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## The Influence of Direct and Indirect Speech on Mental Simulations

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It is well-known that people form mental simulations of a described situation to understand language (e.g., Johnson-Laird, 1983; Morrow, Greenspan, & Bower, 1987; van Dijk & Kintsch, 1983; Zwaan & Radvansky, 1998). However, little is known about the quality of these representations for different types of language (Yao, Belin, & Scheepers, 2011). For example, we know that people perceive direct speech (e.g., *John said: 'I had a horrible day at the office'*) as more vivid and perceptually engaging than indirect speech (e.g., *John said that he had a horrible day at the office*). Does this also influence how the described situations are mentally represented? We address this issue in the current research. More specifically, we investigate whether the use of direct versus indirect speech quotations influences the accessibility of described objects in the situation. These objects could be present in the communicative situation (i.e., the situation in which the conversation takes place) or the referential situation (i.e., the situation that is talked about). Given that direct speech is perceived as more vivid than indirect speech, we hypothesized that objects that are mentioned in a direct speech quotation should be more accessible than objects mentioned in an indirect speech quotation. This hypothesis is consistent with the finding by Yao and Scheepers (2011) that readers are more likely to engage in perceptual stimulations of a situation related in direct speech as compared to indirect speech. This suggests that direct speech has greater power to change the perspective from the communicative situation to the referential situation than does indirect speech. Conversely, we might expect therefore that objects from the communicative situation become less accessible after direct speech than after indirect speech.

Participants were recruited online through Amazon's Mechanical Turk (<http://www.mturk.com>). They read a story, sentence by sentence, that contained speech quotations of which we manipulated speech (*direct* vs. *indirect*). After some sentences, that always included direct or indirect speech, a target word appeared on the screen. This word described an object that was either present in the communicative situation, in the referential situation, or not at all (filler). Participants were instructed to indicate whether this object was mentioned in the story they just read (*yes/no*). Reaction times were recorded. We hypothesized that the use of direct speech makes objects more accessible than the use of indirect speech. Therefore, we expected that reaction times to words present in the communicative situation would be shorter than reaction times to words present in the referential situation. A reversed effect regarding reaction times was expected after the use of indirect speech.

In Experiment 2, we used a task developed by Vandenberg, Eerland, & Zwaan (2012), in which subjects first saw a picture of an object at 50% transparency, read a story, and then saw two versions of the picture side-by-side at 45% and 60%, respectively (for the experimental stories). Their task was to indicate which of the pictures they had seen before. Vandenberg et al. found that this task can be used to assess the strength of the visual representation of an object in the mental simulation. We will discuss the implications of the results in the context of mental simulation and narrative conventions.

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