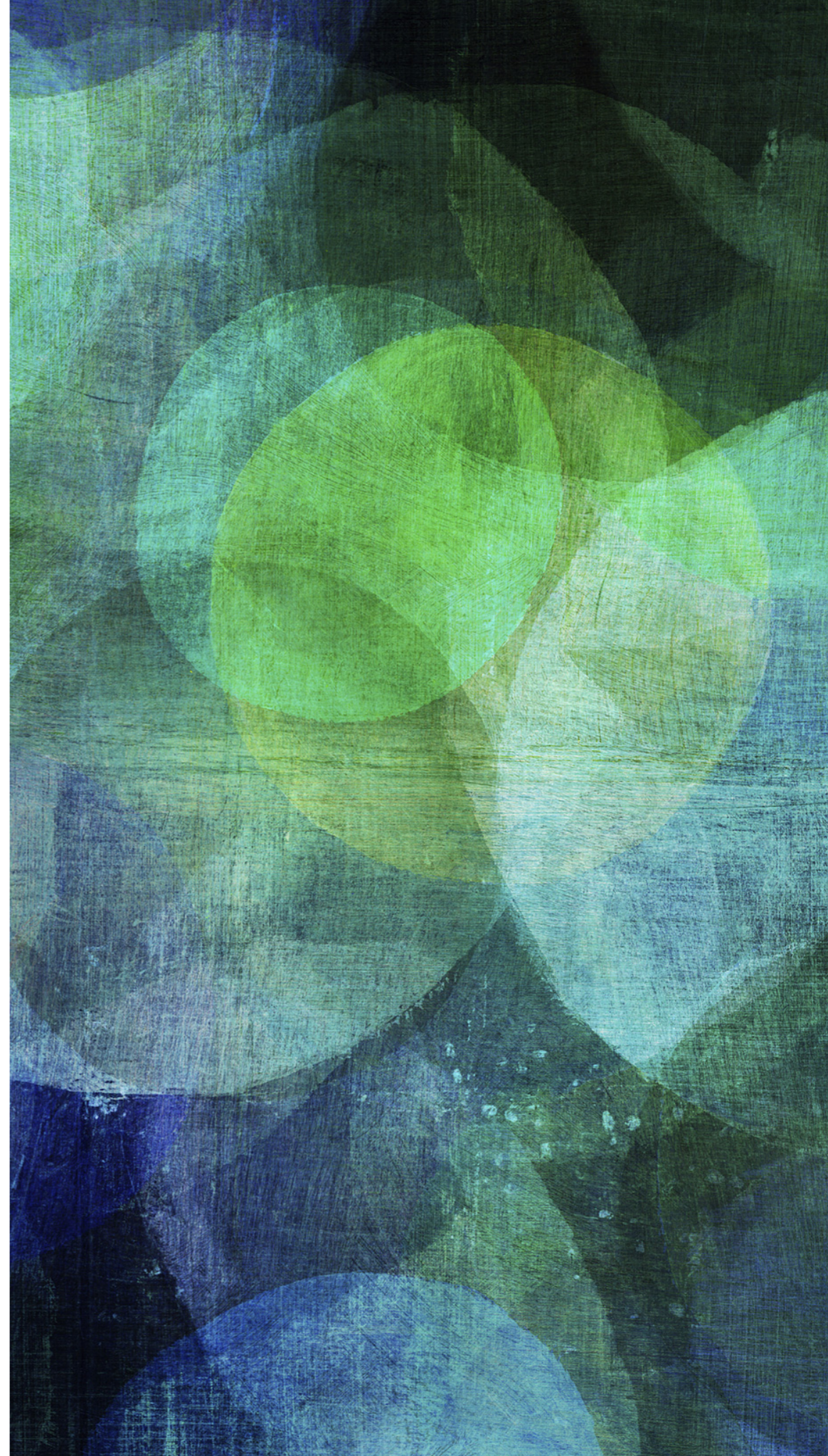


# AN EMPIRICAL INVESTIGATION ON THE INTERPRETATION OF ISOLATED ARGUMENTAL NEGATIVE QUANTIFIERS IN ENGLISH

*Eloi Puig-Mayenco (King's College  
London) & Susagna Tubau (UAB-CLT)*  
.....

*e.puig-mayenco@kcl.ac.uk*  
*Susagna.Tubau@uab.cat*





# 1. INTRODUCTION

---

- Negative quantifiers (NQs) in English introduce an instance of logical negation, as shown by (some of) Klima's (1964) tests, and so does the sentential negative marker.

(1) *Nobody* read a book, **did they?** / and **neither** did you.

(2) *Nobody* read a book, **\*didn't they?** / **\*and so** did you.

(3) John *didn't* read a book, **did he?** / and **neither** did you.

(4) John *didn't* read a book, **\*didn't he?** / and **so** did you.

# 1. INTRODUCTION

---

- In the light of (1)-(4), Double Negation (DN) is predicted to emerge when two NQs co-occur and when an NQ co-occurs with sentential negation, as both NQs and sentential negation encode logical negation.

(5) *Nobody* read *nothing* [= Everybody read something]

(6) *Nobody* didn't read [= Everybody read]

# 1. INTRODUCTION

---

- Yet, Blanchette (2013, 2016, 2017) argues that English speakers tolerate Negative Concord (NC).

- (7) a. *Nobody* read *nothing* [= Nobody read anything]  
b. *Nobody* *didn't* read [= Nobody read]

- So while isolated NQs used as answers to negative questions are predicted to give rise to DN in English, it is possible that they also give rise to single negation (SN).

(8) Q: Who *didn't* read?

A: *Nobody* [*didn't* read]

DN: Everybody read / SN: Nobody read.

# 1. INTRODUCTION

---

- For NC languages such as Spanish, it was shown in Espinal and Tubau (2016) that two readings are possible with fragment NCIs.

(9) Q: ¿Quién *no* llevaba gafas? [negative question]  
who not wore glasses  
'Who wasn't wearing glasses?'

A: *Nadie*. [NCI fragment]  
n-body  
SN: Nobody / DN: Everybody [was wearing glasses]

- SN is predicted in NC languages; DN is not.

# 1. INTRODUCTION

---

## ➤ Research question

How do English speakers interpret isolated NQs as fragment answers to negative questions?

## ➤ Hypothesis

The most prominent interpretation (DN or SN) in full sentences with co-occurring NQs or NQ + sentential negative marker will also be the most prominent interpretation for isolated NQs as answers to negative wh-questions.

# 1. INTRODUCTION

---

## ► Predictions

(i) Speakers that interpret co-occurring NQs/NQ + sentential negative marker in full sentences as yielding DN will also do so for isolated NQs as answers to negative wh-questions.

(ii) Speakers that interpret co-occurring NQs as yielding SN in full sentences will also do so for isolated NQs as answers to negative wh-questions.

## 2. EXPERIMENTAL DESIGN

---

- An experiment was designed consisting of two tasks.

**Task A.** Full sentences with NQ + sentential negation / co-occurring NQs. How are they interpreted? SN or DN?

**Task B.** NQs as fragment answers to negative wh-questions. How are they interpreted? SN or DN?

- **Testing the hypothesis:** Is there a correlation between the results in Task A and the results in Task B?



## 2. EXPERIMENTAL DESIGN

---

### ➤ Participants

- 30 participants aged 19-21
  - Native speakers of British English (Southern dialects)
  - No high proficiency in any language other than English
- 
- The same participants took both Task A and Task B, so that the results could be then analysed for correlation.

## 2. EXPERIMENTAL DESIGN: TASK A

---

- Task A. Sentence-picture matching task (n=96 items)
- 1 sentence, 2 pictures
- Conditions:

	Conditions	Sentence	n=
Control, 24	A.object.post	The girl is drawing nothing.	8
	B.subject.pre	Nobody is driving a car.	8
	C.subject.post	There is nobody in the park.	8
Critical, 40	A.object.post	George isn't chasing nothing.	8
	B.subject.pre	Nobody isn't writing a letter.	8
	C.subject.post	There isn't nobody in the room.	8
	D1.subject.object	Nobody is singing nothing.	8
	D2.subject.object	Nobody isn't writing nothing.	8

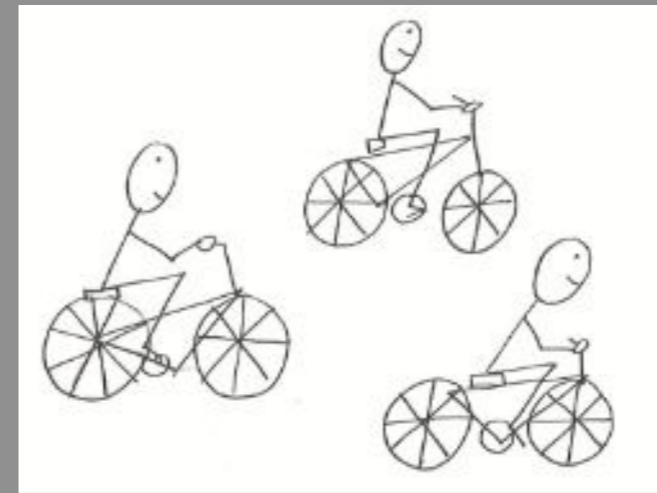
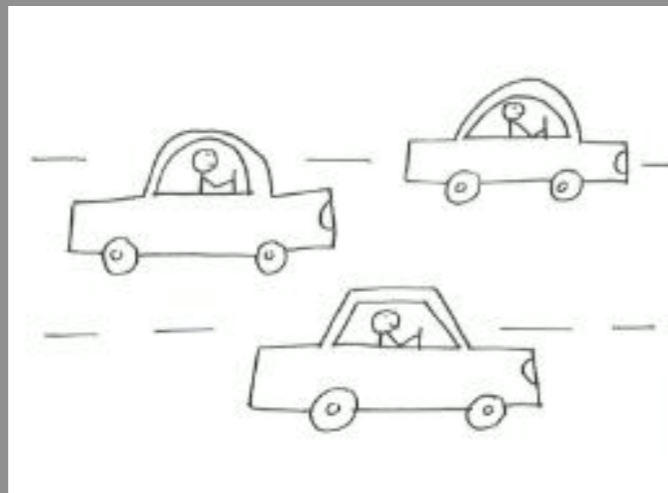
- Fillers, 32: sentences without negation

## 2. EXPERIMENTAL DESIGN: TASK A

---

- Example of a control stimulus

Nobody is driving a car.

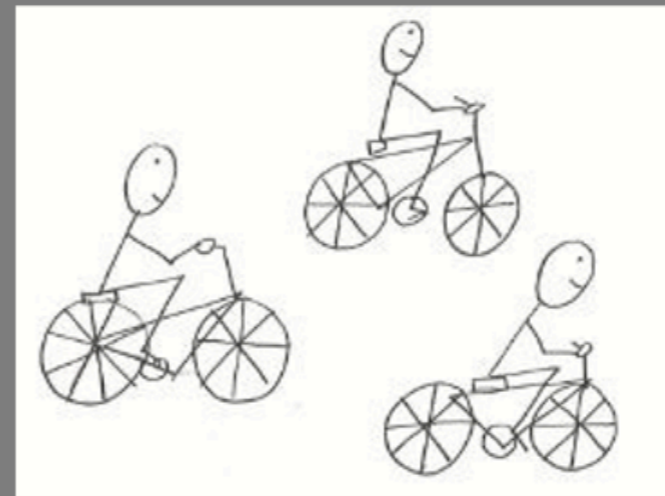
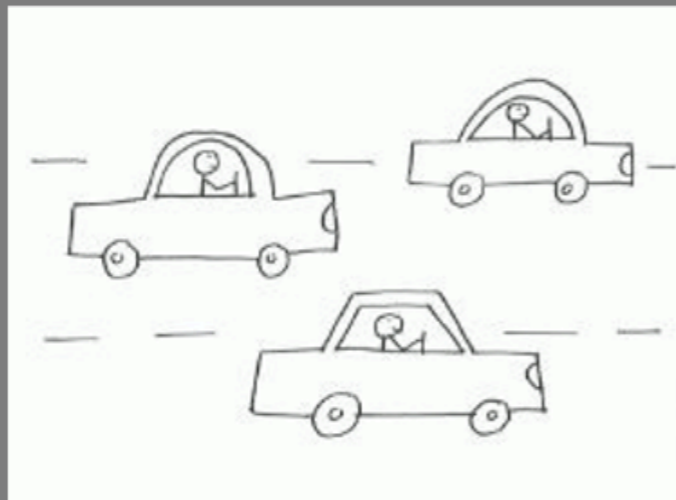


## 2. EXPERIMENTAL DESIGN: TASK A

---

- Example of a critical stimulus

Nobody isn't driving a car.





## 2. EXPERIMENTAL DESIGN: TASK B

- Task B. Sentence-picture matching task (n=96 items)
- 1 question, 1 answer, 2 pictures
- Conditions:

Context	Condition	Question	Answer	N=
Critical	A1.Critical.Sub.nobody	Who isn't driving a car?	Nobody.	8
	B1.Critical.Sub.nothing	What isn't on the table?	Nothing.	8
	C1.Critical.Ob.nobody	Who isn't the doctor seeing?	Nobody.	8
	D1.Critical.Ob.nothing	What isn't the girl drawing?	Nothing.	8
Control.NQ	A2.Control.Sub.nobody	Who is playing an instrument?	Nobody.	4
	B2.Control.Sub.nothing	What is pink?	Nothing.	4
	C2.Control.Ob.nobody	Who is Peter following?	Nobody.	4
	D2.Control.Ob.nothing	What's the boy fishing?	Nothing.	4
Control.DP	A3.Control.Sub.animate	Who isn't cycling?	A boy.	4
	B3.Control.Sub.inanimate	What isn't on the floor?	A pen.	4
	C3.Control.Ob.animate	Who isn't Peter hugging?	A girl.	4
	D3.Control.Ob.inanimate	What isn't Mary chasing?	A dog.	4

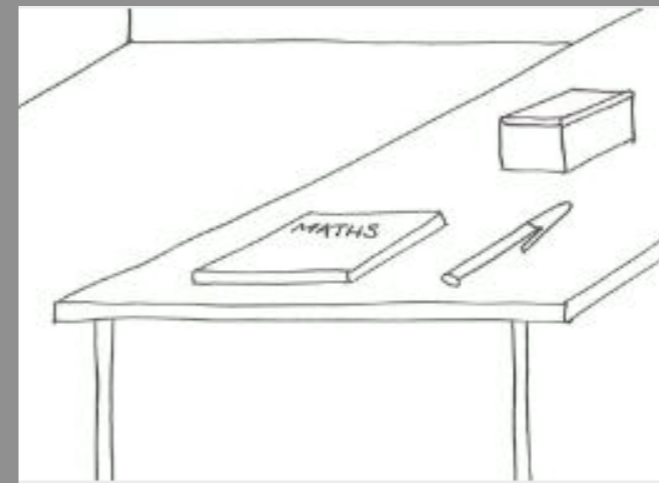
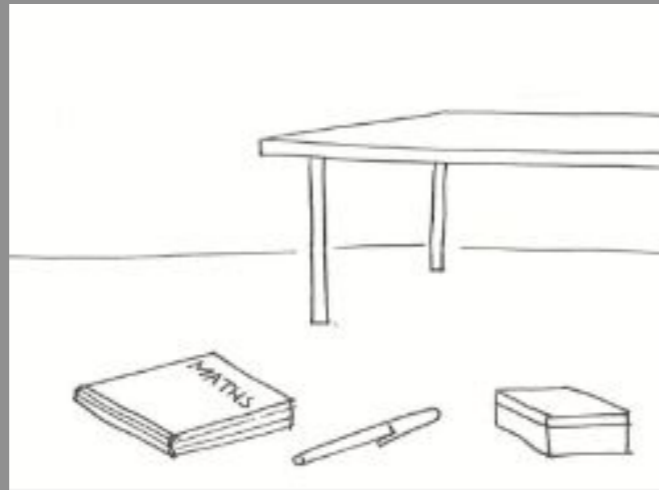
- Fillers, 32: Questions and A unrelated to negation

## 2. EXPERIMENTAL DESIGN: TASK B

---

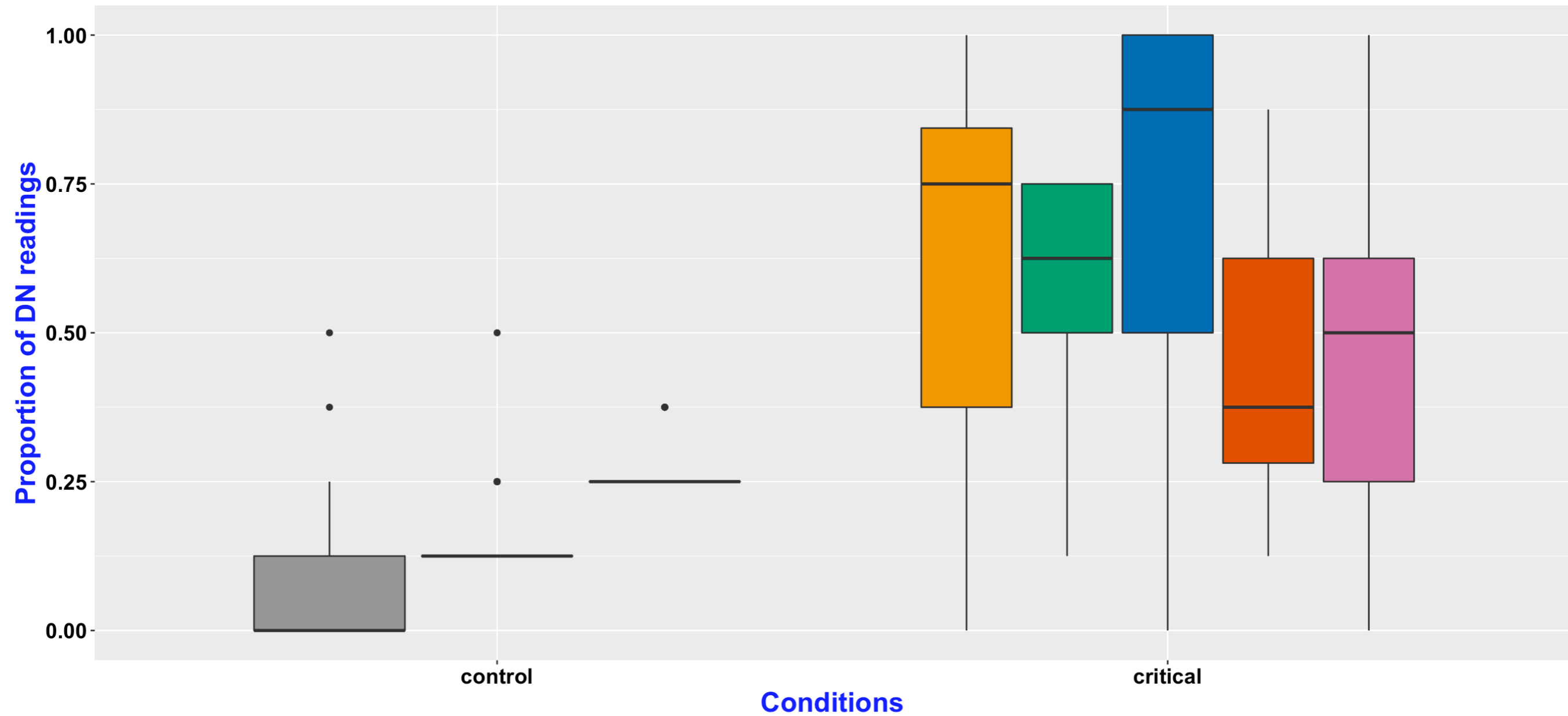
- Example of a critical stimulus

Q: What isn't on the table?  
A: Nothing.



# 3. RESULTS: TASK A

Task A: Control vs Critical conditions; proportion of DN readings



condition A1.Control.Ob.Post B1.Control.Sub.Pre C1.Control.Sub.Post D1.Critical.Sub-Ob.Post  
A2.Critical.Ob.Post-SNM B2.Critical.Sub.Pre-SNM C1.Critical.Sub.Post-SNM D2.Critical.Sub-Ob.Post-SNM

### 3. RESULTS: TASK A

---

- **Controls:**

- Very low proportion of DN, as expected.
- Not much inter-speaker variation, either.

- **Criticals:**

- High proportion of DN for the 5 conditions.
- High levels of inter-speaker variation.

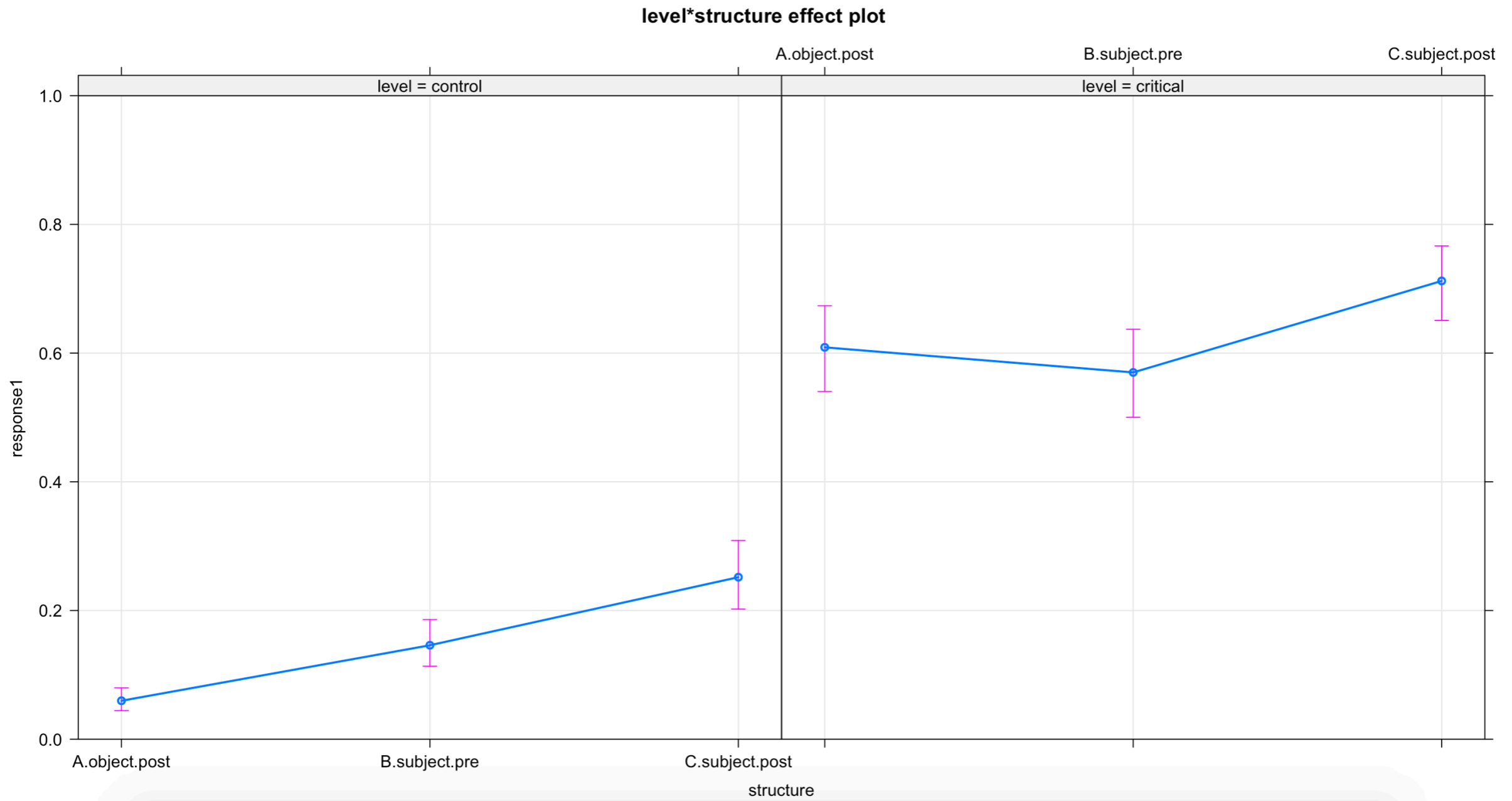


### 3. RESULTS: TASK A

---

- Generalized Mixed Effect Logistic Regression
  - Fixed effects: *structure* (subject.pre, subject.post, object.post) and *level* (critical, control)
  - Random effects: *participant* and *item*
- Control conditions A, B, C were compared to critical conditions A, B, C. Critical conditions D (D1: NQ + NQ and D2: NQ + not + NQ) are explored separately.
- Outcomes:
  - Significant main effect of *structure* and *level*
  - Significant two-way interaction: Structure\*level

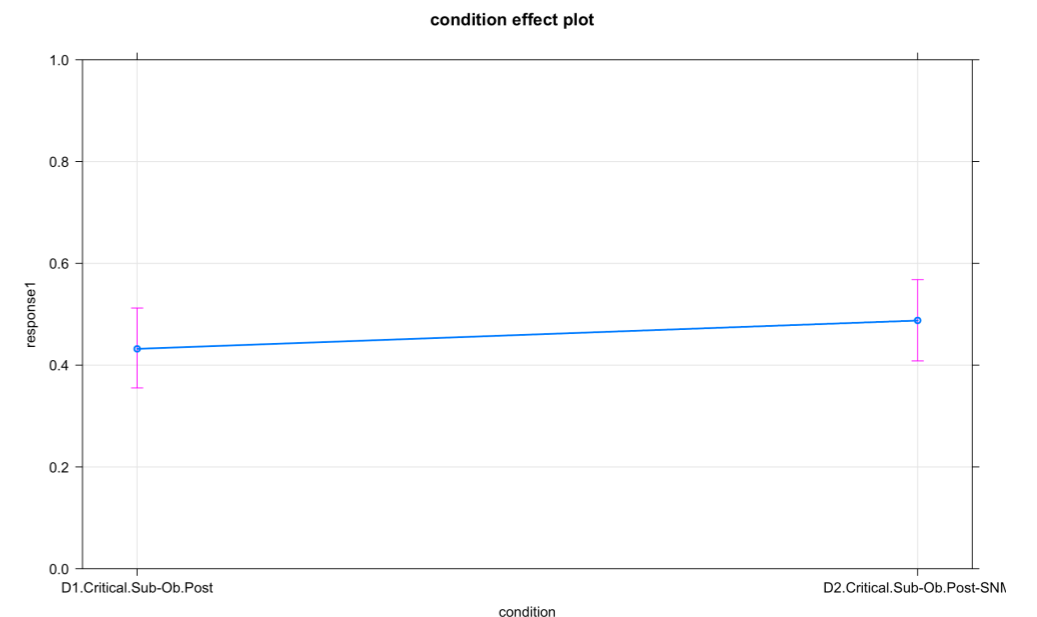
# 3. RESULTS: TASK A



# 3. RESULTS: TASK A

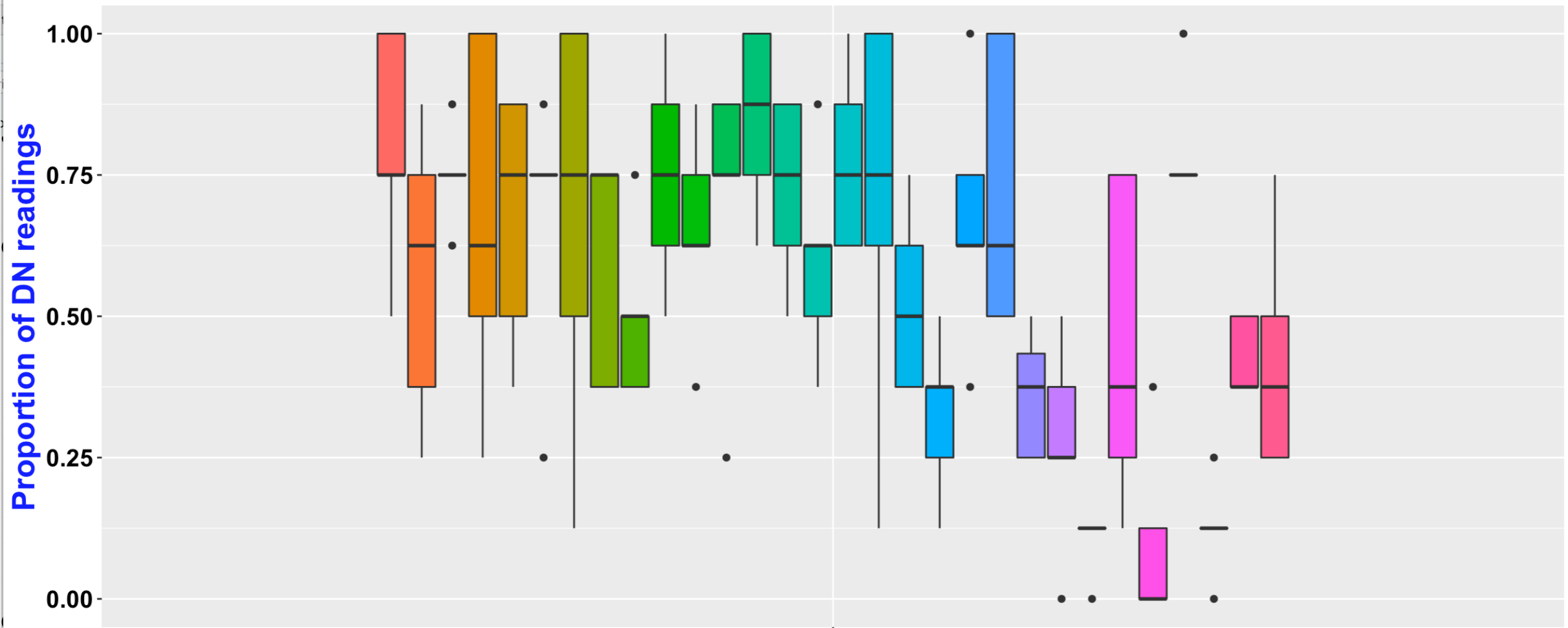
---

- Generalized Mixed Effect Logistic Regression
  - Fixed effects: *condition* (D1.Critical.Sub-Ob.Post, D2.Critical.Sub-Ob.Post-SNM)
  - Random effects: *participant* and *item*
- Outcomes:
  - No significant main effect. No significant differences between the D1 and D2 conditions concerning the proportion of DN



# 3. RESULTS: TASK A

Task A: participants and DN readings



Average of CRITICAL conditions





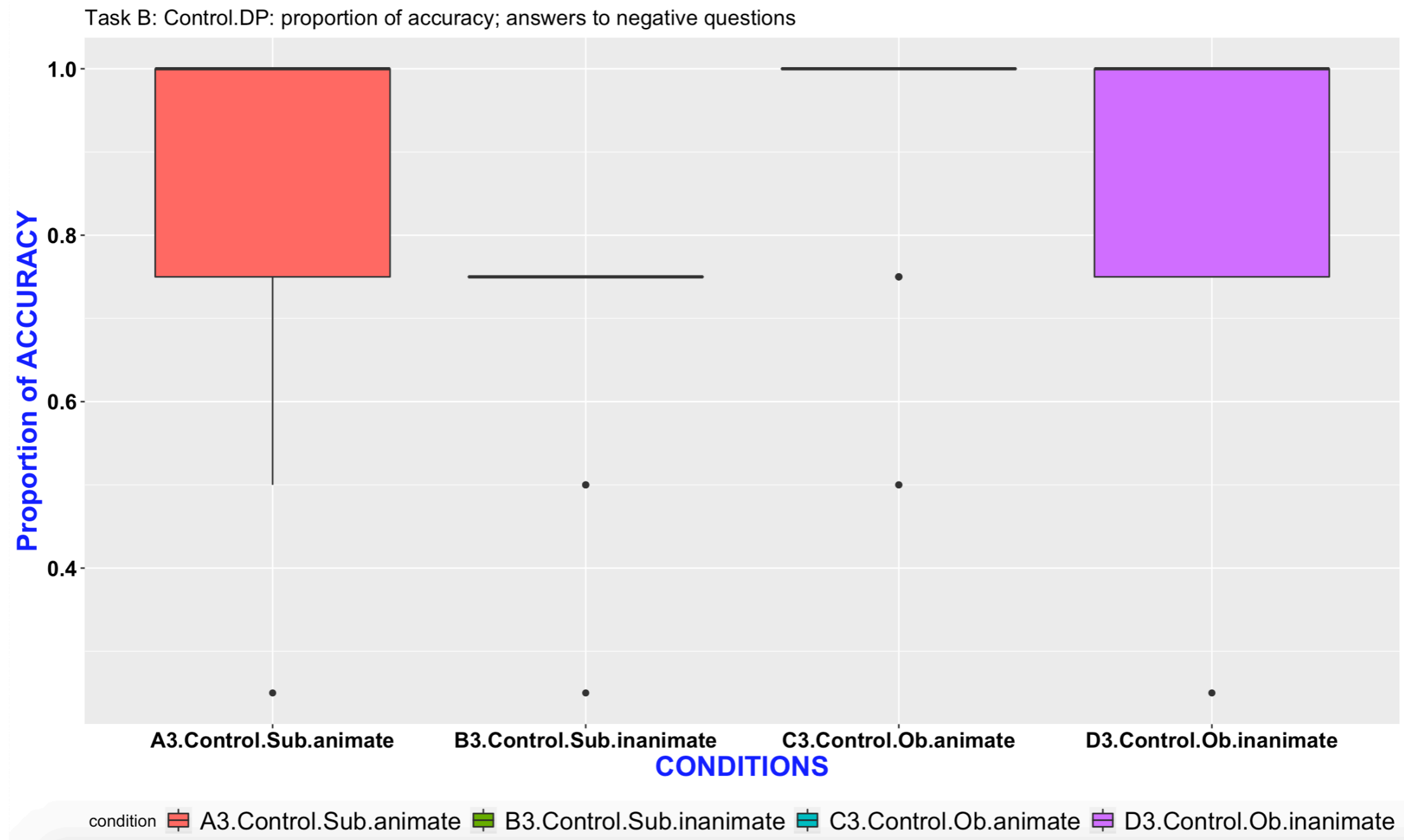
### 3. RESULTS: TASK A

---

- Participants can be classified according to whether they mostly provide DN readings or they do not.
  - Proportion of DN above 50% = DN-provider participant
  - Proportion of DN below 50% = NC-provider participant
  
- 21 DN-providers vs. 9 NC-providers

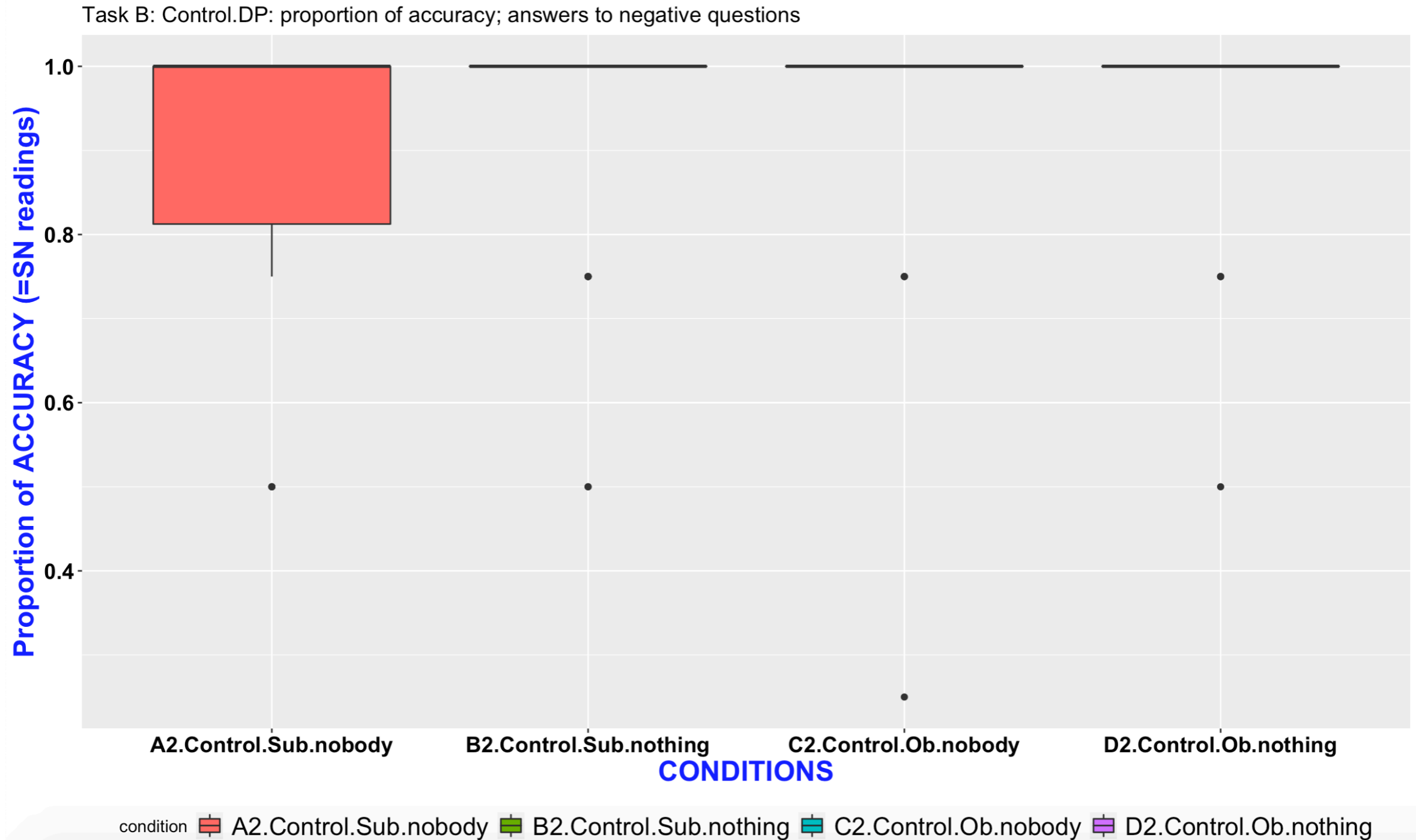
# 3. RESULTS: TASK B

## ► Controls. Negative Q; non-negative A



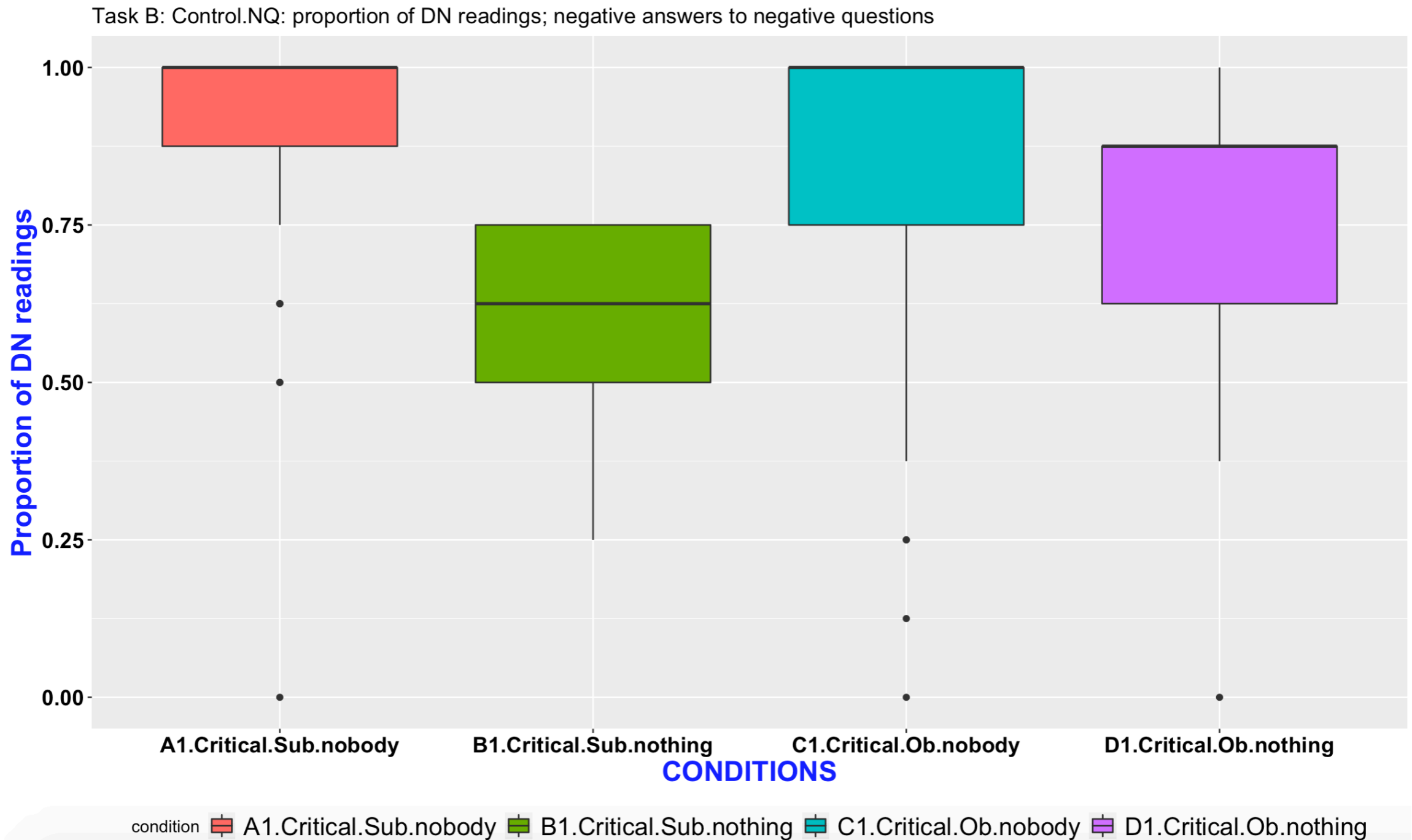
# 3. RESULTS: TASK B

## ► Controls. Positive Q; Negative A



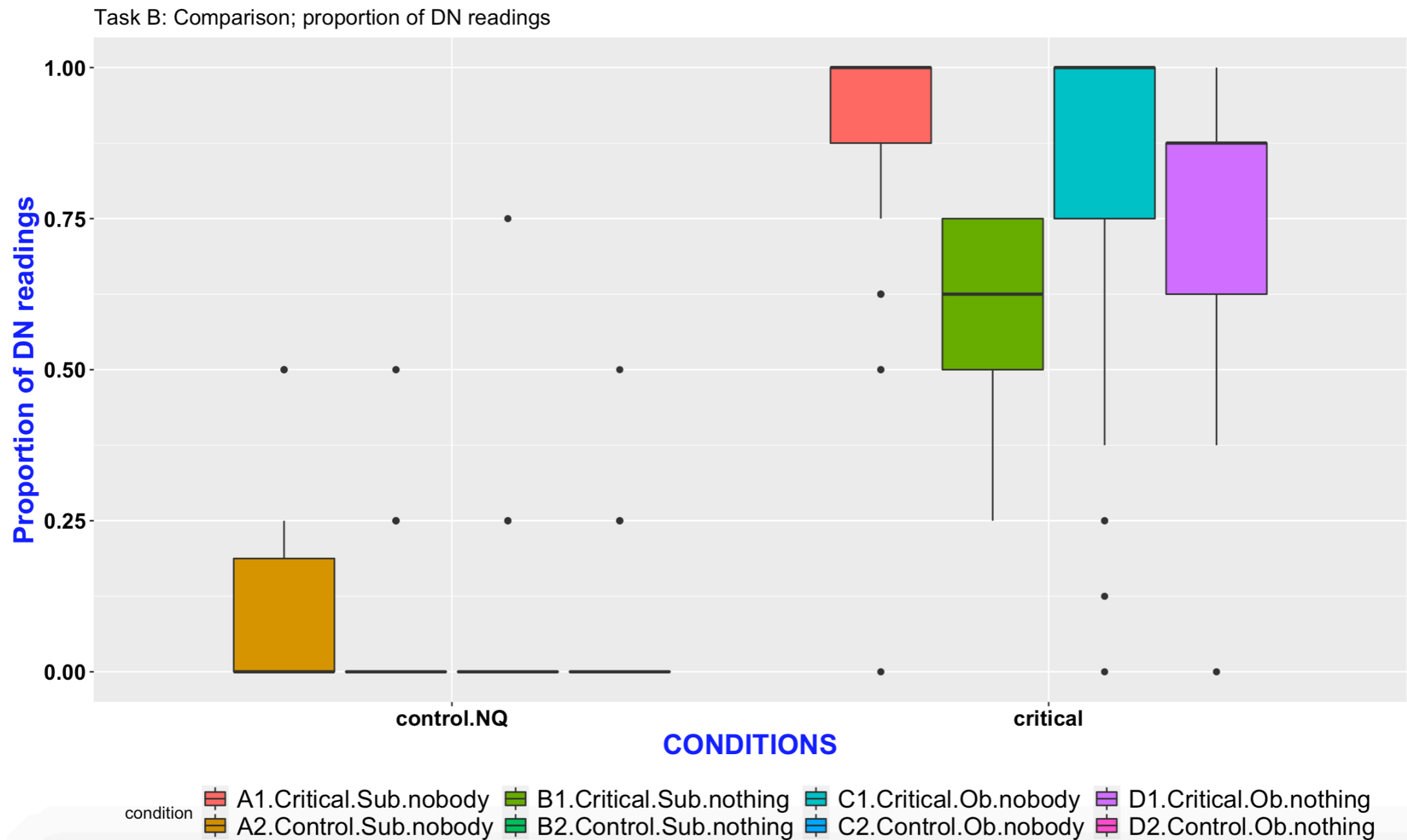
# 3. RESULTS: TASK B

## ➤ Criticals. Negative Q; Negative A



# 3. RESULTS: TASK B

► NQs as A in non-negative Q vs. NQs as A in negative Q



### 3. RESULTS: TASK B

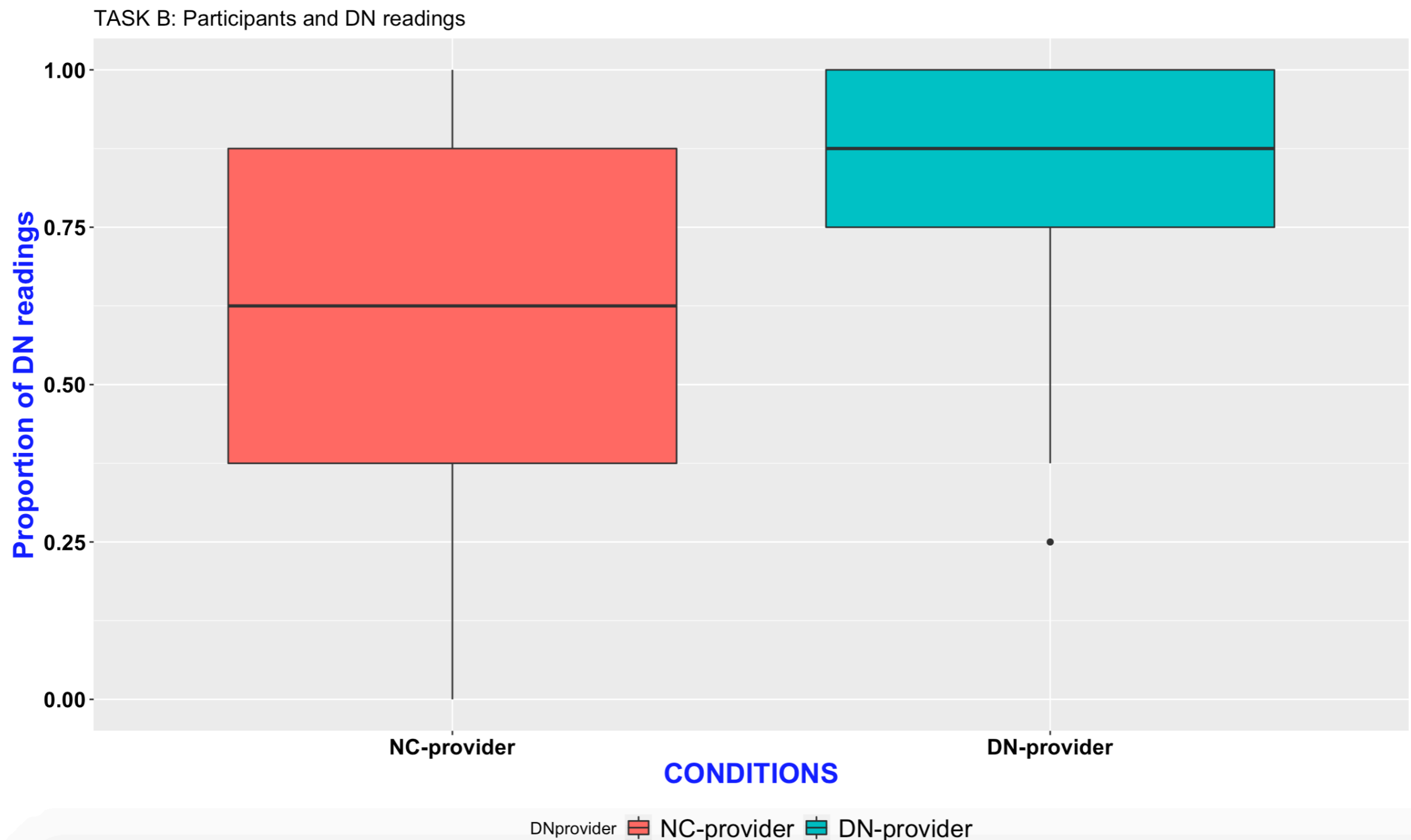
---

- Generalized Mixed Effect Logistic Regression
  - Fixed effects: *context* (critical vs. control NQ), *animacy* (nobody vs. nothing), *argument* (subject vs. object)
  - Random effects: *participant* and *item*
- Outcomes:
  - Significant main effect of *context* and *animacy*
  - Significant two-way interactions: *animacy*\**context*; *context*\**argument*, *argument*\**animacy*
  - Significant three-way interaction: *animacy*\**context*\**argument*

### 3. RESULTS: CORRELATION BETWEEN TASK A AND TASK B

---

- In NQ As to negative Qs, DN-providers in Task A consistently provide DN, whereas NC-providers show large variation.





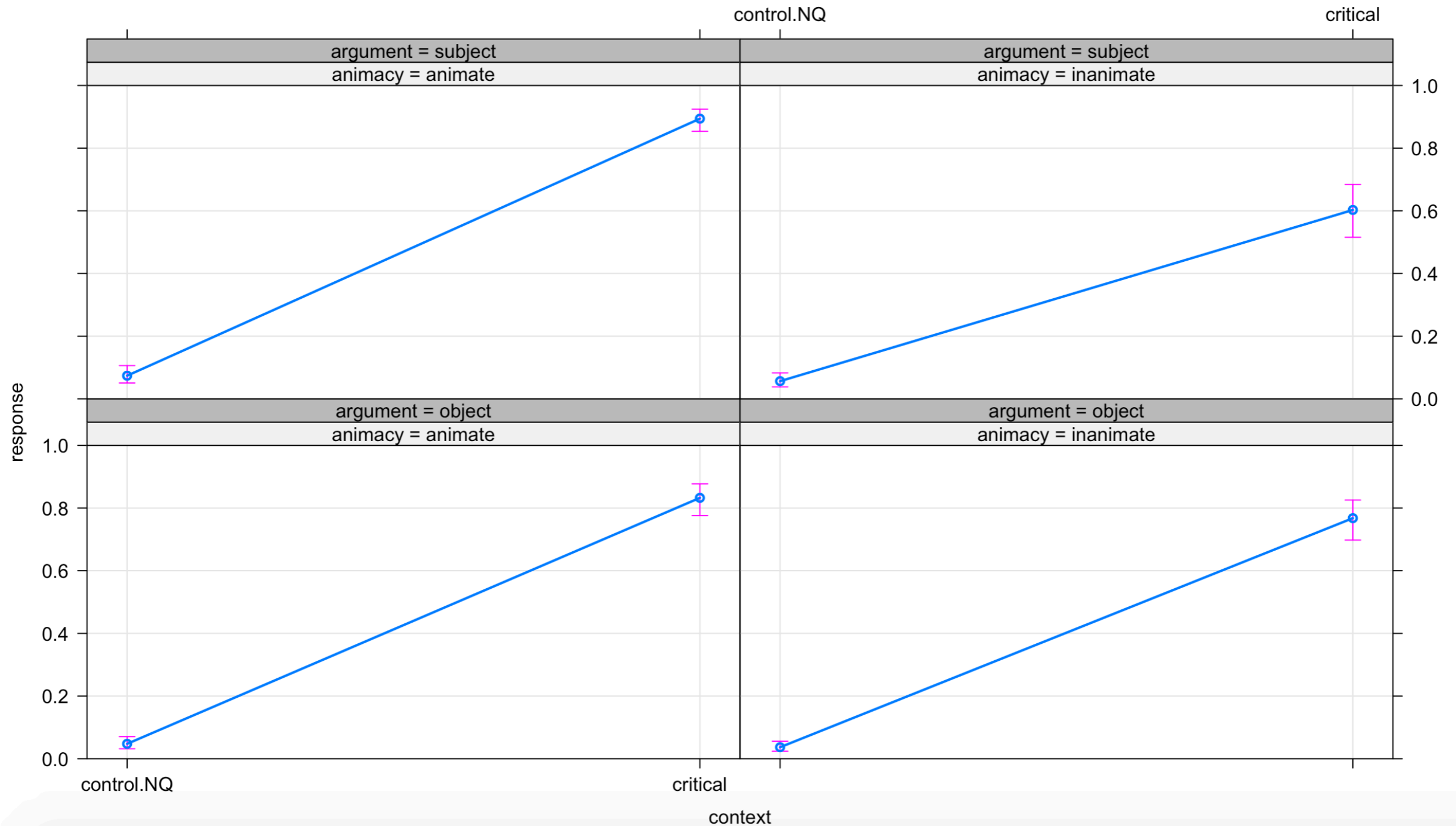
### 3. RESULTS: CORRELATION BETWEEN TASK A AND TASK B

---

- Generalized Mixed Effect Logistic Regression
  - Fixed effects: *context* (critical vs. control NQ) and *X-provider* (DN-provider vs. NC-provider)
  - Random effects: *participant* and *item*
- Outcomes:
  - Significant main effect of *context*
  - Significant two-way interaction:  $\text{context} * \text{X-provider}$

# 3. RESULTS: TASK B

context\*animacy\*argument effect plot



## 4. DISCUSSION

---

- Two groups emerge from the data:
  - One for which a DN interpretation of NQs as A to negative Q is the norm (DN-providers).
  - One for which a DN interpretation of NQs as A to negative Q co-occurs with a SN interpretation (NC-providers).
- Theoretically, two possible representations for NQs in speakers' lexicon, but no consensus as to what exactly these representations are.
  - **Option 1:**  
NQs = Neg + existential vs. NCI = existential, [uNeg]
  - **Option 2:**  
NQs = Neg + existential vs. NCI = existential, [Neg]

## 4. DISCUSSION

---

- Our results mirror those in Espinal & Tubau (2016):
  - **Spanish/Catalan:** NCI variant vs. emergent NQ variant
  - **English:** NQ variant vs. retained NCI variant
  
- Frequency with which different variants are accessed changes from speaker to speaker.

## 4. DISCUSSION

---

- Depending on how one assumes the NCI variant to be formally characterised in English, one syntactic mechanism or another will be activated.
- Both mechanisms ensure a single negation reading in fragments that serve as answers to negative questions and in full sentences with NC.
- NQs have been analysed as negation + polarity item that have undergone post-syntactic fusion (Klima 1964, Jacobs 1980, Ladusaw 1993, Penka and Zeijlstra 2010, Iatridou and Sichel 2011, a. o.).
- NQs = [neg + existential]

## 4. DISCUSSION

---

- If the non-atomic analysis of NQs is correct, the SN/DN contrast in (10) is formalised as in (11) if NCIs are assumed to be non-negative ([uNeg]):

(10) Q: Who didn't ride a bike?

A: *Nobody*. [DN: Everybody / SN: Nobody]

(11) DN: [not+existential] [didn't ride a bike]

SN: [existential, uNeg] [didn't ride a bike] - **uF iF Agree**

- If, by contrast, NCIs are assumed to be negative, then DN vs. SN would be obtained as in (12):

(12) DN: [not+existential] [didn't ride a bike]

SN: [existential, neg] [didn't ride a bike] - **Factorisation**

## 5. CONCLUSION

---

- We have experimentally investigated:
  - How isolated NQs as answers to negative questions are interpreted in English.
  - To what extent SN readings in full sentences with NQs co-occurring with the sentential negative marker or another NQ are tolerated by the speakers.
  - Whether there is a correlation between tolerance of NC in full sentences and SN readings in isolated NQs as answers to negative questions.



## 5. CONCLUSION

---

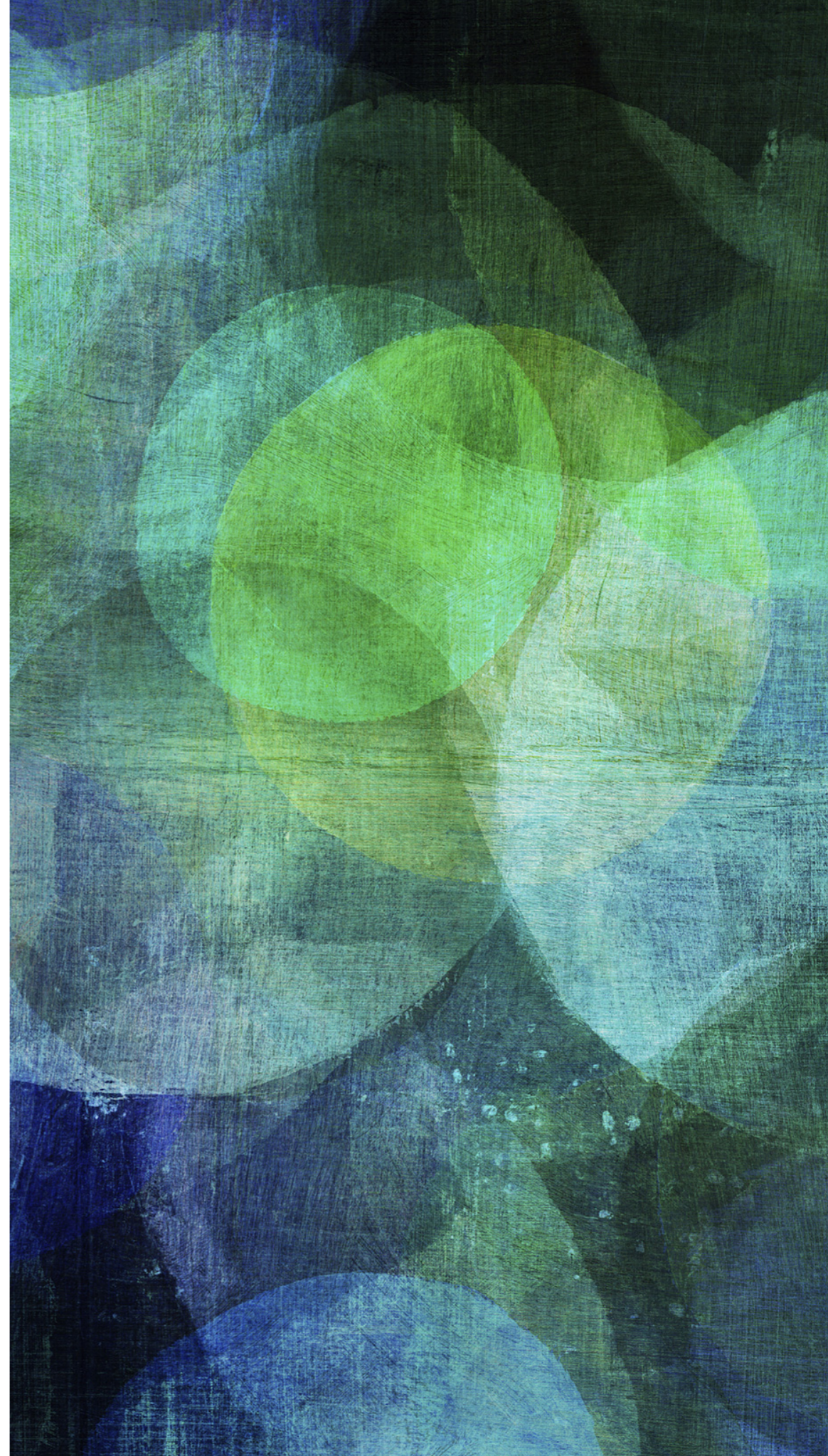
- It was found that:
  - Some speakers uniformly interpret isolated NQs as answers to negative questions as conveying DN, while some others allow both SN and DN readings.
  - There is a correlation between rate of DN/SN in full sentences with negation and NQ or co-occurring NQs and DN/SN readings for isolated NQ answers to negative questions.
- The SN/DN readings for isolated NQ answers to negative questions have been related to two possible lexical variants for words such as *nobody* and *nothing*: a negative and quantificational one, NQ (DN readings), and an NCI-one (SN readings).



**THANK YOU  
VERY MUCH  
FOR YOUR  
ATTENTION**

---

*Time for questions!*





# REFERENCES

---

Blanchette, Frances. 2013. Negative Concord in English. *Linguistic Variation* 13: 1-47.

Blanchette, Frances. 2016. Subject-object asymmetries in the acceptability of English sentences with two negatives. *University of Pennsylvania Working Papers in Linguistics* 22: 41-50.

Blanchette, Frances. 2017. Micro-syntactic variation in English Negative Concord. *Glossa: A journal of general linguistics* 2: 1-32.

Espinal, M.Teresa & Susagna Tubau. 2016. Interpreting argumental n-words as answers to negative wh-questions. *Lingua* 177: 41-59.

Iatridou, Sabine, and Ivy Sichel. Negative DPs, A-Movement, and Scope Diminishment. *Linguistic Inquiry* 42.4: 595–629.

# REFERENCES

---

Jacobs, Joachim. 1980. Lexical decomposition in Montague Grammar. *Theoretical Linguistics* 7:121–136.

Klima, Edward S. 1964. Negation in English. In *The structure of language*, ed. by Jerry Fodor and Jerry Katz, 246–323. Englewood Cliffs, NJ: Prentice-Hall.

Ladusaw, William. 1992. Expressing negation. In *Proceedings of the Second Conference on Semantics and Linguistic Theory*, ed. by Chris Barker and David Dowty, 237–259. Columbus: Ohio State University, Department of Linguistics.

Penka, Doris and Hedde Zeijlstra. 2010. Negation and polarity: an introduction. *Natural Language & Linguistic Theory* 28: 771–786.