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The Effects of Consumer Prior Knowledge and Processing Strategies on Judgments

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### Abstract

Four studies examine how consumers' prior knowledge of a product category and the manner in which product information is processed affect evaluation. Those with extensive prior knowledge of a category evaluated the brand more favorably when the manner in which product information was presented prompted a sense of progress rather than facilitated a detailed assessment (studies 1 and 2), and when information was presented at a high level of construal rather than a low level (studies 3 and 4). Those with limited domain knowledge exhibited the opposite outcomes. These effects were mediated by a subjective experience of processing fluency. The findings suggest that evaluations are more favorable when there is a fit between prior knowledge and how a message is processed than when fit is absent.

Keywords: prior knowledge, expertise, fluency, construal level, processing mode

Consumers' prior knowledge often serves as an important means of market segmentation. For example, a webpage for a laptop computer targeting consumers with extensive prior knowledge of computers might present the specifications related to technical information such as display, memory, and hard drive because such information is particularly informative to this segment (Maheswaran and Sternthal 1990). In contrast, for those with limited knowledge about computers, benefits that can be expected from the brand's technical features such as the enhanced visibility resulting from the LED backlit screen are likely to be highlighted because this information is most informative. These observations illustrate the well-known fact that a correspondence between consumers' prior knowledge and the content presented in an appeal enhances the impact of a message (Alba and Hutchinson 2000; Bettman and Suajan 1987).

There is also emerging evidence that individuals' evaluations of an object depend not only on the content they process, but also on the subjective experience that results from a reflection on how information was processed in making a judgment (e.g., Higgins 2000; Schwarz 2004). The subjective experiences documented in the literature include the perceived ease with which information relevant to an advocacy comes to mind (Menon and Raghurir 2003; Tybout et al. 2005), the fluency with which information is processed (Lee and Aaker 2004; Novemsky et al. 2007), and the subjective experience of feeling right about the judgment process (Camacho, Higgins, and Luger 2003). The current research extends this analysis by examining the conditions under which consumers' prior knowledge influences the impact of a message through a subjective experience arising from the judgment and decision making process. We adopt the term *processing fluency* to refer to this experience.

The studies we report are based on the premise that when message information is processed in a manner that corresponds to the processing proclivities associated with an individual's prior knowledge, a positive subjective experience of processing fluency occurs, which in turn enhances judgments. Insight about these processing proclivities is reported in the literature examining the effects of prior knowledge. Those with extensive knowledge in a domain exhibit a sense of urgency about achieving their goals (Lewandowsky and Kirsner 2000). They do so by following well-traveled and proceduralized solution paths (Spence and Brucks 1997; Wiley 1998), by being selective in their information search (Bettman and Park 1980; Schraagen and Leijenhorst 2001), and by giving emphasis to information that is focal to their goal (Lewandowsky and Kirsner 2000). In contrast, those with limited knowledge about a topic are more intent on the acquisition of message information. They exhibit a tendency to engage in more external search for information rather than relying on their existing knowledge (Mandel and Johnson 2002), and they are slower in forming an impression or a judgment than their more knowledgeable counterparts (Sujan 1985).

This characterization of the preferred knowledge-based processing styles suggests that those with extensive knowledge are more focused on the achievement of their goal, whereas those with limited knowledge are more focused on the acquisition of message information. Processing strategies that correspond to these proclivities are expected to prompt a positive subjective experience. One means of achieving such correspondence is by adopting an appropriate *processing mode*, that is, whether information is processed in a manner that stimulates a sense of progress toward a goal or that facilitates making detailed comparisons in reaching a decision (Kruglanski et al. 2000). Given their sense of urgency with regard to goal achievement, those with extensive knowledge are likely to prefer processing message

information in a manner that is perceived to facilitate progress toward a goal (i.e., progress mode), whereas less knowledgeable individuals are expected to prefer a processing mode that enables detailed assessment of the message information and careful comparison of choice alternatives (i.e., assessment mode).

Correspondence between prior knowledge and processing strategy can also be achieved by presenting the message at the appropriate *level of construal*, that is, how abstractly or concretely information is represented (Trope and Liberman 2003; Trope, Liberman, and Wakslak 2007). Specifically, representing information at a high level of construal is expected to fit with the processing proclivities of those with extensive prior knowledge because abstract information is attuned to goal achievement. In contrast, it is anticipated that those with less knowledge would prefer information that is represented at a low level of construal because the concreteness of the information facilitates learning of the message content.

In the present research, we investigate the impact of prior knowledge on brand judgments when information is processed using different modes and at different levels of construal. The prediction is that when there is a fit between individuals' prior knowledge and the mode in which information is processed and between prior knowledge and the level of construal at which information is represented, a positive subjective experience of fluency occurs that results in more favorable judgments of a brand. We refer to this prediction as the *knowledge fit hypothesis*.

### **Prior Knowledge and Consumer Processing Proclivities**

In the next sections, we report findings on prior knowledge that pertain to processing mode and to level of construal to provide a rationale for the knowledge fit predictions.

Evidence related to each of these processing proclivities is reviewed.

*Prior Knowledge and Processing Mode.* We hypothesize that those with extensive prior knowledge will exhibit a preference for a progress mode, which provides a sense of progress toward a goal. Given their sense of urgency with regard to goal achievement (Lewandowsky and Kirsner 2000), processing message information in a manner that is perceived to facilitate progress toward a goal should fit the proclivities of those with extensive knowledge. This prediction is consistent with the observation that in relation to those with limited knowledge, individuals with extensive prior knowledge exhibit a greater tendency to make quick decisions (Thunholm 2005), and display greater selectivity in the information they consider as a basis for decisions (Bettman and Park 1980; Brucks 1985; Schraagen and Leijenhurst 2001), even to the point of sometimes overlooking useful information (Radecki and Jaccard 1995) or prematurely stopping the learning of new information (Wood and Lynch 2002).

On the other hand, individuals with limited prior knowledge are expected to exhibit a preference for an assessment mode. This is because an assessment mode allows those with limited prior knowledge to adopt processing strategies that enable a careful and complete consideration of information, which would compensate for their lack of prior knowledge and thus fit with their information acquisition focus. Consistent with this reasoning is the observation that individuals with limited knowledge make a greater number of comparisons among alternatives than more knowledgeable individuals (Mitchell and Dacin 1996). Those with limited knowledge also exhibit a greater tendency to engage in data-driven processing, which facilitates the acquisition and consideration of all pieces of information (Chi, Glaser, and Rees 1982), including information that is peripheral to the decision (Alba and Hutchinson 1987; Thunholm 2005). These findings suggest that an assessment processing

mode, which is characterized by making detailed comparisons among alternatives, should fit with the processing proclivities of individuals with limited prior knowledge.

*Prior Knowledge and Level of Construal.* Differences in prior knowledge are also likely to influence the preference for the level of construal used to present information (Trope and Liberman 2003; Vallacher and Wegner 1987). High-level construals are abstract representations that identify core features of an object and focus on why an object might be of interest, whereas low-level construals are concrete representations that encompass the surface features of an object and focus on how an object operates. For example, the same feature of an MP3 player might be described in terms of a high-level construal such as “easy menu navigation,” or as a low-level construal such as “select a song by artist, album, song title, and more by the touch of a button.” Our prediction is that there is a fit between extensive prior knowledge and high-level construals because they pertain to the why aspect of an object and thus focus attention primarily on goals (Liberman and Trope 1998). We also predict that there is a fit between limited prior knowledge and low-level construals because the concrete description of how an object performs facilitates the acquisition or learning of the message content (Liberman and Trope 1998).

Support for these predictions is found in studies reporting that individuals with extensive prior knowledge exhibit a tendency to represent information more abstractly than those with limited knowledge across a variety of domains including chess (Chi and Simon 1973), physics (Chi, Glaser, and Rees 1982), and mathematics (Schoenfeld and Herrmann 1982). For example, when providing task instructions for others to follow, those with extensive domain knowledge use more abstract statements and fewer concrete ones than those with limited prior knowledge (Hinds, Patterson, and Pfeffer 2001). Highly knowledgeable individuals also list fewer and less specific steps when describing a task

(Langer and Imber 1979) and develop more abstract categories (Honeck, Firment, and Case 1987) than those with limited prior knowledge. Experts in physics use a deeper and more abstract conceptual structure to group problems in their knowledge domain, whereas novices are more likely to perform such tasks on the basis of surface features, which are more concrete (Chi, Glaser, and Rees 1982). Similar observations have also been documented in the consumer domain (e.g., Alba and Hutchinson 1987; Roehm and Sternthal 2001). In learning about a new product, consumers with extensive domain knowledge exhibit more favorable evaluations when product information is conveyed using an analogy that is based on abstract structural relations, whereas those with limited knowledge are more persuaded when the information is presented using a literal similarity that is based on the surface features (Roehm and Sternthal 2001).

These findings lend credence to the notion that there is a fit between consumers' prior knowledge and the processing mode by which information is processed, and between prior knowledge and the level of construal at which information is represented. This fit is of interest because it has implications for judgments.

### **Fit Effects on Judgment**

Although fit effects have not been investigated in the context of prior knowledge, research in other domains indicate that a fit between individuals' processing proclivities and how information is processed can lead to more favorable judgments (Avnet and Higgins 2003; Higgins 2000; Lee and Aaker 2004). For example, Avnet and Higgins (2003) presented participants with information about several reading lights and asked them to make a choice. Participants were required to follow either a progressive elimination strategy, which involves

sequentially eliminating alternatives that have the worst performance on an attribute until only one option remains, or a full evaluation strategy, which entails making a choice based on detailed comparisons among all the brands on all attributes. The results indicated that participants with an orientation toward making progress were willing to pay more for the chosen reading light when they used a progressive elimination rather than a full evaluation strategy to process the information, whereas the reverse was found for those with an orientation toward assessment.

Recent research suggests that the fit effect on judgment results from a positive subjective experience arising from the process of making a judgment, which is transferred to the evaluation of the object. Lee and Aaker (2004) reported that for promotion-focused participants, whose orientation is toward advancement and growth, an advertised brand was judged more favorably when the message was framed in terms of gains (“get energized”) than in terms of non-losses (“don’t miss out on getting energized”), whereas for those with prevention focus, whose orientation is toward safety and security, the opposite was found. Furthermore, Lee and Aaker (2004) provided evidence that when there is a fit between goal orientation and message framing, participants experienced a feeling of processing fluency, that is, a subjective experience that the message information was easily processed. In turn, this feeling of processing fluency arising from fit induced more favorable judgments of the advertised brand than occurred in the absence of fit.

On the basis of these findings, we predict that when there is a fit between the processing proclivities associated with prior knowledge and the manner in which information is processed or presented, a subjective feeling of fluency occurs that results in more favorable evaluations than when such fit is absent. Specifically, we hypothesize that:

H<sub>1</sub>: Consumers with extensive prior category knowledge will exhibit more favorable evaluations of a brand when product information is processed in a manner that facilitates progress rather than assessment; and the opposite will occur for those with limited prior knowledge.

H<sub>2</sub>: Consumers with extensive prior category knowledge will exhibit more favorable evaluations of a brand when product information is presented in a high level of construal rather than at a low level of construal; and the opposite will occur for those with limited prior knowledge.

Four studies were conducted to test these predictions. Participants' prior knowledge of the product category for which they were to make a judgment was either measured or manipulated. In studies 1 and 2, we tested H<sub>1</sub> by examining the fit effect between prior knowledge and processing mode related to progress and assessment. In studies 3 and 4, we tested H<sub>2</sub> by examining the fit effect between prior knowledge and the level of construal at which the message is represented. The role of processing fluency in mediating the effects of fit on judgments was also examined (studies 2 and 4).

Support for these predictions would suggest that the effects of prior knowledge are influenced not only by information content that is presented for an advocacy, but also by how the information is presented. Understanding the preferences for information delivery of those varying in domain knowledge is useful for suggesting information processing strategies and designing presentation formats to create a feeling of fluency that enhances message impact.

### **Study 1: Fit between Prior Knowledge and Progress vs. Assessment Mode**

The purpose of study 1 was to provide an initial test of the knowledge fit hypothesis by examining the fit effects between prior knowledge and processing mode on judgment.

Participants were given product information regarding several alternative brands in a manner that either provided a sense of progress toward the goal, or facilitated the assessment of alternative brands (Kruglanski et al. 2000). The prediction is that those with extensive prior knowledge would exhibit more favorable evaluations when information is processed in a manner that prompts a sense of progress, whereas those with limited prior knowledge would evaluate the product more favorably when information processing facilitates assessment.

#### **Method**

Forty-eight undergraduate students (29 females) from a Midwestern university were paid \$10 for their participation in this study. Participants were recruited to take part in a product evaluation study. To operationalize progress and assessment processing modes, we adapted the procedures developed by Avnet and Higgins (2003) to a new context. Participants were presented with a  $5 \times 4$  information matrix where five different brands of laundry detergent (brands A, B, C, D, and E) were described on four features: odor removal, stain removal, anti-static, and fade resistance. Each brand was rated on each feature on a 10-point scale. The values on these features were configured such that brand B was the superior brand: It dominated the four alternative brands on at least one feature and was not dominated by any other brand on any feature (for further information, see the Web Appendix). This was to ensure that all participants would choose the same brand so that the object of evaluation would be the same.

Processing mode was manipulated by instructing participants at the outset of the task to follow either a progress or an assessment mode to processing the product information (Avnet and

Higgins 2003). Participants in the progress condition were asked to make a choice by selecting one feature and eliminating the alternative that performs the worst on that feature, and then repeating this process for subsequent features until only a single alternative remained.

Specifically, they read the following instructions: “Please examine the information about these brands of laundry detergent using the following decision strategy. Look at the first attribute, *odor removal*, brand by brand. Exclude the brand that has the worst value on this attribute. Now you are left with four brands. Go to the second attribute, *stain removal*, and again look at it for all the remaining brands. Exclude the brand that has the worst value on this attribute. Follow this procedure until you are left with only one brand. Mark it as your chosen brand.” Because how the final choice is made involves narrowing the number of alternative possibilities at the end of each decision phase, this strategy provides a sense of progress toward making a decision.

On the other hand, participants in the assessment condition were asked to make a choice by comparing all of the alternatives on all of the attributes, and then choosing the brand that has the best attributes overall. Here, the instructions read: “Please examine the information about these brands of laundry detergent using the following decision strategy. Look at brand A. Compare it to the rest of the brands based on each of the attributes. Now look at brand B. Compare it to the rest of the brands based on each of the attributes. Do so until you have looked at all the brands and at all the attributes. After you are done comparing the brands, decide which brand you prefer most. Mark this brand as your chosen brand.” This strategy involves making as many comparisons as possible in reaching the final choice, and thus prompts assessment.

After reviewing the product information, participants were asked to choose one of the five brands and then evaluate the chosen brand on four seven-point scales (bad/good, disliked/likeable, negative/positive, unfavorable/favorable). Participants then responded to

three seven-point items that served as checks for the progress and assessment manipulations. They were asked to indicate whether the strategy they used to examine product information allowed for a detailed assessment of the features, a clear overview of the products, and a detailed assessment of alternative brands (1 = *strongly disagree*; 7 = *strongly agree*). Finally, participants' prior knowledge of the laundry and laundry detergent category was assessed using a 12-item true-false questionnaire (e.g., "For oil-based stains, it's best to soak them in cold water," "Laundry detergents with a bleach alternative use active enzymes to remove stains"). For further information, see the Web Appendix).

## Results and Discussion

*Manipulation Check.* To assess whether we had manipulated progress and assessment modes successfully, a manipulation check index was developed by averaging participants' responses to the three manipulation check items ( $\alpha = .91$ ). A one-way ANOVA performed on the manipulation check index indicated that those following an assessment processing strategy perceived that they were better able to assess the product information ( $M = 5.40$ ) than did those following a progress processing strategy ( $M = 3.77$ ;  $F(1,46) = 15.53$ ,  $p < .001$ ), suggesting that our manipulation of processing mode was successful.

*Prior Knowledge.* To assess participants' prior category knowledge, we coded their responses to the 12-item test of laundry knowledge. A correct response was coded as one and a wrong response was coded as zero. A prior knowledge score was calculated by adding participants' score on the quiz items ( $M = 8.94$ ). A median split ( $median = 9$ ) on participants' knowledge score was used to categorize them into those with extensive and limited prior knowledge. There was no significant difference in prior knowledge between female ( $M = 9.10$ ) and male participants ( $M = 8.68$ ;  $F < 1$ ). Among those with extensive prior knowledge, 70.8%

were female and 29.2% were male. And among those with limited prior knowledge, 50.0% were female and 50.0% were male.

*Evaluation.* To examine the fit effects between prior knowledge and processing mode on judgment, we first developed an evaluation score by averaging participants' responses on the four evaluation items ( $\alpha = .91$ ). A 2 (prior knowledge: extensive vs. limited)  $\times$  2 (processing mode: progress vs. assessment) ANOVA indicated that the main effects of prior knowledge and processing mode were not significant ( $F_s < 1$ ). However, the interaction between these factors was significant ( $F(1, 44) = 14.81, p < .001$ ; see figure 1).<sup>1</sup> As predicted, those with extensive prior knowledge evaluated the chosen brand more favorably when processing involved progress ( $M = 6.23$ ) than when it entailed assessment ( $M = 5.53; F(1, 44) = 4.25, p < .05$ ). Conversely, those with limited prior knowledge exhibited more favorable evaluations when processing involved assessment ( $M = 6.33$ ) rather than progress ( $M = 5.13; F(1, 44) = 11.25, p < .01$ ).

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We also examined whether gender could account for the pattern of outcomes we observed. A 2 (gender: male vs. female)  $\times$  2 (processing mode: progress vs. assessment) ANOVA on evaluation indicated that neither the main effect of gender nor processing mode was significant ( $F_s < 1$ ). The interaction between these factors was also not significant ( $F(1, 44) = 1.65, p > .20$ ). These findings suggest that the effect of fit between prior knowledge and processing mode on evaluations is unlikely to be attributed to gender.

Study 1 provides support for the knowledge fit hypothesis. As predicted, participants with extensive prior category knowledge evaluated their chosen brand more favorably when the product information was processed using a progress mode than an assessment mode, and those

with limited prior knowledge exhibited the opposite pattern of results ( $H_1$ ). Furthermore, the fact that these outcomes occurred when all participants were exposed to the same information is consistent with the notion that evaluations were based on the subjective experience of how information is processed. In study 2, we sought additional evidence regarding the process at work by measuring the subjective experience of fluency and determining whether it mediates the fit effects on judgment observed in study 1.

### **Study 2: Fit between Manipulated Knowledge and Progress vs. Assessment Mode**

Study 2 was designed to achieve two objectives. One was to examine the robustness of the fit effects observed in study 1 between prior knowledge and processing mode. For this purpose, we used the same operationalization of progress and assessment mode as in study 1. However, rather than measuring participants' prior knowledge of the product category, we manipulated it by administering a training exercise at the beginning of the study. In addition, consumers' prior knowledge of MP3 players rather than laundry detergent was examined. The prediction is that those primed with extensive prior knowledge would evaluate the chosen brand more favorably when using a progress mode rather than an assessment mode to process the product information, and the reverse would occur for those with limited knowledge ( $H_1$ ). The second objective of study 2 was to examine whether the observed fit effects on evaluation are attributable to the subjective experience of processing fluency. For this purpose, we measured participants' subjective experience of fluency in processing the product information.

#### **Method**

Sixty-six undergraduate students (41 female) from a Midwestern university were paid \$10 for their participation in this study. Prior knowledge was manipulated at the outset of the

study using a training exercise adapted from prior research (Wood and Lynch 2002). Participants were asked to read an article as a warm-up task. Those in the extensive prior knowledge condition read about MP3 players, which unknown to them was the same category as the one for which they were subsequently asked to make a choice. Participants in the limited prior knowledge condition read about laundry and laundry products, which was unrelated to the product category presented in the focal task (for further information, see the Web Appendix). Both articles were similarly structured with a similar amount of information, and did not differ in processing difficulty.

Participants were then asked to complete a product choice task. Information about five brands of MP3 players (brands A, B, C, D, and E) were described on four features: built-in memory, USB interface, digital tuner, and battery life. The configuration of the product information and the processing mode instructions were the same as those used in study 1 (for further information, see the Web Appendix). After reviewing the product information, participants were asked to choose one of the five brands and to evaluate the chosen brand on four seven-point scales (bad/good, dislikable/likeable, negative/positive, unfavorable/favorable). They also indicated their subjective experience of fluency in processing the product information on a seven-point scale (1 = *easy to process*, 7 = *difficult to process*; reverse coded), which is similar to one that has been used successfully in prior research as an indicator of processing fluency (Lee and Aaker 2004). This was followed by manipulation checks for progress and assessment modes. Participants were asked to indicate whether the strategy they used to examine product information allowed them to make a detailed assessment of the features (1 = *strongly disagree*; 7 = *strongly agree*) and brought them closer to making a decision with every step they took (1 = *strongly disagree*; 7 = *strongly agree*). Finally, to assess the adequacy of the prior knowledge

manipulation, participants were asked to take a 12-item true-false quiz on MP3 players (e.g., “Because of the compression techniques used, MP3 players can only play MP3 format music files,” “WMA format is half the size of an MP3 format, but WMA offers poorer sound quality”). For further information, see the Web Appendix).

## Results and Discussion

*Manipulation Check for Processing Mode.* To assess whether we had successfully manipulated processing mode, we first conducted a 2 (prior knowledge: extensive vs. limited) × 2 (processing mode: progress vs. assessment) ANOVA on participants’ perception of whether the strategy they used to process the information brought them closer to making a decision with each step. The results indicated the presence of a significant main effect of processing mode such that those in the progress condition reported a greater sense of progressing toward the goal ( $M = 6.06$ ) than those in the assessment condition ( $M = 5.20$ ,  $F(1, 62) = 6.49$ ,  $p < .05$ ). Neither the main effect of prior knowledge ( $F(1, 62) = 1.33$ ,  $p > .25$ ) nor the interaction between the two factors ( $F(1, 62) = 2.27$ ,  $p > .10$ ) was significant. A similar analysis was conducted on the extent to which the processing mode facilitated comparison. Participants in the assessment condition indicated that the processing strategy allowed them to assess the product features better ( $M = 5.46$ ) than did those in the progress condition ( $M = 4.84$ ), although this difference did not reach the conventional level of significance ( $F(1, 62) = 2.76$ ,  $p = .10$ ). Again, neither the main effect of prior knowledge ( $F(1, 62) = 1.32$ ,  $p > .25$ ) nor the interaction ( $F < 1$ ) was significant. These findings suggest that the manipulation of processing mode was successful.

*Manipulation Check of Prior Knowledge.* To check for our manipulation of prior category knowledge, we first coded participants’ responses to the 12-item quiz on MP3 players. A correct response was coded as one and a wrong response was coded as zero. A prior

knowledge score was developed by adding participants' score on the quiz items ( $M = 8.47$ ). A 2 (prior knowledge: extensive vs. limited)  $\times$  2 (processing mode: progress vs. assessment) ANOVA on participants' quiz score indicated that the main effect of prior knowledge was significant such that those assigned to the extensive prior knowledge condition performed better on this quiz ( $M = 9.59$ ) than those assigned to the limited prior knowledge condition ( $M = 7.41$ ;  $F(1, 62) = 14.76, p < .001$ ). Neither the main effect of processing mode ( $F(1, 62) = 1.82, p > .15$ ) nor the interaction between prior knowledge and processing mode ( $F < 1$ ) was significant.

We also examined whether gender had an effect on participants' prior knowledge of MP3 players. A one-way ANOVA indicated the presence of a significant effect of gender on participants' performance on the knowledge quiz: male participants had greater prior knowledge of MP3 players ( $M = 9.44$ ) than did female participants ( $M = 7.88$ ;  $F(1, 64) = 6.73, p < .05$ ).

*Evaluation.* To examine whether we replicated the fit effect between prior knowledge and processing mode, we first calculated an evaluation score by averaging participants' responses on the four evaluation items ( $\alpha = .93$ ). A 2 (prior knowledge: extensive vs. limited)  $\times$  2 (processing mode: progress vs. assessment) ANOVA indicated that the main effect of processing mode on evaluation was not significant ( $F < 1$ ). However, there was a marginally significant main effect of prior knowledge such that those in the extensive prior knowledge condition had more favorable evaluations ( $M = 6.12$ ) than those in the limited prior knowledge condition ( $M = 5.73$ ;  $F(1, 62) = 3.79, p < .06$ ). More importantly, as figure 2 shows, the predicted interaction between prior knowledge and processing mode was significant ( $F(1, 62) = 10.97, p < .01$ ). Consistent with our hypothesis, those primed with extensive prior knowledge evaluated their chosen brand more favorably when they used a progress mode to process the product information ( $M = 6.44$ ) than when an assessment mode was employed ( $M = 5.80$ ;  $F(1, 62) = 3.93, p = .05$ ). In contrast,

those primed with limited prior knowledge had more favorable evaluations when they used an assessment mode ( $M = 6.11$ ) than a progress mode ( $M = 5.25$ ;  $F(1, 62) = 7.35, p < .01$ ).

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We also conducted a 2 (gender: male vs. female)  $\times$  2 (processing mode: progress vs. assessment) ANOVA on evaluation to examine whether gender could produce the same pattern of results. The results indicated that neither the main effect of gender ( $F(1, 62) = 1.34, p > .25$ ) nor processing mode ( $F < 1$ ) was significant. The interaction between these factors was also not significant ( $F(1, 62) = 1.24, p > .25$ ). These findings suggest that the effects observed on evaluation are distinct from gender effects.

*Subjective Experience.* To test the hypothesis that the fit effect between prior knowledge and processing mode on judgment is mediated by participants' subjective experience of fluency in processing the product information, we performed a mediation analysis following the procedure developed by Baron and Kenny (1986). First, we created a dummy variable to represent fit between prior knowledge and processing mode (0 = nonfit; 1 = fit) and regressed participants' evaluation score on the dummy variable of fit. The analysis indicated that the effect of fit on evaluations was significant ( $\beta = .37, t = 3.17, p < .01$ ). Next, we regressed participants' subjective experience of processing fluency on fit and found that fit was a significant predictor of processing fluency ( $\beta = .31, t = 2.63, p < .05$ ). A third regression revealed that the subjective experience of processing fluency had a significant effect on evaluation ( $\beta = .35, t = 3.02, p < .01$ ). Finally, when both the dummy variable of fit and participants' subjective experience of processing fluency were included in the model to predict evaluation, the coefficient of fit was significantly reduced ( $\beta = .29, t = 2.41, p < .05$ ; Sobel test  $z = 2.96, p < .01$ ), while processing

fluency remained a significant factor ( $\beta = .26, t = 2.22, p < .05$ ). These results suggest that a subjective experience of processing fluency partially mediated the effects of fit between prior knowledge and processing mode on evaluation.

The results of study 2 provide additional support for the knowledge fit hypothesis. Consistent with our predictions ( $H_1$ ), participants who were trained to have extensive prior knowledge of MP3 players evaluated their chosen brand more favorably when using a processing mode that fostered a sense of progress rather than assessment, whereas those with limited prior knowledge exhibited more favorable evaluations when using a processing mode that facilitated assessment. Also in accord with our hypothesis, we observed that the subjective experience of processing fluency partially mediated the effect of fit between prior knowledge and processing mode on evaluations. In the next two studies, we sought evidence of fit between prior knowledge and the level of construal at which information is represented in a message ( $H_2$ ).

### **Study 3: Fit between Prior Knowledge and Level of Construal**

The purpose of study 3 was to examine the fit effects between prior knowledge and level of construal on judgments. Participants were shown an ad in which the product information was presented either at a high or low level of construal. The knowledge fit prediction is that those with extensive prior category knowledge would exhibit more favorable evaluations of the advertised brand when the information is presented at a high level of construal, whereas those with limited prior knowledge would evaluate the brand more favorably when the product information is presented at a low level of construal ( $H_2$ ).

Method

Fifty-five undergraduate students (38 female) from a Midwestern university were paid \$10 for their participation in this study. Participants were recruited to take part in a product evaluation study. They were shown an ad for a (fictitious) new model of MP3 player called CL200. The MP3 player was described on seven features (e.g., storage capacity, memory, menu navigation). The features were held constant across the conditions, but were presented at either a high or low level of construal. In the high-level construal condition, the product descriptions were more abstract and focused on *why* the features are of value, whereas in the low-level construal condition the descriptions were more concrete and emphasized on *how* the features operate (Vallacher and Wegner 1987). For example, the control menu feature was described as “easy menu navigation” (high-level construal) or “select a song by artist, album, song title, and more by the touch of a button” (low-level construal). Similarly, the memory feature was described either as “readily expandable memory” (high-level construal), or “insert a memory card in the built-in slot for even more space” (low-level construal; for further information, see the Web Appendix).

After reading the ad, participants evaluated the MP3 player on five seven-point scales including: bad/good, dislikable/likable, negative/positive, unfavorable/favorable, and not at all likely to buy/very likely to buy. This was followed by a construal level manipulation check: Participants were asked to indicate how concrete the information about the CL200 MP3 player was on a seven-point scale (1 = *not at all*, 7 = *very much*). Finally, to measure participants’ prior category knowledge, the same quiz on MP3 players as used in study 2 was administered.

## Results and Discussion

*Manipulation Check.* To check the adequacy of the construal level manipulation, a one-way ANOVA was performed on participants’ perceptions regarding the concreteness of the

product information about the CL200 MP3 player. As we expected, those in the low-level construal condition rated the product descriptions as more concrete ( $M = 4.63$ ) than did those in the high-level construal condition ( $M = 3.64$ ;  $F(1,53) = 4.65, p < .05$ ).

*Prior Knowledge.* To assess participants' prior knowledge of the MP3 player category, we first coded participants' responses to the 12-item MP3 player quiz. A correct response was coded as one, and a wrong response was coded as zero. A prior knowledge score was developed by adding participants' score on the quiz items ( $M = 8.31$ ). A median split ( $median = 8$ ) on participants' prior knowledge score categorized them into those with extensive and limited prior knowledge. There were no differences in prior knowledge of MP3 players between female ( $M = 8.26$ ) and male participants ( $M = 8.41$ ;  $F < 1$ ). Among those with extensive prior knowledge, 71.4% were female and 28.6% were male. And among those with limited prior knowledge, 66.7% were female and 33.3% were male.

*Evaluation.* First, we calculated an evaluation score by averaging participants' responses on the five evaluation items ( $\alpha = .88$ ). To test the knowledge fit hypothesis, we conducted a 2 (prior knowledge: extensive vs. limited)  $\times$  2 (level of construal: high vs. low) ANOVA on product evaluation. Neither the main effect of construal level ( $F < 1$ ) nor the main effect of prior knowledge ( $F(1, 51) = 1.78$ ;  $p > .15$ ) was significant. However, central to our hypothesis, the interaction between these factors was significant ( $F(1, 51) = 20.55, p < .001$ ; see figure 3). As predicted, planned contrasts indicated that those with extensive prior knowledge had more favorable evaluations when the product information was presented at a high level of construal ( $M = 5.79$ ) rather than at a low level of construal ( $M = 4.74$ ;  $F(1, 51) = 10.23, p < .01$ ), whereas participants with limited prior knowledge evaluated the product more favorably when the

information was presented at a low level of construal ( $M = 5.49$ ) than at a high level of construal ( $M = 4.42$ ;  $F(1, 51) = 10.32, p < .01$ ).

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Insert figure 3 about here  
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To examine whether gender could account for the observed pattern of outcomes, we conducted a 2 (gender: male vs. female)  $\times$  2 (level of construal: high vs. level) ANOVA on evaluation. There was a marginally significant main effect of gender such that female participants evaluated the MP3 player more favorably ( $M = 5.29$ ) than male participants ( $M = 4.80$ ;  $F(1, 51) = 3.21, p < .08$ ). The main effect of level of construal was not significant ( $F < 1$ ). Importantly, the interaction between these factors was also not significant ( $F < 1$ ). These results suggest that the fit effect between prior knowledge and level of construal on evaluation could not be attributed to gender.

Study 3 offers further support for the knowledge fit hypothesis. As predicted, participants with extensive prior knowledge had more favorable evaluations of the product when the information was presented at a high level of construal, whereas a low level of construal resulted in more favorable product evaluations when participants had limited prior category knowledge ( $H_2$ ).

#### **Study 4: Fit between Prior Knowledge and Temporal Construal**

Study 4 was designed to replicate the fit effects found in study 3, and to extend this analysis in two ways. First, to provide convergent evidence for the fit between prior knowledge and the level of construal, we introduced a different operationalization of the construal level variable. Previous research has documented that information is construed at a high level of

construal when it pertains to the distant future, whereas information is construed at a low-level of construal when it pertains to the near future (Trope and Liberman 2003). Thus, we manipulated the level of construal of the information presented by varying the temporal construal described in the message. We predicted that participants with extensive prior knowledge would exhibit more favorable evaluations when the product information is presented as having benefits in the distant rather than near future, whereas those with limited prior knowledge would exhibit more favorable evaluations when the information presented implies that the benefits would occur in the near future. The second objective of study 4 was to provide additional evidence for the prediction that a subjective experience of fluency underlies the knowledge fit effects on judgment by examining the role of processing fluency in mediating the fit effects between prior knowledge and level of construal.

#### Method

Fifty-six undergraduate students (27 female) from a Midwestern university were paid \$10 for their participation in this study. Participants were recruited to take part in a product evaluation study. They were shown an ad for a new brand of laundry detergent called Fresh Start. The ad described the advertised brand on eight features. The descriptions of three of these features were identical across conditions: “provides all the qualities that today’s clothes require,” “available in major supermarkets,” and “comes in three sizes: 22, 44, and 66 loads.” The descriptions of the remaining five features were varied to manipulate temporal construal. For example, in the distant future condition, the message stated that “the new ABT<sup>®</sup> antibacterial formula keeps you germ free for as long as you own your clothes,” whereas in the near future condition the description was “the new ABT<sup>®</sup> antibacterial formula kills germs on contact to keep you healthy.” (For further information, see the Web Appendix).

A pretest was conducted to check the adequacy of this operationalization as a construal level manipulation ( $N = 29$ ). Participants were randomly assigned to either the distant future condition or the near future condition and were given the same product information as in the main study. They were asked to indicate how abstract the information about the laundry detergent was on a seven-point scale (1 = *not at all*, 7 = *very much*). A one-way ANOVA indicated that those in the distant future condition rated the product descriptions as more abstract ( $M = 4.47$ ) than those in the near future condition ( $M = 3.14$ ;  $F(1,28) = 6.18$ ,  $p < .05$ ), suggesting that our manipulation of construal level was appropriate.

After reading the message, participants evaluated the Fresh Start brand on a series of seven-point scales: bad/good, negative/positive, unfavorable/favorable, not at all unappealing/extremely unappealing (reverse coded), and not at all likely to buy/very likely to buy. Participants then indicated their subjective experience of fluency in processing the product information on a seven-point scale (1 = *not at all difficult to process*, 7 = *very difficult to process*; reverse coded). Finally, participants' prior knowledge of laundry and laundry detergent was assessed using the same quiz as that employed in study 1.

## Results and Discussion

*Prior Knowledge.* To assess participants' prior category knowledge, we coded their responses to the 12-item quiz in the laundry category. A correct response was coded as one and a wrong response was coded as zero. A prior knowledge score was developed by adding participants' score on the quiz items ( $M = 8.82$ ). A median split on participants' prior knowledge score categorized them into those with extensive prior knowledge and those with limited prior knowledge (*median* = 9). Gender had a marginally significant effect on participants' prior knowledge such that female participants ( $M = 9.19$ ) were more knowledgeable than male

participants ( $M = 8.48$ ,  $F(1, 54) = 3.35$ ,  $p < .08$ ). Among those with extensive prior knowledge, 64.3% were female and 35.7% were male. And among those with limited prior knowledge, 33.3% were female and 66.7% were male.

*Evaluation.* We calculated an evaluation score by averaging participants' responses on the five evaluation items ( $\alpha = .76$ ). To examine whether we replicated the fit effects between prior knowledge and level of construal observed in study 3, we performed a 2 (prior knowledge: extensive vs. limited)  $\times$  2 (temporal construal: distant vs. near) ANOVA on participants' evaluation of the laundry detergent. The main effects of prior knowledge ( $F(1, 51) = 1.56$ ;  $p > .20$ ) and temporal construal ( $F < 1$ ) were not significant. However, the interaction between these factors was significant ( $F(1, 51) = 13.75$ ,  $p = .001$ ; see figure 4). As predicted, those with extensive prior knowledge of laundry and laundry detergent evaluated the product more favorably when the product benefits would accrue in the distant future ( $M = 5.87$ ) than in the near future ( $M = 4.96$ ;  $F(1, 51) = 7.43$ ,  $p < .01$ ). In contrast, those with limited knowledge had more favorable evaluations when the product benefits would be manifested in the near future ( $M = 5.54$ ) rather than a distant future ( $M = 4.71$ ;  $F(1, 51) = 6.34$ ,  $p < .05$ ).

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Insert figure 4 about here  
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Because we found a gender effect on participants' prior knowledge of laundry, we also conducted a 2 (gender: male vs. female)  $\times$  2 (temporal construal: distant vs. near) ANOVA on evaluation to examine whether gender could account for the results we observed. Results showed that neither the main effect of gender ( $F(1, 52) = 2.08$ ,  $p > .15$ ) nor temporal construal ( $F < 1$ ) was significant. The interaction between these factors was also not significant ( $F(1, 52) = 1.51$ ,  $p$

> .20). These findings suggest that the fit effects between prior knowledge and temporal construal on evaluation were not accounted for by gender.

*Subjective Experience.* To test the hypothesis that the fit effect between prior knowledge and temporal construal on judgment is mediated by participants' subjective experience of fluency in processing the product information, we performed a mediation analysis using the procedure developed by Baron and Kenny (1986). First, we first created a dummy variable of fit between prior knowledge and temporal construal (0 = nonfit; 1 = fit) and regressed participants' evaluation score on this dummy variable. The analysis indicated the presence of a significant effect of fit on evaluations ( $\beta = .44, t = 3.60, p = .001$ ). Next, we regressed participants' subjective experience of processing fluency on fit and found that fit was a significant predictor of processing fluency ( $\beta = .44, t = 3.56, p = .001$ ). A third regression indicated that processing fluency had a significant effect on evaluation ( $\beta = .62, t = 5.85, p < .001$ ). Finally, when we included both the dummy variable of fit and participants' subjective experience of processing fluency to predict evaluation, processing fluency remained a significant factor ( $\beta = .53, t = 4.50, p < .001$ ). However, the coefficient for fit was significantly reduced ( $\beta = .21, t = 1.80, p < .08$ ; Sobel test  $z = 3.04, p < .01$ ). These results offer support for the contention that a subjective experience of processing fluency mediated the fit effects between prior knowledge and temporal construal on evaluations.

Consistent with the findings reported in study 3, the results of study 4 demonstrated that participants with extensive prior category knowledge had more favorable evaluations when product information was represented at a high level of construal, as operationalized by describing the product benefits as accruing in the distant future, than when it was represented at a low level

of construal, as operationalized by describing the product benefits as occurring in the near future; and the opposite occurred for those with limited prior knowledge. Thus, the results of study 4 offers additional testimony for the knowledge fit hypothesis by demonstrating that fit between prior knowledge and the level of construal represented in the message induced more favorable evaluations than occurred in the absence of fit ( $H_2$ ). Moreover, replicating the results of study 2, we document that a subjective experience of fluency arising from processing the product information mediated the effects of fit on evaluations.

### General Discussion

In four studies, we examined the knowledge fit hypothesis that a correspondence between consumers' prior category knowledge and how message information is processed increases the favorableness of evaluations. Consistent with our hypothesis, we found that those with extensive prior knowledge evaluated the product more favorably when the information was processed in a mode that prompted a perception of progress toward the goal (studies 1 and 2) and when the information was represented at a high level of construal (studies 3 and 4). In contrast, those with limited prior knowledge had more favorable evaluations when the information processing mode involved assessment (studies 1 and 2) and when product information was represented at a low level of construal (studies 3 and 4). These effects occurred whether consumers' prior knowledge was measured (studies 1, 3, and 4) or manipulated (study 2), whether information processing involved the variation of processing mode (studies 1-2) or construal level (studies 3-4), and whether the product category was laundry detergent (studies 1 and 4) or MP3 players (studies 2 and 3). Furthermore, we found that the effects of fit between consumers' prior knowledge and

information processing styles on evaluation were mediated by their subjective experience of fluency arising from processing the product information (studies 2 and 4).

From a theoretical standpoint, the present research extends the analysis of consumer prior knowledge by suggesting that there are multiple routes by which prior knowledge can enhance the favorableness of evaluations. As has been documented in the literature, one route involves the choice of content that is compatible with an individual's level of prior knowledge (Maheswaran and Sternthal 1990; Roehm and Sternthal 2001; Sujan 1985). Along these lines, those with extensive prior knowledge are more persuaded when the message content includes attributes rather than benefits (Maheswaran and Sternthal 1990) and when new products are described in terms of an analogy rather than a literal similarity (Roehm and Sternthal 2001). Those with limited prior knowledge exhibit the opposite pattern of preference. The studies we report here suggest that prior knowledge can also influence judgments through a second route. We found that when information is processed in a manner that fits the proclivities of individuals' prior knowledge, a subjective feeling of processing fluency occurs that results in more favorable evaluations of a brand than those observed when fit is absent (studies 2 and 4). By documenting the mediating role of the subject experience of fluency in producing fit effects on evaluations, we provide evidence for the meta-cognitive nature of these effects; that is, they are based on a reflection of the process by which a judgment is made rather than on information content.

More generally, our results add to the growing number of demonstrations that a fit between individuals' self-regulatory orientation and the means by which a goal is pursued results in more favorable judgments than those occur in the absence of fit (Avnet and Higgins 2003; Camacho, Higgins, and Luger 2003; Cesario, Grant and Higgins 2004; Lee and Aaker 2004). Similar to the fit effects observed for self-regulatory orientations such as regulatory focus

(Camacho, Higgins, and Luger 2003; Cesario, Grant and Higgins 2004; Lee and Aaker 2004) and regulatory mode (Avnet and Higgins 2003), our studies suggest there is a fit between prior knowledge and message processing strategies related to regulatory mode and construal level. These findings raise the possibility that individuals' prior knowledge activates a self-regulatory orientation that guides their subsequent activity. Findings related to the impact of expertise on the regulation of motor skills are consistent with this view (Ferrari et al. 1991). For example, it has been observed that elite marathon runners focus more on cues unrelated to the activity (e.g., music, surrounding scenery) to dissociate themselves from the unpleasant bodily cues, whereas less experienced runners focus their attention more on the bodily stimuli associated with running (Wrisberg and Pein 1990).

The present research also has implications for marketing practice. Our findings suggest the use of different message processing strategies when targeting those with extensive versus limited category knowledge. Specifically, when the target is composed of consumers with extensive prior knowledge, high-level construals that promote the desirability of the brand benefits are likely to be persuasive, whereas when targeting those with less knowledge, emphasis should be given to low-level construals that address the feasibility of product benefits. For example, an advertisement for E\*TRADE published in the *Wall Street Journal* (whose audience includes many individuals with extensive investment knowledge) focused on the desirability benefits such as the customizable platforms and high-powered ways to trade. In contrast, in the section of "Why Choose E\*TRADE" on the company website (which targets the general audience and is likely to include many individuals with limited category knowledge), the message emphasized the feasibility of using E\*TRADE such as its ease of use and the access to knowledgeable customer representatives. Alternatively, construal level can be made operational

by the introduction of alignable and nonalignable features. It has been found that those with high-level construals rely more on nonalignable features than alignable ones, whereas the opposite occurs for those with low-level construals (Malkoc, Zauberan, and Ulu 2005). This implies that nonalignable features should be promoted when targeting knowledgeable consumers, and alignable features should be presented when targeting those with limited knowledge. Following this observation, in the Apple's Mac vs. PC advertising campaign, the spots highlighting Mac's nonalignable attributes such as its new backup features should target those with substantial computer knowledge, whereas the spots emphasizing alignable attributes such as the speed of the Mac vs. PC operating systems are more appropriate when the target has relatively limited computer knowledge.

The findings of the present research also suggest that processing mode might be used to segment consumers with extensive versus limited prior category knowledge. For those with extensive knowledge, providing a sense of progress toward the goal fits with their orientation, whereas for those with limited knowledge assessment and comparison offers a means of fit. Online retailers often present both of these modes and allow consumers to determine which one to select. For instance, when shopping for a camcorder on bestbuy.com, a consumer can choose either the "Camcorder Finder" that offers a step-by-step tool that narrows choice alternatives along each step based on a specific criterion on a certain attribute, or the comparison tool that provides a side-by-side comparison of the features available for alternative brands. Our research suggests that evaluations of the preferred alternative would be more favorable if potential customers landed on the page that best reflects their prior knowledge: the "Camcorder Finder" for those with extensive knowledge and the comparison tool for those with limited knowledge. Moreover, the results of study 2 suggest that marketers could run an educational campaign to

equip consumers with more prior category knowledge, and subsequently roll out advertising campaigns in a way that accommodates their knowledge level.

However, caution is warranted in applying these strategies. As Shanteau (1992) has suggested, the effect of prior knowledge on people's processing proclivities and decision strategies often depends on the characteristics of the task at hand. The stimuli in the current research involved product categories that are associated with limited risk (MP3 players and laundry detergent). Whether the same outcomes would occur for product categories where financial or social risks are more substantial is not examined. It may be that under high risk even consumers with extensive prior knowledge are motivated to engage in the detailed consideration of stimulus information that is exhibited by those with limited prior knowledge. This conjecture is consistent with the demonstrations that those with extensive prior knowledge can engage in more detailed processing when they are sufficiently motivated to do so (Johnson and Russo 1984; Wood and Lynch 2002). Thus, the boundary conditions for the fit effects between prior knowledge and information processing styles we have reported in this research warrant further investigation.

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*FOOTNOTES*

1. In all the analyses in this paper where we report ANOVAs based on a median split of prior knowledge score, we also ran regressions with prior knowledge score as a continuous variable, and obtain the same patterns of results. The results are omitted to avoid redundancy.

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FIGURE 1  
 BRAND EVALUATION AS A FUNCTION OF  
 PRIOR KNOWLEDGE AND PROCESSING MODE (STUDY 1)

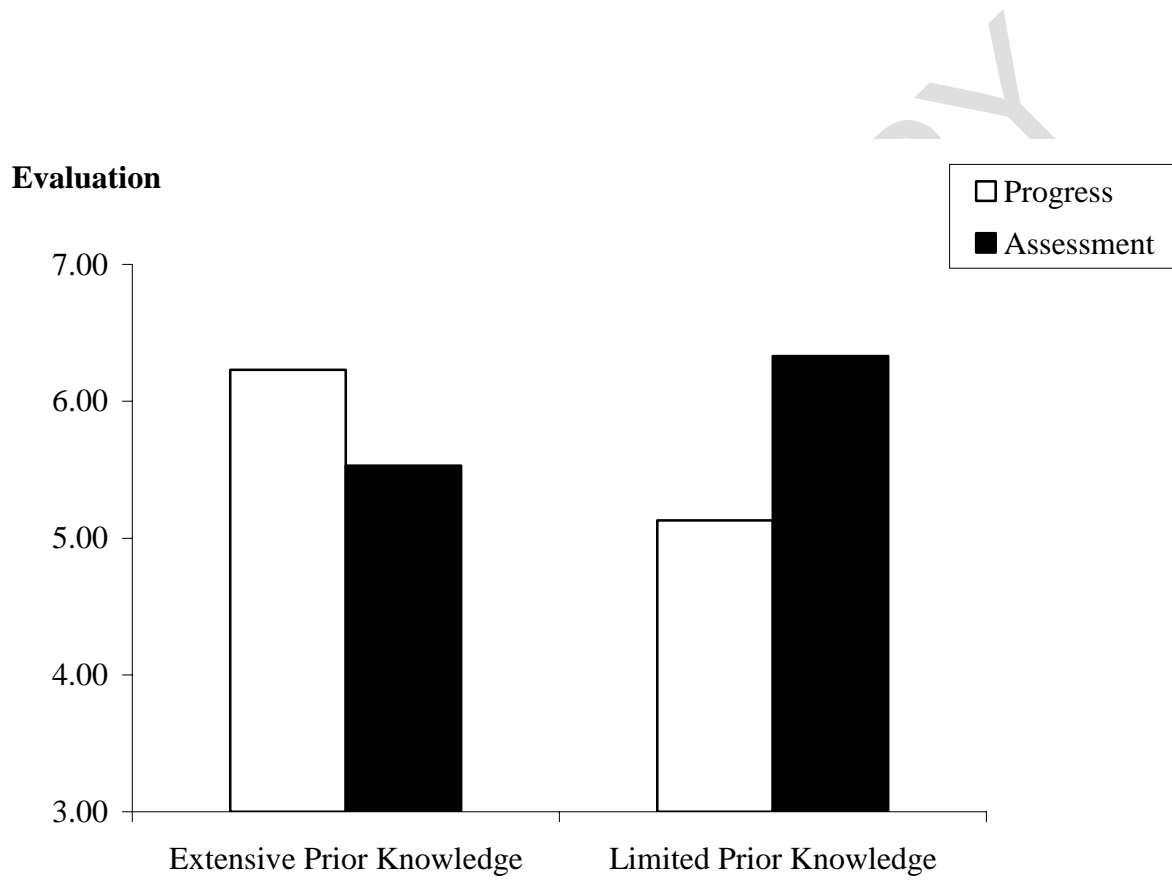


FIGURE 2

BRAND EVALUATION AS A FUNCTION OF MANIPULATED  
 PRIOR KNOWLEDGE AND PROCESSING MODE (STUDY 2)

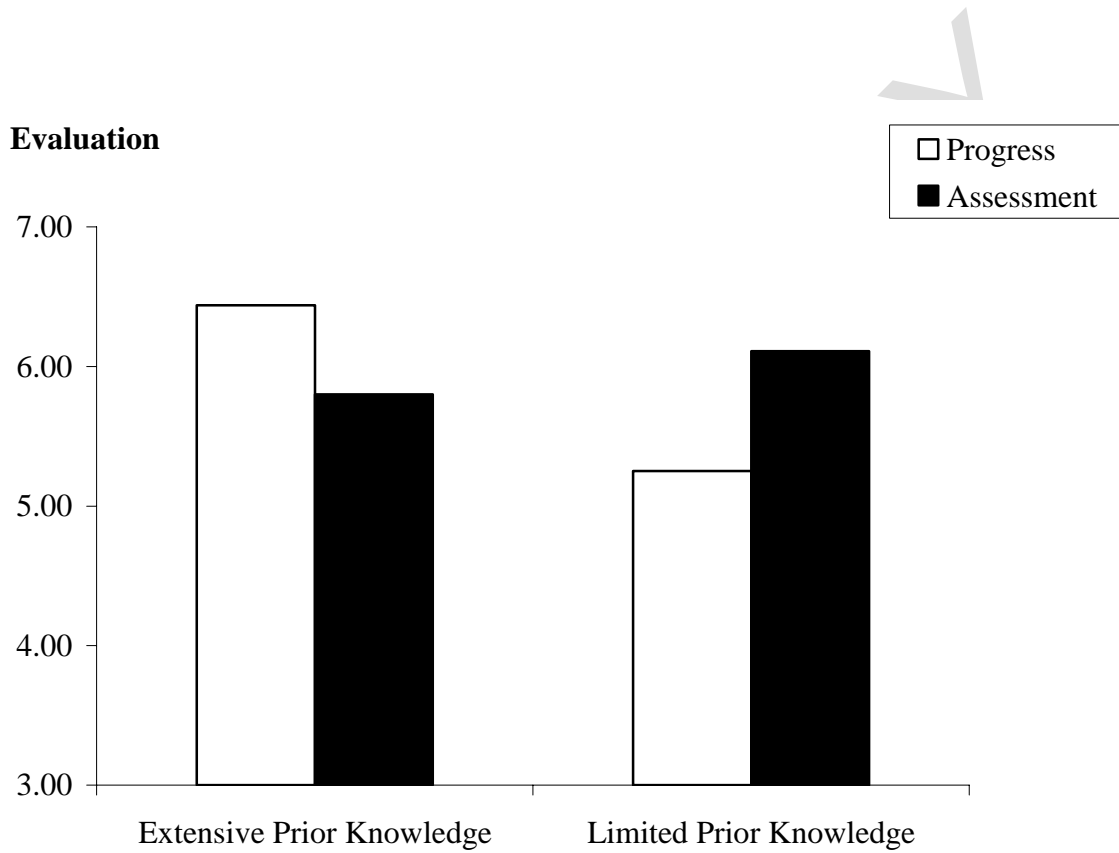


FIGURE 3  
 BRAND EVALUATION AS A FUNCTION OF  
 PRIOR KNOWLEDGE AND LEVEL OF CONSTRUAL (STUDY 3)

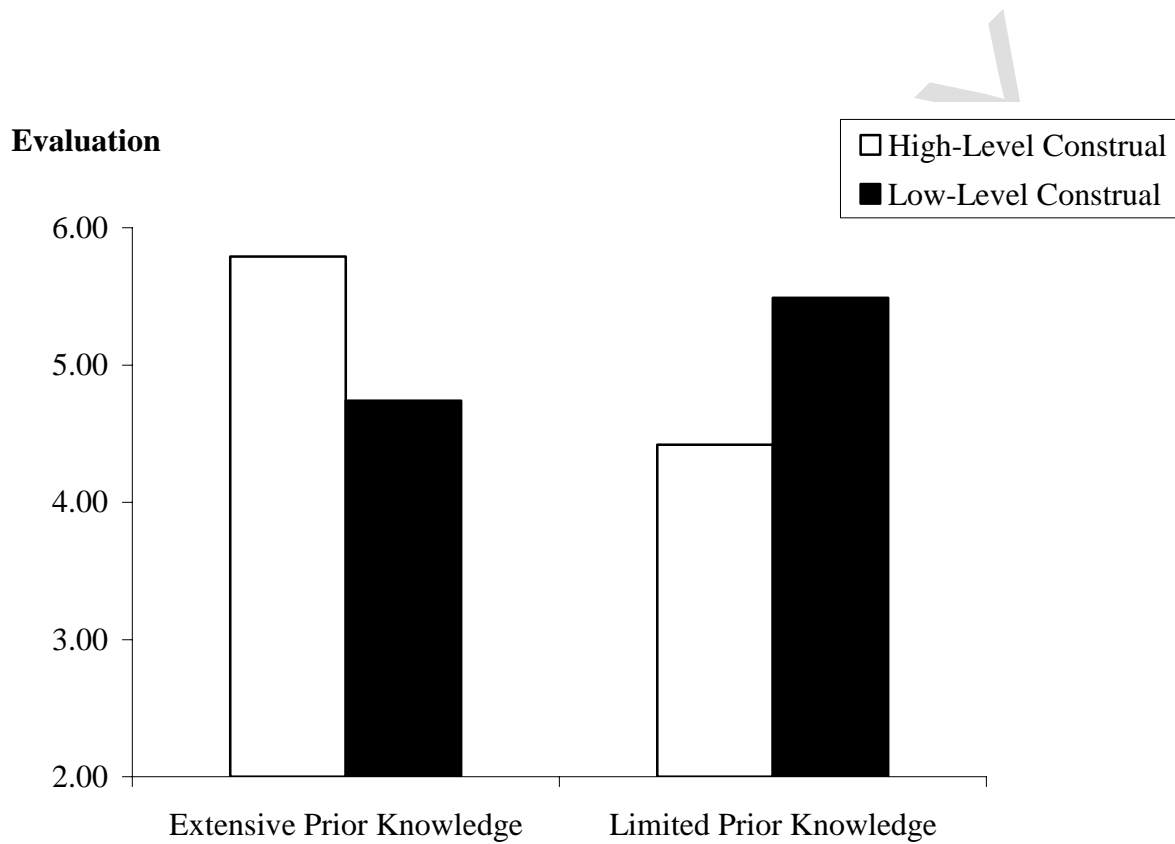
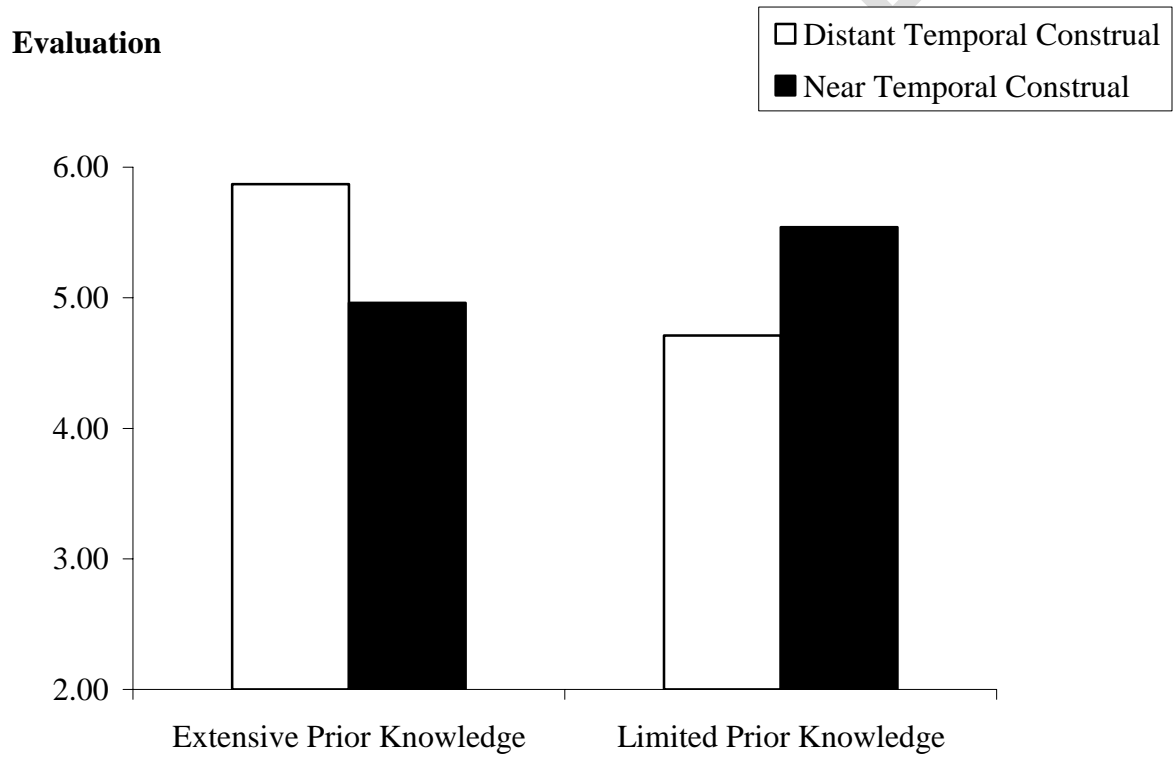


FIGURE 4  
 BRAND EVALUATION AS A FUNCTION OF  
 PRIOR KNOWLEDGE AND TEMPORAL CONSTRUAL (STUDY 4)



## The Effects of Consumer Prior Knowledge and Processing Strategies on Judgments

Jiewen Hong and Brian Sternthal

### Web Appendix

#### *Study 1: Fit between Prior Knowledge and Progress vs. Assessment Mode*

##### *Product Evaluation Stimuli*

Imagine that you are buying laundry detergent. You are provided with product information about five different brands. The following table lists the five different brands of laundry detergent, one in each column, and information on five different attributes, one in each row. The brands' performance on each attribute is rated on a 10-point scale, with higher ratings indicating better performance. They sell for about the same price.

Please examine the information of these brands of laundry detergent using the following decision strategy.

##### *Progress Mode Condition:*

Look at the first attribute, *Odor Removal*, brand by brand. Exclude the brand that has the worst value on this attribute. Now you are left with four brands. Go to the second attribute, *Stain Removal*, and again look at it for all the *remaining* brands. Exclude the brand that has the worst value on this attribute. Follow this procedure until you are left with only one brand. Mark it as your chosen brand.

##### *Assessment Mode Condition:*

Look at brand A. Compare it to the rest of the brands based on each of the attributes. Now look at brand B. Compare it to the rest of the brands based on each of the attributes. Now look at brand C. Compare it to the rest of the brands based on each of the attributes. Do so until you have looked at *all* the brands and at *all* the attributes. After you are done comparing between the brands, decide which brand you prefer most. Mark this brand as your chosen brand.

	<b>Brand A</b>	<b>Brand B</b>	<b>Brand C</b>	<b>Brand D</b>	<b>Brand E</b>
Odor Removal	9	9	9	9	8.5
Stain Removal	9.2	9.2	8.8	9.2	9.2
Anti-Static	8.8	8.8	8.8	8.5	8.8
Fade-Resistant	8.7	9	9	9	9

*Prior Knowledge Measure*

Please circle *True* or *False* for the following statements about laundry and laundry detergents.

1. Soaking white clothes overnight in bleach will make them whiter.

True

False

2. Laundry detergents with bleach alternative use active enzymes to remove stains.

True

False

3. For oil-based stains, it is best to soak them in cold water.

True

False

4. It is necessary to separate the dark colors from light when doing laundry.

True

False

5. For protein-based stains, such as blood or dairy, wash them in hot water.

True

False

6. Cold water has the highest level of color and fabric protection.

True

False

7. Hot water reduces level of hygienic cleaning.

True

False

8. You can use dryer sheets to control static cling.

True

False

9. It is ok to mix delicates and rougher fabrics as long as they are the same color.

True

False

10. Some laundry products allow you to clean your “dry clean only” delicates in your own dryer.

True

False

11. Dry darks at high temperature can prevent fading.

True

False

12. If you want to soften one item with softening sheets, it is better to add a damp bath towel in the dryer.

True

False

(Correct items: 2, 4, 6, 8, 10, 12)

*Study 2: Fit between Manipulated Knowledge and Progress vs. Assessment Mode*

*Product Evaluation Stimuli*

Imagine that you are buying an MP3 player. You are provided with product information for five different brands. The following table lists the five different brands, one in each column, and information on four different attributes, one in each row. They sell for about the same price.

Please examine the information about these brands of MP3 players using the following decision strategy.

*Progress Mode Condition:*

First, look at the first attribute, *Built-in Memory*, brand by brand. Cross out the brand that has the worst value on this attribute. Now you are left with four brands. Go to the second attribute, *USB Interface*. Again, look at the *remaining* brands and cross out the brand that has the worst value on this attribute. Follow this procedure until you are left with only one brand. Mark it as your chosen brand.

*Assessment Mode Condition:*

First, look at brand A. Compare it to the rest of the brands based on each of the attributes. Now look at brand B. Compare it to the rest of the brands based on each of the attributes. Now look at brand C. Compare it to the rest of the brands based on each of the attributes. Do so until you

have looked at *all* the brands and at *all* the attributes. After you are done comparing between the brands, decide which brand you prefer most. Mark this brand as your chosen brand.

	<b>Brand A</b>	<b>Brand B</b>	<b>Brand C</b>	<b>Brand D</b>	<b>Brand E</b>
Built-in Memory	30GB	30GB	30GB	30GB	20GB
USB Interface	2.0	2.0	1.0	2.0	2.0
Digital Tuner	Yes	Yes	Yes	No	Yes
Battery Life (play time)	14hrs	18 hrs	18hrs	18hrs	18hrs

*Prior Knowledge Manipulation*

*Extensive Prior Knowledge Condition:*

For the first task, we would like you to read a short article on MP3 players and tell us your opinions about it. Please read it carefully and answer the questions that follow.

There are many considerations in purchasing an MP3 player. They come in a range of shapes, sizes, features, and storage capacities. How should you choose? This guide provides some information about MP3 players.

What is MP3?

- MPEG-1 Audio Layer 3, commonly referred to as MP3, is a popular compressed digital audio format. It compresses audio data to a fraction of its original size (usually to 1/10th its original size) with little loss of quality.
- MP3 audio can be compressed at several different bit rates, providing a range of tradeoffs between data size and sound quality. A MP3 file encoded at a higher bit rate provides better sound quality than the same file encoded at a lower bit rate (e.g., a song has better sound quality when encoded at 160 kbps than at 96 kbps).

What are the different types of MP3 players?

There are three types of MP3 players:

- Flash-based players: These are the most compact type of MP3 players. However, they

have limited storage space, usually between 32MB and 6GB. They have no moving parts, so they do not skip when the player is in motion. Flash players are easy to keep going because they come with AAA batteries or an internal rechargeable cell.

- Hard drive-based players: These players are not as compact as flash players because they have high storage capacities, ranging from 1.5GB to 100GB. Because of the physical size, these players have some moving parts, so there might be some skipping if the player is used while you are moving around.
- MP3 CD players: These players look just like portable CD players, except they can read data CDs filled with digital music containing MP3 or other digital audio files.

What file formats can MP3 players support?

- Although MP3 was the first format to gain widespread acceptance, today's players support multiple formats, including WMA, AAC, and OGG formats.
- WMA (Windows Media Audio) format is especially popular and is supported by MP3 players of all types. Its popularity stems from the fact that it is approximately half the size of an MP3 format for the same content and sound quality.

Where to get music?

- There are several sources of music. MP3 players can play music that has been ripped from a CD. Or you can get music from online music stores, such as iTunes store, for a downloading fee. Peer-to-peer file-sharing networks are also a good source for MP3 music.

*Limited Prior Knowledge Condition:*

For the first task, we would like you to read a short article on laundry tips and tell us your opinions about it. Please read it carefully and answer the questions that follow.

When you first went to college probably no one mentioned that laundry would be one of your tasks. Maybe someone took care of laundry for you, but now you're on your own. Please take a few minutes to read the following information about doing laundry. It suggests ways to make doing laundry go smoother, and make clothes a little cleaner.

- Tips on Sorting
  - Sort clothes by color, separating whites and darks.
  - Sort delicate fabrics and loose knits from "tougher" fabrics.
  - Garments that generate lint, such as fleece sweat shirts, should be washed separately.
- Tips on Stain Removal
  - Deal with the stain as soon as possible. The longer you wait, the more time the stain has to soak in and/or dry, making it more difficult to remove.
  - Lift or gently scrap off any excess material from the fabric. Use a cloth or a towel to gently blot up liquid spills or scrape off solid buildup with the edge of a dull knife.
  - Identify what caused the stain and treat different stains differently.

- For *protein-based stains*, such as blood or dairy, soak fresh stains in COLD water.
  - For *oil-based stains*, such as greases or makeup, wash in HOT water.
- Tips on Washing
    - Following instructions on the care label carefully.
    - Make sure the items are equally distributed around the tub of the washer to keep the load balanced during spinning cycles.
    - Choose the proper temperature settings for wash and rinse. Cold water prevents colors from fading and protects fabrics. Hot water works best for hygienic cleaning or soil removal.
    - Use smart alternative to chlorine bleach. Some bleach alternative uses active enzymes to break down and remove stains while whitening whites, so it's safe to use on colors too.
  - Tips on Drying and Softening
    - Lightly shake out items taken from the washer before placing them in the dryer. Tightly balled up fabric dries slower and will likely come out wrinkled.
    - Turn your darks inside out when drying to prevent fading.
    - Use fabric softeners to decrease static cling and reduce wrinkling.
    - If you want to soften one item using softening sheet, add a damp bath towel in the dryer to more effectively disperse the softening agent.
  - Tip on Saving on Dry Cleaning
    - Some fabric care system allows you to care for your dry clean only clothes using a regular dryer in about 30 minutes.

*Manipulation Check of Prior Knowledge*

Please circle *True* or *False* for the following statements about MP3 players.

1. MP3 is an audio format.
 

True	False
------	-------
2. MP3 players use flash memory as storage, but not hard drives.
 

True	False
------	-------
3. The process of changing CD music format to MP3 format is known as ripping.
 

True	False
------	-------
4. MP3 stands for Music Player 3rd Generation.

- | True   | False |
|--|-------|
| 5. A USB port allows you to connect your MP3 player to your computer for easy music downloads.   |       |
| True   | False |
| 6. MP3 players can store files other than music files.   |       |
| True   | False |
| 7. Because of the compression techniques used, MP3 players can only play MP3 format music files. |       |
| True   | False |
| 8. Auto Resume feature allows you to automatically begins music playback where you left off.     |       |
| True   | False |
| 9. WMA format is half the size of an MP3 format, but WMA offers poorer sound quality.            |       |
| True   | False |
| 10. A flash drive has the advantage of no moving parts, which eliminates skipping.               |       |
| True   | False |
| 11. MP3 players generally compress music to one fiftieth of the uncompressed form.               |       |
| True   | False |
| 12. Most MP3 players can handle a WMA format.  |       |
| True   | False |
- (Correct items: 1, 3, 5, 6, 8, 10, 12)

*Study 3: Fit between Prior Knowledge and Level of Construal*

*Product Evaluation Stimuli*

Creative Labs is planning to introduce a new MP3 player called CL200. We are interested in your opinion about this new product. Please examine the information provided in a careful and thorough manner and then answer the questions that follow.

*High Level of Construal Condition:*

***Why consider a CL200 MP3 Player?***

- Has a large 32-hour storage capacity
- Readily expandable memory
- Easy menu navigation
- Enables you to record at any time and anywhere
- Fast transfer of albums
- Ultra-compact for convenience
- Comfortable ear buds for long-lasting listening

DO NOT COPY

*Low Level of Construal Condition:*

***How to use a CL200 MP3 Player?***

- Connect it to your computer and store 32 hours of your favorite music
- Insert a memory card in the built-in slot for even more space
- Select a song by artist, album, song title, and more by the touch of a button
- Press a hotkey and record anywhere with the built-in microphone
- Connect to your computer and transfer entire albums to the mp3 player in seconds
- Weighs less than an ounce – slip into your pocket and you will forget it's there
- Put in the comfortable ear buds and listen for hours

*Prior Knowledge Measure*

Same as the manipulation check of prior knowledge in Study 2.

*Study 4: Fit between Prior Knowledge and Temporal Construal*

*Product Evaluation Stimuli*

A laundry detergent manufacturer is planning to introduce a new product called Fresh Start. We are interested in your opinions about this new product. Please examine the information provided in a careful and thorough manner and then answer the questions that follow.

*Distant Temporal Condition:*

***Introducing the new Fresh Start detergent ...***

- ◇ Provides all of the qualities that today's clothes require.
- ◇ The new ABT® antibacterial formula keeps you germ free for as long as you own your clothes.
- ◇ Fresh Start's Odorguard builds up a resistance to odors with each wash.
- ◇ The Stainlifters® formula blankets your clothes with an invisible stain blocking shield. Whites stay white and colors stay bright until the very last wearing.
- ◇ Staticguard keeps your clothing cling free forever without having to use softener sheets in

the dryer.

- ◇ Colorlock® locks the color in so that clothes retain the same color even after many washings.
- ◇ Available in major supermarkets.
- ◇ Comes in three sizes: 22, 44 and 66 loads.

*Near Temporal Condition:*

***Introducing the new Fresh Start detergent ...***

- ◇ Provides all of the qualities that today's clothes require.
- ◇ The new ABT® antibacterial formula kills germs on contact to keep you healthy.
- ◇ Fresh Start's Odorguard instantly removes odors from your clothes and leaves a fresh scent.
- ◇ The Stainlifters® formula immediately removes even stubborn dirt and stains. Whites come out white and colors are bright.
- ◇ Staticguard keeps your clothing cling free instantly without having to use softener sheets in the dryer.
- ◇ Colorlock® instantly locks the color in so that clothes retain the same color after washing.
- ◇ Available in major supermarkets.
- ◇ Comes in three sizes: 22, 44 and 66 loads.

***Prior Knowledge Measure Study 4***

Same as the prior knowledge measure in Study 1.