Research Dialogue

Anchoring unbound

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Abstract

An attitudes and persuasion perspective can broaden our understanding of anchoring by highlighting sources of variability in anchoring effects that have been largely overlooked. As the target article suggests, research guided by this perspective can help identify (1) different types of anchors that exert their influence through different underlying mechanisms, 2) important social psychological moderators of anchoring effects, and 3) sources of variability in the consequences of anchoring for judgment and choice. In this commentary, we take an even broader perspective on the types of anchors that are likely to influence judgment, suggesting four potentially distinct types—intuitive approximations, best/worst case scenarios, environmental suggestions, and magnitude priming. We conclude by discussing how an attitudes and persuasion perspective on anchoring may provide novel insights into the moderators and consequences of anchoring effects in everyday life.
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We applaud Wegener, Petty, Blankenship, and Detweiler-Bedell's effort to broaden the study of anchoring by approaching the subject from an attitude and persuasion perspective. The main benefit of this broader perspective is that it brings into view sources of variability in anchoring effects that have so far been largely ignored: variability in the kinds of anchors that influence judgment, variability in processes that give rise to anchoring effects, variability in the contexts in which anchoring effects are likely to be elicited, and variability in the consequences of anchoring that go beyond an immediate influence on numerical judgment.

This broader perspective on anchoring marks a third wave of research on anchoring, one that we think is very promising. The first wave, starting with Tversky and Kahneman's (1974) inclusion of anchoring as one of three basic heuristics in intuitive judgment, sought to establish whether anchoring was unambiguously a bias in judgment. Ever more extreme steps were taken to insure that the anchor values could not be taken as useful hints to the correct answer. We consider this wave now over. No normative model would maintain that such transparently random numbers as the outcome of a spinning wheel (Tversky & Kahneman, 1974), one's telephone number (Russo

& Shoemaker, 1989), or the last two numbers in one's social security number (Ariely, Loewenstein, & Prelec, 2003) should influence judgment.

The second wave of research was a constructive attempt to identify the psychological mechanism responsible for anchoring. This wave is still moving, as not just one but several mechanisms appear to produce anchoring effects in different contexts. These include confirmatory hypothesis testing (Chapman & Johnson, 1994; Strack & Mussweiler, 1997), numeric or magnitude priming (Wong & Kwong, 2000; Oppenheimer, Leboeuf, & Brewer, 2008), and insufficient adjustment (Tversky & Kahneman, 1974; Epley & Gilovich, 2001). An attitudes and persuasion perspective does not seem to add to this second wave of research because it does not identify what the underlying mechanisms might be in different contexts, but it does make predictions about the consequences of more and less elaborate processing. Different effects of high and low elaboration might signify different underlying mechanisms, as Wegener et al. suggest, but such differences could also reflect the effects of more or less elaboration on the very same underlying mechanism. It is not clear in the experiments described by Wegener et al., for instance, whether participants under high versus low cognitive load are simply engaging in less of the same selective accessibility process or if they are engaging in a fundamentally different process.

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The third wave of anchoring appears to be building, one that adopts a broader perspective on the phenomenon (or phenomena) and unbinds anchoring from the dominant experimental paradigm that has been used to study it. This third wave considers anchoring in all of its everyday variety and examines its various moderators in these diverse contexts. This is where we believe an attitudes and persuasion perspective is likely to have the most constructive impact, as this perspective naturally focuses on the social context in which anchors arise and makes predictions not only about the extremity of a given judgment, but about its durability as well. Wegener et al.'s target article left us with little to criticize about their general approach. We think it is both promising and overdue. Instead, it left us interested in trying to expand their contribution by suggesting three ways in which anchoring research might broaden further in the coming years: (1) by analyzing more systematically the different types of anchors that occur in everyday life, (2) by identifying important contextual moderators of anchoring effects, especially social moderators, and (3) by considering a wider variety of consequences of anchoring beyond an immediate influence on the extremity of a given judgment. We consider the first of these in some detail in this commentary, and then describe the last two in closing.

Varieties of anchors

Tversky and Kahneman (1974) argued that anchoring effects could explain a variety of existing biases in judgment, such as the tendency to overestimate conjunctive events and underestimate disjunctive events (Bar-Hillel, 1973), and the tendency to draw overly narrow confidence intervals around predictions (now referred to as overprecision, Moore & Healy, 2008). More important, they also identified two novel demonstrations of anchoring, one that has dominated research on the subject for more than 30 years and one that few people appeared to notice. The former is the two-step procedure, targeted exclusively by Wegener et al., in which people are first asked whether the correct answer to a question is more or less than an anchor value (e.g., is the height of Mt. Everest more or less than 50,000 ft?) and are then asked to provide the actual estimate (e.g., what is the *actual* height of Mt. Everest). The relatively unnoticed demonstration was to have participants estimate the solution to 8!, presented either in ascending ($1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$) or descending order ($8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$). Estimates in the ascending condition were considerably smaller than estimates in the descending version, presumably because people's first few calculations served as an anchor.

Notice that the anchor values in these two paradigms bear little relation to each other. The anchor value in the standard paradigm is provided by an external source in the context of an explicit comparison, whereas the anchor value in the 8! task is generated by participants themselves as an initial starting point that is in need of some final adjustment. The standard anchoring paradigm is therefore analogous to persuasion contexts in which a strong argument is presented for people's explicit consideration in the attempt to elicit agreement and alter people's attitudes. The 8! problem is not at all like a persuasion context,

but we believe it is like many judgments in everyday life in which people do not know the answer to a given question but know something close that can be used as a starting point. People may not know the likely selling price of their own house but may know the selling price of the nicer house next door. People do not know the closing value of tomorrow's stock market, but do know today's closing value. And people may not know when they are likely to complete an important project, but know when they plan to complete it.

Anchor values in everyday life come in different varieties, and these varieties matter because they may be guided by different underlying mechanisms, some of which are likely to be high-elaboration processes (such as elaborated versions of selective accessibility) and others relatively low-elaboration processes (such as numeric priming). We think it would be productive to apply the attitudes and persuasion perspective to these different forms of anchoring as well. To help this effort along, we delineate some of the very different types of anchors to which this perspective might be applied.

Intuitive approximations

Anchoring was originally proposed by Tversky and Kahenman as a heuristic used in judgment—an intuitive strategy that substitutes a rather simple calculation in place of a more laborious, complicated, or perhaps even impossible one. Anchoring is likely to operate as such a heuristic in domains in which people can quickly generate a response that they know is close to the correct answer, but off the mark and in need of adjustment or correction to arrive at the correct value. These intuitive approximations are generated by participants themselves rather than provided by an external source. More important, these values are known to be wrong from the beginning and are therefore unlikely to activate the selective accessibility process that appears to guide anchoring effects in the standard anchoring paradigm. Except for dedicated readers of the anchoring literature, few Americans are likely to know when George Washington was elected President of the United States, but most know that the U.S. declared its independence in 1776 and that Washington must have been elected not long after that. These "self-generated anchors," as we have called them to contrast them with the externally-provided anchors in the standard anchoring paradigm (Epley & Gilovich, 2001), appear to produce anchoring effects through a process of (insufficient) adjustment as people move from the intuitive approximation to consider values ever further from the initial anchor until they find a plausible response, at which point they stop adjusting (Epley & Gilovich, 2004; Quattrone, Lawrence, Finkel, & Andrus, 1981). Because adjustment stops once people reach the realm of values they find plausible, their final estimate is likely to be biased in the direction of the initial anchor value (Epley & Gilovich, 2006). This would be considered a high elaboration process, and sure enough, anchoring effects involving these self-generated anchors are diminished when people lack the motivation or mental capacity to engage in such mental effort (Epley & Gilovich, 2005).

Similar intuitive approximations or self-generated anchors have been proposed as components of a variety of social

psychological assessments, including perspective taking (Epley, Keysar, Van Boven, & Gilovich, 2004), dispositional inference (Gilbert, 1989), and affective forecasting (Gilbert, Gill, & Wilson, 2002), among others (Epley, 2004). An attitudes and persuasion perspective on these kinds of anchors would predict larger anchoring effects in domains in which people feel they have some expertise, and therefore find themselves to be highly credible sources, but weaker in domains in which people feel they are relatively ignorant. Estimates derived from these sorts of intuitive approximations should also be relatively durable because of the high elaboration involved in the adjustment process.

Best- and worst-case scenarios

We were unsure how long it would take to write this commentary, but we could generate a best-case scenario relatively easily and adjust in a pessimistic direction to accommodate the inevitable delays in our best-laid plan. We succumbed, as people commonly do, to the planning fallacy and still underestimated how long it would take to finish (Buehler, Griffin, & Ross, 1994). Interestingly, Tversky and Kahneman (1974) foreshadowed this "planning fallacy" when suggesting that people underestimate the likelihood of conjunctive events because they tend to anchor on the likelihood of an initial elementary event. "The general tendency to overestimate the probability of conjunctive events," they wrote, "leads to unwarranted optimism in the evaluation of the likelihood that a plan will succeed or that a project will be completed on time" (Tversky & Kahneman, 1974, p. 1129).

When making predictions, the most accessible outcome is often not the most likely event, but the one that is most emotionally evocative (Morewedge, Gilbert, & Wilson, 2005) or the one that is seen as most relevant to an individual's goals. When predicting the time to complete a project, for instance, people tend to focus on their good intentions rather than on their past behavior (Koehler & Poon, 2006). These good intentions can lead to the construction of a best-case scenario that serves as an initial anchor that is subsequently adjusted to arrive at a final prediction. In one experiment, for instance, participants induced to accept values earlier in the process of adjustment by making predictions while nodding their heads up and down made more optimistic predictions than participants who made their predictions while shaking their heads from side to side (Rosenzweig, Epley, & Gilovich, 2009). In domains in which the outcomes are generally positive, such best-case scenarios may serve as an initial anchor. Sometimes, of course, the nature of the estimation problem is such that it more naturally elicits a worst-case scenario that serves as an anchor that biases estimates in a pessimistic direction. Thus, participants in another experiment (Rosenzweig et al., 2009) who watched the famous footage of the Hindenberg crash and were asked to estimate the percentage of passengers who perished tended to overestimate the human carnage. But participants who were told they could earn a cash bonus if their estimate was particularly accurate made estimates that were indeed more accurate. This result is consistent with the proposition that participants anchored on a worst-case outcome ("no one could survive that") but then effortfully adjusted to take account of uncertainty—with the more motivated participants adjusting more.

Incidental anchors

Most of the estimating people do is not in the laboratory but out in the world, a world full of numbers. Speed limits. Sale prices. Addresses. Because people are unlikely to deliberate about any of these incidental numbers while estimating completion times, inflation rates, or calories, their influence on judgment—that is, their impact as anchors—is likely to be relatively small. But their effect is not always zero. In one study, participants said they would be willing to spend more for a meal at Bistro 97 than Bistro 17. In another, participants estimated that a higher percentage of global sales would occur in Europe for a P97 cellphone than a P17 (Critcher & Gilovich, 2008).

One would think that these incidental anchors would command no elaboration at all because they are understood to be completely unrelated to the estimation task at hand. But the context in which these incidental anchors are encountered might matter. An attitudes and persuasion perspective can be useful here. For example, might a p-17 offered by a high-prestige brand attract more processing than one from a low-prestige brand, increasing its impact on either the extremity or the durability of people's judgments?

Environmental suggestion

Although anchoring researchers are generally careful to avoid suggesting to participants via conversational norms (Grice, 1975) that an anchor value is a clue to the right answer, there is no doubt that such suggestion is a powerful influence on anchoring effects in everyday life, just as Wegener et al. suggest (see also Schwarz, 1994). The opening offer in a negotiation (Galinsky & Mussweiler, 2001), the sentence proposed by a lawyer in a criminal case (Englich & Mussweiler, 2001), or the asking price of a house (Northcraft & Neale, 1987) are all clearly suggestive of "the right" answer, and all produce reliable anchoring effects. The incidental environmental anchors discussed earlier do not require explicit consideration—the first stage in the standard anchoring procedure—and yet they still elicit anchoring effects. But other types of environmental anchors are not incidental and convey not-so-subtle hints at the "proper" response. For instance, supermarket shoppers bought more Snickers bars when a sign suggested they buy "18 for their freezer" than when it suggested they buy "some for their freezer" (Wansink, Kent, & Hoch, 1998). The similarity between these environmental suggestions and persuasion contexts, as Wegener et al. note in their discussion of conversational norms in the standard anchoring paradigm, is obvious. The credibility of the source of these environmental suggestions surely matters in terms of their impact on people's evaluations and behavior.

Magnitude priming

Perhaps the most generally applicable sort of anchoring effect in the existing literature is the demonstration that a general sense of large or small magnitude can be primed in one context and then influence people's estimates in another (Oppenheimer et al., 2008). In one study, participants were asked to reproduce three lines—a straight line, a squiggle, and an inverted U. Some reproduced 1-in. versions; others 3.5-in. versions. Those asked to reproduce longer lines subsequently made higher numerical estimates of a target value on an entirely different dimension—the average temperature in Honolulu in July. In another study, participants who reproduced the long lines were more likely to generate words synonymous with "large" (e.g., turning _ALL into TALL instead of FALL) than participants who reproduced the small lines. The key question that an attitudes and persuasion approach (or any contextual approach) can help address is when the initial task is likely to activate such a general notion of large or small magnitude and when it is likely to yield a mental representation that is tied so directly to the task at hand that no general notion of large or small is made accessible.

Concluding thoughts

An attitudes and persuasion perspective has the potential to broaden research on anchoring in a way that unbinds it from a concerted study of the standard anchoring paradigm and examines anchoring in all of its everyday variety. We have focused our comments on different varieties of anchoring to which an attitudes and persuasion perspective may be applied, but this perspective has the potential to broaden the study of anchoring in two other important ways as well.

The first is in the study of additional moderators of anchoring effects. Wegener et al. identified the credibility of an anchor's source and people's confidence in their on-going thoughts as plausible moderators of anchoring effects, but we suspect that other social factors may prove important as well. For instance, social status might influence the perceived credibility of an anchor value and its source, with high status people often granting others less credibility than low status people. A person's status may therefore influence the amount of elaboration on a particular anchor value. Social status is orthogonal to a person's expertise in many domains, and is central to nearly every social interaction in everyday life. It is also likely to be central to many domains in which anchoring effects have been shown to emerge, including negotiations, legal judgments, and medical decision-making. Considering the role of elaboration also highlights other social psychological factors that may be likely to influence anchoring, including *accountability*—that should influence the amount of elaborate processing (Lerner & Tetlock, 1999; Kruglanski & Freund, 1983); self-affirmation—that should increase confidence in one's own judgment and therefore influence the amount of elaboration on self-generated and externally-provided anchors (Sherman & Cohen, 2006); and even the mere presence of others—that should increase the tendency to utilize dominant or

default responses in judgment and behavior (Blascovich, Mendes, Hunter, & Salomon, 1999; Zajonc, 1965). Having established anchoring as a reliable and powerful phenomenon in judgment, these broader contextual moderators of anchoring are now important to consider.

The second way that an attitudes and persuasion perspective has the potential to broaden our understanding of anchoring is through the study of its consequences. Understanding the stability of attitudes is a central issue in the attitudes and persuasion tradition, and Wegener et al. apply insights from this perspective to the issue of the durability of anchoring effects (see also Mussweiler, 2001). Another component of the attitudes and persuasion research agenda has been to try to understand when attitudes predict behavior and when they do not. Generally, attitudes formed under high elaboration tend to predict behavior better than those formed under low elaboration. To date, anchoring as been studied as purely a phenomenon of judgment; investigators have largely just assumed that it can influence subsequent behavior, with very little research devoted to examining its actual behavioral impact. Although some existing research demonstrates that anchoring can indeed influence behavior (e.g., Wansink et al., 1998), such studies are notable exceptions. Now that anchoring research is being applied more and more to both consumer and policy domains, understanding its actual impact on choice becomes increasingly important. An attitudes and persuasion perspective provides clear guidance for this research agenda, an agenda that we think holds considerable promise.

The anchoring literature is now old enough that many summaries of its findings have appeared, nearly all of which highlight the importance of anchoring and its underlying processes for so many areas of life that matter for social psychology (e.g., Chapman & Johnson, 2002; Epley, 2004; Mussweiler, 2003). We think an attitudes and persuasion perspective on anchoring, sparked here by Wegener et al., is a way for social psychology to "give back" to the JDM community by identifying the ways in which anchoring is likely to be influenced by a broader social psychological perspective. This broadening is likely to keep anchoring researchers productive for many years to come.

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