Experimental approaches to understanding non-culmination in infants, children, and adults

Sudha Arunachalam
Speech, Language, and Hearing Sciences
& Linguistics

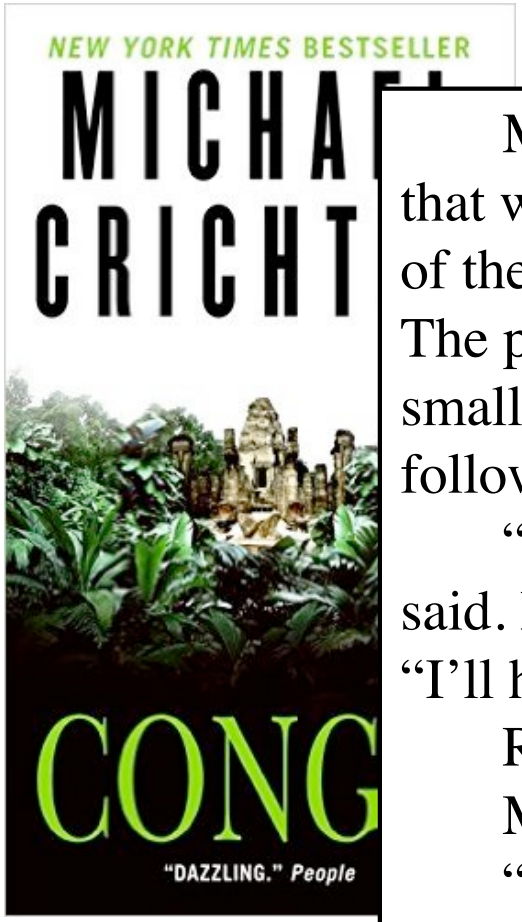
sarunach@bu.edu

TELIC 2017

BOSTON UNIVERSITY

Angela He,
postdoc

Max Kaplan,
MA student



Munro stood, and said something quickly in a language that was not Swahili. The pygmy replied. Munro gave him one of the cigarettes they had been using to burn off the leeches. The pygmy did not want it lit; instead he dropped it into a small leather pouch attached to his quiver. A brief conversation followed. The pygmy pointed off into the jungle several times.

"He says a white man is dead in their village," Munro said. He picked up his pack, which contained the first-aid kit. "I'll have to hurry."

Ross said, "We can't afford the time."

Munro frowned at her.

"Well, the man's dead anyway."

"He's not *completely* dead," Munro said. "He's not dead-for-ever."

The pygmy nodded vigorously. Munro explained that pygmies graded illness in several stages. First a person was hot, then he was with fever, then ill, then dead, then completely dead—and finally dead-for-ever.

(p. 166)

concepts

concepts,
early language

concepts,
language

Study 1

concepts

concepts, early language

concepts, language

concepts

concepts,
early language

Study 2

concepts,
language

concepts

concepts,
early language

Study 3

concepts,
language

concepts

concepts,
early language

Study 4

concepts,
language

Study 1

concepts

concepts, early language

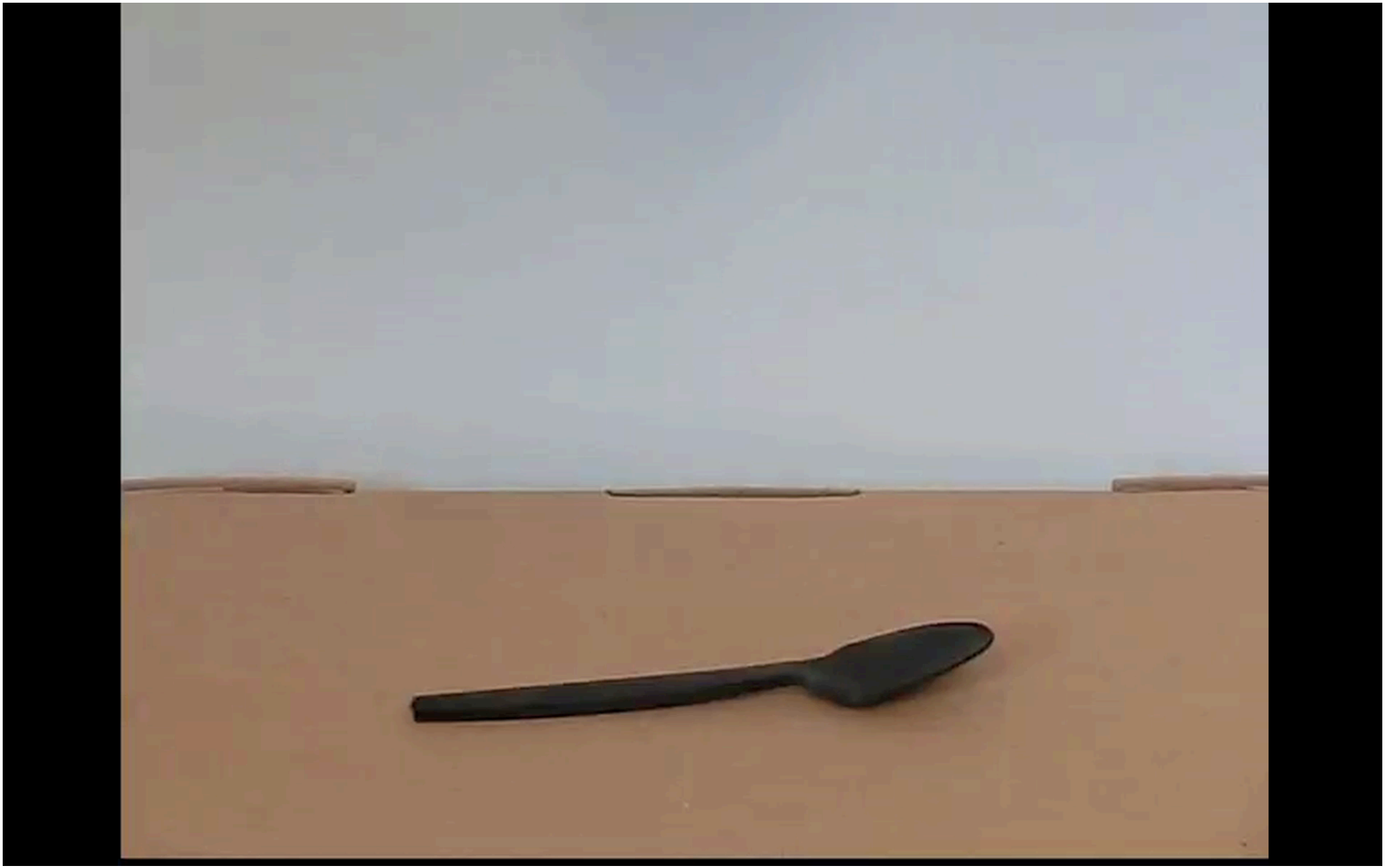
concepts, language

Study 1

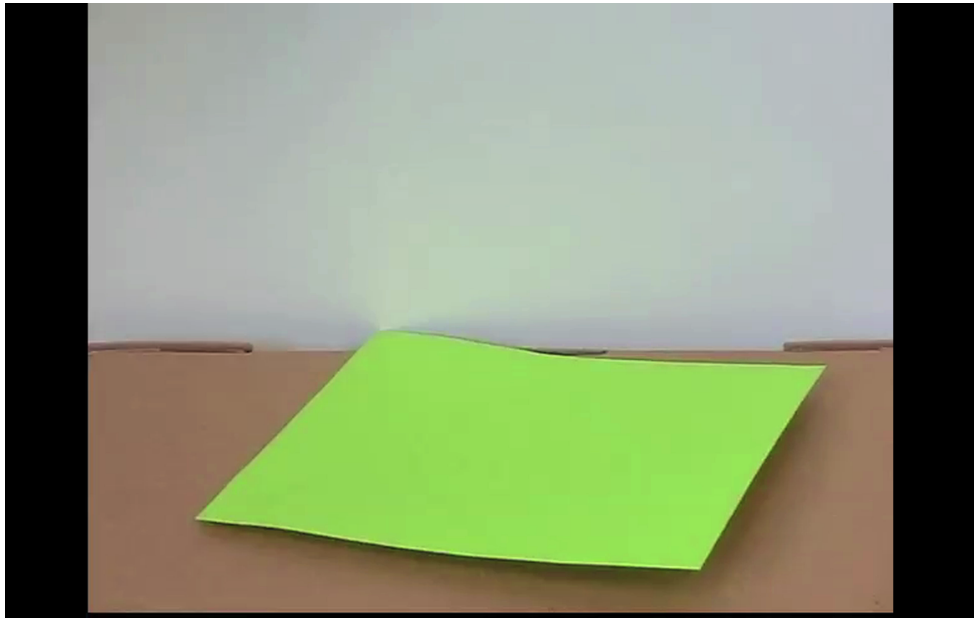
- Children may “neglect” the endstates of events (e.g., Wittek, 2002).
- Do they fail to encode the relevance of endstate at all?
- The results of experimental and corpus studies are mixed.
- How do infants conceptualize event endstates?

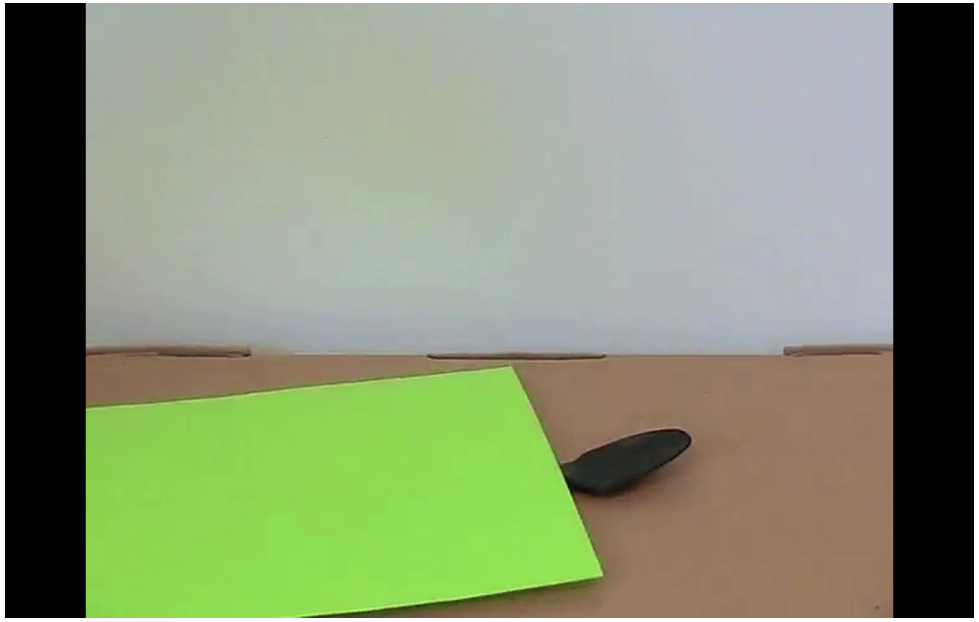
Study 1

- (English-acquiring) infants ages 13-15 months
- Habituation paradigm: habituate to either a fully- or partially-complete event, test for dishabituation to the other

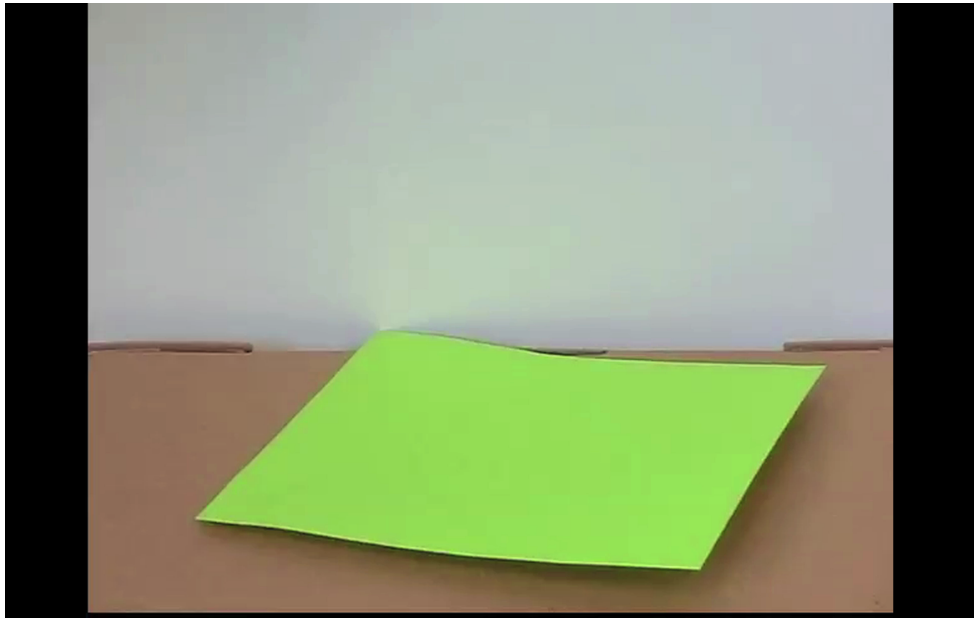


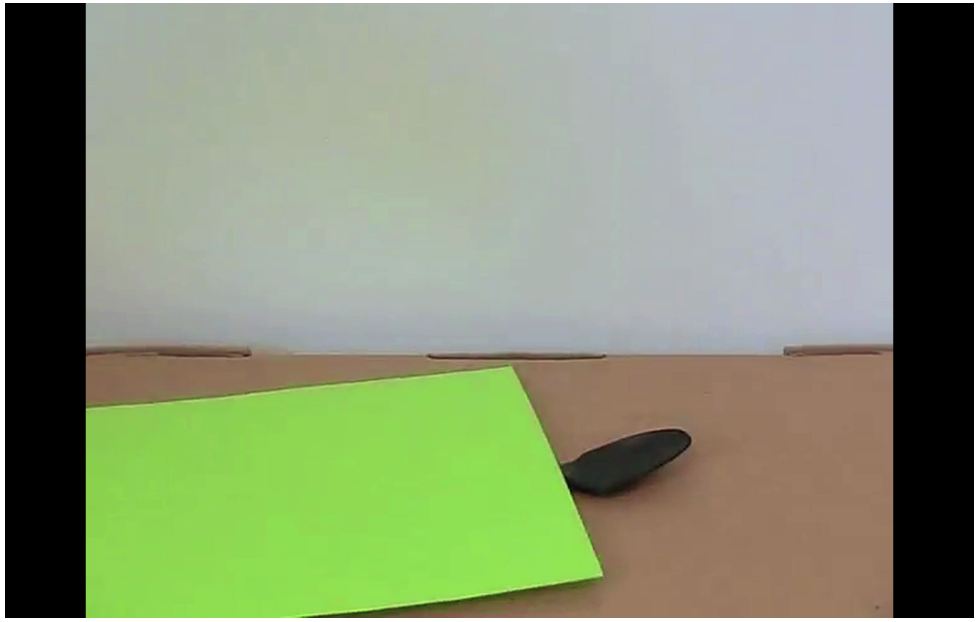
FULL – THEN – PARTIAL



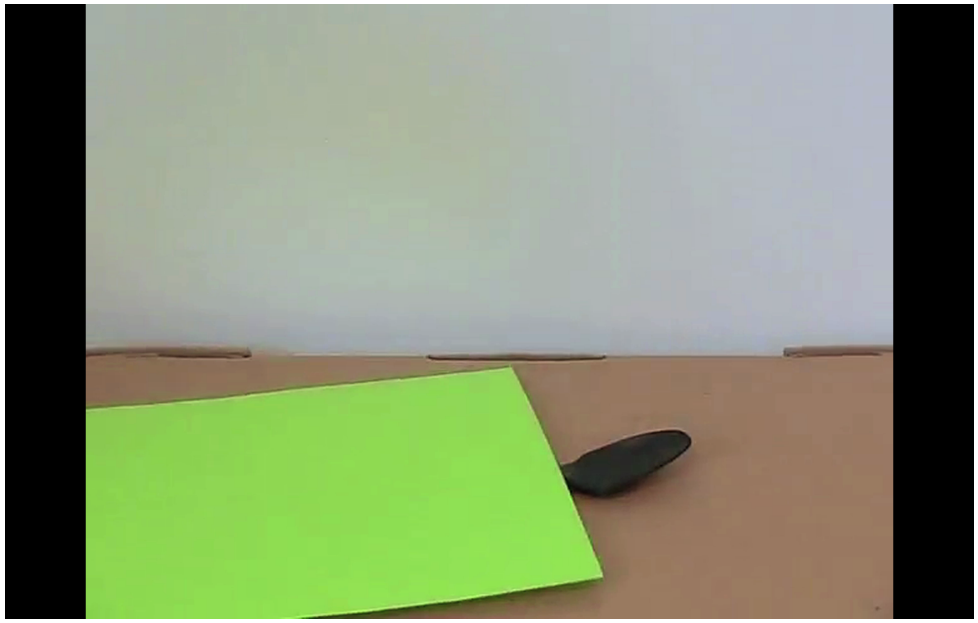


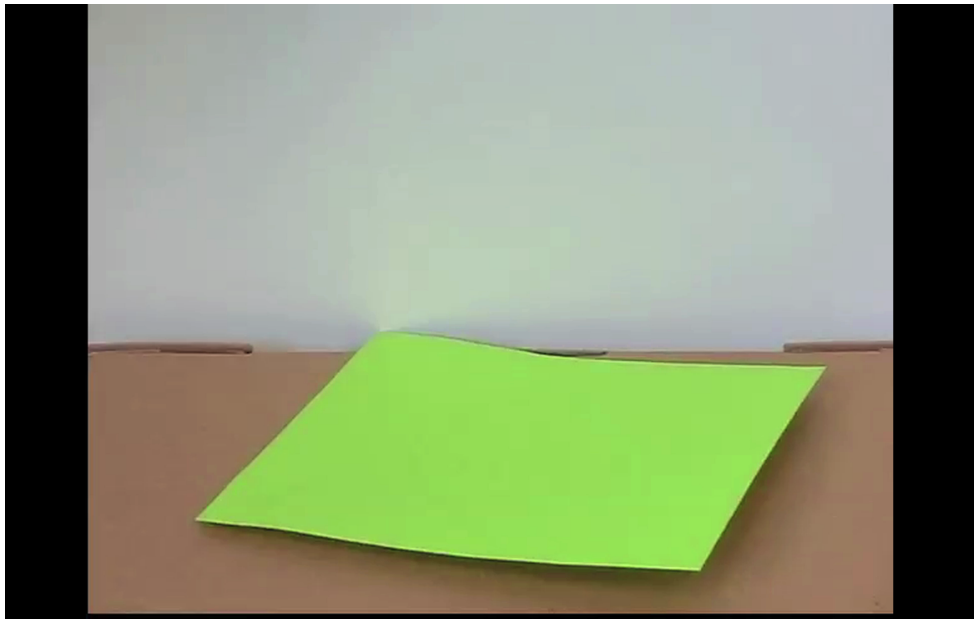
FULL – THEN – PARTIAL



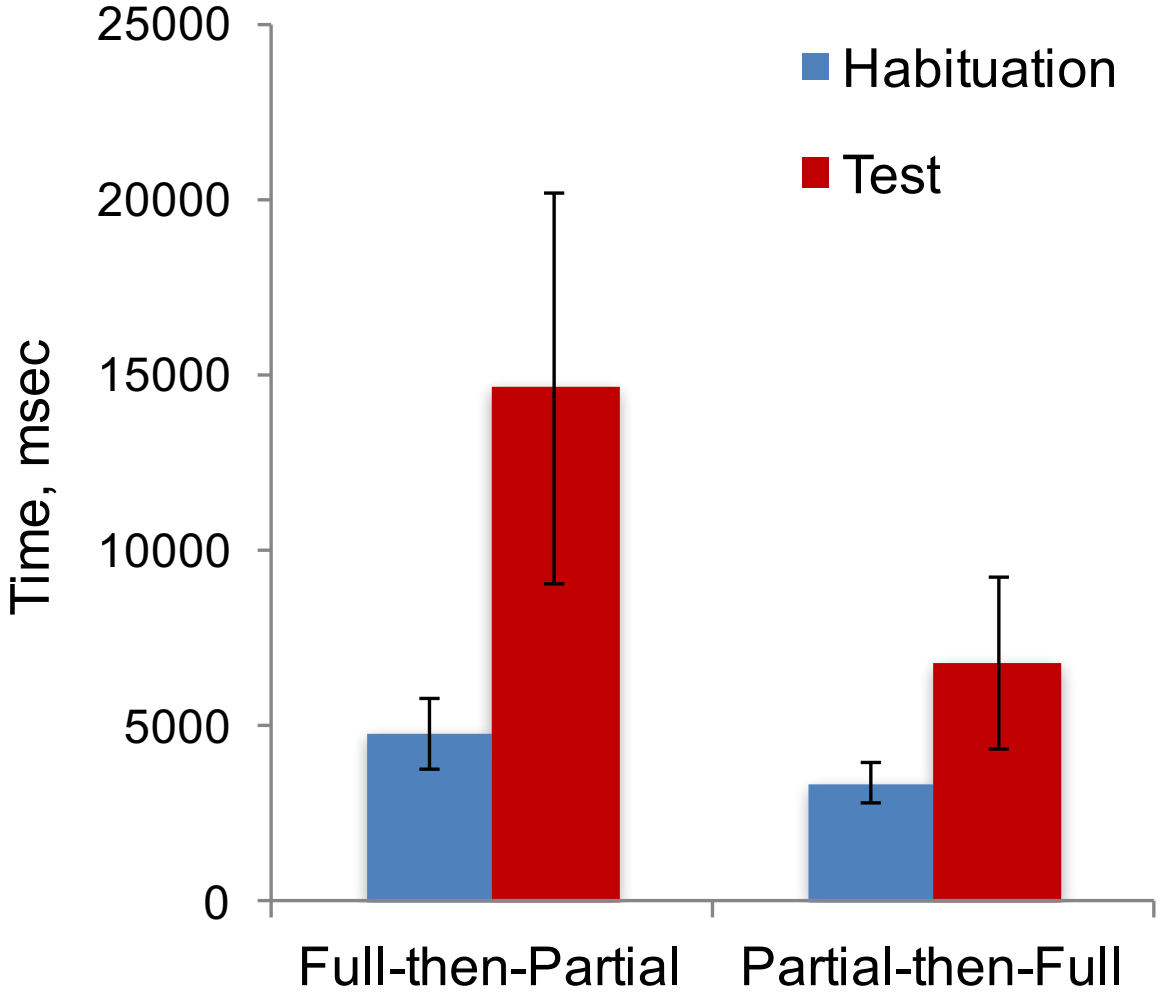


PARTIAL – THEN – FULL





Infants aged 13 to 15 months (N = 13)



Study 1 Conclusions

- For infants, order matters. If you expect a specific natural endstate, you are surprised if you don't see it again.

Next steps:

- Event type must matter—events in which a theme is incrementally affected may show an even stronger effect.
- How does this pattern play out with other types of changes (e.g., covering one half of the spoon *versus* the other)?

concepts

concepts,
early language

Study 2

concepts,
language

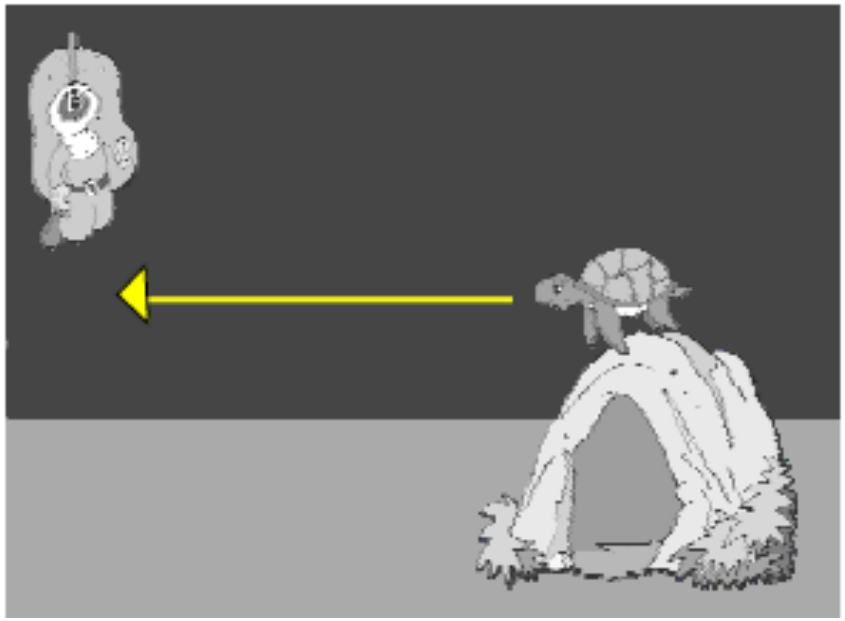
Study 2

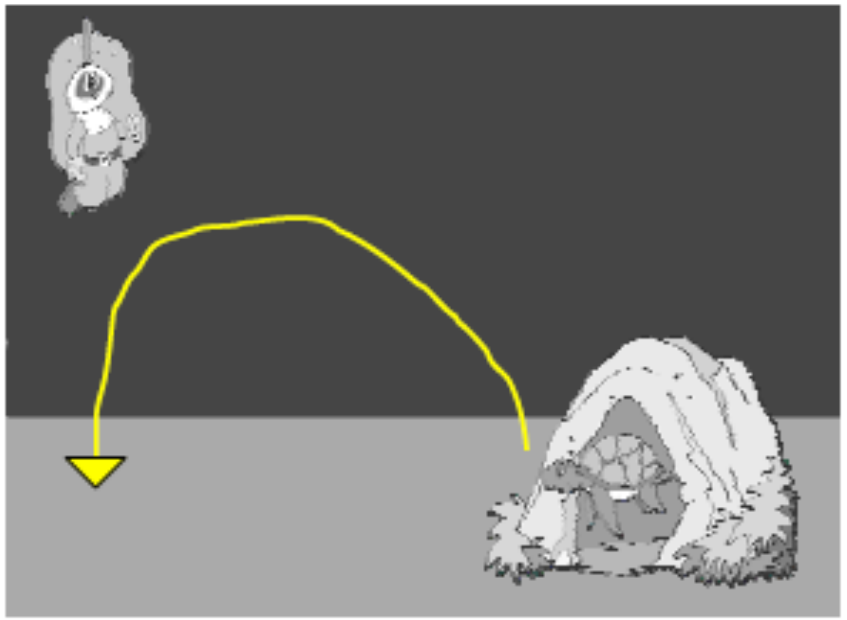
- English-speaking adults with a wide variety of events
- Non-linguistic task!
- Similarity judgment paradigm

(least similar) 1 2 3 4 5 6 7 (most similar)

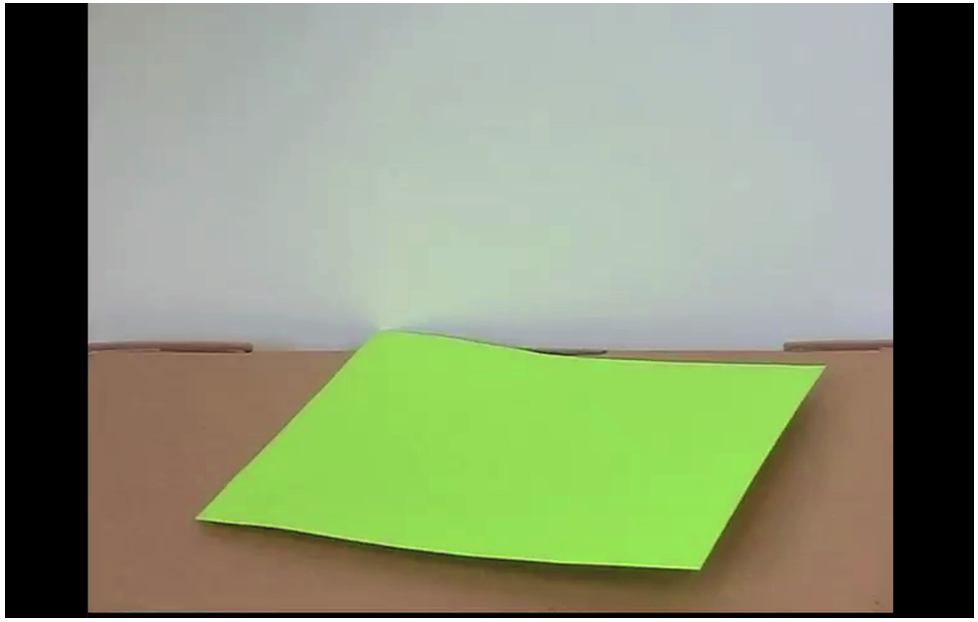
- A completion-related change vs. a “perceptual” change

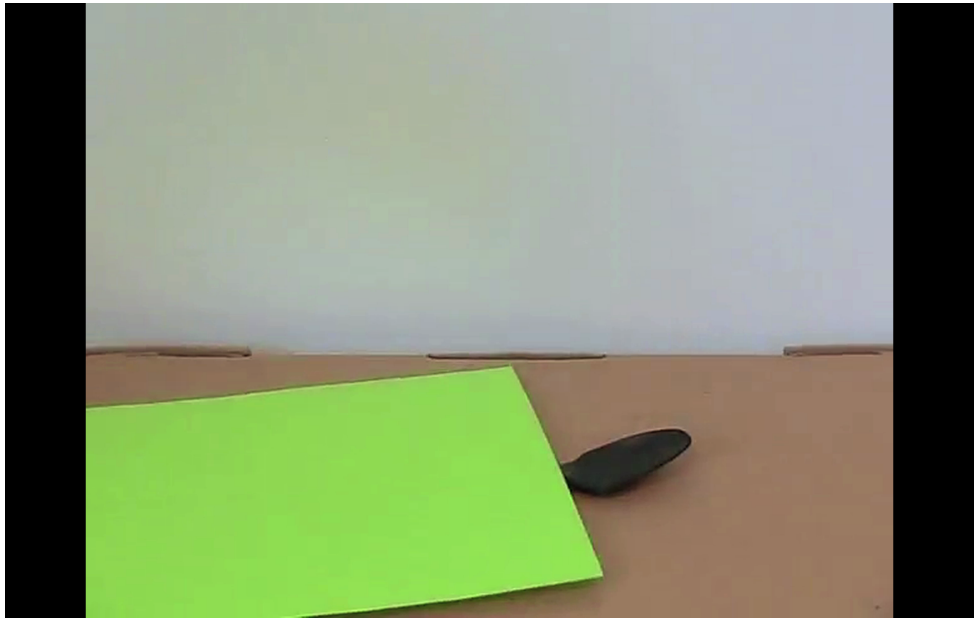
Papafragou & Selimis (2010)



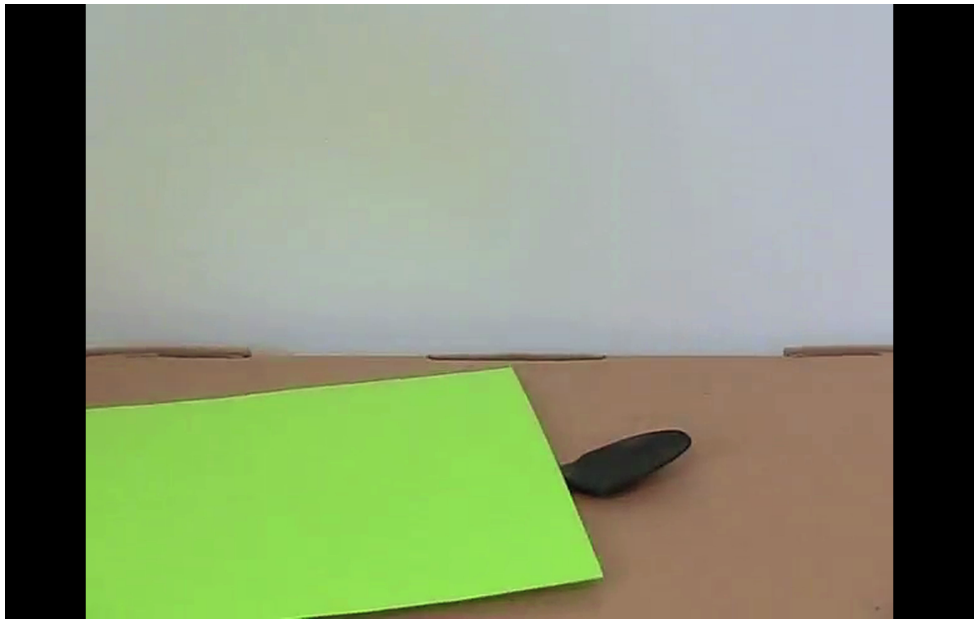


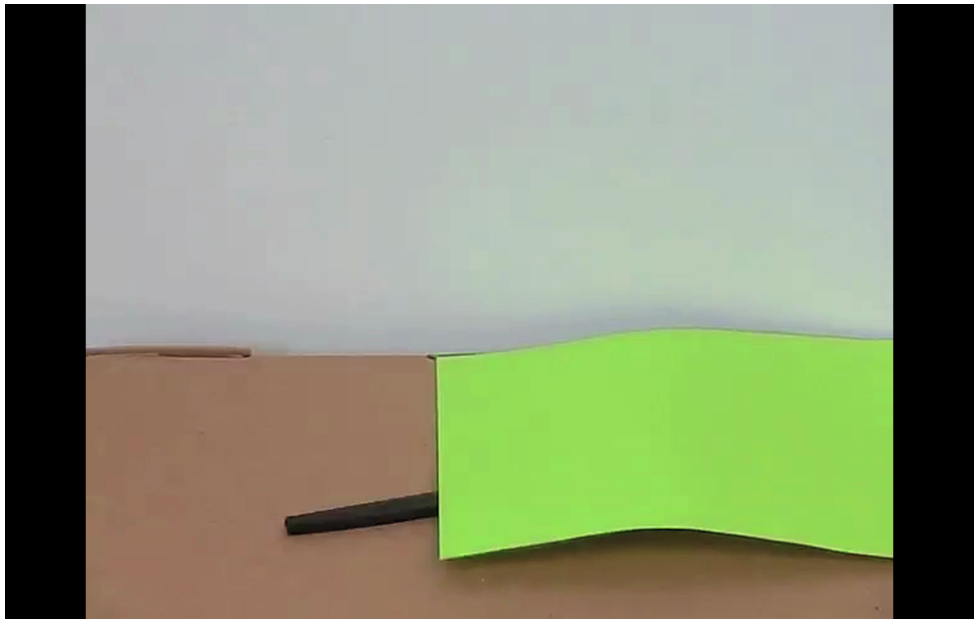
ENDSTATE / COMPLETION CHANGE





OTHER CHANGE

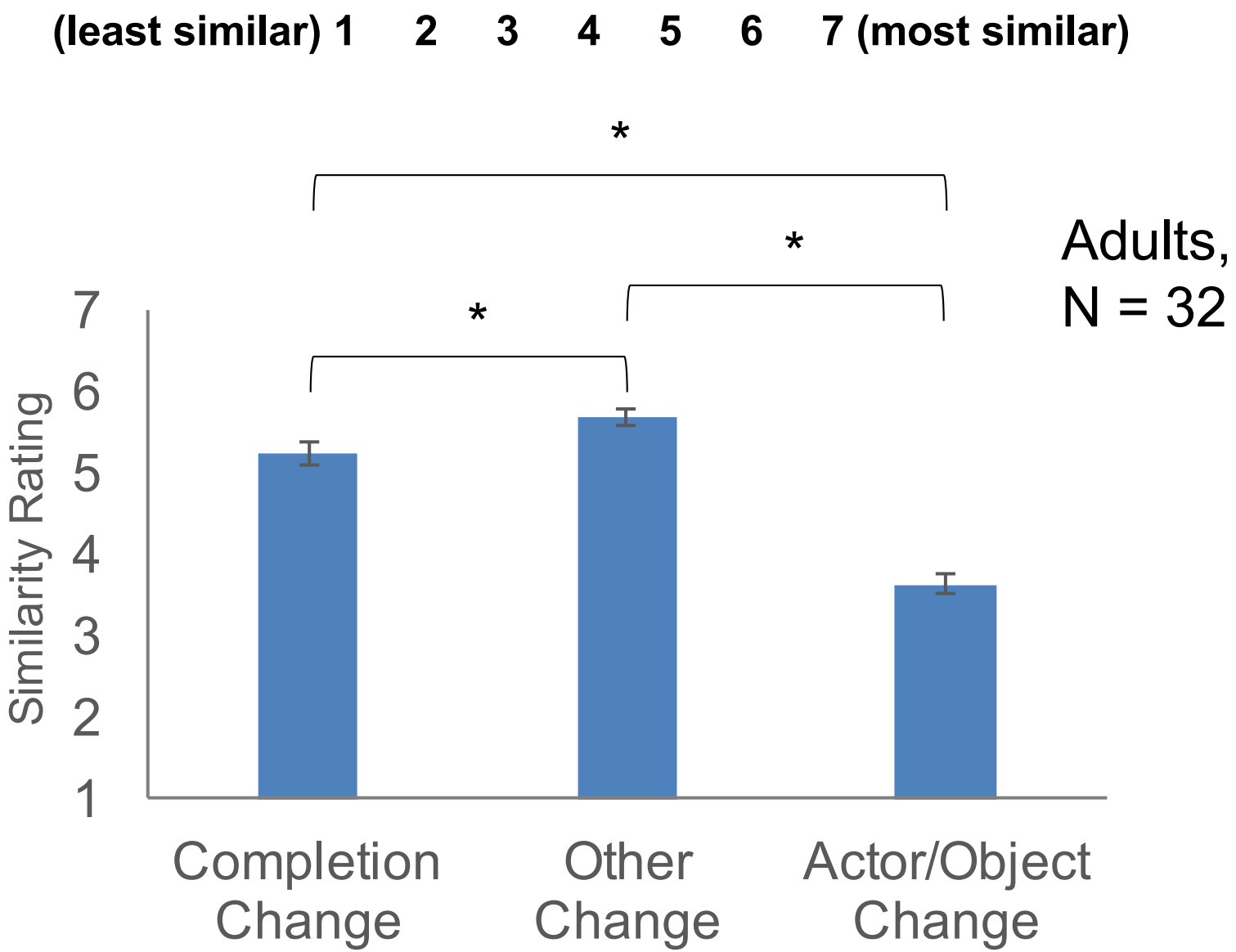


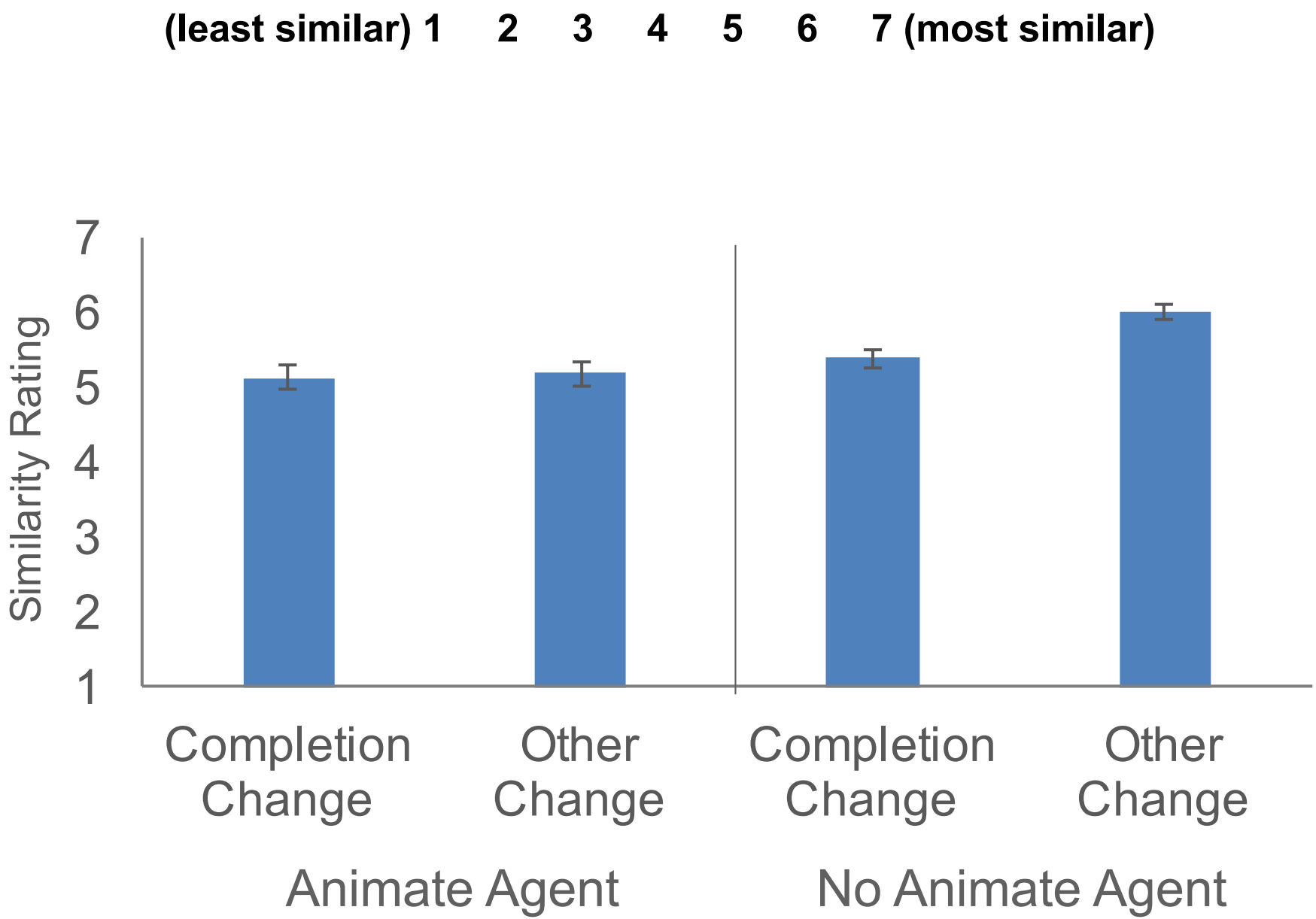


ENDSTATE / COMPLETION CHANGE

OTHER CHANGE

FILLER TRIALS WITH ACTOR OR OBJECT CHANGE


(least similar) 1 2 3 4 5 6 7 (most similar)
*
*
*
Adults,
N = 32
Similarity Rating
7
6
5
4
3
2
1
Completion Change
Other Change
Actor/Object Change


(least similar) 1 2 3 4 5 6 7 (most similar)
Similarity Rating
7
6
5
4
3
2
1
Completion Change
Other Change
Completion Change
Other Change
Animate Agent
No Animate Agent

Study 2 Conclusions

- Adults see completion-related changes as more salient than other changes of a similar type or magnitude.

- Like infants, adults see completion as a critically important event component.

concepts

concepts,
early language

Study 3

concepts,
language

Study 3
Arunachalam & Kothari (2011)

Experimental exploration of the basic phenomenon

- With a wide variety of event types
- In both English- and Hindi-speaking adults

SV:

maayaa-ne biskuT-ko khaa-yaa par use puuraa nahiin khaa-yaa

Maya-*erg* cookie-*acc* eat-*perf* but it-*acc* full not eat-*perf*

Maya ate the cookie but not completely.

SVs compatible with arbitrary endpoints and partial realization

(but the default interpretation is completive)

CV:

maayaa-ne biskuT-ko khaa li-yaa #par use puuraa nahiin khaa-yaa

Maya-*erg* cookie-*acc* eat take-*perf* but it-*acc* full not eat-*perf*

Maya ate the cookie but not completely.

CVs compatible only with natural endpoints and full event realization

Study 3

- Elicited Hindi and English speakers' judgments of perfectives with partially-completed and fully-completed events (TVJT: truth value judgment task)

- 2 x 2 design (both within-subject):

  partial completion vs. full completion

  SV vs. CV (Hindi); eat vs. eat up (English)

Eat the cookie

Eat the cookie

Partial

Full

Events

- Draw (a flower)
- Eat (a cookie)
- Fill (a glass)
- Extinguish (a candle)
- Close (a door)
- Cover (a pot)
- Pluck (a banana)
- Wake (a sleeping person)

Hindi:

SV:	us-ne	biskuT-ko	khaa-yaa	
	she-ERG	cookie-ACC	eat-PERF	
CV:	us-ne	biskuT-ko	khaa	li-yaa
	she-ERG	cookie-ACC	eat	take-PERF

Hindi Predictions

- fully-completed events:
  100% acceptance for SVs and CVs

- partially-completed events:
  differ by syntactic condition

Hindi Results

- fully-completed events:
  100% acceptance for SVs and CVs √

- partially-completed events:
  differ by syntactic condition √
  SV: 53%, CV: 29%

- no effect of incremental theme

Hindi:

SV: us-ne biskuT-ko khaa-yaa
she-ERG cookie-ACC eat-PERF

CV: us-ne biskuT-ko khaa li-yaa
she-ERG cookie-ACC eat take-PERF

English:

ate: She ate the cookie.

English Predictions

- If the English simple past permits only natural endpoint readings, then speakers should perform as in the CV condition in Hindi (100% for full completion, 29% for partial completion).

English Results

- If the English simple past permits only natural endpoint readings, then speakers should perform as in the CV condition in Hindi (100% for full completion, 29% for partial completion).

54% acceptance

Hindi:

SV:	us-ne	biskuT-ko	khaa-yaa
	she-ERG	cookie-ACC	eat-PERF
CV:	us-ne	biskuT-ko	khaa li-yaa
	she-ERG	cookie-ACC	eat take-PERF

English:

ate: She ate the cookie.

ate up: She ate up the cookie.

English Predictions

- If the English simple past permits only natural endpoint readings, then there should be no difference between conditions.

OR

- If the availability of the particle construction draws speakers' attention to the difference between the constructions, then the bare construction should be accepted more often than the particle construction.

English Results

- If the English simple past permits only natural endpoint readings, then there should be no difference between conditions.

OR

- If the availability of the particle construction draws speakers' attention to the difference between the constructions, then the bare construction should be accepted more often than the particle construction.

33%

Study 3 Conclusions

- Evidence that naïve Hindi speakers make judgments consistent with the literature in an experimental task
- They showed the SV/CV distinction across event types (e.g., both incremental theme and non-incremental theme events).
- English speakers too often accept non-culmination interpretations and are sensitive to the differences between syntactic constructions that emphasize completion.

concepts

concepts,
early language

Study 4

concepts,
language

Study 4

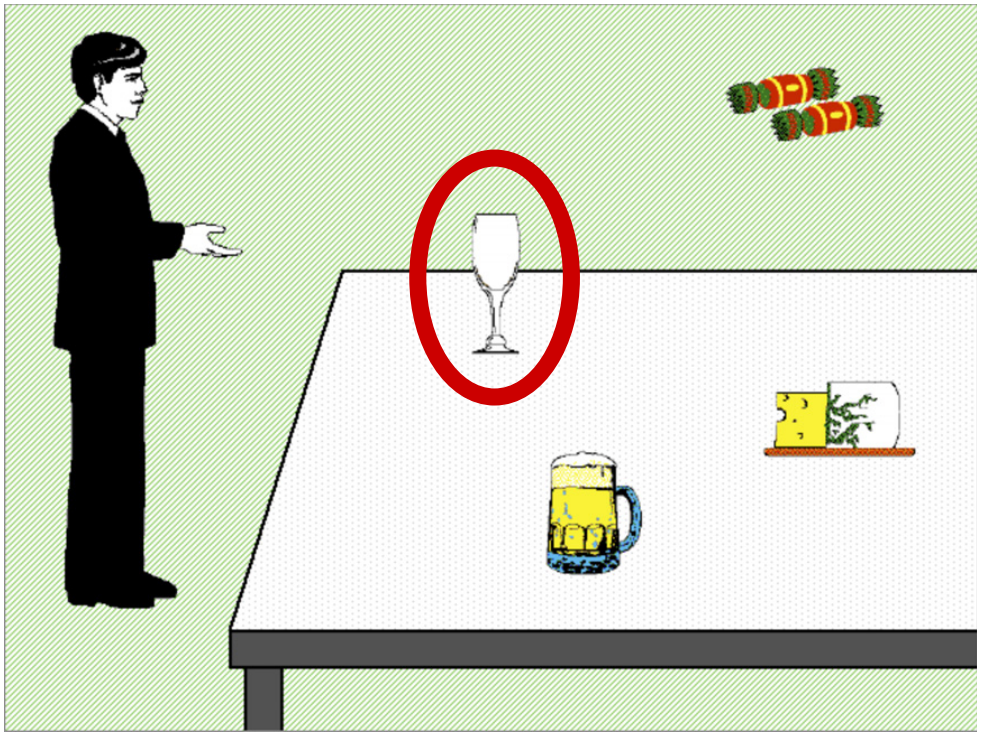
- Even for English speaking adults, partial completion interpretations are acceptable.
- But in non-linguistic tasks, completion may be very important throughout the lifespan.
- Could acceptance of partial completion interpretations be “after-the-fact”? (Pragmatic? Coerced?)
- How do partial completion interpretations emerge over the course of processing a sentence?

The man will drink the beer
The man has drunk the wine

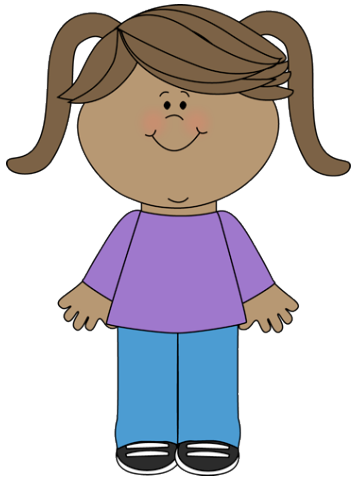
Altmann & Kamide (2007)

The man will drink the beer

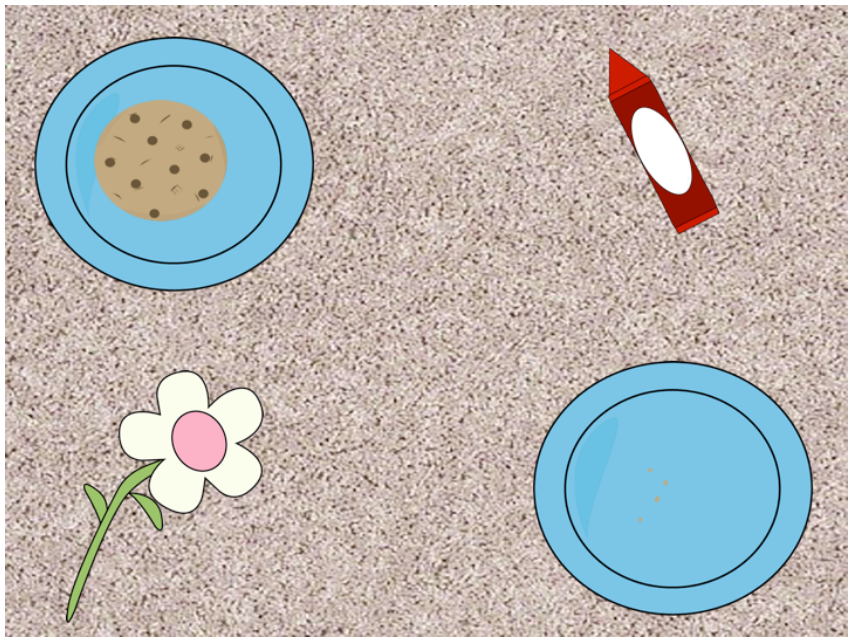
The man has drunk the wine



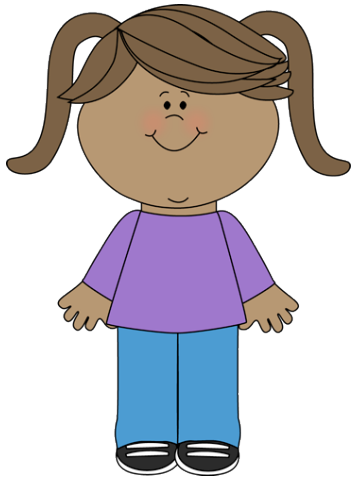
Altmann & Kamide (2007)



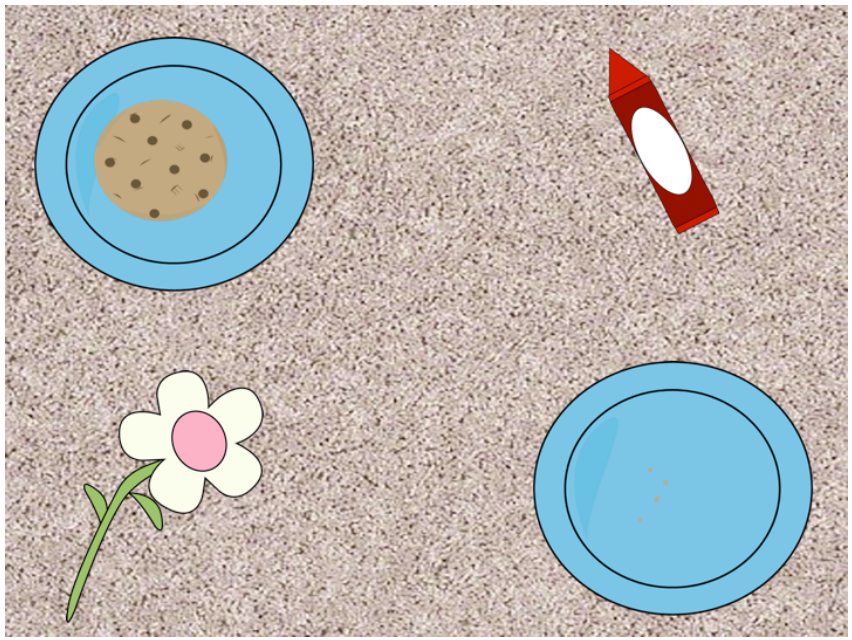
This one is about a girl.



The girl has eaten the cookie.
OR
The girl was eating the cookie.

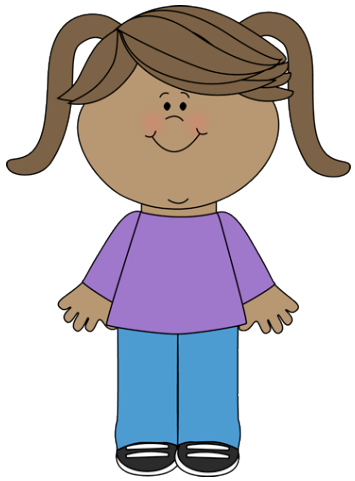


This one is about a girl.

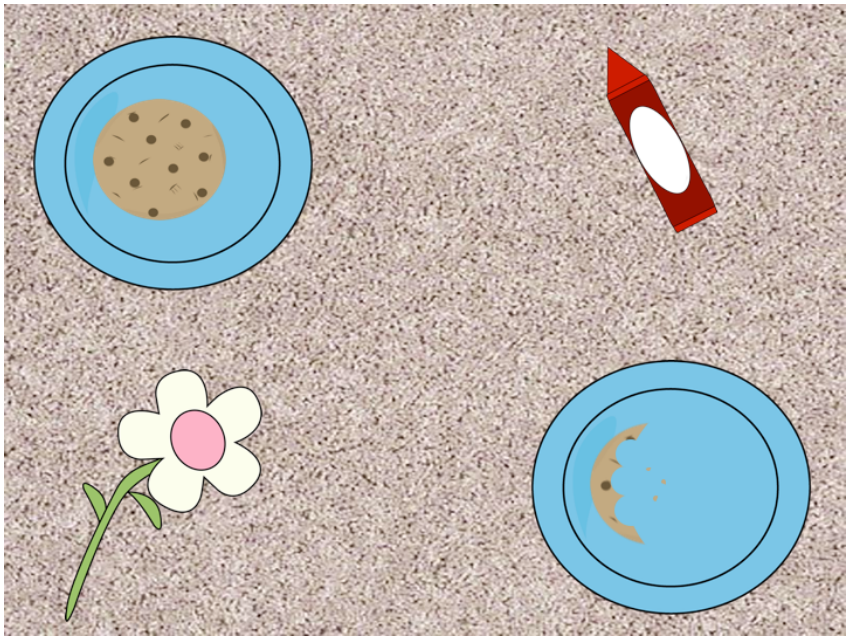


FULL COMPLETION CONDITION

The girl has eaten the cookie.
OR
The girl was eating the cookie.



This one is about a girl.

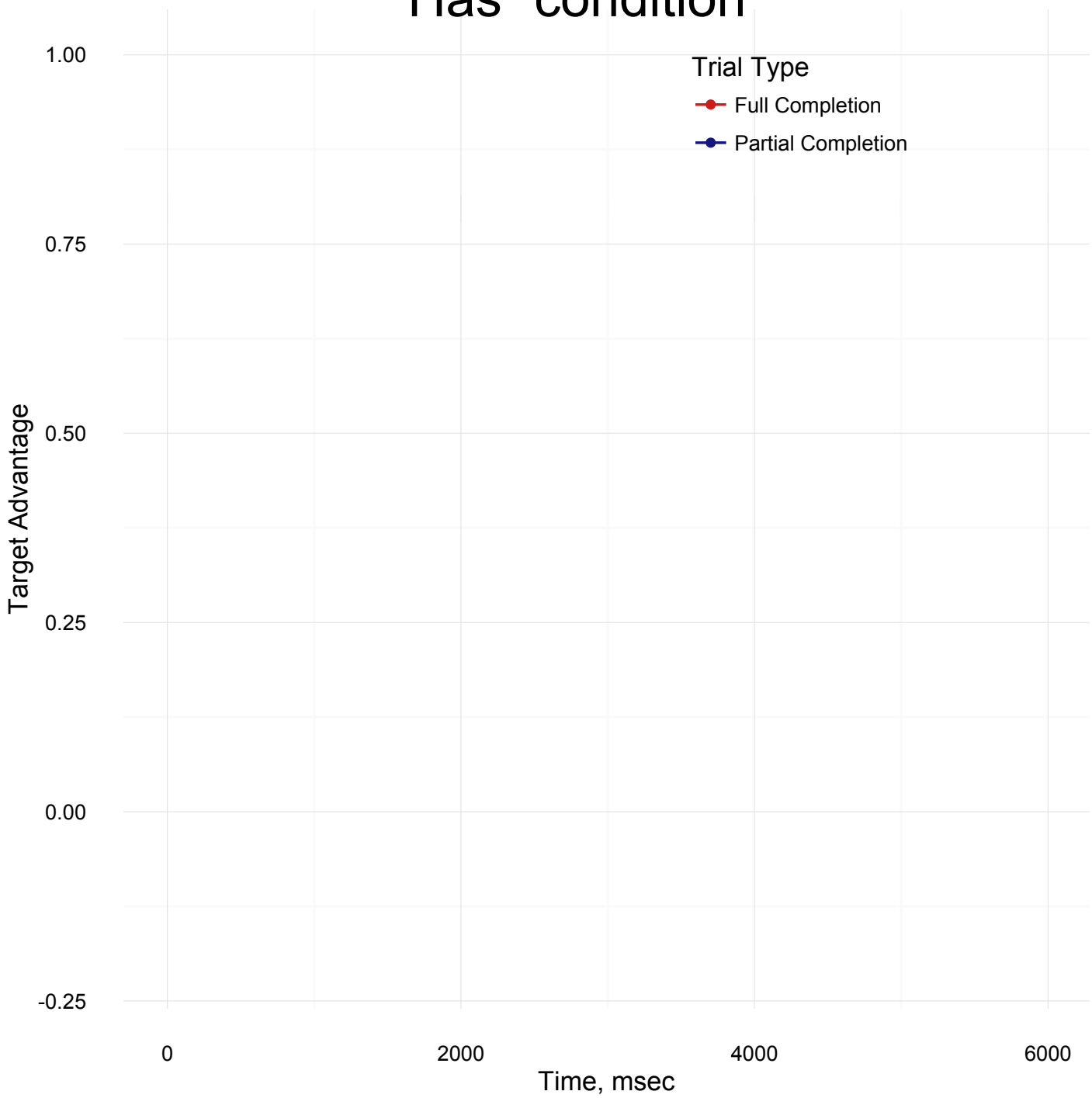


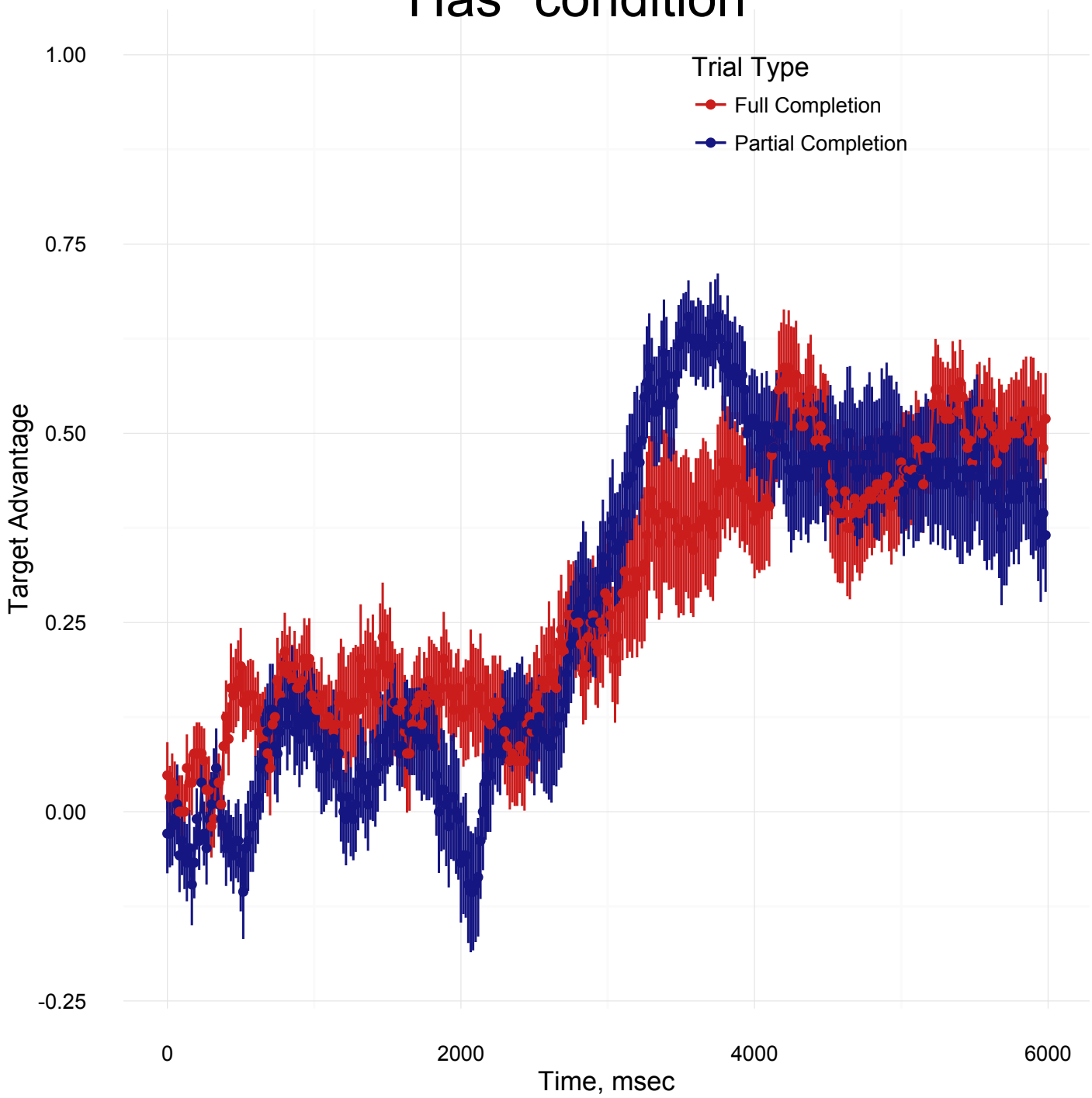
PARTIAL COMPLETION CONDITION

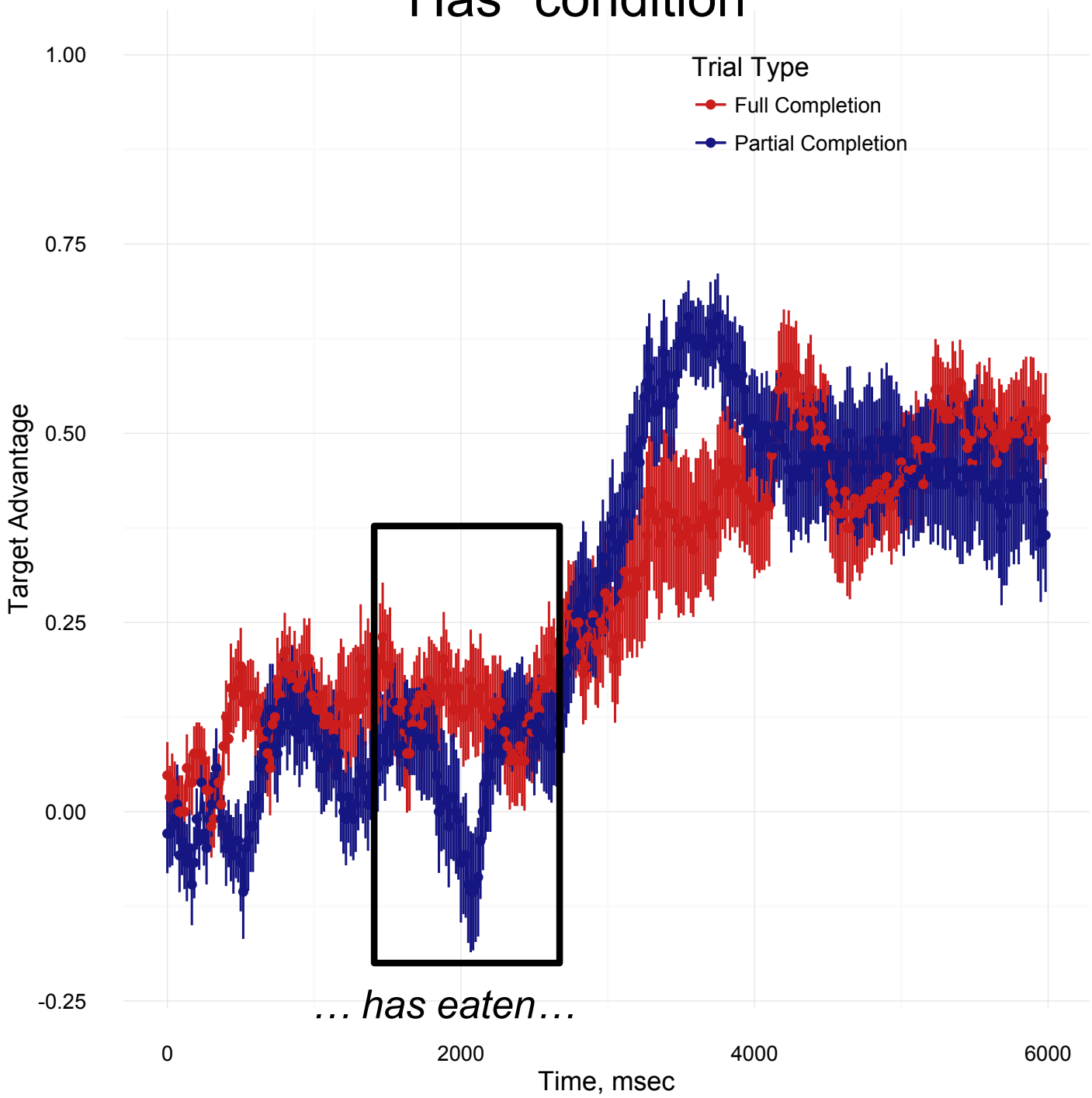
The girl has eaten the cookie.
OR
The girl was eating the cookie.

Study 4 “Has” Predictions

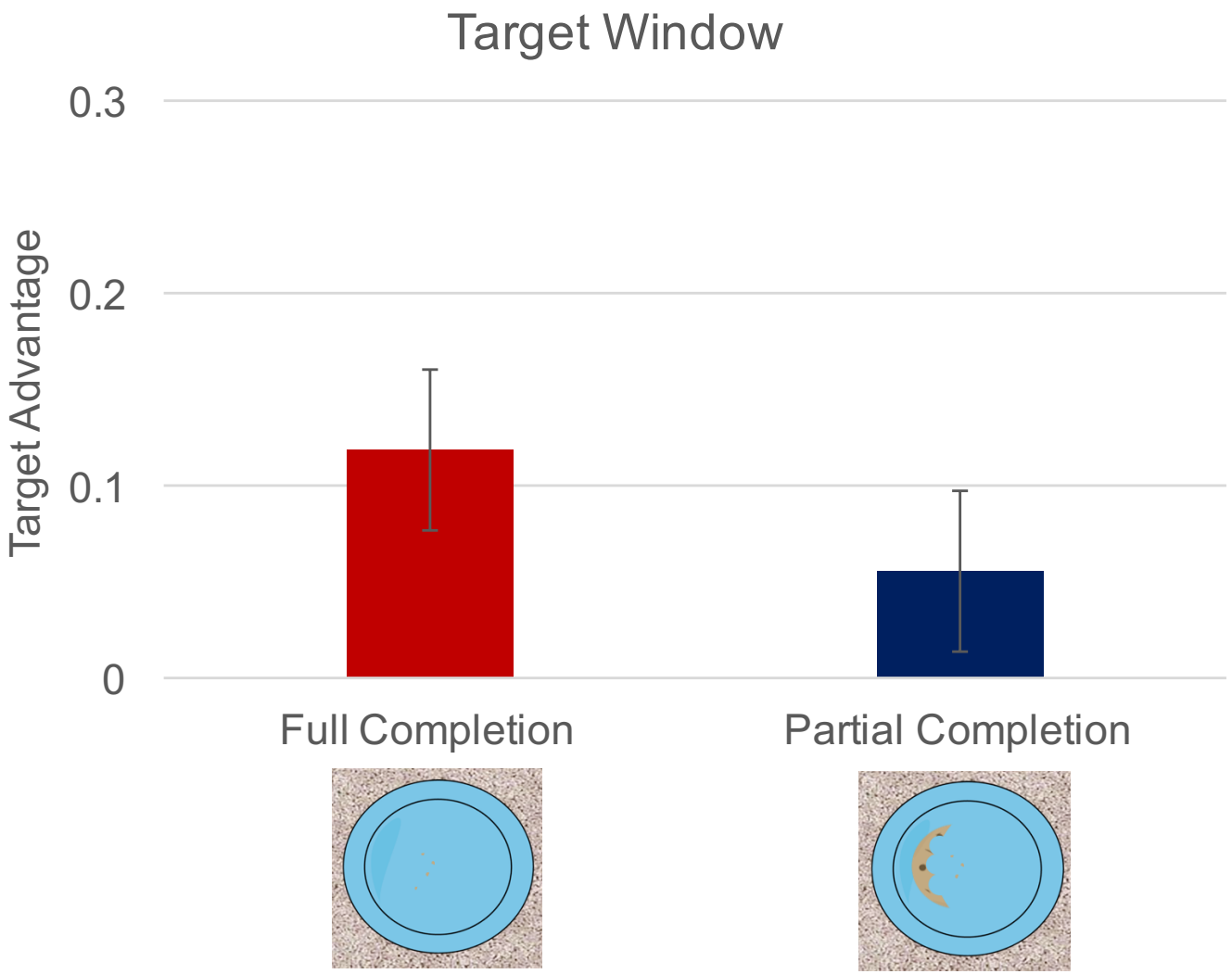
- If partial completion interpretations are immediately seen as good candidates, there should be no difference in the preference for the target across conditions.
- If the partial completion interpretations that arise in offline judgments only come about offline, the full completion condition should show a larger target preference than the partial completion condition.


“Has” condition
Trial Type
Full Completion
Partial Completion
1.00
0.75
0.50
0.25
0.00
-0.25
Target Advantage
0
2000
4000
6000
Time, msec

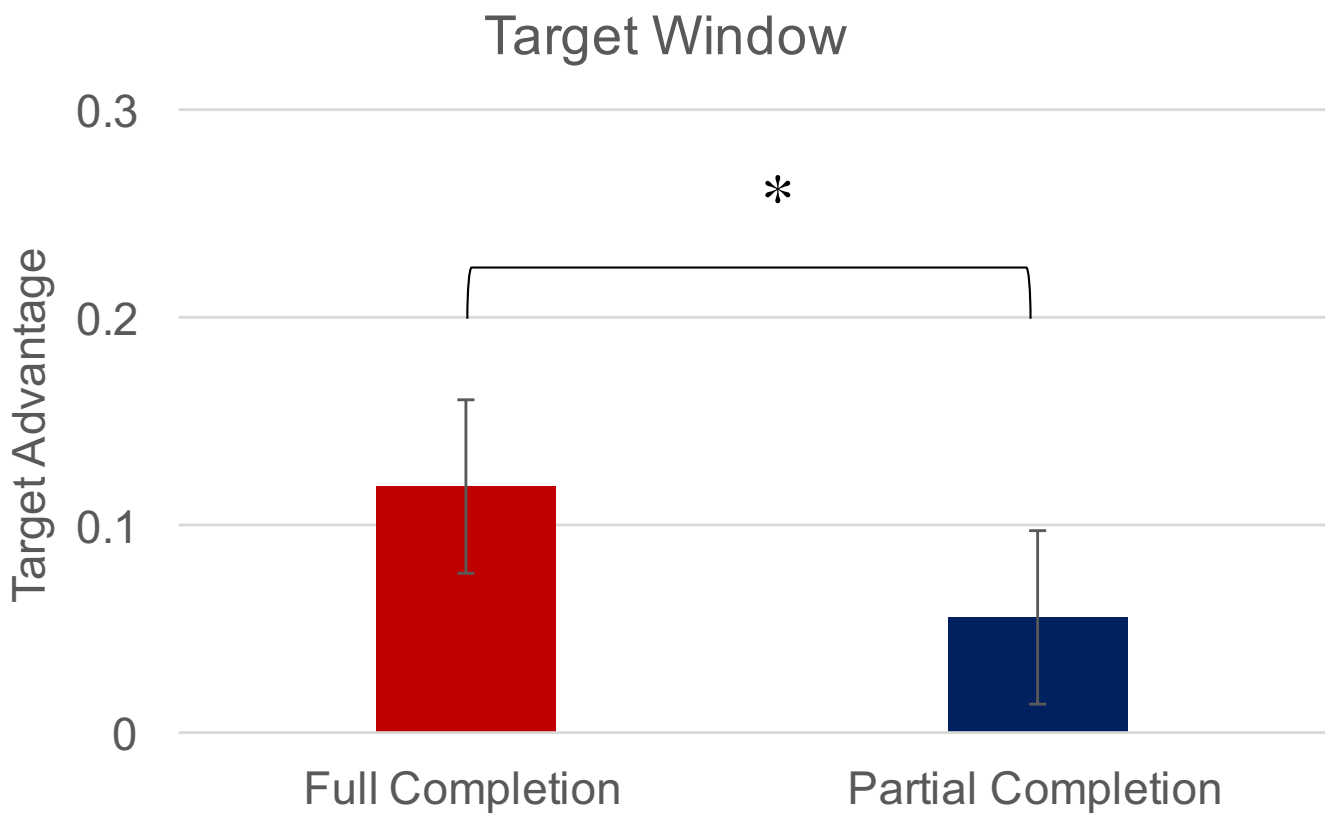

“Has” condition
Trial Type
Full Completion
Partial Completion
1.00
0.75
0.50
0.25
0.00
-0.25
Target Advantage
0
2000
4000
6000
Time, msec


“Has” condition
Trial Type
Full Completion
Partial Completion
1.00
0.75
0.50
0.25
0.00
-0.25
Target Advantage
… has eaten…
0
2000
4000
6000
Time, msec

“Has” condition



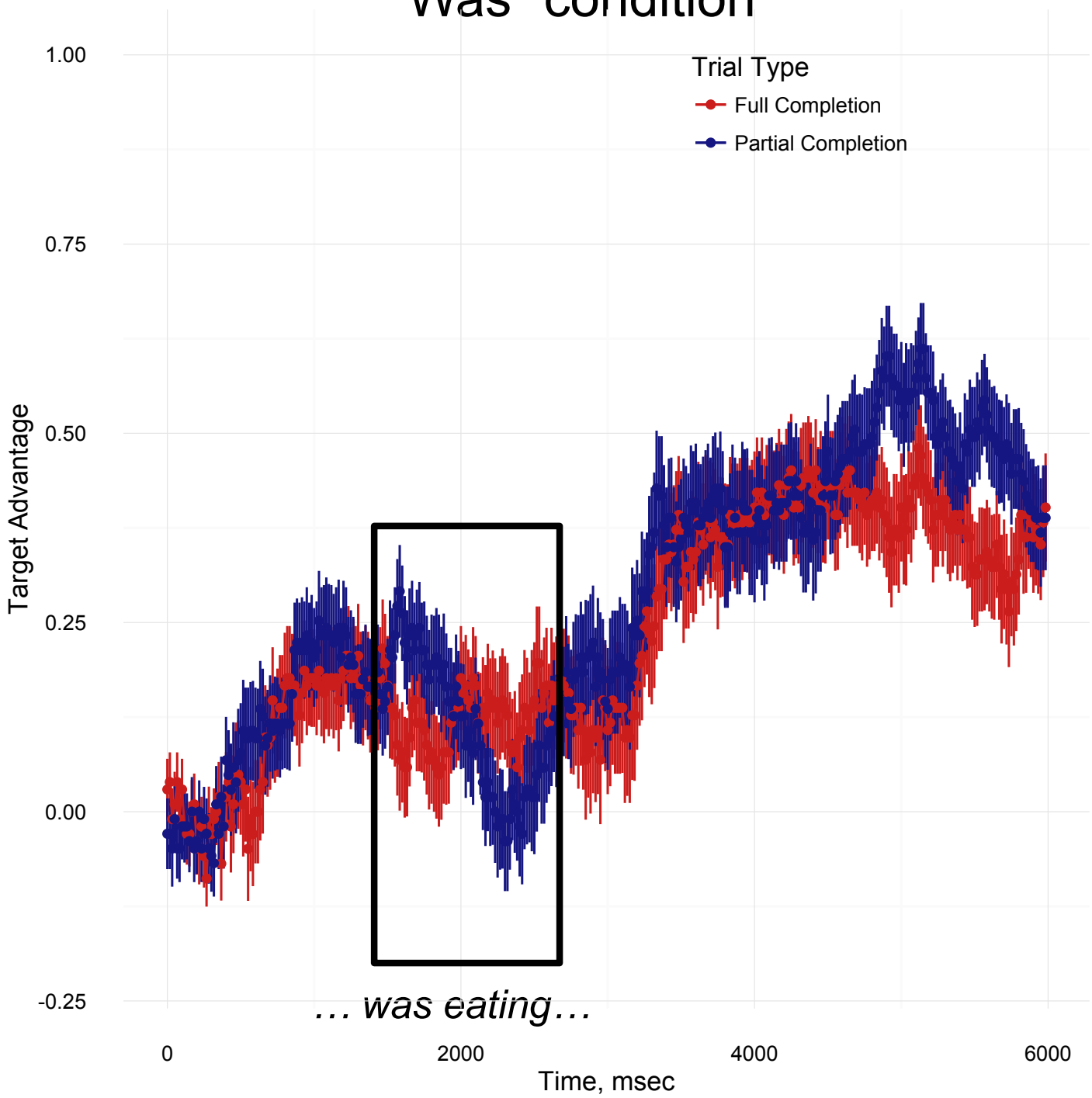
“Has” condition



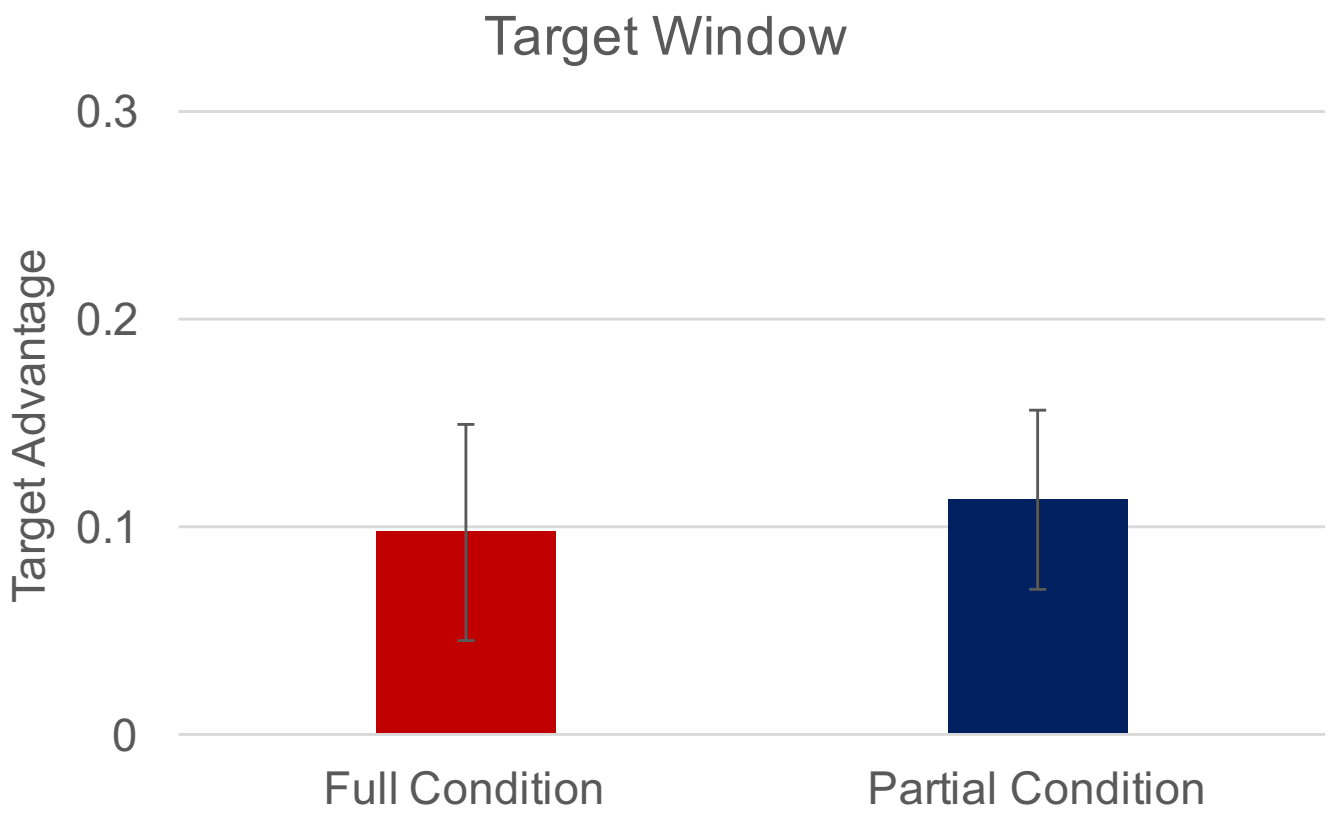
Study 4 “Was” Predictions

- Possibly a target preference in the Partial Completion condition, signifying that participants think the event is ongoing.

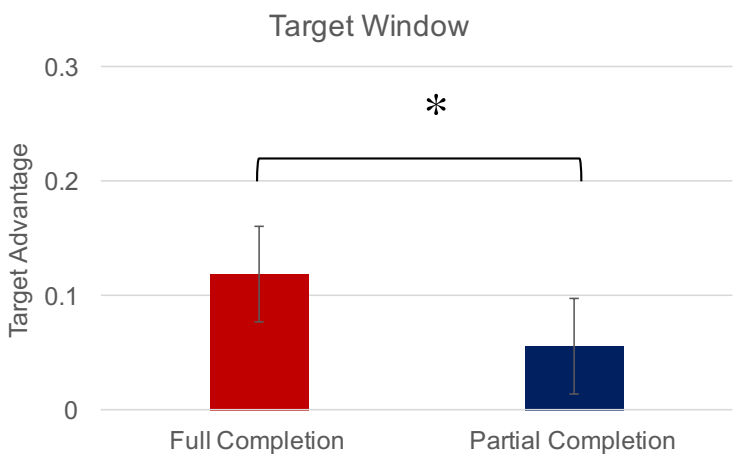
- Or maybe not (e.g., Madden & Zwaan, 2003)


“Was” condition
Trial Type
Full Completion
Partial Completion
1.00
0.75
0.50
0.25
0.00
-0.25
Target Advantage
… was eating…
0
2000
4000
6000
Time, msec

“Was” condition

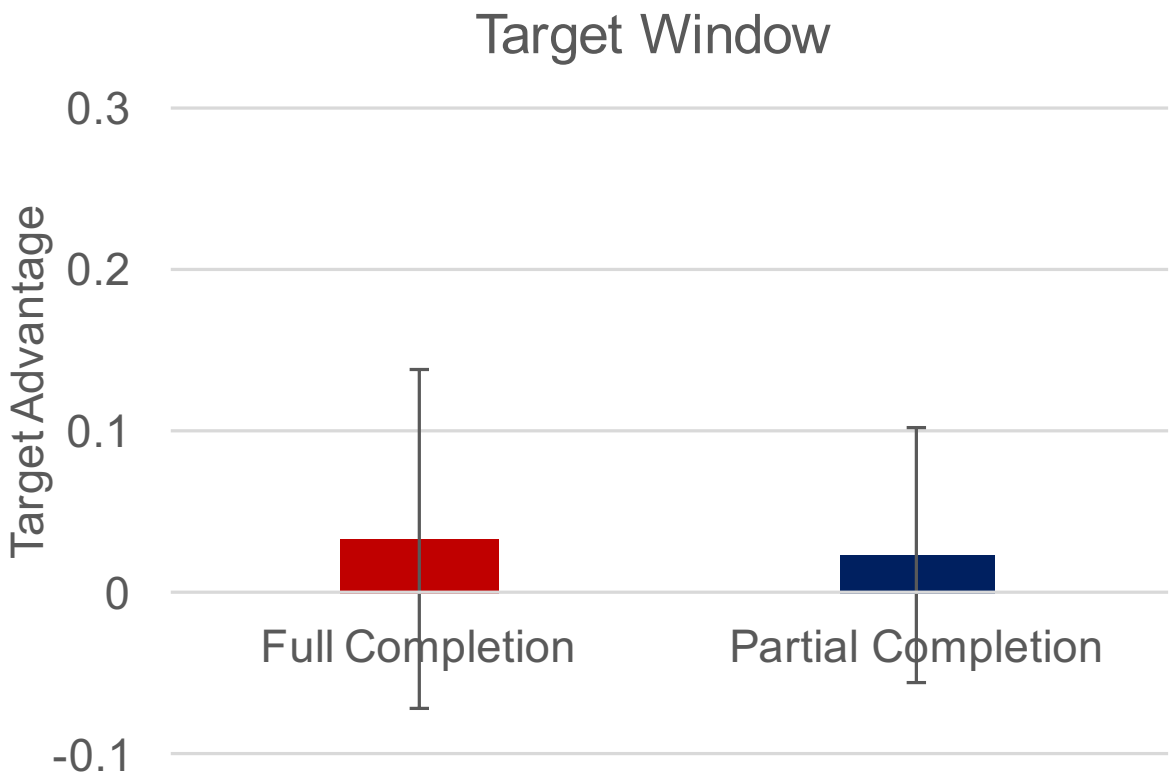


ADULTS



"Has" condition

CHILDREN, ages 4-5
Data collection in progress!



Study 4 Conclusions

- English-speaking adults may immediately, in real-time, assign a full culmination interpretation to, e.g., *has eaten*, only overriding this to permit a partial completion interpretation if it is the best one available.
- Preschoolers may be in an "endstate neglect" stage. Their representations for these predicates may permit both complete and partial culmination interpretations.
- Next step: Test in languages that more readily permit non-culmination interpretations – compare two forms (e.g., Hindi SV vs. CV)

General Discussion

- Infants (“pre-English” wrt this phenomenon) and English-speaking adults both perceive culmination as important when considering events non-linguistically.
- For adults, non-culmination interpretations may be computed in a later processing stage.
- Preschoolers may permit both culmination and non-culmination interpretations (“endstate neglect”), though they too may ultimately prefer the affected referent.

Thank you!

This research was supported by NIH K01 DC013306.

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