

# Context Effects from Bodily Sensations: Examining Bodily Sensations Induced by Flooring and the Moderating Role of Product Viewing Distance

JOAN MEYERS-LEVY  
RUI (JULIET) ZHU  
LAN JIANG

When consumers shop, the flooring underfoot can prompt bodily sensations—a sense of comfort from soft carpeting or fatigue from hard tile flooring. Like moods, such bodily sensations may foster context effects on the products shoppers observe. However, whereas moods prompt only assimilation effects, we demonstrate that consumers' bodily sensations can produce either assimilation, contrast, or no context effects. Further, consumers' viewing distance from a product can determine the direction of such effects. Evidence attests that these effects are (a) prompted by bodily sensations, not conceptual knowledge, (b) rather limited in scope, and (c) reversible in direction under certain circumstances.

Shopping can be an active and often fatiguing exercise. Shoppers frequently walk more than a mile during shopping expeditions, traversing parking lots, walkways, and mall atriums. When venturing inside stores, they often approach and assess merchandise, sometimes viewing it from afar to gauge its overall appearance but at other times hovering close to goods to explore their details. Moreover, as shoppers engage in such activities, they often are exposed to any number of elements that can stimulate physical bodily sensations. These include not only sensory stimuli in the broader retail environment (e.g., odors, temperature) but also tactile properties of the very flooring on which they stand. Such flooring can range from hard, leg-fatiguing surfaces like tile to plush, comfort-inducing carpeting (Cham and Redfern 2001).

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Joan Meyers-Levy is Holden-Werlich Professor of Marketing at the Carlson School of Management, University of Minnesota, Minneapolis, MN 55455 (jmeyerslevy@csom.umn.edu). Rui (Juliet) Zhu (juliet.zhu@sauder.ubc.ca) is Canada Research Chair, associate professor of marketing, and Lan Jiang (Lan.jiang@sauder.ubc.ca) is a doctoral candidate, both at the Sauder School of Business, University of British Columbia, Vancouver, BC V6T 1Z2. We thank the Social Sciences and Humanities Research Council of Canada for their partial funding of this research via support provided to the second author.

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Can these types of flooring influence people's assessments of products that they observe while shopping? Some research suggests so. When assessing an item, people often use two types of input that may be accessible and perceived as relevant: features of the item itself and their own internal experiential feelings. Although such feelings sometimes arise from incidental factors, they still may be viewed as reasonably diagnostic and applicable to the target item (Schwarz and Bless 2007). To illustrate, Schwarz and Clore (1983) found that when people were contacted on either a sunny or a rainy day and asked how satisfied they were with their lives in general, their life satisfaction assessments reflected the favorableness of the feelings that were incidentally prompted by the weather (upbeat or downcast, respectively). Such outcomes were eliminated, however, when people were made cognizant of the true source of their feelings. In that case, individuals apparently recognized that their experiential feelings (i.e., moods) in fact were irrelevant to the query, which led them to ensure that such feelings exerted no influence on their assessments. Thus, such findings suggest that unless people have obvious reasons to discredit the relevance of their feelings to the issue in question, they are likely to employ them as useful input and assimilate them in their assessments.

Other mood investigations have observed similar findings (e.g., Clore 1992; Schwarz, Servay, and Kumpf 1985), suggesting that shoppers may be apt to mistake their bodily sensations evoked by a store's flooring—say, the feeling of

physical (dis)comfort experienced from standing on a hard tile versus a carpeted floor—for their reactions to a focal product. Still, it remains unclear whether this deduction drawn from mood studies will apply to the type of bodily sensations of interest to us. Whereas moods consist of highly diffuse, purely affective feelings spawned solely by psychological processes, bodily sensations have a more circumscribed physical locus, which arises from contact between a stimulus and a person's body-embedded sensory receptors (e.g., receptors of textures, gustatory tastes, etc.). Given that such bodily sensations have a more specific locus that concerns a specific sense, they may exert an influence on a narrower set of assessment characteristics—only ones that pertain to the sense in question.

Questions also linger about the mechanism that might underlie any assimilation effect between such sensory feelings and people's assessments. Prior research has assumed that, due to its ready accessibility, the favorableness of people's feelings (i.e., their mood) is used in some fashion as pertinent input concerning the target item, thereby shaping people's interpretation of the target item. Yet, it remains possible that when individuals momentarily notice incidental contextual cues that activate such sensations (i.e., the sunny or rainy weather or, in our case, the texture of the flooring), relevant thoughts or concepts are triggered by these cues, and these conceptual thoughts—not people's sensations *per se*—are actually responsible for any observed assimilation effect. In other words, in Schwarz and Clore's (1983) study, participants' passing attention to the warm, sunny (dreary, rainy) weather may have primed thoughts about enjoyable leisure-time (dull, mundane) activities. These thoughts, in turn, may have served as conceptual primes that prompted associated cognitions about enjoyable (unenjoyable) activities in participants' lives at large; ergo, participants reported higher (lower) overall life satisfaction. Of course, when the weather was made salient, participants realized its irrelevance, which prompted them to make sure that it did not influence their assessments. As such, context effects were averted.

Finally, contrary to observations in extant mood studies, even if people misread their bodily sensations when assessing target items, there is reason to suspect that these sensations will not invariably produce a positive, assimilative influence on assessments of the target. Rather, the context effects literature offers much evidence that when assessing a target item, contextually spawned accessible data may be used in alternative ways, which can prompt either assimilation or contrast effects (Schwarz and Bless 2007). Contrast effects emerge when people's assessments of target items are negatively related to such data. In light of this information, significant progress would be made if we could elucidate whether and when people's contextually evoked bodily sensations will produce an assimilation, contrast, or no effect on assessments of a target product.

This article explores these issues. In particular, we investigate whether and how consumers' bodily sensations of (dis)comfort that may emerge from standing on either a hard

tile or softly carpeted floor can influence their assessments of a target product viewed simultaneously. Notably, we also examine another factor that is novel, practically relevant, and may moderate the direction of this influence: the magnitude of the distance from which consumers stand from the product. To foreshadow, we posit that in most cases, when the distance that separates the consumer from the product is moderately far and thereby hinders people from clearly accessing or inspecting the target product's specific features, bodily sensations prompted by the flooring will be employed as input that will affect product interpretation, fostering an assimilation effect on product assessments. On the other hand, when this distance is minimal and allows clear and lucid access to the product's specific features, people's bodily sensations still may be used, but now they may serve a different function. They are likely to be used as a comparison standard against which the target product is judged, prompting a contrast effect on product assessments. Finally, when the distance separating the consumer from the product is extremely far, such that virtually all visibility of and access to the product's specific features are undeniably obscure, people are apt to recognize this and the futility of meaningfully assessing the product due to the unreliability of all data. Thus, they are likely to disregard even their bodily sensations and instead simply ascribe a relatively neutral, default value to their product assessments.

The preceding logic is reasonable, yet a point of clarification is necessary. When discussing how experiential data can elicit context (e.g., assimilation) effects, we employed the intuitively appealing language offered by the feelings-as-information literature (e.g., contextually induced feelings may be perceived and treated as relevant input about a target item; Clore et al. 2001; Schwarz and Clore 1983). Henceforth, however, we discuss the process that produces such effects using compatible but alternative language taken from the context effects literature. We use such language because Schwarz and his colleagues, who originally proposed the feelings-as-information account, now recognize that the role played by contextually induced experiential data is, in fact, fully compatible with broader and more general theory that accounts for all context effects (Schwarz and Bless 2007). Context effects theory employs notions of mental representations and construal to explain how and why any type of contextual data can elicit assimilation or contrast effects. Thus, we favor the language of context effects theory, for it offers a more parsimonious, current, and all-encompassing account of how either contextually activated conceptual or experiential (e.g., body sensation) data can influence target item assessments.

At this point, we turn to some crucial insights offered by the context effect literature. They enable us to develop our thesis that bodily sensations evoked by flooring can differentially affect consumers' product assessments as a function of consumers' distance from the product.

## **BODILY SENSATIONS, CONSUMERS' DISTANCE FROM A TARGET PRODUCT, AND CONTEXT EFFECTS**

Context effects theory explains the processes that account for how incidental contextual data can influence assessments of a target item, regardless of whether such data spawn concepts or experiential feelings. The basic premise of this theory is that concepts or sensations activated by contextual data can affect target object assessments during two stages: at the time the target item is encoded and initially interpreted and at the judgment stage when a formal assessment of the target may be rendered by comparing it with a pertinent standard (Schwarz and Bless 2007).

During encoding, contextually activated data that are applicable to the target object on some dimension (Higgins, Rholes, and Jones 1977) typically are employed as a convenient interpretive frame that guides people's understanding of the target. Thus, such data are effectively assimilated with people's initial impressions of the target. At a subsequent judgment phase, these data again may serve a useful purpose, but this time it is as a handy comparison standard against which the target is assessed more formally. This comparison process does not always occur, but when it does, differences between the target and the standard tend to be underscored. Hence, this process prompts a contrast effect that generally overrides any earlier encoding-induced context effect.

Much inquiry has focused on identifying factors that can influence the direction of context effects by altering how the contextually activated data are used during the preceding two stages. Most of this work concentrates on how characteristics of the contextually activated data may do this (e.g., its extremity [Herr 1986]; its distinctness [Stapel, Koomen, and Velthuisen 1998]). More germane to our purposes, however, is evidence that the clarity of the mental representation that people form of the target item (i.e., how clearly they construe the item) also can exert such an influence (Kim and Meyers-Levy 2008; Schwarz and Bless 2007).

This latter work suggests that if an individual's mental representation of the target object is poorly defined (i.e., it is ambiguous with features that lack specificity) and thus has flexible boundaries, contextually activated data are likely to operate at encoding as an interpretive frame that guides interpretation of the target. As such, these data are effectively incorporated in the person's mental representation of the target, prompting an assimilation effect on their initial impressions of the target. At the subsequent judgment stage, however, the poor definition of the target representation renders it too amorphous and vague to be meaningfully compared with any standard (Kim and Meyers-Levy 2008). Hence, a comparison process that might further refine the individual's initial impression of the target is unlikely to occur, causing the assimilation effect that emerged during encoding to remain intact on target assessments.

A different process and outcome is expected, however, when people's mental representation of the target is rela-

tively clear, well specified, and unambiguous. Here, the target's precise definition and boundaries hinder penetration of the contextual data during encoding, which deters any initial assimilation effect of these data. Nonetheless, during the subsequent judgment stage, the clear definition of the target's mental representation allows if not encourages comparison of the target with a standard. Because the contextual data (e.g., one's bodily sensations) are apt to be readily accessible, they are likely to be employed as a convenient comparison standard. As noted earlier, the ensuing comparison process generally highlights differences between the target and standard, and this prompts a contrast effect on assessments. Hence, the target object is assessed more favorably when the implications of the contextual data (e.g., bodily sensation) are relatively negative rather than positive (Kim and Meyers-Levy 2008).

Although the preceding logic suggests that the clarity of a person's mental representation of a target object should moderate the direction of any context effects, little attention has been devoted to identifying specific factors that influence this clarity. Nevertheless, we reasoned that one such factor could be the magnitude of the spatial distance that separates a consumer from a target product during its examination. In most instances, the visibility and clarity of a product's specific features should be enhanced the closer that one stands to a product, and this should enhance the clarity of the mental representation that a person forms of that product. Thus, if tactile aspects of the flooring on which a consumer stands during product examination (i.e., the hardness of the tile or the softness of the carpeting) prompts that individual to experience a bodily sensation of either discomfort or comfort, the influence of this sensation on the viewer's product assessments should vary as a function of the physical distance that separates the consumer from the product. Specifically, if the product is viewed from a moderately far distance that blurs the visibility of its specific features, viewers should form a rather poorly defined mental representation of the product. Thus, for reasons explained earlier, viewers' bodily sensation of (dis)comfort is likely to be assimilated with their product assessments. Alternatively, if this distance is minimal and thereby promotes clear visibility and a well-defined representation of the product, people's bodily sensations are apt to be used primarily as a comparison standard for formally judging the target product. This latter process should foster a contrast effect on viewers' product assessments.

One question that remains, however, is how viewers are likely to use their bodily sensations when the distance that separates them from the product reaches a far extreme. We reasoned that, in this instance, viewers' perception of the target product's features may be so obviously hazy that individuals will realize that the available inputs are too unreliable to enable a sensible assessment of the product. Hence, viewers are apt to disregard and make no use of their bodily sensations when processing the target product. Instead, they are likely to adopt a neutral default value as

their assessment, producing no context effects on their product assessments.

In sum, assuming that people who stand on a carpeted versus a hard tile floor experience bodily sensations of comfort versus discomfort, the preceding theorizing implies that a two-way interaction of flooring and product distance should occur. We test this thesis and the specific outcomes outlined earlier in experiment 1.

## EXPERIMENT 1

### Stimuli

First, a pretest assessed our assumption that individuals experience varying degrees of bodily comfort as a function of the flooring on which they stand. Twenty-seven individuals fully clad with shoes were escorted into a room that featured either a softly carpeted or hard vinyl tile floor. With clipboards and attached surveys in hand, participants were told that the study sought to explore whether variation in individuals' early family and geographical background affects their sense of physical well-being or comfort. Informed that because standing versus sitting helps people better discern their physical well-being, all participants were asked to complete the survey questions while standing. Thus, as participants stood on either the carpeted or hard tile floor, they were asked to rate the extent to which they presently felt comfortable, softly relaxed, physically supple, at ease, contented, and restful (1 = not at all, 7 = very much). Then, to complete the guise, several questions probed participants about where they were born, grew up, number and sex of siblings, and so forth. Analysis of participants' responses to the aggregated comfort-related items ( $\alpha = .83$ ) revealed that they felt a greater sense of physical comfort when they stood on the carpeted versus the hard tile floor ( $M_{\text{carpet}} = 4.94$ ,  $M_{\text{tile}} = 4.13$ ;  $F(1, 25) = 4.46$ ,  $p < .05$ ,  $d = 3.37$ ; in all studies, effect sizes were assessed using Cohen's  $d$  for all independent samples, partial eta-squared was used in mixed ANOVA, and  $f$ -squared was used in multiple regression). Thus, these findings support our assumption that standing on carpeted versus tile flooring can alter people's bodily sensation of (dis)comfort.

The main study was conducted in a room covered with a hard vinyl tile floor. However, for half of the sessions, the area of the floor where participants were asked to stand was covered with a soft pile carpet, while in the other sessions participants stood in this same area, but the hard tile floor remained exposed. In all sessions, the rest of the room was covered with vinyl tile, and it served as the product display area. In this and all other studies reported, participants wore shoes.

Up to three participants took part in each study session, which was described as a product viewing and evaluation study. To begin, each participant was handed a clipboard with an attached survey and escorted to a predetermined position on the carpeted or tile floor that bordered the product display area. The experimenter then placed the target product in a precise floor location, which was either close

to, moderately far from, or extremely far from where participants stood. The specific distances in these conditions were 6 inches, 5 feet, or 10 feet, respectively. The target product consisted of a very large vase, which was chosen because its surface texture was sufficiently varied so that any characterization of the product would be malleable. Specifically, half of the vase was constructed of a smooth, lustrous black ceramic material, while the remainder was made of a rough-textured silver material that was fashioned into curved grooved lines (refer to appendix fig. A1 for a picture of the vase).

### Procedure

Study participants consisted of 192 students who received course credit, and the study design was a 2 (flooring: carpeted or tile)  $\times$  3 (product distance: close, moderately far, or extremely far) between-subjects factorial. Up to three participants entered a room, received clipboards with attached surveys, and were instructed that the study sought to understand how consumers evaluate products displayed in stores. To simulate this setting, each participant was asked to stand in a specific location on the carpeted or hard tile floor that bordered the empty product display area. They were then asked to view a target vase that was placed on the floor at either a close, moderately far, or extremely far distance from them. Without ever touching the product or stooping, participants assessed the target vase on six items that gauged how comfortable, soft, supple, restful, smooth and relaxingly stylish it appeared (1 = not at all, 7 = very much). These items were aggregated to form a product comfort index ( $\alpha = .66$ ). Finally, to assess whether our manipulations actually affected participants' mood as opposed to their bodily sensations, all participants completed the PANAS mood scale (Watson, Clark, and Tellegen 1988).

### Results

An ANOVA performed on the comfort index revealed a two-way interaction of flooring and product distance ( $F(2, 183) = 3.45$ ,  $p < .05$ ,  $d = .35$ ). Planned comparisons revealed that when participants viewed the vase from a moderately far distance, their assessments of the product exhibited an assimilation effect. That is, participants tended to report that the vase possessed a more comforting appearance when they viewed it while standing on the carpeted versus hard tile floor ( $M_{\text{carpet}} = 3.61$ ,  $M_{\text{tile}} = 3.23$ ;  $F(1, 183) = 2.72$ ,  $p < .10$ ,  $d = .33$ ). But when the vase was viewed from a close distance, a contrast effect emerged. Participants perceived the product as more comforting when they viewed it while standing on the hard tile versus the carpeted floor ( $M_{\text{tile}} = 3.76$ ,  $M_{\text{carpet}} = 3.29$ ;  $F(1, 183) = 4.23$ ,  $p < .05$ ,  $d = 2.91$ ). Finally, when participants viewed the vase from an extremely far distance, their assessments of it were unaffected by the flooring ( $M_{\text{carpet}} = 3.46$ ,  $M_{\text{tile}} = 3.57$ ;  $F < 1$ ).

Next, a separate flooring by product distance ANOVA examined participants' responses to the PANAS mood scale.

Separate positive ( $\alpha = .88$ ) and negative ( $\alpha = .84$ ) mood indexes were created by averaging all positive and all negative items, respectively. Results revealed no treatment effects on either the positive ( $p$ 's  $> .45$ ) or negative ( $p$ 's  $> .16$ ) mood index. Thus, variation in participants' mood cannot explain our findings.

## Discussion

The results of study 1 generally support our theorizing, suggesting that bodily sensations prompted by the texture of flooring can produce either an assimilation, contrast, or no effect on people's product assessments. The particular direction of these context effects varied as a function of the distance from which people viewed the product. When individuals viewed the product from a moderately far distance, they assimilated their bodily sensations with the target product. Presumably this occurred because the moderate distance impaired both the clarity of people's visual perception of the product and the mental representation that they formed of it. Hence, individuals incorporated their bodily sensations into their impressions of the product during encoding, and this assimilation effect remained intact during the judgment stage because their poorly defined product representation deterred a comparison process. Outcomes differed, however, when the product was viewed from a close distance, for this enabled viewers to see the target product clearly and to generate a well-defined representation of it. The clarity of this representation probably weakened any assimilation of individuals' bodily sensations on their product representation during encoding, yet it enabled them to undertake a comparison process during the judgment stage. This entailed using people's activated sensations as a handy comparison standard, and the comparison process resulted in a contrast effect on people's product assessments. Finally, when individuals viewed the target product from an extremely far distance, we speculated that individuals' visual perceptions and representations of the product may have been so severely degraded that they realized this and thereby recognized that any sensation of (dis)comfort they currently felt could not be related to the barely discernible product. Thus, in this condition, viewers discounted their bodily sensations, producing product assessments that were immune to contextual influences (i.e., their bodily sensations).

The preceding findings add to the extant literature and provide the strongest evidence to date that people's bodily sensations can exert a full range of context effects. Depending on an individual's proximity to a product and the degree of comfort versus discomfort experienced owing to the flooring underfoot, individual's bodily sensations may prompt either an assimilation, a contrast, or no effect on their assessments of how comforting the product's appearance is. Still, it may be unwise to assign too much weight to these findings, for not only are they silent about the reliability of the observed effects but they rest on product assessments that concern a single (comfort) dimension.

These concerns were addressed in a second study that was similar to the first except that three crucial elements

were altered. The first entailed replacing our measure of how comforting the target product's appearance was with one that probed the perceived firmness of the product. Note that unlike the comforting dimension, the firmness dimension corresponds with a sensation that should be evoked more strongly by the hard tile versus the carpeted floor. Thus, confidence in our theorizing and outcomes would be enhanced if the findings observed on this measure paralleled those detected earlier on the comfort measure, except that under the moderately far (close) distance conditions that should produce an assimilation (contrast) effect, assessments of the product's firmness should be elevated (lower) when participants stand on the hard tile versus the more pliant carpeted floor.

A second modification in study 2 entailed asking participants to assess another target product in addition to the earlier examined vase. This product was a blatantly firm metal chair (refer to appendix fig. A1 for an image of the chair). We anticipated that regardless of whether participants' distance from the chair was moderately far or close, the chair's firmness would be unambiguous and extreme. Thus, the assimilation and contrast effects observed on assessments of the target vase were likely to be greatly attenuated if not entirely absent for the chair.

A final modification in experiment 2 involved varying whether participants were aware of the actual source of their bodily sensations when they assessed the target product. Given that context effects typically operate outside of people's conscious awareness (Higgins and Bargh 1992), this manipulation tested a possible boundary condition of our previously observed findings. In particular, the outcomes that we observed in study 1 should be conceptually replicated when participants are unaware of the true source of their bodily sensations. However, when participants were alerted that the sensations they felt could be due to an incidental contextual factor, namely, the flooring on which they stood, either of two outcomes was possible. One is that, as Schwarz and Clore (1983) and others observed in their mood studies (e.g., McFarland, White, and Newth 2003), such awareness will cause individuals to refrain entirely from using their bodily sensations when assessing the target product. This follows because, logically, such data should have no bearing on people's assessments when either encoding or judging the product. Thus, null effects may emerge. Yet, a second possibility suggested by other research also is conceivable (Wilson and Brekke 1994). Given participants' awareness of the true source of their sensations, they could zealously attempt to partial out any bias that the sensations might exert automatically on their product assessments. In the process, however, they might overadjust for this bias, which could result in a contrast effect on their product assessments. Note that this type of contrast effect, often called a correction-based contrast, occurs via a different process than the one we outlined earlier. While either of the preceding outcomes was possible, we anticipated that similar to Schwarz and Clore's (1983) findings, no context effects would most likely emerge on product assessments when

individuals were made aware of the true source of their sensations.

### EXPERIMENT 2

One hundred four University of British Columbia undergraduate students participated in this experiment in exchange for \$10 each. The procedure was identical to that used in experiment 1 except for four changes. We (a) eliminated the extremely far distance condition, given that previously it produced only a null effect; (b) asked participants to assess the focal products not in terms of comfort but, instead, on four items related to an alternative firmness dimension (i.e., firm, unyielding, hard, and rigid; 1 = not at all, 7 = very much;  $\alpha = .66$ ); (c) included a second target product that was unambiguous in the firmness of its appearance, namely, a solid metal frame chair with a stiff seat; and (d) manipulated whether participants were aware of the true source of their contextually induced sensations. People's awareness of this source was manipulated by altering the instructions that participants received. Specifically, in the source awareness condition, participants were told explicitly that they would be evaluating a product while standing on a softly carpeted (hard tile) floor, given that this emulated a store setting. Further, they were advised that prior research had shown that such flooring can affect people's feelings of (dis)comfort when they shop.

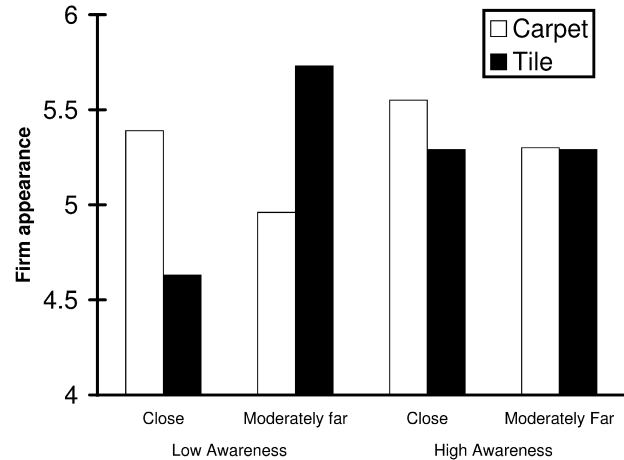
In sum, experiment 2 employed a 2 (flooring: carpet vs. tile)  $\times$  2 (product distance: close vs. moderate)  $\times$  2 (awareness: low vs. high)  $\times$  2 (product type: vase vs. chair) mixed design. The first three factors varied between subjects, while the last factor varied within subjects.

### Results

An ANOVA on participants' product firmness assessments ( $\alpha = .66$  for the vase;  $\alpha = .74$  for the chair) revealed a four-way interaction of flooring, product distance, source awareness, and product type ( $F(1, 95) = 4.03, p < .05, h_p^2 = .04$ ). To examine this interaction further, we investigated assessments of each of the two products separately. Analysis of participants' assessments of the vase revealed a significant three-way interaction of flooring, product distance, and source awareness ( $F(1, 96) = 3.81, p < .05, d = .35$ ).

FIGURE 1

EXPERIMENT 2: EFFECT OF AWARENESS, PRODUCT DISTANCE, AND FLOORING ON PERCEPTIONS OF THE VASE'S FIRM APPEARANCE



Treatment means for assessments of each product are presented in table 1, and figure 1 depicts the outcomes on the preceding interaction for the vase. The interaction of flooring and product distance was significant when participants were unaware of the source of their bodily sensations ( $F(1, 96) = 10.94, p < .001, d = .72$ ). But, when such awareness was made salient, no treatment effects emerged ( $F$ 's  $< 1$ ).

Among participants who were unaware of the source of their bodily sensations, responses on assessments of the vase conceptually replicated those observed in experiment 1. Specifically, when participants viewed the vase from a moderate distance, an assimilation effect emerged whereby individuals assessed the vase as firmer in appearance when they viewed it while standing on the hard tile floor rather than the carpeted one ( $M_{tile} = 5.73, M_{carpet} = 4.96; F(1, 96) = 5.79, p < .05, d = 3.39$ ). But when participants viewed the vase from a close distance, a contrast effect obtained; they assessed the vase as firmer when they stood on the carpeted rather than the hard tile flooring ( $M_{carpet} = 5.39, M_{tile} = 4.63; F(1, 96) = 5.19, p < .05, d = 3.22$ ).

Different outcomes emerged, however, for the unambigu-

TABLE 1

TREATMENT MEANS AND STANDARD DEVIATIONS FOR EXPERIMENT 2

Assessment	Low Awareness				High Awareness			
	Moderately far distance		Close distance		Moderately far distance		Close distance	
	Carpeted flooring	Tile flooring	Carpeted flooring	Tile flooring	Carpeted flooring	Tile flooring	Carpeted flooring	Tile flooring
Vase	4.96 (1.14)	5.73 (.93)	5.39 (.68)	4.63 (.58)	5.30 (.54)	5.29 (1.15)	5.55 (.83)	5.29 (.63)
Chair	4.54 (1.05)	4.40 (.72)	3.96 (.73)	4.38 (.39)	4.35 (1.17)	4.58 (1.30)	4.85 (.95)	4.84 (.76)
Cell size	12	16	13	12	15	12	12	14

ously hard chair. Analysis of participants' firmness assessments of this product revealed no treatment effects ( $p$ 's > .27).

## Discussion

The findings from this study suggest that the outcomes observed in experiment 1 are quite reliable. When individuals assessed the target vase on a dimension that was the opposite of the one investigated in study 1—it concerned the product's firmness versus its more pliant comforting appearance—the outcomes from that study were conceptually replicated. That is, participants' bodily sensations were assimilated with assessments of the product's firmness when the vase was viewed from a moderately far distance as individuals stood on a hard tile versus a carpeted floor. But such assessments exhibited a contrast effect when the vase was viewed at a close distance and individuals stood on the carpeted rather than the hard tile floor.

At the same time, two important boundary conditions were identified. First, the aforementioned context effects did not occur when the target product was a hard metal chair that was unambiguously firm. Second, consistent with the view that context effects typically operate outside of conscious awareness, the outcomes that obtained earlier for the vase were conceptually replicated only when participants were not aware that a contextual factor (i.e., the flooring) was likely to be responsible for their bodily sensations. Indeed, when participants were cognizant of the true source of their bodily sensations, treatment effects on product assessments were absent. Thus, it appears that awareness of the source induced individuals to refrain from using their sensations during any stage of the assessment process.

An important question that still remains, however, is whether the context effects observed to this point are truly attributable to people's use of their bodily sensations *per se*. As our earlier discussion of affective feelings (i.e., moods) implied, it is conceivable that our findings actually reflect people's use of conceptual knowledge that may have been primed by the context (i.e., the flooring). That is, our participants may have noticed the softly carpeted or firm tile flooring on which they stood, and this flooring itself could have primed descriptive concepts concerning the floor covering's comfort and firmness levels. In turn, these concepts—not people's sensations of (dis)comfort or firmness—could have shaped people's product assessments in accordance with the process we have theorized. Given the viability of this alternative mechanism, it is critical to distinguish whether our findings reflect the operation of simple cognitive priming, or, as we propose, the influence of people's bodily sensations.

A second issue that lingers is whether people's physical bodily sensations (e.g., the flooring-induced sensation of [dis]comfort in one's legs, feet, or back) produce context effects that are more limited in scope than those prompted by affective feelings, such as moods, which are diffuse and nonspecific. That is, perhaps because, unlike diffuse affective feelings, physical bodily sensations are more localized

or circumscribed with respect to a particular sense and sense receptors, they might elicit context effects that are largely confined to assessments that relate to that sense—in our case, the sensation of tactile comfort or firmness, as opposed to, say, general assessments like overall affect toward a product.

Experiment 3 aimed to address these issues. To investigate whether the outcomes we observed reflect people's use of internally experienced bodily sensations as opposed to widely shared semantic (i.e., cognitive) concepts associated with the flooring, we examined whether and how differences in participants' self-monitoring might moderate the anticipated context effects. To explain, existing research suggests that individuals who are high in self-monitoring are especially sensitive to prescriptions implied by external cues in the particular situation that are consensually shared and thus socially sanctioned (DeMarree, Wheeler, and Petty 2005). These are likely to include any directives implicated by the shared semantic associations to the environment's flooring. On the other hand, people who are low in self-monitoring determine their responses by looking inward and devoting "serious attention to their own internal states, dispositions, and personal characteristics" (Snyder and Campbell 1982), and these should include individuals' internal bodily sensations. Hence, such theorizing implies that if our findings are the result of people's use of the cognitively primed concepts activated by the external situation (i.e., associations to the flooring), the anticipated context effects are likely to be more prevalent among high versus low self-monitors. But if they reflect people's reliance on their own internal sensations that arise due to the flooring, the effects should emerge primarily among people who are low, not high, in self-monitoring. In addition, study 3 also investigated the scope of our anticipated context effects. This was accomplished by interspersing among the comfort-related assessment items from study 1 several new items that examined participants' general or overall affective assessments of the target product.

## EXPERIMENT 3

### Stimuli and Procedure

Experiment 3 was conducted on 106 students who received course credit. The stimuli and procedures were identical to those used in the first study except for three changes. First, as in study 2, the extremely far distance condition was dropped. Second, a 13-item Revised Self-Monitoring scale (Lennox and Wolfe 1984) was administered at the end of the study. Third, we interspersed among the same assessment measures used in study 1 three additional items that probed participants' overall affect toward the target product (i.e., the vase). These items queried the extent to which the product appeared to be appealing, inviting, and vibrant (1 = not at all, 7 = very much). The items were summed to form an overall affect index ( $\alpha = .76$ ).

## Results

We investigated the effects of flooring, product distance, self-monitoring, and assessment type (i.e., comfort related or overall affective) by first running a general linear model where the latter factor was a repeated measure. The results revealed a four-way interaction of all four factors ( $F(1,96) = 4.81$ ,  $p < .05$ ,  $h_p^2 = .05$ ). We examined this effect further by investigating the two assessment measures separately. As anticipated, analysis of the comfort index ( $\alpha = .69$ ), which was identical to that from study 1, revealed a significant three-way interaction of flooring, product distance, and self-monitoring ( $t(98) = 2.24$ ,  $\beta = 7.67$ ,  $p < .05$ ,  $f^2 = .05$ ). To facilitate understanding of this interaction, we identified low and high self-monitors in terms of participants' responses to the self-monitoring items that were one standard deviation below and above the average. The three-way interaction is depicted in figure 2.

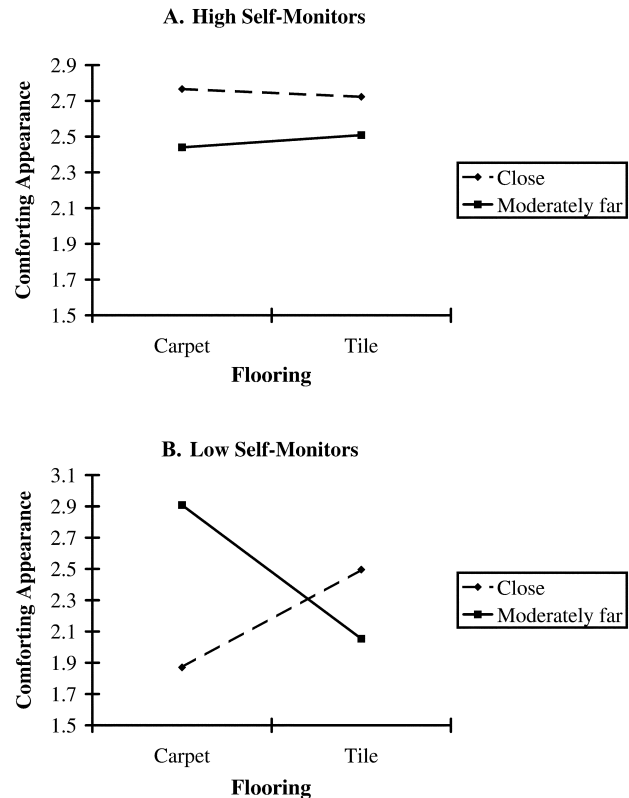
Further analysis of the simple slopes performed on the assessments of low self-monitors revealed that when the target vase was observed from a moderately far distance, product assessments exhibited an assimilation effect. Participants reported that the target vase was more comforting in appearance when it was viewed while standing on the carpeted versus the tile floor ( $t(98) = 2.42$ ,  $\beta = .63$ ,  $p < .05$ ,  $f^2 = .66$ ). But when participants viewed the product from a close distance, their assessments displayed a contrast effect that approached significance. Participants tended to perceive the vase's appearance as more comforting when they viewed the product while standing on the hard tile versus the carpeted floor ( $t(98) = 1.72$ ,  $\beta = .41$ ,  $p < .09$ ,  $f^2 = .20$ ). At the same time, assessments produced by high self-monitors were unaffected by the flooring, regardless of distance ( $p$ 's  $> .79$ ).

Outcomes differed, however, on participants' overall affective assessments of the vase. Here, regression analysis of the overall affect index revealed no significant treatment effects ( $p$ 's  $> .70$ ).

## Discussion

The results of study 3 both bolster and extend our theorizing. They uphold the contention that our findings reflect participants' use of their internal body sensations induced by the flooring, not their reliance on primed cognitive concepts associated with the flooring. This deduction is implicated by the observation that the anticipated context effects emerged only among individuals who were low rather than high in self-monitoring. Note that the former individuals alone base their responses on their internal sensations, like those elicited by the texture of the flooring. In addition, study 3 supports the premise that, in contrast to the broad impact that diffuse mood-induced affective feelings seem to exert on people's responses (e.g., Schwarz and Clore 1983), physical bodily sensations, which are more localized feelings, produce effects that are more limited in scope. We found that people who experienced bodily sensations of (dis)comfort used their sensations when assessing the prod-

**FIGURE 2**  
EXPERIMENT 3: EFFECT OF SELF-MONITORING, PRODUCT DISTANCE, AND FLOORING ON PERCEPTIONS OF THE PRODUCT'S COMFORTING APPEARANCE



uct's tactile properties but not its overall affective appeal. Not only does this observation concur with our reasoning but it suggests that the context effects we observed are unlikely to be the result of treatment-induced differences in people's moods or general affective feelings.

Despite the coherence of our findings, at least one other issue merits attention. We have theorized that the way participants use their bodily sensations when assessing a target product—either as an interpretive frame or as a standard against which they compare the target product—depends on the product's visual acuity as registered by viewers' vision, and this acuity determines the clarity of viewers' mental representation of the product. However, it remains possible that a somewhat different mechanism could be operating. Research into the effects of psychological distance (i.e., variation in an item's temporal, spatial, or social distance) on people's responses indicates that even when people do not directly experience an item (e.g., they do not visually perceive it), they nevertheless typically mentally construe or represent the item in a more concrete and detail specific (vs. abstract and ill-defined) manner provided that they conceive of it as existing at a close versus far distance (Henderson et al. 2006; Liberman, Trope, and Stephan 2007). Presum-



ably this occurs because people come to generalize their actual experiences with near and distant objects and eventually simply associate a close versus far psychological distance with more as opposed to less specific knowledge. This then prompts them to form a concrete versus abstract (i.e., clear versus poorly defined) representation of such items.

This body of theory could explain our findings by suggesting that our manipulation of viewers' physical distance from the product might not have varied the visual clarity of the product when participants viewed it; instead, it may have altered the degree of participants' psychological closeness to the product, and this, in turn, affected the concreteness and hence the clarity of individuals' mental construal of the product. To disentangle this account from the one that we have proposed, consider a less common but still plausible situation where viewers stand in close physical proximity to a product but cannot visually perceive its multiple elements clearly because the viewer's angle of vision obscures many relevant parts of the product. This might occur if, say, the product was an overstuffed gift basket filled with kitchen goods that rested close by on the floor. Here, the close vantage point would most likely reveal only the very tops (e.g., lids) or topmost layer of the items in the basket, not the basket's full contents. Note that, as psychological distance theory holds, a generalized and invariant association between distance and clarity should exist and determine how well-defined the product's mental representation is and thus the direction of context effects that emerge on product assessments. Thus, on assessments of the gift basket, our manipulations of flooring and product distance should still produce the same outcomes that we observed in the previous studies: assimilation should obtain when the distance between the viewer and the product is moderate, but a contrast effect should occur when this distance is close. Alternatively, if our theorizing is correct such that the results are driven by the clarity of viewers' visual perception of all relevant aspects of the product, viewers are likely to perceive the contents of the overstuffed gift basket more fully and clearly when they stand at a moderately far as opposed to a close distance from the product, for this moderately distant vantage point should offer a more complete and lucid visual image of the basket's full contents. Thus, in this case, the outcomes observed in our previous studies should now reverse, prompting a contrast effect when the distance between the viewer and the gift basket is moderately far and an assimilation effect when it is close.

Experiment 4 sought to distinguish which of these theories or processes was operating. Two key modifications were made in the stimuli of study 4. First, we attempted to conceptually replicate our findings from study 3 by replacing our measurement of self-monitoring, which captured people's tendency to rely on their sensations versus cognitions, with an externally controlled manipulation that primed individuals to be sensitive to either their internal sensations or cognitive concepts. We expected that our predicted outcomes would emerge only when participants were primed to be attentive to their bodily sensations, not their cognitions.

Second, we replaced the target vase with two different products. One was an empty rattan clothes basket or hamper that, similar to the vase, possessed some variation in the texture of its parts. The second product was a gift basket that was filled and layered with food and kitchenware (e.g., a jar of pasta sauce, a kitchen towel, etc.). We expected that, unlike the clothes basket, viewers would be able to more clearly and completely see the gift basket contents when viewed from a moderately far rather than a very close distance. Hence, we anticipated that the outcomes observed in study 3 would conceptually replicate on assessments of the clothes basket provided that people were primed to attend to their sensations (not their cognitions); individuals should exhibit an assimilation effect in the moderate distance condition and a contrast effect in the close condition. However, the aforementioned effects should entirely reverse in direction on participants' assessments of the gift basket. Specifically, among sensations-primed but not cognitions-primed participants, a contrast effect should emerge on gift basket assessments in the moderate distance condition, whereas an assimilation effect should obtain in the close condition.

A final modification in this study entailed including a thoughts measure. This was added in an effort to provide some evidence of the underlying process. Patterns of thought content should conceptually mimic the outcomes observed on participants' assessments for each product.

## EXPERIMENT 4

The materials and procedure used in this study were identical to those employed in study 3, except that (a) the self-monitoring measure was dropped and replaced with a priming manipulation that heightened participants' sensitivity to either their bodily sensations or their cognitions, (b) instead of examining overall affective assessments of the product, we pursued process evidence for our theorizing by asking participants to write down the thoughts or feelings that occurred to them as they examined the products, and (c) the target product we employed previously was replaced with two different products, a clothes basket and a gift basket, which varied in their visual clarity when viewed at a close versus a moderately far distance.

Participants' sensitivity to their bodily sensations versus their cognitions was varied via a priming manipulation adapted from one used by van den Berg et al. (2006). At the start of the study, all participants received a  $15 \times 15$  word matrix and were asked to search for nine words hidden in it. The list of hidden words in the sensations priming condition identified nine words related to internal feelings. They included words like sensation, instinct, bodily reaction, and intuition. The list of words given to those in the cognition priming condition all pertained to cognitive thought, including words like analyzing, contemplate, thinking, and reasoning. Participants were given 3 minutes to work on this task.

After this word task, participants were asked to view and assess two products, an empty rattan clothes basket and a gift basket made of a metal colander layered with kitchen goods (e.g., a jar of pasta sauce, box of pasta, kitchen towel,

etc.; refer to appendix fig. A1 for a picture). The flooring on which participants stood and their distance from the product were varied in the same manner as in study 3, and the order of product presentation and assessment was rotated.

A pretest examined whether, as we expected, participants could more clearly view the gift basket and its contents from a moderately far (vs. close) distance, but they could more clearly see the clothes basket and the vase, which had been employed in the previous studies, when they were viewed from a closer distance. Using the same room, procedure, and hard tile flooring employed in study 3, 20 pretest individuals viewed the three products in rotated order from either a moderately far or close distance. For each product, participants rated both how clearly they could see the product and how well they could see the details of the product (1 = not at all, 7 = very clearly). Consistent with our expectations, participants' clarity ratings revealed a product type by distance interaction ( $F(2, 17) = 16.84, p < .001, d = 2.83$ ). Participants reported that they saw the clothes basket ( $F(1, 18) = 63.84, p < .001, d = 3.57$ ) and the vase ( $F(1, 18) = 31.40, p < .001, d = 2.51$ ) more clearly when they were viewed from a close versus moderately far distance ( $M$ 's = 6.15 vs. 4.10 and 6.05 vs. 4.55, respectively). But they saw the gift basket more clearly when they viewed it from a moderately far versus a close distance ( $M$ 's = 5.46 vs. 4.45;  $F(1, 18) = 4.63, p < .05, d = 0.96$ ).

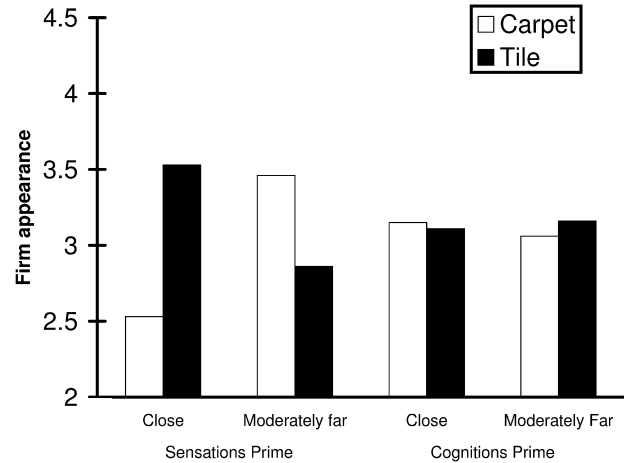
In sum, study 4 was conducted using 116 paid students, and it employed a 2 (flooring: carpeted vs. tile)  $\times$  2 (product distance: close vs. moderate)  $\times$  2 (prime: sensations vs. cognitions)  $\times$  2 (product type: clothes basket vs. gift basket) mixed design. The first three factors varied between subjects, and the last factor varied within subjects.

**Results**

An ANOVA on the product comfort indexes for the clothes ( $\alpha = .79$ ) and the gift baskets ( $\alpha = .71$ ) revealed a four-way interaction of flooring, product distance, prime,

**FIGURE 3**

EXPERIMENT 4: EFFECT OF PRIME, PRODUCT DISTANCE, AND FLOORING ON PERCEPTIONS OF THE CLOTHES BASKET'S COMFORTING APPEARANCE



and product type ( $F(1, 105) = 12.96, p < .001, h_p^2 = .11$ ). This interaction was examined further by investigating each of the two products separately.

Treatment means are reported in table 2, and figures 3 and 4 depict the interactions that emerged on assessments of the clothes and gift baskets, respectively.

Analysis of participants' assessments of the clothes basket revealed a three-way interaction of flooring, product distance, and prime ( $F(1, 105) = 6.92, p < .01, d = .51$ ). The interaction of flooring and product distance was significant only when participants' sensations ( $F(1, 105) = 10.87, p < .001, d = .68$ ), not their cognitions ( $F$ 's < 1), were primed. Follow-up analysis indicated that when sensations were primed, participants who viewed the clothes basket from a moderate distance exhibited an assimilation effect. They

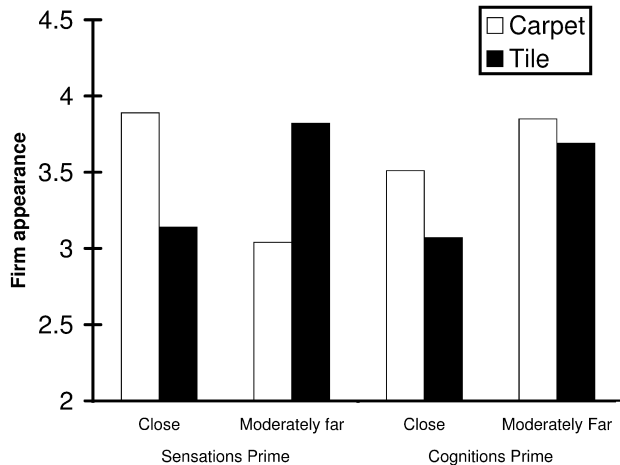
**TABLE 2**

TREATMENT MEANS AND STANDARD DEVIATIONS FOR EXPERIMENT 4

	Sensations prime				Cognitions prime			
	Moderately far distance		Close distance		Moderately far distance		Close distance	
	Carpeted flooring	Tile flooring	Carpeted flooring	Tile flooring	Carpeted flooring	Tile flooring	Carpeted flooring	Tile flooring
<b>Assessments:</b>								
Clothes basket	3.46 (.81)	2.86 (.69)	2.53 (.75)	3.53 (.97)	3.06 (.77)	3.16 (.96)	3.15 (1.05)	3.11 (.88)
Gift basket	3.04 (.78)	3.82 (1.22)	3.89 (.86)	3.14 (.82)	3.85 (1.05)	3.69 (.97)	3.51 (1.20)	3.07 (.73)
<b>Thoughts:</b>								
Clothes basket	1.54 (2.32)	-.32 (1.41)	-1.37 (2.07)	.39 (2.37)	.25 (1.91)	-.50 (1.45)	-.29 (2.24)	-.10 (2.33)
Gift basket	.38 (1.33)	1.68 (2.04)	2.40 (1.79)	.32 (1.25)	1.06 (1.39)	.62 (2.39)	1.46 (1.47)	.50 (1.21)
Cell size	12	14	15	14	16	17	12	15

FIGURE 4

EXPERIMENT 4: EFFECT OF PRIME, PRODUCT DISTANCE, AND FLOORING ON PERCEPTIONS OF THE GIFT BASKET'S COMFORTING APPEARANCE



tended to assess the clothes basket as more comforting in appearance when it was viewed while standing on the carpeted rather than the hard tile flooring ( $M_{\text{carpet}} = 3.46$ ,  $M_{\text{tile}} = 2.86$ ;  $F(1, 104) = 2.30$ ,  $p < .09$ ,  $d = 2.45$ ). But when participants viewed the clothes basket from a close distance, a contrast effect was evident. Here, they assessed the clothes basket as more comforting when they stood on the hard tile rather than the carpeted flooring ( $M_{\text{tile}} = 3.49$ ,  $M_{\text{carpet}} = 2.53$ ;  $F(1, 106) = 8.47$ ,  $p < .01$ ,  $d = 4.17$ ).

Next, we analyzed the thoughts and feelings that participants reported about the clothes basket. Two independent judges who were blind to the study conditions reliably coded participants' thoughts that pertained to feelings of either comfort or discomfort. Examples of comfort-related thoughts included "the basket is very warm feeling" and "you wanna just sit on it and relax." Examples of discomfort-related thoughts were "the basket is completely dark, giving me a sense of unwelcome," and "the four stiff spokes poking out at you at the top make it seem very prickly and bossy." Such thoughts were combined into an index that reflected net comfort-related thoughts by subtracting the number of thoughts that implied discomfort from those that implied comfort. As we discuss later, participants thoughts about the gift basket were coded and combined in a similar manner, and analysis of the thoughts indexes for the two products also revealed a four-way interaction ( $F(1, 106) = 7.73$ ,  $p < .01$ ,  $d = .55$ ).

Consistent with expectations, analysis of net comfort-related thoughts concerning the clothes basket revealed a marginal three-way interaction of flooring, product distance, and prime ( $F(1, 106) = 3.13$ ,  $p < .08$ ,  $d = .41$ ). The effect of flooring and product distance was significant only when participants' bodily sensations ( $F(1, 106) = 10.84$ ,  $p < .001$ ,  $d = .67$ ), not their cognitions ( $F$ 's  $< 1$ ), were primed. Fol-

low-up contrast analyses performed on such thoughts indicated that when sensations were primed, participants who viewed the clothes basket from a moderate distance exhibited an assimilation effect. That is, they produced more net comfort-related thoughts when they viewed the product while standing on the carpeted versus the tile floor ( $M_{\text{carpet}} = 1.54$ ,  $M_{\text{tile}} = -.32$ ;  $F(1, 107) = 5.48$ ,  $p < .05$ ,  $d = 3.31$ ). But when they viewed the clothes basket from a close distance, such thoughts displayed a contrast effect; participants produced more net comfort-related thoughts when they viewed the product while standing on the hard tile versus the carpeted floor ( $M_{\text{tile}} = .39$ ,  $M_{\text{carpet}} = -1.37$ ;  $F(1, 107) = 5.48$ ,  $p < .05$ ,  $d = 3.31$ ).

Next, we analyzed participants' comfort-related assessments and thoughts about the second product, namely, the gift basket. First, an ANOVA conducted on assessments of the gift basket revealed a three-way interaction of flooring, product distance, and prime that approached significance ( $F(1, 107) = 2.91$ ,  $p < .09$ ,  $d = .41$ ). The interaction of flooring and product distance was significant only when participants' sensations were primed ( $F(1, 107) = 8.20$ ,  $p < .01$ ,  $d = .55$ ), not their cognitions ( $F$ 's  $< 1$ ). Consistent with our theorizing, further examination of these gift basket assessments when participants' sensations were primed revealed opposite outcomes from those observed for the clothes basket. When participants viewed the gift basket from a moderate distance, a contrast effect emerged. They perceived the gift basket as more comforting in appearance when they viewed it while standing on the hard tile rather than the carpeted floor ( $M_{\text{tile}} = 3.82$ ,  $M_{\text{carpet}} = 3.04$ ;  $F(1, 108) = 4.20$ ,  $p < .05$ ,  $d = 2.89$ ). Yet, when participants viewed this product from a close distance, an assimilation effect emerged: the gift basket was viewed as more comforting when participants examined it while standing on the carpeted versus the tile flooring ( $M_{\text{carpet}} = 3.89$ ,  $M_{\text{tile}} = 3.15$ ;  $F(1, 108) = 4.10$ ,  $p < .05$ ,  $d = 2.90$ ).

Participants' comfort- and discomfort-related thoughts about the gift basket also were coded, combined, and analyzed in the same way as were those for the clothes basket. Again, a significant interaction of flooring, product distance, and prime emerged on net comfort-related thoughts ( $F(1, 108) = 4.45$ ,  $p < .05$ ,  $d = .47$ ). The interaction of flooring and product distance was significant only when participants' sensations were primed ( $F(1, 108) = 11.21$ ,  $p < .001$ ,  $d = .72$ ), not their cognitions ( $F$ 's  $< 1$ ). When the gift basket was viewed from a moderate distance, a contrast effect emerged. Participants produced more net comfort-related thoughts when they examined the gift basket while standing on the hard tile rather than the carpeted floor ( $M_{\text{tile}} = 1.68$ ,  $M_{\text{carpet}} = .38$ ;  $F(1, 109) = 3.85$ ,  $p < .05$ ,  $d = 2.78$ ). But when participants viewed this product from a close distance, an assimilation effect was evident; they generated more net comfort-related thoughts when they viewed the gift basket while standing on the carpeted versus the tile flooring ( $M_{\text{carpet}} = 2.40$ ,  $M_{\text{tile}} = .32$ ;  $F(1, 109) = 9.73$ ,  $p < .01$ ,  $d = 4.42$ ).

## Discussion

The results of experiment 4 establish several important insights. First, by manipulating rather than simply measuring people's reliance on bodily sensations versus cognitions, study 4 provides stronger evidence that, indeed, it is people's bodily sensations that drove our findings. Second, this experiment offers compelling evidence of the processes that produced our observed context effects. Such evidence attests that participants' net comfort-related thoughts about the target products conformed with the patterns implied by our theorizing. Finally, the findings of this study distinguish between two alternative mechanisms that potentially could account for how people's distance from a target product affects their mental representation of the product, with that representation, in turn, determining the direction of the resulting context effects. Study 4 found that people's distance from a target product produced reversed context effects on assessments of a target product that consisted of a gift basket filled with layered goods versus an empty clothes basket. Moreover, whereas the detailed elements of the clothes basket were observed more clearly when that product was viewed from a very close distance, the detailed contents of the gift basket were seen more clearly when the gift basket was viewed from a moderate distance. The preceding observations are at odds with the notion that in our research people invariably formed poorly (vs. well-) defined mental representations of items that were more psychologically distant. That premise also is incompatible with our observation that people's viewing distance produced reversed context effects for the two types of products. Instead, such observations align with the view that how clearly people see a product in its entirety can determine how well-defined people's mental representation of that product is, and, for layered bundled products like our gift basket, clarity is actually enhanced when such products are viewed at a moderately far versus close distance.

## GENERAL DISCUSSION

The results of this research support the notion that the texture of the flooring on which consumers stand when shopping can prompt sensations of (dis)comfort, which in turn can foster context effects on people's assessments of store products. Moreover, the direction of these context effects was found to depend on the extent to which consumers' physical distance from the product enabled these consumers to clearly perceive the product fully and thereby generate a well-delineated mental representation of it. In most cases, when people's distance from a product is moderately far, their visual access to the product's features and, thus, the representation that they form of the good will be relatively poorly defined. This encourages the assimilation of their bodily sensations with their product assessments. Alternatively, when this distance is close, such that the visual acuity of the product and its representation is clear, people's bodily sensations are apt to be used as a comparison standard and prompt a contrast effect on their product assessments. Fi-

nally, when people view a product from an extremely far distance, their vision of the product's features may be so degraded that they dismiss all available input, and, thus, their sensations have no bearing on the barely visible product. Hence, in this instance, people are apt to discount their sensations, producing product assessments that are free of any context effects.

At the same time, exceptions to the preceding outcomes can occur, as was demonstrated in study 4. In that study, the target product was atypical, as it consisted of a bundled assortment of layered goods that, in fact, was more fully and clearly discernible when viewed from a moderate distance as opposed to close up. Because viewers could see and form a clearer representation of this bundled product when it was viewed from a moderately far versus a close distance, the direction of the context effects that we observed earlier was now reversed. That is, for this bundled layered product, a contrast effect emerged in the moderate distance condition because this distance permitted a clearer view and representation of the product's more complete contents. On the other hand, an assimilation effect obtained when this product was viewed up close, because this close vantage point occluded many of the product's specific components, rendering its representation ill defined.

Such observations, that people's bodily sensations prompted by tactile stimuli produced either assimilation or contrast effects, is noteworthy given that prior investigation into mood-induced bodily sensations have largely revealed only assimilation effects. Hence, the present work offers the strongest evidence available to date that bodily sensations can at times be used as comparison standards that foster contrast effects.

Importantly, our findings also offered testimony that all of the context effects we observed indeed were attributable to how people used their bodily sensations of (dis)comfort induced by the flooring. Whether investigated via either a self-monitoring measure or a manipulated prime, studies 3 and 4 showed that our anticipated context effects emerged only when viewers based their responses on their own internal feelings, not on conceptual knowledge implied by a situational (i.e., flooring) cue. Further, study 3 demonstrated that context effects spawned by people's bodily sensations may be more limited in scope than those prompted by mood-induced affective feelings. Although we observed our anticipated context effects on a product assessment dimension that aligned directly with participants' experienced bodily sensations (i.e., their sensation of [dis]comfort or firmness), no such effects emerged on participants' general affect toward the product.

It is interesting to note that our participants apparently experienced a bodily sensation of (dis)comfort from the carpeted or tile flooring even though they wore shoes and often socks in our studies. This aligns with similar observations made by Cham and Redfern (2001), who measured various objective indicators of leg and back muscle fatigue experienced by workers who, while wearing shoes, stood on either a hard vinyl tile floor or alternative mats. Such find-

ings appear to suggest that even seemingly subtle bodily sensations—ones that do not emerge from direct contact with flooring surfaces—can exert a significant impact.

Our research also prompts some questions that merit additional inquiry. In particular, our research investigated assimilation and contrast effects spawned by physical bodily sensations of (dis)comfort. Research is still needed that examines whether other human senses that produce alternative kinds of bodily sensations (e.g., gustatory sensations of sweetness vs. sourness, warm vs. cold body temperatures) can prompt similar context effects. Likewise, work is needed to uncover factors beyond viewing distance that can influ-

ence the clarity of people's mental representations. Finally, in environments like the ones that we studied, it could be that certain moderators influence whether or when people will base their assessments on either their bodily sensations or semantic cognitions implied by the contextual factors (e.g., flooring). For example, individuals who are high in their need for either cognitive clarity (Cox 1967) or cognitive structure (Neuberg and Newsom 1993) might be more likely to attend to and use cognitive concepts implicated by the physical environment as opposed to their more ephemeral bodily sensations. We hope that future research will explore these and other possibilities.

## APPENDIX FIGURE A1

### EXPERIMENT STIMULI



Vase



Chair



Clothes Basket



Gift Basket

NOTE.—Color version available as an online enhancement.

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