

# Big Raccoons and Small Giraffes: Anchoring in Sequential Judgments

Daniel Mochon, Massachusetts Institute of Technology, USA  
Shane Frederick, Massachusetts Institute of Technology, USA

## EXTENDED ABSTRACT

Ever since Tversky and Kahneman (1974) showed that irrelevant anchors can affect judgments, researchers have investigated the boundary conditions of this effect. Most research since then has focused on the original paradigm, where people are asked to make an explicit comparison between the object being judged and some (arguably) irrelevant anchor (Jacowitz and Kahneman, 1995; Strack and Mussweiler, 1997). More recently, researchers have also looked at situations where the anchor is self generated as an approximate, but incorrect benchmark for the requested judgment (Epley and Gilovich, 2001). Although both of these procedures have produced consistent anchoring effects, the range of circumstances under which numbers in the environment affect people's estimates is still unknown. Some studies have argued that simply writing down a number 35 times (Wilson, Houston, Etling, and Brekke, 1996), or even being exposed to it subliminally (Mussweiler and English, 2005) can cause anchoring, while others have argued that such effects are weak and hard to replicate (Brewer and Chapman, 2002).

In this research, we explore the extent of anchoring in a common situation—when respondents render multiple judgments sequentially, as they do in many surveys. Suppose, for example, respondents were asked to estimate the weight of an average adult giraffe. Will the giraffe then be judged as being lighter or heavier if they also first estimated the weight of an adult raccoon? Suppose further that another group estimated the weight of both a raccoon and a wolf before judging the weight of a giraffe. Would this matter? What would be the direction of the effect? This particular form of anchoring has not been well explored in the literature. Moreover, the effect of more than one anchor is rarely examined, even though in most situations people commonly make multiple judgments.

In the first study, we tested whether judgments to previous questions can anchor subsequent ones. We presented participants with questions of objective quantities (such as the weight of an average adult giraffe), and manipulated the number of estimates preceding the target question. In one condition, the target question appeared alone. In a second, it was preceded by an estimate of a related but lesser entity (e.g., the weight of an average adult raccoon). In a third condition, it was preceded by a question asking for the estimate of a medium entity (e.g., the weight of an average adult wolf). In the fourth condition estimates of both the smaller and medium entities preceded the target judgment. We found across various domains that previous questions function as anchors of subsequent ones. The judgments of the target questions were assimilated towards the previous judgments. We also found that the effect was larger when the target judgments were preceded by both the small and medium judgment than when preceded by either the small or medium judgments alone, suggesting that multiple prior judgments can amplify the effect.

In study 2, we tested whether target judgments are anchored on preceding judgments unrelated to the target domain. For example, prior to the giraffe judgment, respondents were asked to estimate the number of states east of the Mississippi, and the average lifespan of a Japanese woman (which yield similar estimates as the weights of a raccoon and wolf respectively). We found that simply producing smaller numbers in preceding responses does not cause anchoring. We also tested whether the effect was produced by conceptual priming apart from produced responses. For example, prior to the giraffe judgment, respondents were shown pictures of a raccoon

and a wolf, and were asked to identify them. Our results showed that it is also not sufficient to merely group the giraffe with the smaller animals. It appears instead that both conditions are necessary—preceding judgments must be made and those judgments must have conceptual similarity to the target domain. This restricts the set of circumstances in which we should expect anchoring in surveys, although the remaining subset is still pretty large.

These findings have important implications for the anchoring literature as well as for survey research in general. They add to the growing literature showing that anchoring effects are much more prevalent than previously thought. Even though there was no explicit comparison with the previous judgments, the target judgments were assimilated towards them. The results also demonstrate that anchoring effects extend beyond the immediately preceding judgment to even earlier ones. This finding poses a challenge for the existing theories that try to explain the anchoring effect. More generally, these studies suggest the existence of an important consideration in survey design that is often overlooked.

## References

- Brewer, Noel T. and Gretchen B. Chapman (2002), "The Fragile Basic Anchoring Effect," *Journal of Behavioral Decision Making*, 15, 66-77.
- Epley, Nicholas and Thomas Gilovich (2001), "Putting Adjustment Back in the Anchoring and Adjustment Heuristic: Differential Processing of Self-Generated and Experimenter-Provided Anchors," *Psychological Science*, 12 (5), 391-396.
- Jacowitz, Karen E. and Daniel Kahneman (1995), "Measures of Anchoring in Estimation Tasks," *Personality and Social Psychology Bulletin*, 21 (11), 1161-1166.
- Mussweiler, Thomas and Birte English (2005), "Subliminal Anchoring: Judgmental Consequences and Underlying Mechanisms," *Organizational Behavior and Human Decision Processes*, 98 (2), 133-143.
- Strack, Fritz and Thomas Mussweiler (1997), "Explaining the Enigmatic Anchoring Effect: Mechanisms of Selective Accessibility," *Journal of Personality and Social Psychology*, 73 (3), 437-446.
- Tversky, Amos and Daniel Kahneman (1974), "Judgment Under Uncertainty: Heuristics and Biases," *Science*, 185, 1124-1131.
- Wilson, Timothy D., Christopher E. Houston, Kathryn M. Etling and Nancy Brekke (1996), "A New Look at Anchoring Effects: Basic Anchoring and its Antecedents," *Journal of Experimental Psychology: General*, 125 (4), 387-402.