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Article *in* Journal of Consumer Marketing · April 2020

DOI: 10.1108/JCM-01-2018-2510

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Rubin, D., Martins, C., Ilyuk, V. and Hildebrand, D. (2020), "Online shopping cart abandonment: a consumer mindset perspective", *Journal of Consumer Marketing*, Vol. 37 No. 5, pp. 487-499. https://doi.org/10.1108/JCM-01-2018-2510

Online shopping cart abandonment: A consumer mindset perspective

Without doubt, one of the greatest marketplace changes that has taken place during the past several decades—a direct consequence of technological advances—is the growth of online shopping. Indeed, over 40% of global internet users purchase products online (Statista, 2013a), with online retail sales worldwide projected to total $2.8 trillion U.S. dollars by the end of 2021 (Clement, 2019). These numbers are only expected to grow, given that consumers increasingly value the ease and convenience of online shopping over in-store, brick-and-mortar experiences (Kaufman-Scarborough and Lindquist, 2002; Morris, 2013). With this proliferation, a great deal of research has examined the inhibitors and catalysts of online shopping, focusing on factors such as the roles of perceived risk (e.g., privacy/security concerns and the inability to physically examine items) and product presentation format (e.g., visual and verbal information) in online decision making styles and attitudes (Anesbury *et al.*, 2015; Chang and Wu, 2012; Harris and Dennis, 2011; Kim and Lennon, 2008; Wu and Lin, 2012; Yazdanparast and Spears, 2013).

Surprisingly, a phenomenon largely particular to online shopping has received significantly less attention from the consumer behavior literature—shopping cart abandonment (Kukar-Kinney and Close, 2010; Rajamma *et al.*, 2009). That is, consumers often place items in an online shopping cart, but end up not actually finalizing a purchase of any of those items

during that online shopping session (Kukar-Kinney and Close, 2010). It is estimated that up to a staggering 70% of online shoppers have abandoned online shopping carts, totaling $18 billion in lost sales annually (Weinstein, 2014). Given the scope and economic impact of online shopping cart abandonment, prioritizing an understanding of the drivers of this behavior is essential.

The present research seeks to provide redress for the sparseness of attention paid to shopping cart abandonment in prior consumer behavior literature. Specifically, we explore whether differences in consumer mindsets—that is, the degree to which online shoppers represent the options in their shopping carts abstractly or concretely—act as a predictor of shopping cart abandonment. This research is motivated by findings in the area of Construal Level Theory (CLT) which suggest that consumers in an abstract mindset focus on primary features of products (i.e., those central to a product's essential purpose), whereas their counterparts in a concrete mindset pay relatively more attention to peripheral product features (i.e., those unrelated to a product's essential purpose; Trope and Liberman, 2003; 2010). To exemplify this dichotomy, individuals in an abstract mindset would focus on the primary attribute of a pair of gloves (i.e., that they keep your hands warm), whereas those in a concrete mindset would focus on peripheral attributes (e.g., they are the color brown or they were made in Canada). We expect that a focus on such primary features of products in an online shopping cart will lead consumers with an abstract (vs. concrete) mindset to show an increased level of involvement with the products—thus, temporarily perceiving the purchase of those products as more important—subsequently leading to a lower likelihood of abandoning the shopping cart and greater likelihood of making an immediate purchase.

Consequently, this work makes several contributions to the literature. Foremost, the current work contributes to the nascent research studying psychological drivers of online

shopping cart abandonment by identifying how consumer mindsets—which can be manipulated or can occur spontaneously—influence the level of involvement with the contents of online shopping carts, therefore determining the likelihood of abandonment. Further, while objects of involvement are generally product categories (as opposed to individual products) in the context of choice between various alternatives, the present research examines behavioral outcomes relating to involvement when the objects of involvement are individual products at the purchase decision phase following evaluation of alternatives. That is, we uniquely explore involvement at the point of the decision to finalize the purchase, rather than at the decision stage regarding which alternative to advance to purchase. These findings also provide support for management decisions in e-commerce given that marketing practitioners can easily manipulate both consumer mindsets and product descriptions—matching mindsets to compatible product descriptions to minimize shopping cart abandonment. Across three studies, we establish the proposed effect, provide support for involvement as the underlying mechanism, and evince the moderating role of the number of peripheral attributes included in product descriptions.

Conceptual framework

Shopping Cart Abandonment

Shopping cart abandonment is a phenomenon that is particularly germane to an online (vs. brick-and-mortar) context. As Kukar-Kinney and Close (2010) suggest, while physical in-store carts are relatively utilitarian in nature (i.e., consumers use them to store products en route to the cashier), virtual shopping carts offer additional, potentially hedonic uses, including use of the cart as a research or organizational tool and for entertainment value. Unquestionably, such behavior is much less common in traditional, brick-and-mortar settings where consumers are

unlikely to add and carry weighty products in shopping carts for entertainment or to leave a store without completing the purchase if, after the clerk has scanned and bagged all of the items in the shopping cart, consumers deem the bill too pricey (Pungartnik, 2015). This is due, at least in part, to social norms and impression concerns operating in public (vs. private) settings that characterize brick-and-mortar locations (Agrawal and Maheswaran, 2005; Giner-Sorolla and Chaiken, 1997). Further, costs associated with *non*-buying may be heightened in such contexts (e.g., wasted travel time and the burden put on sales associates to restock all of the non-purchased merchandise). In other words, rapidly growing online shopping platforms are particularly conducive to consumers' shopping cart abandonment, furthering the need for an understanding of the antecedents this behavior.

Notably, other factors that have been identified as potential sources of shopping cart abandonment relate to friction in the transaction process, including encountering unexpected costs, having to complete lengthy order forms, facing website issues and technical glitches, non-availability of alternative methods of payment, excessive security checks, and concerns regarding privacy or security ((Rajamma *et al*., 2009; Statista, 2013b; Xu and Huang, 2015; Egeln and Joseph, 2012; Close and Kukar-Kinney, 2010; Kukar-Kinney and Close, 2010). However, beyond the aforementioned inquiries, little is currently known about the precursors of online shopping cart abandonment, particularly the psychological drivers of such behavior.

As is discussed next, one important factor that in this context has heretofore not received any attention is consumers' construal level; that is, the degree to which consumers mentally represent the contents of their shopping carts in abstract or concrete terms. For example, construing a vacuum cleaner abstractly involves representing it as an object that can effectively clean a surface, whereas construing it concretely might include representing its very specific

details such as color, size, and cord length (Trope and Liberman, 2010). Study of this construct in the context of online shopping cart abandonment is of great managerial importance considering the ease by which such mindsets can be manipulated in an online setting and the potential economic impact of abandonment.

Construal Level Theory

Although individuals can directly experience only the present moment in time, a vast literature in psychology demonstrates that they can also transcend themselves across different dimensions of time, space, social distance, and hypothetical scenarios (Trope and Liberman, 2010). According to Construal Level Theory (CLT), psychological distance affects the way that consumers interpret their reality (Liberman and Trope, 2008; Soderberg *et al.*, 2015; Trope and Liberman, 2010). CLT posits that psychologically distant objects, such as objects that are physically distant, or in a distant past, are represented abstractly at a high-level, whereas psychologically near objects, such as objects that are physically close, are represented concretely at a low-level (Dhar and Kim, 2007). Thus, mental representations can be organized along a continuum (Soderberg *et al*., 2015), on which objects become more abstract as distance increases (Trope and Liberman, 2010).

Abstract construals represent high-level, superordinate, central attributes of objects, while concrete construals are low-level, subordinate, and peripheral in nature (Soderberg *et al*., 2015). Extant research demonstrates that primary, goal-related, desirability sources of value are weighed more heavily in decisions when consumers are in an abstract mindset, whereas secondary, goal-irrelevant, feasibility sources of value are given greater weight by consumers who are in a concrete mindset (Trope *et al.*, 2007). To give but a few examples, gift givers tend

to conceptualize gifts abstractly, and therefore rely on central, high-level features to a greater extent than do gift receivers (Baskin *et al.*, 2014). Similarly, Yan and Sengupta (2011) show that participants focus more on product characteristics like price when predicting product quality from the perspective of another person (high psychological distance) than when inferring quality from the self-perspective (low psychological distance), since price is considered a central feature that consumers use in making judgments. Additionally, research evidence demonstrates that advertisements are more persuasive and effective when their distance matches specific arguments about the product being advertised, as ads that were seen from some distance (i.e., on billboards) were better received when they emphasized central, important features, while those closer to consumers (i.e., in-store messages) were found to be more effective when emphasizing secondary, peripheral features of the promoted product (Dhar and Kim, 2007; Kim *et al.*, 2007). A review of the above literature reveals that the primary focus of research in CLT has been on how shifts in construal increase the weight consumers ascribe to features with a matching level of construal. However, it is still unclear whether and how psychological distance can influence judgments when the objects of evaluation lack features that highlight dimensions favored by consumers with different mindsets (e.g., features that clearly favor either desirability or feasibility concerns, which would match consumers' abstract or concrete mindsets respectively). The current research fills this gap by examining the role of CLT within the context of online shopping by investigating if consumers' abstract versus concrete mindsets influence the level of involvement they have with products in their shopping carts, and crucially, if such involvement impacts the likelihood of abandoning their shopping cart.

Involvement and Product Importance

Notwithstanding its germane role in consumer behavior and its prominence as the subject of research for decades, involvement as a construct remains contentious, its conceptualization and operationalization varying widely across multiple domains (e.g., Behe et al., 2015; Bruwer and Buller, 2013; Bloch and Richins, 1983; Calvo-Porral et al., 2018; Michaelidou and Dibb, 2008; Zaichkowsky 1986). Common across these varied domains, however, is the notion that involvement pertains to a motivational state toward an object based on the degree to which the object is personally relevant, where high- versus low-involvement objects are of greater personal relevance (Mittal, 1995; Zaichkowsky, 1986). Consistent with prior literature, we adopt the position that the perceived relevance of an object may be contingent upon salient needs or goals (Behe et al., 2015; Bloch and Richins, 1983)—generally referred to in the literature as situational involvement (Rothschild, 1984). As opposed to enduring involvement, situational involvement involves a *short-lived* elevation of perceived product importance for a specific purchase situation (Bloch and Richins, 1983). Though regularly conceptualized as something intrinsic to product categories themselves (Petty *et al*., 1983), involvement has been shown to be situationally malleable—higher when products are expected to have personal implications for the individual in the short-term (Petty *et al*., 1983). In such a scenario, consumers link a product to specific benefits and desired outcomes, subsequently increasing the perceived importance of the product—a requisite antecedent for involvement, the motivational state that directs behavior (Bloch and Richins, 1983; Mittal, 1995).

Involvement has often been used interchangeably with product importance in prior literature (Bloch and Richins, 1983; Laurent and Klapferer, 1985). These constructs are so closely related that involvement has been conceptualized as the perceived importance of a product (Bruwer and Buller, 2013; Mittal, 1995; Mittal and Lee, 1989) and perceived importance

has been oft treated as a direct measure of involvement itself (Mittal, 1995; Schneider and Rodgers 1996). Regardless of whether or not they are interchangeable, the measurement of involvement is frequently accomplished by measuring product importance either as a direct measurement of involvement or as a proxy for it (Lastovicka and Gardner, 1978; Schnedier and Rodgers, 1996; Traylor, 1981)—a practice that is often defended by those who contend that multidimensional scales (i.e., those measuring anything other than perceived importance) actually measure sources of involvement rather than involvement per se (Mittal, 1995; Schneider and Rodgers, 1996). As the present work focuses on the dimension of involvement concerning the perceived personal relevance of the objects of a purchase decision, we explicitly focus on product importance as a critical facet of involvement. It should be noted, however, that we hold the position that the construct of product importance in itself merely refers to the perception that a product matters to the individual, and it is this assessment that gives rise to involvement—the motivational state that actually directs consumer behavior (Bloch and Richins, 1983), in this case purchase immediacy.

Perceived product importance, defined as "the extent to which a consumer links a product to salient enduring or situation-specific goals" (Bloch and Richins, 1983, p. 71), plays a significant role in buying behavior. Perceived importance is derived from the link between product attributes and relevant enduring or transient end-states, and can be shaped by both stable and situation-specific variables (Bloch and Richins, 1983; Samson and Voyer, 2014; Townsend and Sood, 2012). To illustrate, consumers might perceive a product as important because they associate a specific product capability to an enduring desired end-state (e.g., a washing machine has an energy-saving wash cycle, hence allowing the consumer who uses it to feel environmentally responsible). Similarly, a product might be momentarily perceived as important

if associated with a more transient desired end-state (e.g., a cake is situationally important because it is a friend's birthday tomorrow and the consumer wants to give her a treat). Taken together, these streams of research suggest that purchase likelihood should increase with greater involvement with products included in a shopping cart (Samson and Voyer, 2014; Sun, 2010; Towsend and Sood, 2012). Moreover, although perceived importance (the precursor which gives rise to involvement) is often dependent on enduring consumer characteristics, such as values and beliefs, transient consumer states may also play an important role (Bloch and Richins, 1983; Towsend and Sood, 2012). The current research adds to the literature by proposing and demonstrating how transient consumer mindsets can influence the importance they ascribe to products, ultimately affecting their likelihood of leaving their online shopping carts behind via increased involvement.

The Influence of Mindset Construal Level on Product Importance

As discussed, CLT suggests that abstract mindsets lead to a focus on primary and relevant elements when representing objects (Soderberg *et al*., 2015; Trope and Liberman, 2010). This increased focus on primary features facilitates the identification of key, higher-order, superordinate goals that can be achieved through product use (Trope and Liberman, 2003; Pieters *et al.*, 1995). In contrast, concrete mindsets lead to a more detailed, granulated representation of products, characterized by a relatively greater focus on secondary, peripheral, and even unimportant attributes of such products (Soderberg *et al*., 2015; Trope and Liberman, 2003; 2010), particularly when products are described with a limited number of features, a practice that is largely defended by marketing scholars (Thompson, Hamilton, and Rust 2005; Jacoby *et al*., 1974) and practitioners (The Economist, 2009). Consumers in concrete mindsets, therefore, need

a much more detailed description of products to extract the same subjective informational value (as opposed to same objective informational content) than their abstract minded counterparts (Johnson and Fornell, 1987). Since product importance derives primarily from the links that consumers build between products or product attributes and desired end-states (Bloch and Richins, 1983), and given the limited number of product features and dimensions that are typically available to and thus processed by consumers under concrete mindsets, the present research proposes that the abstract construal's increased attention to central features and superordinate goals, combined with a lack of focus on peripheral and unimportant attributes, should increase involvement (Etco *et al*., 2017).

Importantly, the current work proposes that this increased importance ascribed to products included in the shopping cart resulting from an abstract mindset will increase the likelihood that consumers will finalize their purchases (and therefore not abandon their online shopping carts). Product importance has been positively associated with the amount of effort consumers are willing to dedicate to product purchase, and critically to the urgency associated with product purchase (Beatty and Smith, 1987; Bloch and Richins, 1983; Punj and Stewart, 1983; Samson and Voyer, 2014). Therefore, since an abstract (vs. concrete) construal increases the involvement with products placed in a shopping cart during an online shopping episode, it should also lead to a higher likelihood that consumers will finalize their purchases.

H1: An abstract (vs. concrete) mindset will lead consumers to have higher intentions to purchase products included in their online shopping carts.

Further, extant research has shown that those with a concrete mindset represent products in their minds using a larger set of features than those in an abstract mindset (Johnson, 1984) and, ergo, require information about a larger number of features to fully capture the value of products and to become involved with those products (Johnson and Fornell, 1987). In other words, consumers in a concrete mindset can only extract comparable informational value that their abstract minded counterparts do—and consequently develop a similar degree of involvement with a product—if they are allowed to process a larger number of features, even if those features are peripheral or secondary in nature.

Although companies usually describe their products using a small, limited set of primary features, a practice that has been long defended in the academic and practitioner literature (e.g., Jacoby *et al*., 1974; The Economist, 2009; Thompson et al., 2005), they sometimes expand such descriptions with additional, even if more peripheral, features. As such, and consistent with our theorizing, if the relative handicap of concrete mindsets is produced by consumers' greater need for additional information in the form of peripheral features that are often missing from product descriptions, this handicap can be at least partially compensated by increasing the number of peripheral features used to describe products. In circumstances where the number of peripheral features is inflated, we expect consumers in abstract mindsets to ignore such features, and thus present no change in involvement and abandonment likelihood, whereas consumers in concrete mindsets will show an increased level of involvement and a reduced likelihood of abandonment, effectively weakening the influence of mindsets on involvement and shopping cart abandonment. We state the hypotheses associated with the mediation and moderation mechanisms as follows:

H2: The number of peripheral features with which the product is described will moderate the effect of construal mindset on shopping cart abandonment, such that the negative effect of abstract (vs. concrete) mindsets on shopping-cart abandonment will be reduced when a greater number of peripheral attributes are added to the product description.

H3: The interactive effect of mindset and the number of peripheral features on shopping cart abandonment will be mediated by consumers' level of involvement with the product.

For a conceptual model, see Figure 1.

[Insert Figure 1 about here.]

Study 1

The goal of Study 1 is to test the basic assertion that a concrete mindset induces lower purchase intentions than an abstract mindset (H1).

Method

A one-factor between-subjects design with two levels (mindset: abstract vs. concrete) was employed. One hundred and ten participants were recruited online through Prolific Academic, and participated in this study in exchange for a small payment. In all studies we avoided ballot boxing by limiting one response per IP and geolocation. We also eliminated participants who skipped the experimental manipulations or did not complete the study. In study 1, seven participants who skipped the experimental manipulations were excluded from the analysis,

resulting in a final sample of 103 participants (average age = 31.5; 45.1% female). Following prior research (Fujita *et al.*, 2006), participants were first instructed to perform a procedural priming task, in which they were presented with a list of nouns and were asked to either generate category labels (abstract mindset) or exemplars (concrete mindset) for them. To ensure that participants would be able to form higher and lower level representations, nouns with an average level of concreteness were chosen (e.g., apostle, fortification; Brysbaert *et al.*, 2014). The rationale behind this manipulation is that when forming category labels, people are forced to think about essential, higher, abstract features of objects, adopting, as a result, a more abstract construal. In contrast, when forming exemplars, people have to think about the detailed, concrete, and peripheral features of the noun that makes the listed exemplar unique within that category; in doing so, people are likely to adopt a concrete construal. Although prior research has confirmed that the construal adopted to perform the priming task is in turn likely to influence how consumers interpret their subsequent tasks (Freitas *et al.*, 2004; Fujita *et al*., 2006), we ran an independent pre-test to attest its effectiveness. Specifically, participants of the pre-test (N = 51) were asked to perform the task that manipulated mindset and then responded to the Behavioral Identification Form (BIF), designed by Vallacher and Wegner (1989) to assess how concretely or abstractly people describe different behaviors. Results confirmed our expectations, as participants assigned to the abstract mindset condition reported more abstract descriptions (M = 16.45) than those in the concrete mindset condition (M = 12.21, $F(1,49) = 4.07$, $p < .05$).

After performing the mindset priming task, participants proceeded to an allegedly unrelated task, in which they were instructed to browse the website of a renowned online retailer (Amazon.com) for 5 minutes. To emulate a common online shopping experience, they were told that they could look at products in any category and in as many categories as they wished.

During this process, participants were asked to include five different products they would consider purchasing for themselves in their carts. After completing this task, they were asked to upload a picture of the shopping cart onto a folder included in the survey and list the products they included. Next, participants indicated their willingness to buy the products in their shopping cart using two questions: "How much are you willing to buy the products you included in your shopping cart?" and "How much are you looking forward to buying the products that you included in your shopping cart?", assessed on a 7-point scale (1 = not at all, 7 = very much). These two items were averaged to form a purchase likelihood index ($r = .71$, $p < .001$). Given the established link between purchase intentions and actual behavior, the use of self-reported intentions to purchase as a proxy for purchase likelihood is well supported by extant literature (e.g., Thiel and Kosobud, 1968; Ajzen, 2008). Participants were also asked to indicate their attitudes toward the retailer using the following items: "How much do you like Amazon.com?", and "How favorable are you towards Amazon.com?" (assessed on a 5-point scale; 1 = a great deal, extremely favorable; 5 = not at all, extremely unfavorable). These two items were averaged to form an Amazon attitudes index ($r = .71$, $p < .001$). Participants then answered a few demographics questions (i.e., age, gender, state of residency), were thanked for their time, and given their payment.

Results

An analysis of covariance (ANCOVA) was conducted with purchase likelihood as the dependent variable, mindset as the independent variable, and attitude toward Amazon as a covariate. This covariate was included because Amazon is a well-known retailer and, thus, it could serve as a potential control for individual differences in attitudes toward the retailer. Results demonstrate a significant main effect of mindset (F (1, 101) = 4.74, $p < .05$), as well as

of the Amazon attitudes covariate (F (1, 101) = 10.54, p < .01). As illustrated in Figure 2, participants in an abstract mindset were significantly more likely to intend to purchase the products from their shopping cart than their counterparts in a concrete mindset ($M_{concrete}$ = 5.18, $M_{abstract}$ = 5.61).

[Insert Figure 2 about here.]

Discussion

The first study provided support for the prediction that consumers who browse an online website with an abstract mindset are less likely to abandon the shopping cart (i.e., more likely to intend to purchase the items included in the shopping cart) than consumers who browse online with a concrete mindset. It was hypothesized that this difference in likelihood of abandoning the shopping cart emerges from the increased involvement that consumers browsing with an abstract mindset have with products they include in their shopping carts. The goal of the next study was to test these hypotheses, as well as to rule out a key alternative explanation.

More specifically, based on the increased abstractness of indirect product experiences (e.g., reading product descriptions on a website; Hamilton and Thompson, 2007), the activity of reading the information about products they considered including in the shopping cart (as opposed to directly testing the product and perceiving its attributes) may have matched the abstract mindset prime. This match between the construal level of an action undertaken by a consumer and that of the consumer's mindset has been shown to produce favorable attitudes toward products (Fujita *et al*., 2006; Spassova and Lee, 2013), possibly leading to the effects we observed. However, when consumers reach the stage of including products in a shopping cart, they have typically constructed more concrete shopping goals, being more likely to describe

products in more concrete terms (Lee and Ariely, 2006); as such, it is not anticipated that the aforementioned matching mechanism will take place.

Involvement and attitudes are two separate evaluative dimensions; while involvement pertains to the personal relevance of a product, attitudes encompass only a general sense of positivity/negativity (Mittal, 1995). While attitudes can increase involvement, they will not necessarily do so. For involvement to develop, individuals not only need to have a positive attitude, but also a sense that the product matches situationally salient interests, values, or needs (Zaichkowsky, 1985). If a matching mechanism is in place, then construal level should influence not only perceived importance but also attitudes toward the products (Fujita *et al*., 2006; Spassova and Lee, 2013). If instead, as predicted, construal level impacts involvement independently of any potential matching mechanism, then there should be differences in purchase likelihood and involvement even in the absence of differences in attitude toward the products included in the shopping cart. To examine this alternative explanation, participants' attitudes toward the objects they included in the shopping cart were measured in the next study.

Study 2

The primary goal of this study was to test whether involvement with the products included in consumers' shopping carts mediates the effect of consumers' mindsets on purchase likelihood. A secondary goal was to test an alternative explanation for the findings from the previous study. Finally, a tertiary goal of this study was to increase the generalizability of reported findings by using a different operationalization of construal level.

Method

A one-factor between-subjects design with two levels (mindset: abstract vs. concrete) was used. One hundred and ninety-nine participants were recruited online through Prolific Academic, and participated in the study in exchange for a small payment. Seventeen participants (8.5%) who skipped the experimental manipulations or did not complete the study were excluded from the analysis; the final sample was composed of 182 participants (average age = 29.4; 47.5% female). Participants were first instructed to engage in a thought exercise, which in effect constituted the mindset manipulation. More specifically, participants assigned to the abstract mindset condition were asked to consider why they would engage in an activity (exercising/working out), whereas participants assigned to the concrete mindset condition had to consider how they would engage in the same activity. To aid participants in this task, a diagram with five boxes was provided, in which participants had to write on the first (last) box of the diagram the focus activity (exercising/working out) and then think increasingly abstractly (concretely) by successfully indicating why (how) they would engage in it (see Freitas *et al.*, 2004, p. 742, for a detailed illustration of the task). Again, although extant research (Freitas *et al*., 2004; Fujita *et al*., 2006) has confirmed that considering questions of why (vs. how) primes an abstract (vs. concrete) mindset, we ran an independent pre-test to make sure that our manipulation successfully affected mindset. As in the pre-test of study 1, participants (N = 60) were asked to perform the mindset manipulation task and then respond to the BIF (Vallacher and Wegner 1989). As predicted, participants assigned to the abstract mindset condition made more abstract interpretations of behavior (M = 17.45) than those assigned to the concrete mindset condition (M = 12.75; $F(1,58) = 5.66$, $p < .05$).

In the main study, instead of responding to the BIF, participants were directed to browse Amazon.com for five minutes and include five items in their shopping carts, mirroring the

shopping task used in Study 1. They then indicated their likelihood of purchasing the five items they included in the shopping cart, their attitudes toward the items, involvement with the items, and their attitudes toward Amazon. Purchase likelihood ($r = .60$, $p < .001$) and attitudes toward Amazon ($r = .85$, $p < .001$) were measured as in the previous study. Involvement with the five products they had included in the shopping cart was measured using two 7-point semantic differential items adapted from Zaichkowsky (1985): unimportant/important, useless/valuable ($r = .64$, $p < .001$). Attitudes toward the products were measured on three dimensions: bad/good, negative/positive, unsatisfying/satisfying ($\alpha = .84$). Lastly, participants answered demographic questions as in Study 1, and were thanked for their time and given their payment.

Results

An ANCOVA was performed with purchase likelihood as the dependent variable, mindset as the independent variable, and attitudes toward Amazon as covariate. As illustrated in figure 3, results indicate a higher purchase likelihood for participants in an abstract (vs. concrete) mindset ($M_{concrete} = 4.80$, $M_{abstract} = 5.44$; F (1, 179) = 8.09, $p < .01$), replicating the results of Study 1. The attitudes toward Amazon covariate was also significant (F (1, 179) = 15.78, $p < .01$).

[Insert Figure 3 about here.]

Next, an ANCOVA on the involvement index also revealed a significant effect of mindset, with participants in an abstract (vs. concrete) mindset rating the products they had included in the shopping cart to be more important ($M_{concrete} = 4.95$, $M_{abstract} = 5.44$; F (1, 179) = 5.62, $p < .05$; see figure 4). The covariate was also significant (F (1, 179) = 7.00, $p < .01$).

[Insert Figure 4 about here.]

Importantly, and casting doubt on an alternative explanation based on attitudes, an ANCOVA with attitudes toward the products as the dependent variable indicated a non-significant effect of mindset (F (1, 176) = .86, p > .10), although the covariate remained a significant predictor (F (1, 179) = 17.50, p < .01).

Lastly, a mediation analysis using bootstrap confidence intervals for the indirect effect (Hayes, 2013) supported H3 regarding the underlying process of the effect of mindset on the likelihood of purchasing products included in the shopping cart. Specifically, purchase likelihood was included as the dependent variable, mindset as the independent variable, Amazon attitudes as the covariate, and involvement as the potential mediator. Although the manipulations did not affect attitudes, the construct was also included as a potential parallel mediator to provide a more stringent test for the alternative explanation based on a matching mechanism. The effect of mindset on involvement and attitudes was described above. In the model predicting purchase likelihood both involvement and attitudes had a positive and significant effect ($\beta_{Involvement}$ = .30, t (177) = 3.85, p < .001; $\beta_{Attitudes}$ = .42, t (177) = 3.22, p < .01). More importantly, the indirect effect of mindset on purchase intentions through involvement was significant, as its 10,000 bootstraps 95% confidence interval did not include zero (β = -.13, CI: -.30 to -.03); however, the indirect effect of mindset on purchase intentions through attitude was, as predicted, not significant (β = -.04, CI: -.16 to .04).

Discussion

The second study increased the validity of our framework by replicating the findings from Study 1 using a different manipulation of mindset and provided support for involvement as the mechanism underlying the effect of mindset on the likelihood of purchasing, and therefore not abandoning, the products in the shopping cart. Moreover, Study 2 also cast doubt on the

alternative explanation that a matching mechanism in construal level was responsible for the lower purchase intentions of consumers adopting a concrete (vs. abstract) mindset. In other words, although participants with both concrete and abstract mindsets had similar attitudes toward the products, those in an abstract mindset were more likely to be involved with the products than their concrete minded counterparts, thus explaining their higher likelihood of purchasing them.

It is worth noting that participants in both studies were exposed to a naturalistic online shopping setting in which they themselves selected the products they would later evaluate. Since participants in these studies – via the priming task – adopted a specific mindset before choosing the products they would include in the shopping cart, one might suggest that they systematically chose products that would be superior on dimensions associated with the adopted mindset. For instance, one could argue that the participants in abstract (vs. concrete) mindset condition chose products with attributes that emphasize the product's desirability (vs. feasibility). It should be noted, however, that this reasoning provides an even more rigorous test of the hypotheses. After all, if consumers selected products that would be superior under the influence of their adopted mindsets, then no difference in purchase likelihood between concrete and abstract mindsets should have been found. Therefore, the fact that significant differences were found even in this relatively naturalistic setting speaks to the robustness of the observed effects.

Study 3

The purpose of Study 3 was three-fold. First, we sought to provide increased ecological validity by examining a more consequential dependent variable—using a simulated shopping cart to measure abandonment of a shopping cart directly. This design overcomes the reliance upon self-reported purchase intensions as an approximation of shopping cart abandonment, a

limitation of prior studies. Second, we explicate the managerial relevance of the phenomenon under study by demonstrating a more practicable manipulation of construal level that can be easily implemented by marketing practitioners in real-world online shopping environments. Third, we try to flesh out the mechanism through which mindset operates. We propose that mindset influences shopping cart abandonment because consumers in an abstract mindset will pay greater attention to the features that are tied to critical benefits they seek in the product (i.e., primary features), thus believing that the purchase of the product might be more important and becoming more involved with the purchase, in turn reducing abandonment likelihood. We examined this mechanism by assessing involvement using an established scale and testing it as a mediator of the effect of mindset on shopping cart abandonment. Finally, we also explored the mechanism through a theoretically and managerially relevant moderator, that is, the number of peripheral features with which the products are described.

Method

Study 3 utilized a 2 (mindset: abstract vs. concrete) x 2 (number of peripheral attributes: two vs. five) between-subjects design. One hundred and seventy-four subjects recruited through Amazon Mechanical Turk participated in the study in exchange for a small payment. Eleven participants (6.3%) who skipped the experimental manipulations or did not complete the study were excluded from the analysis; the final sample was composed of 163 participants (average age = 40.3; 75 female, 87 male).

Participants were told that they would be testing an online recommendation engine that provides tailored office supply recommendations based on their responses to a series of guided questions. The specific questions provided served as the mindset manipulation. As extant

research has shown, considering *why* versus *how* questions induces abstract versus concrete mindsets respectively (Freitas *et al*., 2004; Fujita *et al*., 2006). Accordingly, participants in the abstract condition answered questions relating to *why* they would use specific office supplies (i.e., a USB drive and a retractable ballpoint pen), whereas those in the concrete mindset condition answered questions pertaining to *how* they would use those same items. Following this manipulation, participants were presented with two ostensibly recommended items, a USB drive and a retractable ballpoint, and were told that both were added to their online shopping carts. Images of these recommended items were presented with either two or five peripheral attributes per item. We pretested a set of 10 attributes for involvement and selected the attribute perceived as most important as the central, primary attribute, and the attributes that had either low (i.e., the least important feature) or moderate levels of involvement (i.e., features which involvement was not statistically different than the neutral point on the scale) as peripheral attributes. The order of presented attributes was [low/high/moderate] in the one primary / two peripheral attributes condition and [low/high/moderate/moderate/moderate/moderate] in the one primary / five peripheral attributes condition.

Participants saw the images of the items in the shopping cart, which also included buttons that would allow them to exclude each of the items, as well as a button that allowed them to purchase the items. After they made their selections, participants were asked to indicate the extent to which they were involved with each of the products, using the 20-item scale developed by Zaichkowsky (1985; sample items: “unimportant:important”, “useless:useful”, “worthless:valuable”; $\alpha = .98$). Participants then indicated their demographics and were dismissed.

Results

Shopping cart abandonment. Since the outcome variable was binary (1 = abandoned the shopping cart, 0 = made a purchase), we examined the effect of number of peripheral attributes and mindset with a binary logistic regression. We regressed shopping cart abandonment on number of peripheral attributes (1 = 5 peripheral attributes, 0 = 2 peripheral attributes), mindset (1 = abstract, 0 = concrete), and their interaction (Cox & Snell R square = .04). Results revealed a predicted significant interactive effect ($\beta = 1.54$, $z = 2.41$, $p < .05$), as well as a significant main effect of number of peripheral features ($\beta = -.89$, $z = -1.96$, $p < .05$) and mindset ($\beta = -.95$, $z = -2.08$, $p < .05$). Simple effect analysis revealed, as expected, that in the two peripheral attributes condition, individuals primed with an abstract mindset were less likely to abandon the shopping cart ($P = .41$) than those primed with a concrete mindset ($P = .64$, $\beta = -.95$, $z = -2.08$, $p < .05$; see figure 5), whereas in the five peripheral attribute condition, there were no differences in abandonment likelihood ($P_{abstract} = .57$, $P_{concrete} = .43$, $\beta = .59$, $z = 1.32$, $p > .10$). Further, participants primed with a concrete mindset were more likely to abandon the cart when provided with two peripheral attributes than when provided with five peripheral attributes ($\beta = -.89$, $z = -1.96$, $p < .05$), but participants primed with an abstract mindset were insensitive to the number of peripheral attributes ($\beta = .65$, $z = 1.44$, $p > .10$).

[Insert Figure 5 about here.]

Purchase involvement. We ran an ANOVA with purchase involvement as the dependent variable, and mindset and number of features as factors. Results revealed a significant interactive effect ($F(1,159) = 4.46$, $p < .05$). Planned contrast analyses revealed, as predicted, that subjects exposed to two peripheral product features judged the purchase as being more important when primed with an abstract mindset ($M = 5.02$) than when primed with a concrete mindset ($M =$

4.35, F(1,159) = 6.06, $p < .05$). In contrast, there were no differences for those exposed to five peripheral product features ($M_{abstract} = 4.53$, $M_{concrete} = 4.67$, F(1,159) = .27, $p > .10$).

Mediation analysis. To support the underlying role of purchase involvement, we calculated bootstrap intervals for the interactive effect of mindset and number of peripheral attributes on shopping cart abandonment through purchase involvement. The effect of mindset and number of peripheral attributes on purchase involvement is reported above. When we regressed shopping cart abandonment on purchase involvement, number of peripheral attributes, mindset, and the number of attributes by mindset interaction, we found a significant effect of purchase involvement (β = -.50, z = -3.33, $p < .001$), as well as a marginally significant effect of number of peripheral features (β = -.81, z = -1.71, $p = .09$) and a marginally significant interactive effect (β = 1.27, z = 1.91, $p = .06$). Importantly, the 95%, 10,000 bootstraps confidence interval (CI) for the indirect effect of the number of features by mindset interaction on shopping cart abandonment through purchase involvement was significant (β = .41, CI: .024 to .98).

Discussion

In sum, study 3 accomplished several goals. First, we replicated our effects on a more ecologically valid outcome measurement using a more naturalistic manipulation of mindset, one that can be easily replicated by managers trying to curb shopping cart abandonment. Second, we show that mindset impacts shopping cart abandonment by driving those in an abstract mindset to focus on key features of products, as participants in abstract mindsets were largely unaffected by the addition of positive but rather unimportant attributes. This is in contrast to those in concrete mindsets who significantly reduced their likelihood of shopping cart abandonment when given the additional unimportant features. Finally, we showed that the decreased shopping cart abandonment among consumers in abstract mindsets is attributable, at least partially, to the

greater involvement that they have with the products in the cart. We discuss the theoretical and practical implications of these findings next.

General Discussion

As the world is becoming increasingly dependent on technology to intermediate and facilitate commercial transactions, it is important for online retailers to recognize psychological processes that underlie consumers' behavior in an online shopping context. Though online shopping has been traditionally considered to be an extension of consumers' brick-and-mortar experiences, there are nevertheless fundamental differences between the two that are critical to consider (Kukar-Kinney and Close, 2010). Further, online retailers are faced with the common phenomenon of shopping cart abandonment that simply does not exist offline. While this problem can negatively impact companies' revenue, it also harms consumers who may waste time and effort on abandoned carts. The current research answers the call for further exploration of the drivers of online shopping cart abandonment (Kukar-Kinney and Close, 2010; Rajamma *et al*., 2009) by investigating the specific role of consumers' mindsets in the online consumption process. Results from three studies demonstrate that consumer mindsets impact the likelihood of shopping cart abandonment, evince involvement as the driver of these effects, and highlight the moderating role of the number of peripheral attributes included in product descriptions.

While prior work has explored factors affecting online consumer behavior and shopping cart abandonment, most of the examination has centered on variables external to consumers themselves. Thus, the current work contributes to the literature by demonstrating the influence of one set of factors, namely abstract or concrete mindsets, resulting from different psychological distances. Importantly, as evinced by much prior literature, these different mindsets occur

naturally in consumer settings (Baskin *et al*., 2014; Pfeiffer *et al*., 2014; Trope and Liberman, 2003, 2010) and as the present research demonstrates, these mindsets can potentially be influenced by marketers rather easily through slight alterations in website text such as that in a recommendation engine or in product descriptions themselves.

This research also contributes to the literature on CLT by being among one of the first efforts to examine the effect of mindset construal level on the involvement with objects under evaluation. While most previous research has focused on studying consumers' attitudes and behaviors toward products with attributes that match consumers' mindsets in terms of construal (e.g., products with features superior in desirability are preferred by consumers adopting an abstract construal), the present paper explores the more basic, fundamental idea that consumer mindsets might influence consumers' behavior—by affecting perceived product importance—even when products do not vary systematically in their superiority on relevant attributes. Future research could explore whether the long-established matching effects on consumers' attitude toward products can affect, and even potentially moderate, the more basic effect that mental construal has on perceived product importance. Additionally, given that extant research suggests that consumer mindsets have differential effects on purchase decisions that depend on the nature of product arrays (e.g., different types of products relating to the same goal vs. substitutable products; Goldsmith, Xu, and Dhar, 2010), future research might look at the relationship between products in online shopping carts in the context of abandonment.

The findings from this research indicate that mental construal level can influence involvement with objects in one's shopping cart, and subsequently affect purchase intentions. This insight has many implications for online and brick-and-mortar retailers, as well as for shoppers. Most obviously, the knowledge provided here can aid in online retailer strategy.

Importantly, since placing individuals in an abstract mindset leads to increased involvement and purchase intentions for products placed in a shopping cart (assuming the product description emphasizes few key attributes, a common marketing practice), one method for increasing the completion of online transactions may be to manipulate consumer mindsets directly. For instance, marketers could increase involvement with products consumers are considering purchasing by asking them to think about the long-term use of the products or about the reasons for why they would consider purchasing those products (Fujita *et al*., 2006; Trope and Liberman, 2010). As study 3 shows, such manipulations are easily accomplished through simple adjustments to website copy. Alternatively, direct mailing strategies could include elements in line with abstract thinking (i.e., email sign-ups for discounts on future (vs. current) purchases, calls to action for gifting to others (vs. buying for oneself)).

Though the current research was limited to an online context, it also has interesting implications for in-store experiences. For example, brick-and-mortar retailers can substantially benefit by inducing consumers to think abstractly when shopping in a store and emphasizing central product attributes accordingly. However, on a practical level, inducing such a mindset may be difficult to implement in a physical setting. One way to possibly do so may be to use technology (i.e., mobile phones) to provide consumers with a promotion or incentive that is framed in a way to foster an abstract mindset. For instance, food companies selling products through brick-and-mortar retailers could induce consumers to think about why they would want to buy certain ingredients rather than using the more common strategy of encouraging consumers to think about specific recipes they might cook using the item (which could induce a more concrete mindset, negatively impacting sales). On the other hand, the findings from this work can also serve to provide shoppers themselves with beneficial information to better their online

shopping experiences. For instance, consumers can avoid making unnecessary purchases by adopting a concrete mindset. If consumers train themselves to think more concretely before finalizing their purchases, focusing on the specific ways in which they might use every single feature of the product they are considering purchasing, they may realize that the product is unimportant and may ultimately forego purchasing it.

While the findings from the current research can provide useful applications for companies and consumers alike, there are some limitations worth noting. Most profoundly, this research utilized controlled, experimental studies to examine the proposed effects. While this technique allowed for a clear demonstration of the consequences of abstract and concrete mindsets, there are several limitations. Importantly, participants in the present studies were purposely put into abstract or concrete mindsets that resulted in different consumption outcomes. Although the controlled nature of this manipulation was necessary, one shortcoming may be the lack of relevance to actual consumption scenarios. For example, when consumers are shopping, they do not necessarily have to put products in their carts. Furthermore, although retailers can make attempts to induce specific (i.e., abstract) mindsets, there is no guarantee that consumers will be influenced by those mindsets to the degree that they were in controlled experiments. Another limitation is that the current research did not assess any antecedents of shopping behavior such as shopping goals. As such, the role of different shopping goals and their potential interactions with the manipulated mindset could not have been assessed. Finally, like all experimental research, it can be argued that participants' behavior was biased by demand effects (Sawyer, 1975). Relatedly, given the hypothetical nature of the tasks, participants may have behaved differently than they would have in actual consumption scenarios. Nevertheless,

differences resulted between the two different mindset manipulations, thus garnering support for little (if any) demand effects.

The findings from this research pose several interesting questions for future research to examine. For instance, it would be interesting to explore a scenario in which participants are asked to choose between product types (i.e., utilitarian vs. hedonic). Given the frequent treatment of involvement as a product category-level (Petty *et al*., 1983), exploring the interaction with manipulated construal levels could be worthwhile. In addition, future research should assess antecedent factors like shopping goals (e.g., recreational versus task oriented; Kaltcheva and Weiz, 2006) or consumer shopping styles (Park, Yu, and Zhao, 2010), and how they might interact with consumers' mindsets to affect involvement and product purchase. Further, to increase the external validity of this work, future efforts may utilize a more realistic shopping setting without as much control. For example, consumers can be told to browse a website as they normally would and their naturally-occurring mindsets can be assessed thereafter. Finally, perhaps the most beneficial scenario could be to implement mindset manipulations on a real website while monitoring activity through clickstream data or weblog. In this way, actual behavior can be examined and the effect of specific mindsets on consumer behavior seen in this research can therefore be more solidly established.

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