

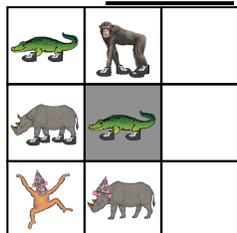
Pragmatic narrowing in reference resolution: Domain restriction & perspective taking

Florian Schwarz (University of Pennsylvania) & Dan Grodner (Swarthmore College)

florians@ling.upenn.edu

Comprehenders have to juggle various types of contextual information, on top of the literal meaning expressed, such as that coming from Perspective Taking (PT) and Domain Restriction (DR). PT involves differentiating shared information from information that is only available to the listener (privileged ground). Some researchers have argued that comprehenders are initially ego-centric, failing to distinguish shared from privileged ground, and others that they are distinguished right away (Barr 2008; Brown-Schmidt & Hanna 2011). Domain restriction involves restricting the set of individuals under consideration: *The desk is covered with books* is normally understood to be implicitly restricted so as to pick out the contextually unique desk. DR can be seen as arising from a Question Under Discussion (Roberts 1996), which encodes the purpose of the ongoing exchange. The question of the processing time-course of DR is parallel to the case of PT: are incoming linguistic expressions initially evaluated literally, independently from contextual considerations, or are contextual constraints immediately applied? An additional question is whether or not DR and PT are different facets of the same underlying process of social coordination, or whether they draw, at least in part, on separate resources.

Methods. Subjects played a game where animal figures with accessories were moved about a 3x3 grid, with a goal of minimizing the number of adjacent animals with like accessories. A sample initial display is shown on the left. A confederate director provided instructions to a participant matcher. The matcher heard the instructions in another room via headphones. Privileged ground was indicated by shading parts of the subject's display gray (they were blocked on the director's screen). Most trials involved actual live reasoning by the director, but critical instructions were pre-recorded, as in (1).



No-DR/Hidden display from the matcher's perspective

(1) *Ok, let's start by dealing with the **boots**. Move the alligator*
{**Hidden**: \emptyset / **Not-Hidden**: on the top left} to the bottom right.

The competitor (the middle alligator) had the same accessory as the target in the **No-DR** condition, but a different one in the **DR** condition. Thus the context sentence potentially eliminated the competitor from consideration in the **DR** condition. The perspective conditions were **Hidden** vs. **Not-Hidden**. This resulted in a 2x2 interaction design.

Results: Analyses were carried out on the eye movements of 26 participants. Elogit-transformed proportions of looks to the competitor as well as target advantage scores were modeled with mixed effects regression. Both the **DR** and **PT** conditions exhibited significantly more looks to the target relative to the base-line (**No-DR:NotHidden**) within 200ms. Interestingly, there were significantly more looks to the competitor in the **No-DR:Hidden** condition than in the **DR:Not-Hidden** condition suggesting that DR may be more powerful than PT. Further, there were marginally fewer looks to the competitor in **DR:Hidden** versus **DR:Not-Hidden** 600-800ms after animal onset. Thus PT helped identify the target even when DR was operative.

Discussion: Immediately upon hearing *the alligator*, subjects do **not** go through a phase of indiscriminately looking at any visually present alligator. When the context narrowed the DR to a specific accessory, attention is restricted to the alligator with that accessory. Similarly, if the competitor is in privileged ground, fixations are biased towards the shared ground alligator. Interestingly, the former effect is stronger than the latter, suggesting that the processes involved are not completely identical. The results argue against an initial egocentric processing stage and suggest that comprehension is immediately relativized to considerations about the state of the discourse, including the perspective of the speaker and the shared goal structure reflected in the Question Under Discussion that shapes DR.

