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Semantic versus numeric priming and the consider-the-opposite strategy: Comment on Adame (2016)

Nathan N. Cheek

Wellesley College, 106 Central Street, Wellesley, MA 02482, USA

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ABSTRACT

In a recent study, Adame (2016) demonstrated that training people to use the consider-the-opposite strategy can successfully reduce anchoring effects. In this commentary, I reconsider the implications of Adame's results and argue that although they do not provide additional evidence for the Selective Accessibility Model, they do reveal the effectiveness of the consider-the-opposite strategy for reducing anchoring effects that result from both semantic and numeric priming.

1. Introduction

Since Tversky and Kahneman's (1974) initial introduction of the standard anchoring paradigm, anchoring—the tendency for people's numerical judgments to assimilate to previously considered values—has been the subject of substantial empirical attention (for a review, see Furnham & Boo, 2011). In a recent article, Adame (2016) demonstrated that training people through a computer task to use the consider-the-opposite strategy can successfully reduce anchoring effects. In this commentary, I reconsider the implications of Adame's results and argue that although they do not provide additional evidence for the Selective Accessibility Model (e.g., Strack & Mussweiler, 1997), they do reveal the effectiveness of the consider-the-opposite strategy for reducing anchoring effects that result from both semantic and numeric priming.

2. Semantic priming and the consider-the-opposite strategy

The standard anchoring paradigm consists of two sequential questions: an initial, comparative question containing the anchor value (e.g., "Is the Mississippi River longer or shorter than 200 miles?") followed by a question asking participants to make an estimate of a target value (e.g., "How long is the Mississippi River?"). Several theoretical accounts have been proposed to explain anchoring effects (e.g., Dowd, Petrocelli, & Wood, 2014; Frederick & Mochon, 2012; Simmons, LeBoeuf, & Nelson, 2010; Tversky & Kahneman, 1974; Wong & Kwong, 2000), including the Selective Accessibility Model (SAM; Chapman & Johnson, 1999; Mussweiler & Strack, 1999, 2000; Strack & Mussweiler, 1997). According to the SAM, anchoring occurs because in order to answer the comparative question, participants test the hypothesis that the anchor value is correct (Mussweiler & Strack, 1999; Strack & Mussweiler, 1997). Because people test hypotheses by seeking information to confirm them (e.g., Wason, 1960), the process of answering the comparative question through a hypothesis test activates anchor-consistent information, which then becomes more accessible to participants (e.g., Mussweiler & Strack, 2000). When participants subsequently make an absolute estimate, they are more likely to consider the semantically primed, anchor-consistent

E-mail address: nathan.n.cheek@gmail.com

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information and less likely to consider anchor-inconsistent information (e.g., Higgins, 1996), which then leads their estimates to assimilate to the anchor value.

Because, according to the SAM, anchoring occurs due to the selective activation of anchor-consistent information, Chapman and Johnson (1999) and Mussweiler, Strack, and Pfeiffer (2000) hypothesized that encouraging participants to explicitly consider anchor-inconsistent information would counteract anchoring. For instance, in one study (Mussweiler et al., 2000), participants first answered a comparative question about the odds that a particular political candidate would win an election. Some of the participants then immediately made an absolute estimate of the odds, whereas others first adopted the consider-the-opposite strategy by listing reasons why the anchor value was relatively inaccurate. Mussweiler et al. found that this consider-the-opposite strategy was effective: anchoring effects were weaker when participants considered anchor-inconsistent information before providing an absolute estimate. Thus, according to the SAM, the comparative question semantically primes anchor-consistent information as the result of a biased hypothesis test, and the consider-the-opposite strategy mitigates anchoring by making anchor-inconsistent information available in addition to the already available anchor-consistent information.

3. Numeric priming

Note that the SAM posits that anchoring occurs because the knowledge activated by the comparative question is used by participants to make a subsequent estimate; accordingly, a semantic priming account of anchoring predicts that anchoring should only occur when the object of the comparative question and the object of the absolute estimate are the same (e.g., the Mississippi River). If, for example, participants were asked to estimate the length of the Mississippi River after answering a comparative question about the weight of a tiger, the SAM would predict that no anchoring effects should emerge, because the tiger-relevant information activated by the confirmatory hypothesis test in response to the comparative question would not be used by participants to make an estimate about a different object—in this case, the Mississippi River.

It turns out, however, that anchoring actually can occur even when the object of the comparative question differs from that of the absolute estimate. For example, Wong and Kwong (2000) found anchoring effects even when participants made an absolute estimate of the mean winter temperature of Singapore after answering a comparative question about Hong Kong. Wong and Kwong suggested that, in addition to activating anchor-consistent information, the comparative question can also lead to numeric priming, such that when participants make the absolute estimate, the anchor value and nearby numbers are more likely to be considered as potential responses (Wong & Kwong, 2000; see also Critcher & Gilovich, 2008; Englich, 2008; Wilson, Houston, Etling, & Brekke, 1996). That is, in contrast to the SAM, which posits that confirmatory hypothesis testing mediates subsequent semantic priming, numeric priming accounts propose that, at least in some cases, the anchor in the comparative question simply activates the anchor value and nearby numbers, without any hypothesis testing or related process (Wong & Kwong, 2000; cf. Wilson et al., 1996).

Indeed, Wilson et al. (1996) argued that "If people pay at least a minimal amount of attention to completely arbitrary numbers, these numbers can anchor numerical answers to unrelated questions, even when there is no logical reason for people to use the numbers" (p. 401). Critcher and Gilovich (2008), for example, found that participants reported that they would be willing to pay more for a dinner at a fake restaurant named "Studio 97" than at a fake restaurant named "Studio 17", apparently because the arbitrary number in the restaurant name primed their subsequent estimates. In fact, Mussweiler and Englich (2005) even showed that subliminal presentation of numbers can influence subsequent estimates. Hence, both semantic and numeric priming can lead to anchoring effects, but a confirmatory hypothesis search is only predicted by the SAM, not by numeric priming accounts (Mussweiler & Strack, 1999; Strack & Mussweiler, 1997; Wong & Kwong, 2000).

4. Adame's study and the utility of the consider-the-opposite strategy

In summary, when the object of the comparative question is different from that of the absolute estimate, it is unlikely that semantic priming causes anchoring, given that available anchor-consistent information is unlikely to be drawn upon by participants when they make the absolute estimate. This is the case in Adame's (2016) study: participants first answered a comparative question about either the capacity of an average swimming pool or the average number of passengers on a plane, after which they estimated how many objects were in a container. As a result, the anchoring effects in this study are better explained by numeric priming than by semantic priming—participants likely did not use available information about swimming pools and airplanes to estimate the number of objects; rather, they likely drew on primed numeric values to make their estimates.

Thus, I disagree with Adame's (2016) interpretation of the results as additional evidence for the SAM, because semantic priming as a result of a biased hypothesis test is unlikely to account for the observed anchoring effects.[1] Instead, Adame's results provide additional evidence for the numeric priming account of anchoring, which is particularly noteworthy because past research has cast doubt on the reliability of numeric priming (e.g., Brewer & Chapman, 2002; Newell & Shanks, 2014).

[1] There is, however, ample evidence for the role of semantic priming in anchoring from other sources (e.g., Bahník & Strack, 2016; Chapman & Johnson, 1999; Englich & Soder, 2009; Ma, Li, Shen, & Qiu, 2015; Mussweiler, 2003; Mussweiler & Strack, 1999, 2000; Strack & Mussweiler, 1997).

Perhaps more importantly, Adame (2016) has shown that the consider-the-opposite strategy, which was previously believed to reduce only semantic priming (Chapman & Johnson, 1999; Mussweiler et al., 2000), can also effectively counteract numeric priming. This represents an important contribution to the literature on the debiasing of anchoring effects (e.g., Aczel, Bago, Szollosi, Foldes, & Lukacs, 2015; Morewedge et al., 2015) and underlines the broad utility of the consider-the-opposite strategy. Future research should continue to explore the mechanism(s) through which considering anchor-inconsistent information offsets numeric priming, but, for now, Adame's study has revealed not only the reliability of numeric priming as a cause of anchoring, but an effective and teachable way to counteract it as well.

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