

Prominent protagonists influence discourse topicality

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Previous approaches to pronoun resolution have focused on various (interacting) features of the antecedent as governing factors of pronoun resolution. Demonstratives have been claimed to show anti-subject/-agent/-first-mention/-sentence-topic preferences (e.g., [1]; [2]); following a sentence containing two NPs such as “the policeman chased the criminal”, a demonstrative would normally refer to the NP2 “the criminal”. We explore the impact of the wider discourse on pronoun interpretation. We look at the German demonstrative pronoun (*dieser*) in comparison to the personal pronoun (*er*), investigating whether pronouns are influenced only by features associated with the antecedent in the immediately preceding sentence or whether they are additionally influenced by discourse topichood [3]. We predict an effect of the wider discourse: The likelihood of interpreting *dieser* with respect to the less prominent entity of the previous sentence (e.g., the NP2 as illustrated above) will decrease if the NP2 is the topic of the wider discourse. In that case the sentence-topic (NP1) is a potential candidate for *dieser*-reference, because it is less prominent in the overall discourse.

Two forced-choice referent selection studies were conducted to test resolution preferences in short stories (seven sentences long) in which two possible referents were available (see (1)-(8)). Two factors were manipulated: **Pronoun** (*er* vs. *dieser*) refers to the pronoun appearing in the final sentence; **Discourse topic** (NP1, NP2) refers to the discourse topic of the first five sentences being either NP1 or NP2 of the penultimate sentence. The experiments consisted of 12 items and 18 fillers. For **Exp.1** (n=56), items were divided into three story settings based on the novels *Harry Potter*, *Sherlock Holmes* and *Winnetou*. Probabilities of referring to NP2 are shown in Table1/Fig1. A generalized mixed-effects model revealed only a significant effect of pronoun ($z=13.47$, $p<.001$). This indicates that only local factors influenced interpretive preferences, supporting findings from studies with only one context sentence (e.g., [1]; [2]).

For **Exp.2** (n=113), we modified the stimuli to prevent a potential genre effect: The prominent proper names (e.g., *Sherlock*) were replaced by definite descriptions (*the policeman*) and the stories were no longer presented in story setting blocks. The model showed a significant effect of pronoun ($z=16.29$, $p<.001$) and an interaction of discourse topic and pronoun ($z=9.26$, $p<.001$). Models for *er* and *dieser* showed significant effects of discourse topic (*er*: $z=-8.39$, $p<.001$; *dieser*: $z=5.5$, $p<.001$). The data (Table2/Fig2) show that the demonstrative pronoun is less often interpreted as the NP2 (non-sentence-topic) of the previous sentence when this entity is the topic of the wider discourse.

The results from the two experiments reveal a genre effect: when participants are exposed to a story with a famous protagonist, this entity reaches a high level of prominence, overriding discourse constraints on reference resolution. This was evident in Exp.1 where the manipulation of discourse topicality had no effect on the referential preferences. In contrast, in the absence of a famous protagonist in Exp.2, discourse topicality influenced pronoun interpretation by decreasing NP2 references of the demonstrative and increasing NP2 references of the personal pronoun when NP2 was also the discourse topic. Furthermore, an analysis across experiments revealed a 3-way interaction of discourse topic, pronoun and experiment ($z=3.89$, $p<0.001$), supporting the influence of the protagonist in Exp.1. These findings indicate that discourse topicality competes with local factors of the immediately preceding antecedent, unless the wider discourse (genre-specific knowledge of famous protagonists) interferes with these structural constraints.

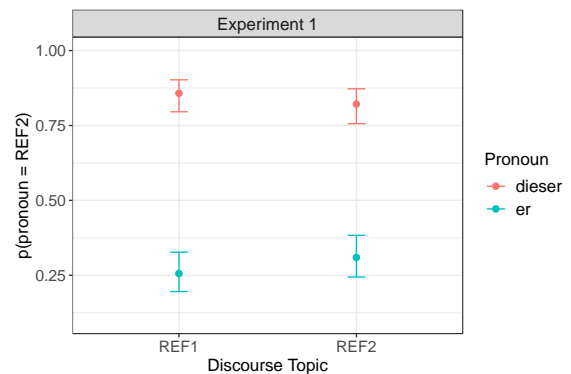
Experiment 1: Material (discourse topic in bold; pronoun underlined>. Original items were German)

- (1)/(2) Hastily, **the villain** ran along Baker Street. **He** was sure that **he** was being followed. Finally, **his** years of endurance training would pay off. But at the end of the street, **he** realized that **he** was being set up and would not win the chase. With shaky knees, **he** ran toward the end of the street, where **he** was already expected. [**The villain**]_{NP1} immediately went after [**Holmes**]_{NP2}. He/D-Pron had already drawn his weapon.
- (3)/(4) Hastily, **Holmes** ran along Baker Street. **He** was sure that **he** was being followed. Finally, **his** years of endurance training would pay off. But at the end of the street, **he** realized that **he** was being set up and would not win the chase. With shaky knees, **he** ran toward the end of the street, where **he** was already expected. [**The villain**]_{NP1} immediately went after [**Holmes**]_{NP2}. He/D-Pron had already drawn his weapon.

Table 1: Results Exp 1

Example	Discourse topic	Pronoun	NP2 probability
(1)	NP1	Er	0.26
(3)	NP2	Er	0.31
(2)	NP1	Dieser	0.86
(4)	NP2	Dieser	0.82

Figure 1: NP2 probability, Exp 1



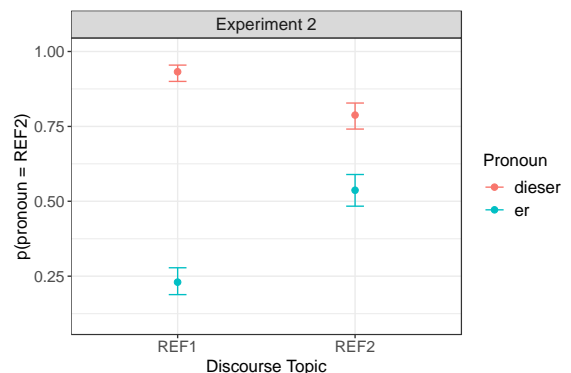
Experiment 2: Material (discourse topic in bold; pronoun underlined. Original items were German)

- (5)/(6) Hastily, **the impostor** ran along the avenue. **He** was sure that **he** was being followed. Finally, **his** years of endurance training would pay off. But at the end of the street, **he** realized that **he** was being set up and would not win the chase. With shaky knees, **he** ran toward the end of the street, where **he** was already expected. [**The impostor**]_{NP1} immediately went after [**the policeman**]_{NP2}. He/D-Pron had already drawn his weapon.
- (7)/(8) Hastily, **the policeman** ran along the avenue. **He** was sure that **he** was being followed. Finally, **his** years of endurance training would pay off. But at the end of the street, **he** realized that **he** was being set up and would not win the chase. With shaky knees, **he** ran toward the end of the street, where **he** was already expected. [**The impostor**]_{NP1} immediately went after [**the policeman**]_{NP2}. He/D-Pron had already drawn his weapon.

Table 2: Results Exp 2

Example	Discourse topic	Pronoun	NP2 probability
(5)	NP1	Er	0.23
(7)	NP2	Er	0.54
(6)	NP1	Dieser	0.93
(8)	NP2	Dieser	0.79

Figure 2: NP2 probability, Exp 2



References:

- [1] Bosch, P., Katz, G., & Umbach, C. (2007). The non-subject bias of German demonstrative pronouns. In Anaphors in Text: Cognitive, formal and applied approaches to anaphoric reference (pp. 145–164). John Benjamins.
- [2] Schumacher, P. B., Dangl, M., & Uzun, E. (2016). Thematic role as prominence cue during pronoun resolution in German. In Empirical Perspectives on Anaphora Resolution (pp. 213–240). De Gruyter.
- [3] van Dijk, T. 1977. Text and context. London: Longman.