

**Antecedent topicality affects the processing of both NP anaphors and pronouns**

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Topic continuity and grammatical subject antecedents are often claimed to be associated with the use of pronouns, while topic shifts and grammatical object antecedents are often linked with the use of fuller anaphors. Teasing apart the role of topic and subjecthood on subsequent anaphor processing is challenging because discourse topics tend to occupy the grammatical subject position. We conducted two visual-world experiments to test the unique effect of topic on processing noun and pronoun anaphors by using pre-sentential topicalizing adverbial phrases (e.g., "In his opinion, ..."), which have been shown to affect the processing of subsequent anaphors (Gordon et al., 1993).

In both experiments, participants heard three-sentence discourses in which Sentence 3 (the critical sentence) referred to a Target with either a definite NP or a pronoun (see sample items below). Both experiments used the same visual displays of four objects: Target (a woman with a purse), Interactor (a doctor), Distracter similar to the Target except in one distinctive feature (a woman with a hat but no purse), and an Unrelated item. Our main interest was in the effect of the topicalization manipulation in Sentences 1 and 2, which varied by experiment, on looks to the Target immediately after hearing the anaphor in Sentence 3, which was the same in both experiments.

Experiment 1 tested the effect of topicality on reference to grammatical subject antecedents. Sentence 1 established the Target as the topic by mentioning it in the subject position. Sentence 2 varied by condition. In the Compatible condition, the Target was both the topic and the subject. In the Incompatible condition, the topic shifted to the Interactor, but the Target appeared as the grammatical subject. A 2x2 ANOVA with factors Discourse-Condition and Reference-Form of the proportion of fixations to the Target at the 10 ms immediately after the anaphor revealed only an interaction the factors ( $F1(1,35)=4.17, p<0.05, F2(1,24)=3.96, p<.06$ ): For the noun anaphors, there were more looks to the Target in the Incompatible condition than the Compatible condition. For the pronouns, there were no differences between the conditions.

Experiment 2 tested the effect of topicality on non-subject antecedents. Sentence 1 established the Interactor as the topic by mentioning it in the subject position. Sentence 2 varied by condition. In the Compatible condition, the Interactor was both the topic and the subject. In the Incompatible condition, the topic shifted to the Target, but the Interactor appeared as the grammatical subject. An ANOVA similar to Experiment 1 found only a main effect of Discourse-Condition such that for both pronoun and noun anaphors, there were more looks to the Target in the Incompatible condition than the Compatible condition,  $F1(1,35)=12.12, p<.002, F2(1,23)=12.63, p<.002$ .

Our results show that antecedent topicality: (a) affects the processing of repeated anaphors but not pronouns with a grammatical subject antecedent (Exp1), (b) facilitates both repeated noun and pronoun anaphors to a non-subject antecedent (Exp2). Overall, this study shows that topicality can affect anaphor processing independently of subjecthood but its effects on repeated noun anaphors and pronouns and are not always complementary.

Experiment 1 (E1) sample item (\* - position of analysis time windows)

The woman with the purse yelled at the doctor about smoking in the hospital.

In *her/his* opinion, she should not have done that. (*Compatible/Incompatible*).

\* *The woman/she apologized to \* the doctor \* about the incident. (Noun/Pronoun).*

Experiment 2 (E2) sample item (\* - position of analysis time windows)

The doctor yelled at the woman with the purse about smoking in the hospital.

In *her/his* opinion, he had the right to do that. (*Incompatible/Compatible*).

\* *The woman/she apologized to \* the doctor \* about the incident. (Noun/Pronoun).*

Gordon P., Grosz B., Gilliom L. (1993). Pronouns, names and the centering of attention in discourse. *Cognitive Science*, 17, 311-347.