

Research Report

The role of evaluation mode on the unit effect

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Abstract

Recent research on the unit effect has suggested that consumers tend to ignore relevant unit information and over-rely on numeric magnitudes in judgments (e.g., perceiving the difference between 700 and 900 on a 1000-point quality scale to be larger than the difference between 7 and 9 on a 10-point scale). The current work investigates the nature of the unit effect by studying the role of different modes of evaluation, and types of information processing, on the unit effect. Specifically, three studies demonstrate that the unit effect occurs when options are evaluated simultaneously and attenuated when options are evaluated sequentially. The current article builds on research concerning comparative versus selective information processing. It demonstrates that, when information is processed in a comparative rather than selective manner, common elements in the decision (i.e., units) are more likely to be edited out, resulting in the unit effect.

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Normatively speaking, preferences for a given good should not be influenced by the units used to convey the magnitude of the good. That is, a product with a quality score of 7 out of 10 should be perceived as equally attractive as one with a score of 700 out of 1000. In contrast to these normative assumptions, recent research has demonstrated that consumers' judgments are highly influenced by the unit of reference. For example, Pandelaere, Briers, and Lembregts (2011) demonstrated that participants perceived quality differences as larger for two televisions with quality rating scores presented on a 1000-point scale than for two televisions with quality rating scores presented on a 10-point scale. Thus, participants appeared to neglect the reference scale (i.e., unit), relying instead on the magnitude of the presented numeric

information (i.e. the unit effect). This and related numerosity effects have been demonstrated in a variety of domains such as currencies (Raghubir & Srivastava, 2002; Wertenbroch, Soman, & Chattopadhyay, 2007), loyalty programs (Bagchi & Li, 2011), and product attributes (Burson, Larrick, & Lynch, 2009; Monga & Bagchi, 2012; Pandelaere et al., 2011). The current research aims to understand factors that produce and attenuate the unit effect.

Consumers should attend to both the numeric differences (e.g., ratings of 7 and 9 vs. 700 and 900) and the unit information (e.g., whether the ratings are on a 10-point scale or 100-point scale) when assessing quantities. However, unit-effect research has demonstrated that consumers rely primarily on the abstract numeric component, often ignoring the relevant unit or scale information (Monga & Bagchi, 2012; Pandelaere et al., 2011; Shen & Urminsky, 2013). For example, Pandelaere et al. (2011) found that consumers evaluated the magnitude of a difference between two dishwasher warranties as subjectively larger when specified in months (84 vs. 108 months) than in years (7 vs. 9 years), which suggests a focus on the size of the numbers and a relative lack of consideration of the contextualizing unit.

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Consumers only appear to shift attention to the unit under certain circumstances. For example, Shen and Urminsky (2013) demonstrated that increasing the visual salience of the unit increased attention to the unit and decreased the unit effect. Similarly, Monga and Bagchi (2012) found that experimentally evoking an abstract mindset shifted focus to the unit, moderating the unit effect. Although most researchers appear to agree that the unit effect is likely produced by consumers relying on the numbers more than the unit information, the exact mechanisms remain unclear (Adaval, 2013).

Unit (and related) effects have been observed under conditions both of joint evaluation (e.g., Burson et al., 2009; Monga & Bagchi, 2012; Pandelaere et al., 2011) and separate evaluation (e.g., Shen & Urminsky, 2013; Raghubir & Srivastava, 2002; Wong & Kwong, 2000).¹ Because consumers often evaluate more than one alternative, our focus in this article is on joint evaluation. In particular, we turn our attention to a distinction within joint evaluation modes that has not been systematically studied within the unit-effect literature: sequential versus simultaneous evaluation. For instance, when shopping online, a consumer may first view a dishwasher with a 5-year warranty and subsequently click through to another dishwasher with a 7-year warranty (sequential evaluation). Alternatively, many websites offer consumers the ability to compare multiple items simultaneously on a single page.

Simultaneous versus sequential evaluation

Research on simultaneous versus sequential evaluation has primarily investigated the influence of evaluation mode on information search (Diehl & Zauberan, 2005; Gilbert & Mosteller, 1966; Levav, Reinholtz, & Lin, 2012; Shu, 2008; Weitzman, 1979) and order effects (Bruine de Bruin & Keren, 2003; Hogarth & Einhorn, 1992). In particular, these researchers have demonstrated that simultaneous versus sequential evaluation affects attention to and weighting of different attributes in multi-attribute choices; they have left untested whether the difference in evaluation will influence how consumers process the quantity information contained within a particular attribute.

In general, simultaneous and sequential evaluation modes differ in the ease of direct comparisons. As such, it may affect the processing style that consumers adopt in judgments (Kardes, 2013; Mantel & Kardes, 1999). When information is evaluated simultaneously, comparative processing is facilitated by the explicit juxtaposition of the options (Kardes, 2013). This may have important implications for how quantitative information is processed, in particular with regard to the neglect of the contextualizing unit information (Pandelaere et al., 2011; Shen & Urminsky, 2013). Past research has found that when consumers directly compare two options that are identical on a given attribute (e.g., option A: $x\%$ chance of winning \$10 vs.

option B: $y\%$ chance of winning \$10), they edit out common features (i.e., \$10) and make decisions based solely on dissimilar features (i.e., $x\%$ vs. $y\%$) (Kahneman & Tversky, 1979; Payne, Bettman, & Johnson, 1992; Thaler & Johnson, 1990). We hypothesize that, because the unit information is identical between options, it may be edited out as a common element.

If common elements in the decision environment can be edited out, then what factors facilitate this editing? Wang and Wyer (2002) found that comparative information processing inhibited the processing of common features in multi-attribute choice. Specifically, they found that participants who were explicitly told to compare two products were more likely to cancel out common features relative to participants who were not instructed to compare the products. If comparative processing leads to editing-out of common features (Wang & Wyer, 2002) and if neglecting unit information produces the unit effect (Pandelaere et al., 2011; Shen & Urminsky, 2013), then simultaneous evaluation, which facilitates comparative processing (Kardes, 2013), should promote the unit effect.

Whereas simultaneous evaluation facilitates comparative processing, sequential evaluation typically lends itself to more step-by-step processing in which global impressions of each alternative are compared in a stepwise fashion (i.e. selective processing; Bruine de Bruin & Keren, 2003). Particularly, the first evaluation is made without explicit comparisons, and consumers are forced to selectively process information in isolation on the basis of its own merits without considering other information (Sanbonmatsu, Posavac, Kardes, & Mantel, 1998). Subsequently, additional judgments in sequential evaluation can involve comparison of the attribute(s) between options. Consumers, however, must rely on memory for any comparisons, making direct comparison more difficult in sequential evaluation; this should attenuate the unit effect. Sequential evaluation is not without comparative processing; rather, it facilitates relatively less comparative processing than simultaneous evaluation.

We test the role of evaluation mode and information processing on the unit effect in three studies. Study 1 investigates whether sequential evaluation attenuates the unit effect relative to simultaneous evaluation. Study 2 investigates what information is processed in both modes using a memory measure. Lastly, Study 3 attempts to test the editing hypothesis by manipulating the mode of information processing, through a comparative evaluation prompt (Wang & Wyer, 2002), and observing its influence on the unit effect.

Study 1

The aim of Study 1 was to test whether evaluation mode moderates the unit effect. To do so, we modified a paradigm used in Study 1 of Pandelaere et al. (2011).

Methods

Online Mechanical Turk participants ($n = 204$; 41.7% female; $M_{\text{age}} = 27.7$; range 18–75 years) were recruited and paid \$0.50 for participation. Participants were asked to imagine that they were shopping for a new television. They were told about two

¹ We should note that, whereas research on sequential versus simultaneous evaluation (both modes of joint evaluation) has not investigated how modes of evaluation influence the processing of quantitative information, extensive research exists related to this topic in joint versus separate evaluation (for a review, see Hsee & Zhang, 2010).

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