Referential ambiguity resolution for multiple referents: Evidence from event-related potentials

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Introduction

- Referential ambiguity arises when there is more than one available referent in the context and the receiver is unable to establish the anaphoric relationship.
- In ERP literature, referentially ambiguous anaphor is known to elicit a sustained frontal negativity called the **Nref effect** [1,2,3].
- Yet, the underlying neural mechanisms that generate this effect are still unclear.
  - One hypothesis suggested that the Nref effect reflects **the maintenance of relevant candidates in the working memory** waiting for further disambiguating information [2].
  - An alternative possibility stated that the Nref effect may reflect **the operation of "detecting" the ambiguity** [4].
- We manipulated the number of potential antecedents up to **three**.
  - The first hypothesis predicts that when there are more suitable referents, **the amplitude of the Nref effect increases** because the load of maintenance increases. This characteristic has been shown in several **memory-related sustained negativities** like **CDA** [5]
  - The second hypothesis predicts that the Nref effect may **remain the same or even decrease** when there are more referents because it is easier to detect the ambiguity.

Procedure

Participants read 22 stories for each condition:

- Unamb
- 2-ref
- 3-ref

Materials

3-referent condition

Context passage

Robert sits cross-legged on the sofa, nervously watching the ball game broadcast. Teddy, standing aside, looks at the close score on the screen. Every possession is important. Jack, who sits in front of the TV, knows that if the team they support can win this game, they will have a better chance to win the championship. It is such a see-saw game that Teddy, Jack and Robert can feel the intensity in the stadium even on this side of the screen

Critical sentence

If the team loses this game with such a great performance, he can guarantee that Teddy and Jack will definitely be disappointed

Target word — disambiguation

2-referent condition

Context passage

Robert sits cross-legged on the sofa, nervously watching the ball game broadcast. Teddy, standing aside, looks at the close score on the screen. Every possession is important. Jack, who sits in front of the TV, knows that if the team they support can win this game, they will have a better chance to win the championship. It is such a see-saw game that Teddy, Jack and Robert can feel the intensity in the stadium even on this side of the screen

Critical sentence

If the team loses this game with such a great performance, he can guarantee that Teddy and Jack will definitely be disappointed

Unambiguous condition

Context passage

Robert sits cross-legged on the sofa, nervously watching the ball game broadcast. Teddy, standing aside, looks at the close score on the screen. Every possession is important. Jack, who sits in front of the TV, knows that if the team they support can win this game, they will have a better chance to win the championship. It is such a see-saw game that Teddy, Jack and Robert can feel the intensity in the stadium even on this side of the screen

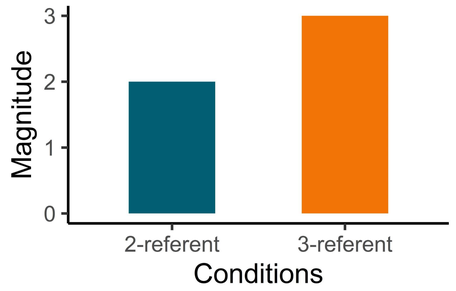
Critical sentence

If the team loses this game with such a great performance, he can guarantee that Teddy and Jack will definitely be disappointed

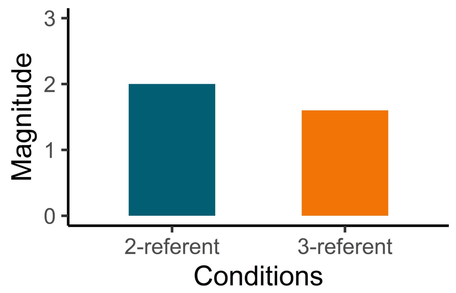
(An approximate English translation from Mandarin)

Predictions

The **maintenance hypothesis** expects the Nref amplitude to be greater for 3-referent than 2-referent condition.



The **detection hypothesis** expects the Nref amplitude to be indistinguishable for the 3-referent and 2-referent conditions, or greater for 2-referent than 3-referent condition.



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