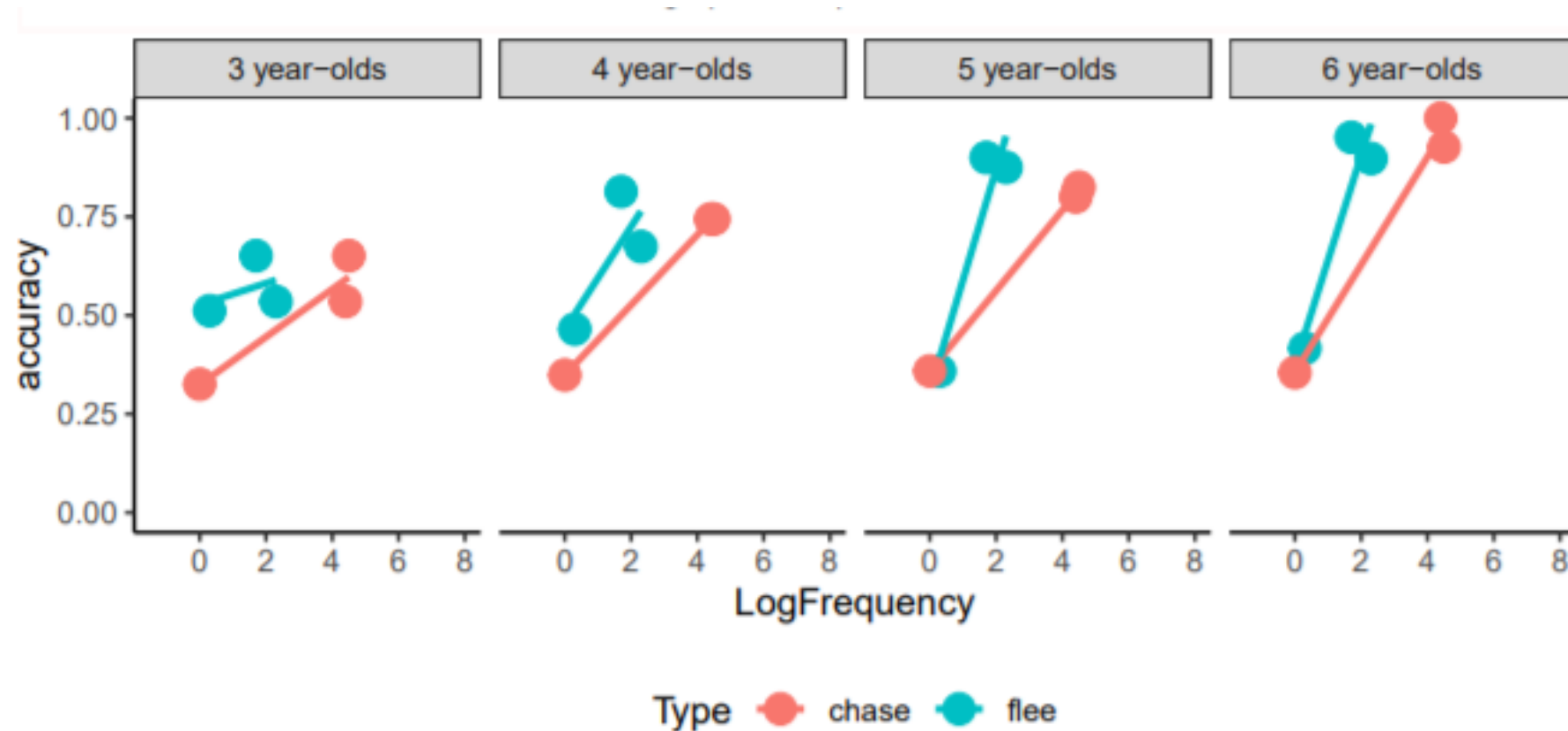
- 3 year-olds (43)
- 4 year-olds (43)
- 5 year-olds (40)
- 6 year-olds (41)

## Results:

- An early advantage of flee-type



# Experiment 2: chase-type vs. flee-type



Accuracy for each verb against log frequency, split into four age groups, with linear regressions shown.

# Experiment 2: chase-type vs. flee-type

	frighten vs. fear	chase vs. flee	give vs. receive
Frequency	N	N	
Verb class	Y	N	
Causality	Y	N	
Salience	--	N?	

# Experiment 3: give-type vs. receive-type

Predictions:

	Frighten-fear	Chase-flee	Give-receive
Frequency	fear	chase	neither
Verb class	frighten	chase	give
Causality	frighten	neither	neither
Salience	--	chase?	receive

- receive-type more salient (Freeman, Sinha, & Stedmon, 1981; Fujita, 2000; Lakusta & Landau, 2005, 2012; Papafragou, 2010; Regier & Zheng, 2007)

# Experiment 3: give-type vs. receive-type

Video: two experimenters exchange objects



What did the boy/girl give?

# Experiment 3: give-type vs. receive-type

## Materials:

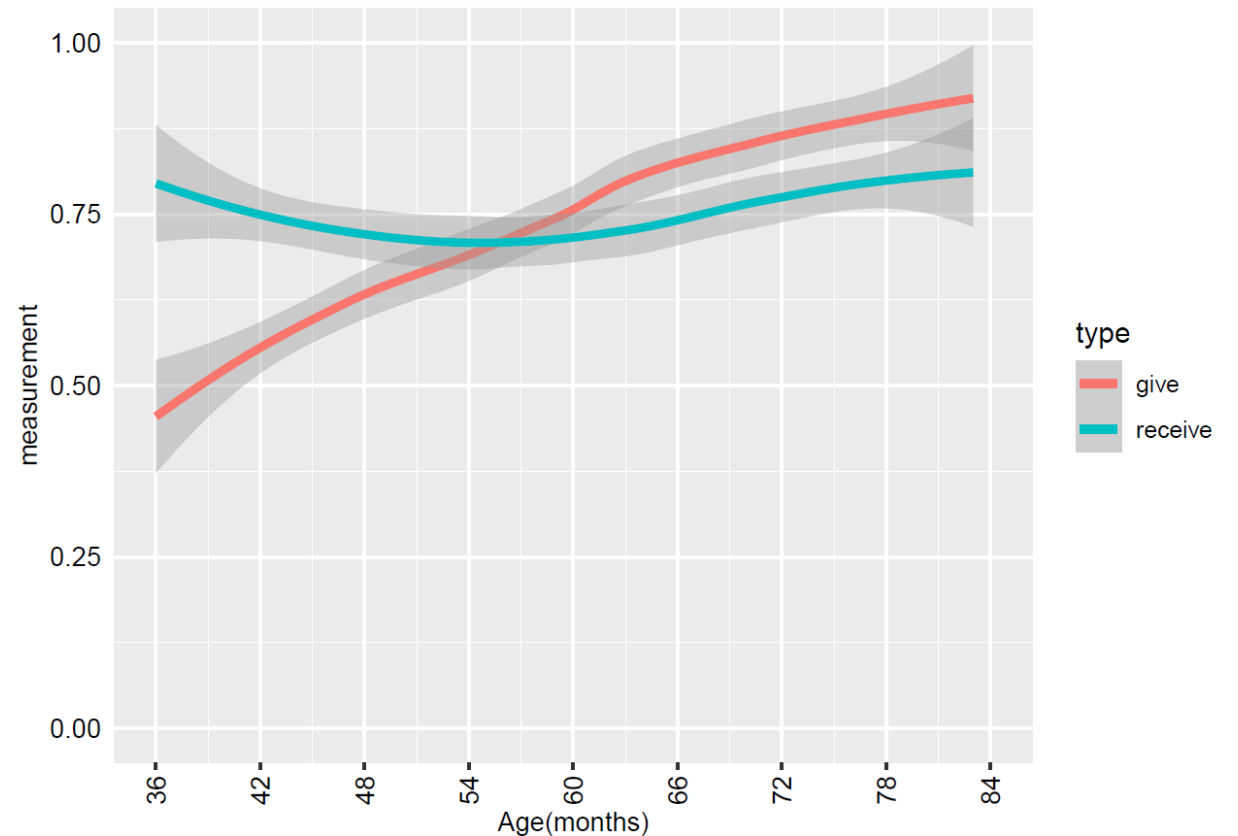
- 4 give-type vs. 4 receive-type

## Participants:

- 3 year-olds (107)
- 4 year-olds (105)
- 5 year-olds (109)
- 6 year-olds (104)

## Results:

- An early advantage of receive-type



# Experiment 3: give-type vs. receive-type

	frighten vs. fear	chase vs. flee	give vs. receive
Frequency	N	N	N
Verb class	Y	N	N
Causality	Y	N	N
Salience	--	N?	Y



# Implications

	frighten vs. fear	chase vs. flee	give vs. receive
Frequency	N	N	N
Verb class	Y	N	N
Causality	Y	N	N
Saliency	--	N?	Y

- None of frequency, verb class size, saliency or causality can explain all cases
- Towards a theory of word acquisition

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