

Gesturing in aphasia, compensatory with or without speech?

A case study

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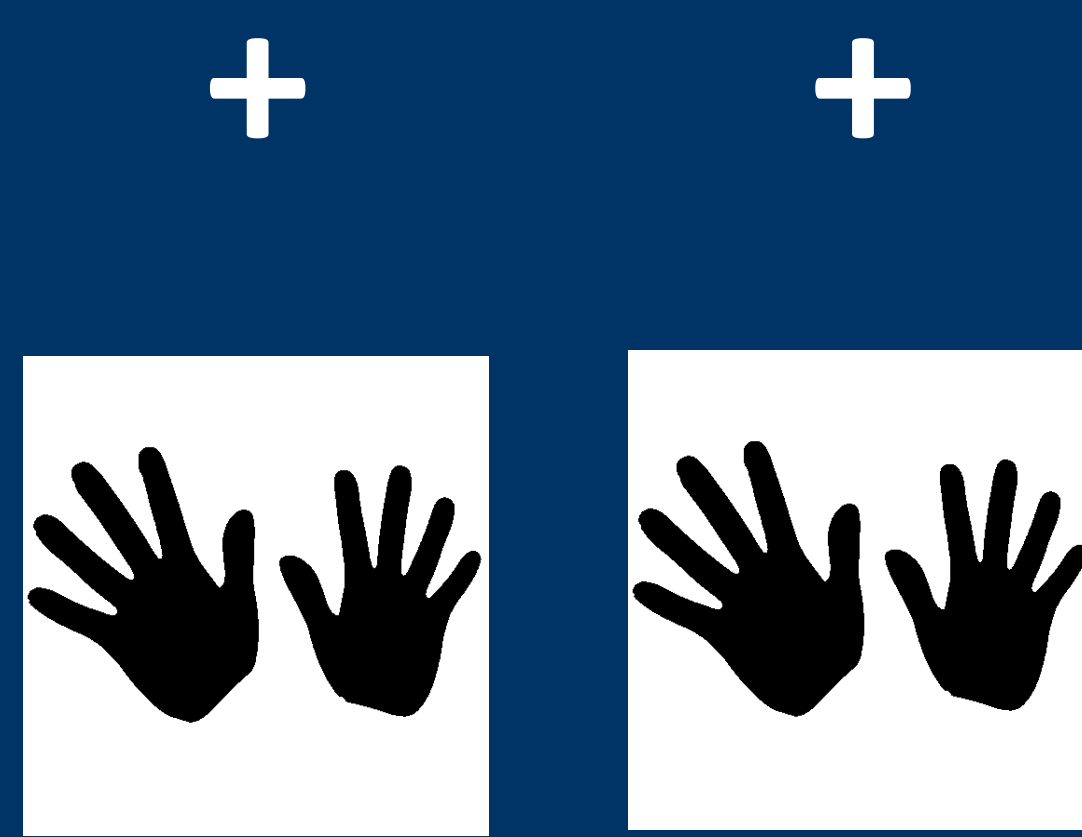
Introduction

- **Pantomime** and/or **gesticulation** might compensate for speech loss in severe aphasia.
- **Pantomimes:** without speech, describing objects/actions.
- **Gesticulation:** with speech, complex visual information/story.
- Little is known about these gesture modes in aphasia.

- A case study: QH
 - speech, but incomprehensible
 - difference in (comprehensibility) gesticulation and pantomime?

The current study addresses the following research questions:

- 1) Can **pantomimes** and/or **gesticulation** be used as compensation for fluent but meaningless speech in (QH's) aphasia?
- 2) Is (QH's) **gesticulation** and/or **pantomime** influenced by (his) fluent aphasia and/or apraxia?



Gesticulation Pantomime
McNeill, (2000)

Method

- Case:** QH
- Speech: fluent, but incomprehensible
 - Good comprehension of speech
 - Apraxia

Task 1: Naming objects (20 items) (BNT)¹
Task 2: Retelling a story (3 episodes) (T&S)²

Condition 1: Speech (**gesticulation**)
Condition 2: Only gestures (**pantomime**)

¹Boston Naming Task (Kaplan et al., 1983)
²Tweety & Sylvester cartoon (McNeill, 1992)



Analysis 1: comprehensibility

- forced choice task
- 15 students

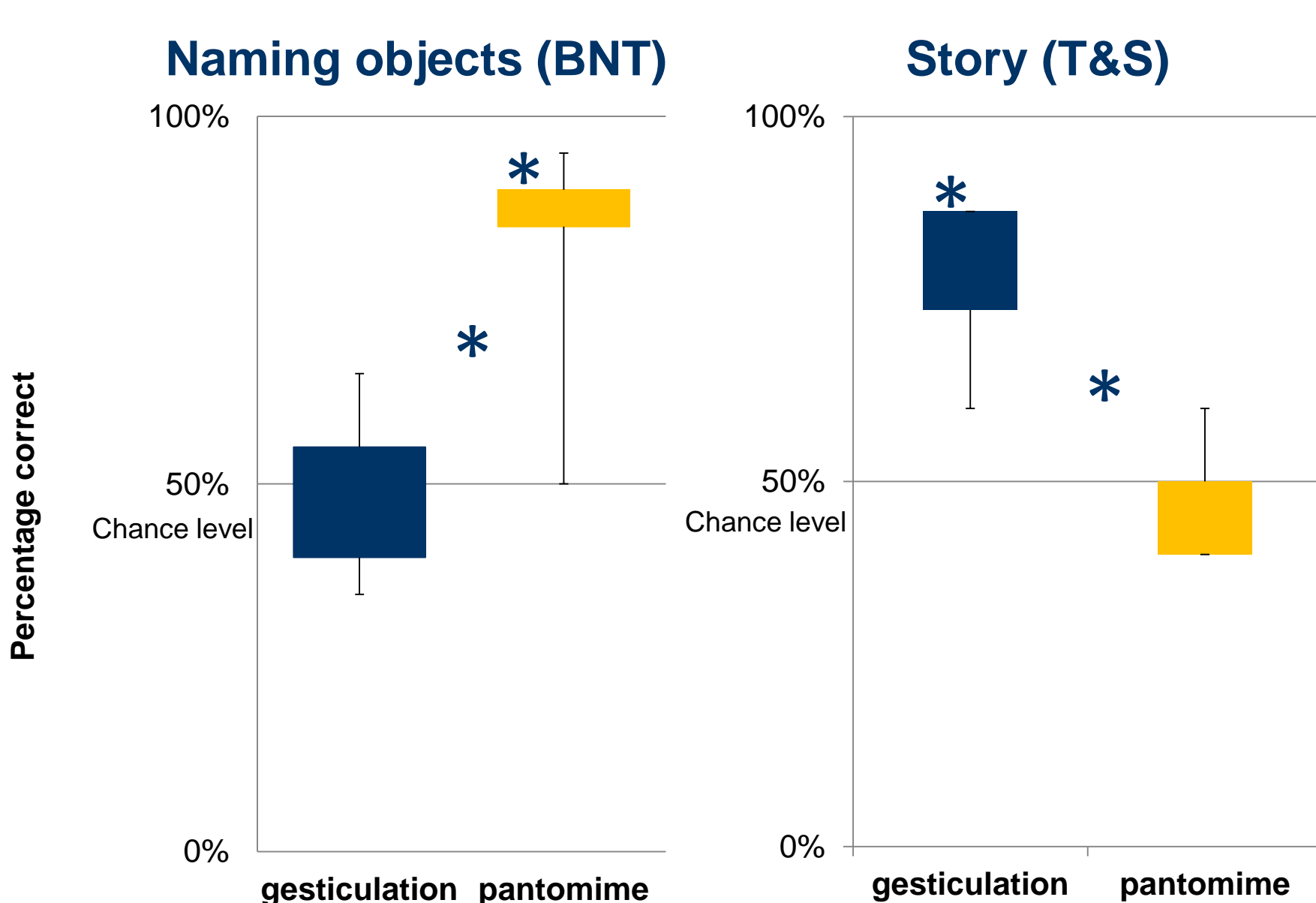
Analysis 2: gesture techniques

- gesture technique per item/episode
- comparison to 20 controls

Results

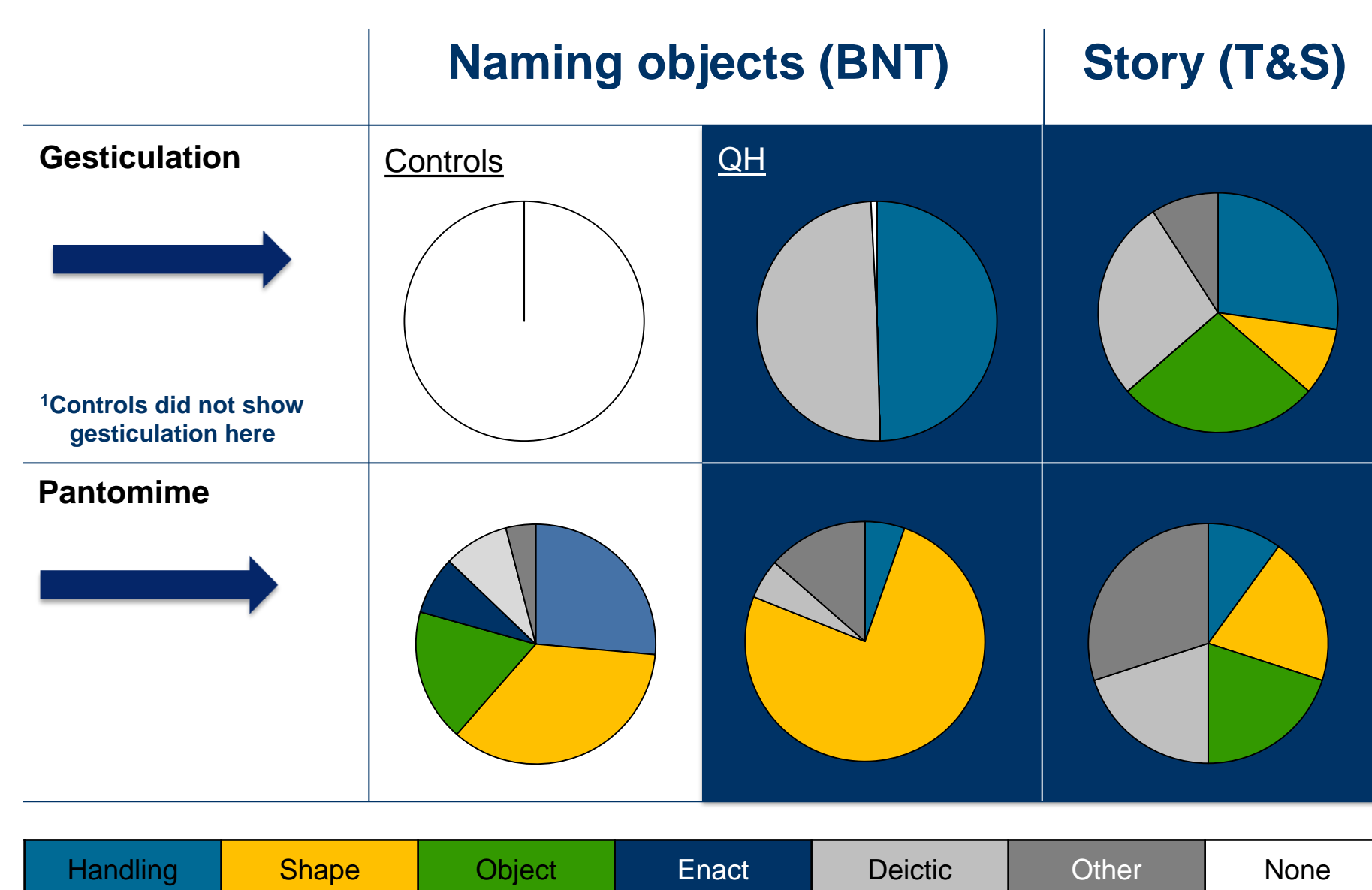
Analysis 1: Comprehensibility

- Naming Objects (BNT)
 - **Speech:** incomprehensible
 - **Pantomimes,** 82% correct: comprehensible ($p \leq 0.05$)
 - **Gesticulation,** 48% correct: incomprehensible ($p > 0.05$)
 - **Pantomime > Gesticulation** ($p \leq 0.01$).
- Retelling a story (T&S)
 - **Speech:** incomprehensible
 - **Pantomimes,** 47% correct: incomprehensible ($p \leq 0.05$)
 - **Gesticulation,** 78% correct: comprehensible ($p > 0.01$)
 - **Gesticulation > Pantomime** ($p \leq 0.05$)



Analysis 2: Representation Techniques

- Naming Objects (BNT)
 - **Pantomimes**
 - Controls: specific techniques for specific objects
 - QH: mostly 'shape gestures'
 - **Gesticulation**
 - Controls: no gesticulation
 - QH: gesticulation for every object (handling & deictic)
- Retelling a story (T&S)
 - **Pantomimes & Gesticulation**
 - QH: various techniques
 - No difference between **pantomime & gesticulation**
 - Comparable to healthy controls?



Discussion

QH's gesticulation:

- No explicit compensation
 - Word finding difficulties or 'normal' gesticulation
- 1) Can be compensatory when (re)telling a story
 - 2) Influenced by aphasia and/or apraxia?

QH's pantomime:

- Simplified pantomimes (shape)
 - No use of conceptual features
- 1) Can be compensatory when talking about objects
 - 2) Impaired because of apraxia

Conclusion

- 1) **Gesticulation** and **pantomime** can be used to compensate for speech.
 - Gesticulation for retelling a story
 - Pantomime for naming objects
- 2) **Pantomime** (and **gesticulation**?) influenced by apraxia. Influence of aphasia?

References

Goldin-Meadow, S., So, W. C., Özyürek, A., & Mylander, C. (2008). The natural order of events: How speakers of different languages represent events nonverbally. *Proceedings of the National Academy of Sciences*, 105(27), 9163-9168.

Kaplan, E., Goodglass, H., & Weintraub, S. (1983). *The Boston Naming Test*. Philadelphia: Lea & Febiger.

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Clinical Implications

- **Gesticulation** and **pantomime:** different processes, with different functions, which can be impaired differently
 - assess both **gesticulation & pantomime**
- Pantomime of tool use does not represent **pantomime** or **gesticulation** ability
 - assesses various representation techniques

