Topics take wide scope: an empirical test of a theoretical claim

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Questions, such as (1) can be ambiguous between allowing a surface scope reading, as evidenced by the answer in (1a), in which there is a single assignment that every student completed, or an inverse scope reading (1b), corresponding to pairings of students and their individual assignments.

(1)   Which assignment did every student complete?
    a.   The semantics assignment.   *Surface scope*
    b.   John completed the semantics assignment, Jane completed the syntax assignment, and Mary completed the phonology assignment.   *Inverse scope*

Multiple factors affect the availability of inverse scope including the structural position of the quantifier (Agüero-Bautista, 2001; Chierchia, 1993; May, 1985), its semantics (Beghelli & Stowell, 1997), as well as the semantics of an interacting *wh*-phrase. In this paper, we explore the relationship between information structure of a question and the availability of inverse scope. According to Krifka (2001), only constituents that are topics can take inverse scope, while focused phrases are unable to do so. Eilam (2011) following the information structure analysis of Lambrecht (1996) extended Krifka's proposal to treatment of quantifiers not only in declarative sentences but in questions as well.

From the empirical side, there is additional evidence suggesting that factors beyond pure grammatical structure are at play when regulating access to inverse scope readings. Achimova et al. (2013) reported that at least 30% of speakers in their original experiment allowed inverse scope in situations where theories predicted it to be unavailable. This latter observation suggests that there might be contextual factors that interact with scope: apparently, some speakers were able to construct an event representation that allowed for an inverse scope reading. Here, we make an attempt to experimentally assess the role of topic-focus structure of a question and its effect on scope disambiguation.

In the course of the experiment, subjects view a story that makes both inverse and surface scope readings true at different time slices. We then offer participants a question and an answer to that question, such as in (1). Each question appears with only one answer. Subjects use a slider to evaluate how acceptable they find that answer. We evaluate whether different discourse manipulations, such as adding a topic statement, or changing the way we present characters, affect the availability of inverse scope.

The data confirm that speakers find some inverse scope readings possible despite the structural considerations that should rule out such readings. On the other hand, adding an explicit topic statement "This was a story about ... " was not sufficient to elevate the acceptance of inverse scope readings to the level of surface scope. We speculate what other pragmatic factors might affect the choice of scopal readings in questions. From a cognitive perspective, we are interested in working out a linking hypothesis that connects information structure of a sentence and the structure of the underlying event representation (Butz & Kutter, 2017).

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