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Making judgments in a two-sequence cue environment: The effects of differential cue strengths, order sequence, and distraction

Dipayan Biswas [a,*], Abhijit Biswas [b], Subimal Chatterjee [c]

[a] Bentley University, 238 Morison Hall, 175 Forest Street, Waltham, MA 02452, USA
[b] Wayne State University, USA
[c] Binghamton University, USA

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Abstract

Consumers frequently evaluate multiple sequential cues of varying strengths in order to draw inferences about a product's quality. The results of three experiments show that when consumers are not distracted, they judge a product's quality more favorably following a strong–weak cue sequence relative to a weak–strong sequence (a primacy effect). However once consumers are distracted from the evaluation task, the primacy effect reverses to a recency effect, whereby consumers judge a product's quality more favorably following a weak–strong cue sequence. Process tests suggest that distraction crowds consumers' short-term working memory and inhibits the spontaneous rehearsal and the subsequent recall of the cue presented first in the information sequence.

Suppose, while shopping for a vehicle at a car dealership a consumer comes across an unfamiliar brand of a navigational system. Upon asking for additional information, she first learns that the navigational system comes with a good warranty and, and after a while, she learns that the brand is highly reputed in the industry. Further, suppose that the consumer perceives a brand's reputation to be a stronger indicator of product quality relative to a brand's warranty. A potentially interesting question is whether the sequential order of these pieces of information or cues matters when the consumer makes a final judgment about the product's quality. That is, would the consumer's overall judgment of the navigational system be different if she learned about the stronger cue (e.g., brand reputation) first instead of last? Additionally, would we observe a different pattern of order effects if the consumer were distracted in her shopping task? In the present research, we attempt to provide answers to these questions.

We propose that, in a two-cue environment, a strong–weak cue sequence will result in a more favorable quality judgment of the product relative to a weak–strong cue sequence as long as the consumer is not distracted in her evaluation task. However, if distracted, the consumer will judge a product's quality to be superior following a weak–strong cue sequence relative to a strong–weak cue sequence. We build our hypotheses based upon prior work in the areas of order effects (e.g., Bond et al., 2007; Carlson, Meloy & Russo, 2006; Hogarth & Einhorn, 1992) and short-term working memory models (Atkinson & Shiffrin, 1968; Cowan et al., 2005). Our rationale is that the first cue in a sequence has more diagnostic power (i.e., more indicative of product quality) relative to the other cues that consumers see down the line since the other cues are no longer unique to the consumer (Basuroy, Desai, & Talukdar, 2006; Biswas & Biswas, 2004). Consequently, a strong–weak cue sequence should result in more favorable product quality judgment relative to a weak–strong cue sequence. However if the consumer is distracted, her short-term working memory will be "crowded" and inhibit her from spontaneously rehearing the cue presented first in the information sequence (Barrouillet, Bernardin, & Camos, 2004; Cowan et al., 2005; Saito & Miyake, 2004). To the extent that distractions make it harder for the consumer to remember the first cue, her product quality judgment will be more favorable if the stronger cue appears last (instead of first) in the cue sequence.

Our research has two important implications. First, from a theoretical perspective, by combining the order effects literature with the literature on short-term working memory, our research attempts to reconcile the conflicting findings in the extant research on cue-sequence order effects on product evaluations. For example, as discussed in the next section, one stream of

* Corresponding author.
E-mail address: dbiswas@bentley.edu (D. Biswas).

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research suggests that consumers put more weight on the cue they see first in the sequence, thereby favoring a strong–weak cue sequence (see Gürhan-Canli, 2003; Kruglanski & Freund, 1983). A second stream of research suggests that under certain conditions, consumers put more weight on the cue they see last in the sequence, thereby favoring a weak–strong cue sequence (see Johar, Jedidi, & Jacoby, 1997; Olsen and Pracejus 2004; Richter & Kruglanski, 1998). Finally, a third stream of research suggests that consumers are indifferent to whether a cue is put first or last in the sequence, thereby suggesting no difference between a strong–weak sequence and a weak–strong sequence (see Lopes, 1985; Shanteau, 1975). Our results suggest that the shift from giving greater weight to the first cue to giving greater weight to the last cue is likely to occur if the consumer is distracted enough that she is unable to rehearse the information content of the first cue, and hence subsequently have weakened recall of the first cue.

Second, from a managerial perspective, our research suggests that whether a marketer should present the most important piece of information first or last to the consumer is a tactical issue depending upon an accurate assessment of the distraction level of the target consumer. For example, recent research has shown that distracting consumers when they are sampling a food product (e.g., chocolates) actually increases the subsequent choice of the sampled food (Nowlis & Shiv, 2005; see also, Shiv & Nowlis, 2004). Our findings add to this research by suggesting that if consumers appear to be distracted from the shopping task, it is advisable to present the most important piece of information last, instead of first, to these consumers. Moreover, by using distraction tactics, marketers can also make it difficult for consumers to recall the characteristics of a competing product they might have seen earlier, and thereby get the consumers to think more favorably about the seller's own product.

Cue sequence and product judgments

Products consist of an array of cues that serve as surrogate indicators of quality (Monroe & Dodds, 1988; Olson, 1973; Richardson, Dick, & Jain, 1994). Research classifies cues as either extrinsic or intrinsic to the product (Richardson et al., 1994). Extrinsic cues, such as brand reputation, warranty, price and advertising spending, are not part of the physical product, whereas intrinsic cues, such as the product ingredients and taste, relate to physical attributes of the product (Miyazaki, Grewal, & Goodstein, 2005; Richardson et al.). The present research focuses on extrinsic cues because we are interested in studying how consumers make inferences about a target product's quality based upon the cues they see in the marketplace. Among extrinsic cues, we focus on brand reputation, warranty, and advertising spending for two reasons. First, past research has shown that consumers infer product quality from these cues (Dawar & Parker, 1994; Jain, Slotegraaf, & Lindsey 2007; Shimp & Bearden, 1982). Second, our pretest shows that although these cues signal quality, they do so with unequal strength, a difference that is critical in our manipulation of stronger versus weaker cues.

Cue sequence and product judgments

When consumers see two cues of differing strengths (e.g., brand reputation and warranty), does the sequence (i.e., the order of evaluating the cues) influence their final product judgments? An information-integration model (Anderson, 1981) or an averaging model (Lopes, 1985) would suggest that consumers would be indifferent to the position of the cues in the sequence. In contrast, should the weights attached to these cues be distorted based upon their position in the sequence, then how the cues are ordered in the sequence can influence how consumers form their overall judgment (Boulding, Kalra, & Staelin, 1999; Carlson et al., 2006; Hogarth & Einhorn, 1992; Russo, Meloy, & Medvec, 1998).

Extant literature offers mixed findings with respect to order effects. For example, some studies (such as Gürhan-Canli, 2003; Kruglanski & Freund, 1983) find primacy effects, whereby the first cue has a stronger influence on overall judgment; that is, consumers put more weight on the first cue in the sequence (Hogarth & Einhorn, 1992; see also research on information distortion and leader-driven primacy effects for similar predictions, e.g., Carlson et al., 2006). In contrast, other studies (e.g., DeWit et al., 1989; Tubbs et al. 1990; Johar et al., 1997; Richter & Kruglanski, 1998) find recency effects whereby the last cue of the sequence has a stronger influence on overall product judgment. Finally, a third stream of research reports no order effects. Studies reporting such a pattern of results have found that individuals tend to compute an average of the information presented by the cues such that it does not matter which cue they see first or last (Lopes, 1985; Shanteau, 1975; see also research on information integration theory for similar predictions, e.g., Anderson, 1981).

The critical question we address in this research is which of these three models would be the best predictor of a target product's quality if consumers perceive the cues to vary in strength. For example, suppose that a consumer sees two cues, a relatively stronger cue (e.g., brand name), and a relatively weaker cue (e.g., warranty), and has to make up her mind about a target product's quality. If the consumer computes an average of the information presented by the cues (the averaging model), then it should not matter if the consumer sees the stronger cue first versus last. However, if the consumer, perhaps unconsciously, gives more weight to the first cue when combining the information presented by the cues (the primacy model), then the product quality evaluation would be higher when the consumer sees the stronger cue first versus last (a strong–weak sequence). Finally, if the consumer gives more weight to the last cue when combining the information presented by the cues (the recency model), then the product quality evaluation would be higher when the consumer sees the stronger cue last instead of first (a weak–strong sequence).

We propose that if we sequentially present two cues that differ in strength and then ask for a product evaluation, we would expect the primacy effect to hold; that is, a strong–weak cue sequence will result in more favorable product quality evaluation relative to a weak–strong sequence. We offer four supporting arguments. First, in the absence of any other cue, the