The goal of the present study was to investigate the interaction between coherence relations and information structure and the different predictions that they make for pronoun resolution. In particular, we used two questionnaire studies to elucidate if information structure (marked by means of the focus-sensitive particles even and only) would trigger the same expectations of an antecedent for a subsequent pronoun in a subordinate temporal clause as in an explanation. We assume that discourse representations that are constructed based on an utterance can trigger expectations about upcoming discourse. These expectations can then influence the comprehension as well as the production of pronouns. Based on earlier studies on cleft constructions (Colonna et al., 2010, 2012; de la Fuente & Hemforth, submitted), we predict that temporal subordinates (1) are expected to contribute to the backgrounded/presupposed part of an utterance. This should result in a dispreference for antecedents within the scope of the focus particle, i.e. a dispreference for John in (1,2). In line with the above assumptions, our results show that, when the pronoun is embedded in a temporal subordinate clause, participants select more often the antecedent outside the scope of the focus particle (Paul in 1,2). For causal relations (2), on the other hand, we assume that expectations depend on potentially missing or unspecified content (Altmann & Steedman, 1988; Bott & Solsted, forthcoming; Hemforth & Konieczny, 2004; Zeevat, 2009). Different expectations can be predicted here due to the semantic properties of even and only: Even seems to demand an explanation for the unlikely event of John, in addition to others, calling Paul. This explanation cannot easily be related to John, since, given the semantics of even, he is the least likely person to call Paul. The explanation should, therefore, provide information about Paul. Only, on the other hand, seems to demand an explanation for the exhaustiveness of the entity in its scope, that is, why John and nobody else is calling Paul. Crucially, in our data, while an anti-focus effect is observed for both focus particles in when-clauses, a similar effect can only be observed for because-clauses when the antecedent is in the scope of the focus particle even (i.e. a preference for explanations related to Paul), the opposite pattern is elicited for sentences with only (i.e. a preference for explanations related to John). These results are fully in line with the predictions of the missing-content account.

(1) Even/Only John called Paul when he…
(2) Even/Only John called Paul because he…

The present study

Previous research on the role of information structure in between-sentence pronoun resolution has shown that topic and focus play a major role in pronoun resolution as they render antecedents more accessible for a pronoun in a subsequent sentence (e.g. Arnold, 1999; Colonna et al., 2010, 2012; Cowles et al., 2007; Ellert, 2010). These results contrast, however, with findings on within-sentence pronoun resolution where focus, established by means of a cleft construction, seems to have the opposite effect (Colonna et al., 2010, 2012; de la Fuente & Hemforth, submitted): antecedent selections for an ambiguous pronoun decrease significantly when the potential antecedent is foregrounded by means of clefting. These results can be explained by a preference to interpret the subordinate clause as contributing to the presupposed/backgrounded part of the utterance. If this is true, the observed preferences against clefted antecedents should generalize to other focus constructions.

This prediction was put to the test in Experiment 1. For that, Experiment 1 asked if the same pattern of results observed in previous studies for cleft structures would arise when antecedents are

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focused by means of the focus-sensitive particles *even* and *only*. Thirty-seven English native speakers completed a sentence-interpretation task on Amazon’s Mechanical Turk in which they were asked to select an antecedent for an ambiguous pronoun in sentences like (3) where the pronoun is embedded in a subordinate temporal clause.

(3) a. Even / Only John called Paul when he was in the office.
   b. John called even / only Paul when he was in the office.
   PROMPT: ________ was in the office.

For both *even* and *only*, participants selected a subject antecedent significantly more often when the focus particle modified the object antecedent (*even*: 70%; *only*: 70%), and likewise, they selected an object antecedent significantly more often when the focus particle modified the subject antecedent (*even*: 70%; *only*: 75%; see Figure 1). In a separate Acceptability Judgment experiment (n=39 English native speakers) that employed disambiguated versions of the same materials, we found that sentences where the object was directly within the scope of these focus particles (3b) were less acceptable than sentences where the subject was in their scope (3a) (see Figure 1). In the experiment reported here, preference patterns were, however, similar for both constructions. The results of Experiment 1 are in line with previous findings on the role of clefting in pronoun resolution and indicate that the observed dispreference for focused antecedents also extends to other focusing devices.

In Experiment 2, we investigated if *even* and *only* would have the same effect on participants’ choices when there is a causal relation between matrix and subordinate clause (Kehler, 2002). Forty English native speakers completed a continuation task on Amazon’s Mechanical Turk in which they were asked to write an appropriate continuation for sentence onsets like (4). The experimental paradigm used in Experiment 1 could not be applied here given the difficulty of creating fully ambiguous *because*-clauses.

(4) a. Even / Only John called Mary because…
   b. John called even / only Mary because…

A total of 81% of the continuations contained pronouns that unambiguously referred to either antecedent and could thus be taken into account for subsequent analyses. The results show that, for sentences with *even*, participants had a robust preference for the antecedent that was outside the scope of the focus particle (subject antecedents: 35% for *even*+subj; 70% for *even*+obj; see Figure 3), in line with the results of Experiment 1. Critically, however, for sentences with *only*, participants showed a clear preference for the antecedent that was within the scope of the focus particle (subject antecedents: 60% for *only*+subj; 40% for *only*+obj). These results are fully compatible with our predictions. We suggest an explanation of our results based on Zeevat’s (2009) proposal on expectedness violations: Explanations are anticipated whenever expectations are violated. When the subject is in the scope of the focus particle, like in (4a), *only* violates the expectation of, for example, others but *John* calling *Mary*, so that the exhaustiveness of only *John* calling needs to be explained (i.e. there is a preference for an explanation related to *John*). *Even* violates the expectation that, for example, only people likely to call *Mary* will do so. It, thus, demands an explanation of what property of *Mary* makes even unlikely people call her (i.e. there is a preference for an explanation related to *Mary*). The same line of argumentation holds when the object antecedent is in the scope of the focus particle, like in (4b).

Conclusions

The results of Experiment 1, combined with the results from previous studies, suggest that in within-sentence pronoun resolution there is a general dispreference for focused antecedents, regardless of whether they are focused by means of a cleft construction or a focus-sensitive particle (recent data from Spanish suggest, however, that this effect is only cross-linguistically stable for *only*). We propose that speakers/readers expect temporal subordinate clauses to contribute to backgrounded/presupposed
information and not to focused information. It is this expectation that makes antecedents outside the scope of the focus particle more accessible. The results of Experiment 2 indicate that these effects actually depend on the coherence relations holding between the clauses where the pronominal dependency is established, since antecedent preference for causal relations seems to depend on the kinds of explanations possibly triggered by incomplete discourse representations (or expectedness violations, as in Zeevat, 2009). We argue that even and only trigger specific demands for explanations similar to those triggered by implicit causality verbs (Bott & Solstad, forthcoming), which need to be filled to not leave missing content unspecified. In order to account for potential limitations due to the implementation of two different experimental paradigms, we are currently conducting a continuation experiment varying coherence relations (when vs. because) and focus particles (even vs. only) in the same experiment. And although the exact time course of the effect of expectations on pronoun resolution is not central to our current research questions, we are also in the process of setting up eye-tracking reading and visual-world studies that would tap directly into online processes.

References