When and Why the Background Contrast Effect Emerges: Thought Engenders Meaning by Influencing the Perception of Applicability

JOSEPH R. PRIESTER
UTPAL M. DHOLAKIA
MONIQUE A. FLEMING*

The Background Contrast Effect occurs when the trade-off value between attributes in a first choice influences subsequent choice. We explore the role of decision-making thoughtfulness in seeking to understand when and why this effect occurs. Experiments 1 and 2 provide evidence that the Background Contrast Effect emerges more under thoughtful than under nonthoughtful conditions. Experiment 3 reveals that thought influences perceptions of applicability of the trade-off values in the first choice to the second. Experiment 4 demonstrates that when the information from the first choice is manipulated to appear inapplicable, the Background Contrast Effect is reversed under thoughtful conditions. This research highlights the role of thought on perception of applicability as a process underlying when and why context is used to generate meaning in choice situations.

That individuals are influenced by context has become axiomatic to the judgment and decision-making literature (Bettman, Luce, and Payne 1998; Huber, Payne, and Puto 1982; Payne, Bettman, and Johnson 1993). A particularly ubiquitous and influential aspect of the decision maker's context is information used in making past decisions (e.g., Dhar and Simonson 1999; Kardes 1986). The Background Contrast Effect (Simonson and Tversky 1992) provides a broad and compelling account of the subtle influence of past decisions on current ones by showing that the trade-off values between attributes in previous choices influence subsequent choice. Surprisingly, little research has examined when and why the Background Contrast Effect influences consumer choice. Such is the goal of this research.

*Joseph R. Priester is a visiting assistant professor of marketing at the University of California, Los Angeles, Anderson School of Management, 110 Westwood Plaza, Los Angeles, CA 90095 (joseph.priester@anderson.ucla.edu). Utpal M. Dholakia is an assistant professor of management at Rice University, Jesse H. Jones Graduate School of Management, 6100 Main Street, Houston, TX 77005-1892 (dholakia@rice.edu). Monique A. Fleming is a visiting scholar of marketing at the University of California, Los Angeles, Anderson School of Management, 110 Westwood Plaza, Los Angeles, CA 90095 (monique.fleming@anderson.ucla.edu). The first two authors contributed equally to this work and correspondence should be addressed to either of them. We thank Itamar Simonson, Michael Johnson, Colleen Seifert, Frank Yates, and the members of the University of Michigan Decision Consortium for helpful feedback on this research. We also thank the editor, associate editor, and three reviewers for helping to clarify and strengthen the contribution of this research. Portions of this research were presented at the 2002 annual Association of Consumer Research conference.

We focus our research specifically on the Background Contrast Effect for two reasons. First, given the potential ubiquity and importance of the effect, it is important in and of itself to better understand when and why this effect emerges. Second, the structure of the Background Contrast Effect provides an opportunity to examine possible underlying psychological processes in a manner that is more informative than other, simultaneous context effects (i.e., instances wherein the context is established within the choice itself). Specifically, the sequential manner whereby the Background Contrast Effect unfolds, in which a first choice is followed by a subsequent choice, provides an opportunity in between the two choices to test possible mechanisms that account for the influence of the first choice on the second one. We take advantage of this opportunity explicitly in experiment 3.

BACKGROUND CONTRAST EFFECT

A large body of work has shown that when making a choice, individuals are susceptible to context effects, wherein the presence or memory of a positive context can make a product seem less attractive, and, similarly, the presence or memory of a negative context can make a product seem more attractive (e.g., Dhar and Simonson 1999; Houghton et al. 1999; Raghunathan and Irwin 2001; Simonson and Tversky 1992). For any given choice, such an influence can emerge either from other alternatives available in the current choice set (which is referred to as a "local" contrast effect; see also Huber et al. 1982; Simonson 1989)

or from choices made by the consumer in the past—called the Background Contrast Effect.

This effect is perhaps best clarified by an example. Consider a consumer faced with making a tire purchase decision, as shown in the tabulation below, which depicts sequential choices under which the background effect emerges (asterisks indicate the preferred alternative for each choice in the two different background conditions, initial choice preference as a function of the alternatives themselves, second choice preference as a result of the background contrast effect):

Expensive background	*Inexpensive background*
Initial choice:	
Alternative A′: 30,000-mi. warranty for $25*	Alternative A: 50.000-mi. warranty for $85
Alternative B′: 35,000-mi. warranty for $49	Alternative B: 70,000-mi. warranty for $91*
Second choice:	
Alternative X: 40,000-mi. warranty for $60	Alternative X: 40,000-mi. warranty for $60*
Alternative Y: 50,000-mi. warranty for $75*	Alternative Y: 50,000-mi. warranty for $75

According to the Background Contrast Effect, if a first choice establishes a relatively high cost for the purchase of additional warranty (30,000-mi. warranty for $25 or 35,000-mi. warranty for $49), a second choice in which purchase of additional warranty is not as expensive (40,000-mi. warranty for $60 or 50,000-mi. warranty for $75) will result in a greater choice of the alternative with more warranty (i.e., the 50,000-mi. warranty alternative). In contrast, if a first choice establishes a relatively low cost for the purchase of additional warranty (50,000 mi. for $85 or 70,000 mi. for $91), the same second choice (40,000-mi. warranty for $60 or 50,000-mi. warranty for $75) will result in greater choice of the alternative with less warranty (i.e., 40,000-mi. warranty alternative).[1] Note that the alternative preferred in the second choice is systematically influenced by the first-choice alternatives. This systematic influence is the Background Contrast Effect.

Thought and the Background Contrast Effect

Our first hypothesis concerns the thoughtfulness with which decisions are made. Thoughtfulness has emerged as a powerful theoretical moderator to the psychological processes that underlie evaluative judgments (Chaiken and Trope 1999).[2] The Elaboration Likelihood Model (ELM; Petty and Cacioppo 1986) is perhaps the best-known theory built upon thoughtfulness as a key moderator. The ELM hypothesizes, "The more motivated and able people are to assess the central merits of the attitude object, the more likely they are to effortfully scrutinize all available object-relevant information" (Petty and Wegener 1998, p. 327). That is, thoughtful individuals are expected to use object-relevant information to a greater extent in forming evaluations than nonthoughtful individuals. With respect to the Background Contrast Effect, unspecified by such a definition is whether the background context established by the first choice is object relevant or not. Such a question leads to two possible alternative hypotheses.

Nonthoughtful Hypothesis

What is particularly intriguing about the emergence of the Background Contrast Effect is that it suggests that individuals rely on the trade-off values of prior choices to inform subsequent decisions rather than calculating the trade-off values of subsequent choices. Were individuals to calculate the value of each alternative as a function of the trade-off of attributes in each choice anew, no such effect would emerge. In the case of the warranty purchase, for example, calculation of the second choice would reveal that in both alternatives each dollar purchases 66.6 mi., and, as such, neither alternative dominates. Such an observation leads to the hypothesis that the emergence of the Background Contrast Effect should emerge primarily under nonthoughtful conditions: Under thoughtful conditions individuals may be more likely to explicitly calculate the alternatives of each choice, and, consequently, the influence of one choice on the next would be eliminated. Indeed, this line of reasoning is consistent with the commonly espoused idea that many variables that influence judgment and choice are relatively nonthoughtful cognitive heuristics that arise as a result of mental shortcuts.

Thoughtful Hypothesis

It is also plausible that in order for the trade-off values between attributes from the first choice to have an influence on a subsequent choice, the decision maker must understand not only the absolute levels of attributes themselves but also the relationships between the different attributes. That is, the decision maker must have calculated the trade-off values in the first choice and inferred meaning from them about the attributes more generally (e.g., additional warranty is expensive). Only then can the attribute trade-off values be applied to the second and subsequent choices and the Background Contrast Effect emerge. That is, the decision maker calculates the trade-off values in the first choice (e.g., additional warranty here is not as expensive) and applies the meaning inferred from the first choice to the second choice (e.g., the more expensive choice with more warranty in the second choice is a good deal). If so, it is likely that such comprehension and application requires thoughtful decision making by the consumer. This line of reasoning suggests that the Background Contrast Effect should emerge only when individuals are relatively thoughtful.

In fact, this reasoning is consistent with an emerging set of diverse research findings. Although not necessarily con-

[1] These choices were used by Simonson and Tversky (1992, p. 284) to provide support for the Background Contrast Effect and are used in the experiments reported herein.

[2] We focus herein on the theoretical variable of thoughtfulness. Others (e.g., Drolet et al. 2003; Griffin and Kahneman 2002; Kahneman and Frederick 2002) have recently suggested that such manipulations may influence the type of reasoning (Sloman 1996). Clearly, understanding the relationship between elaboration and type of reasoning is of great interest for future research.

ceptualized as such, there has been a groundswell of research uncovering the finding that contextual influences on decisions are more likely to emerge under conditions that accentuate rather than attenuate thoughtful decision making. For example, research has found that when time pressure is reduced (Dhar, Nowlis, and Sherman 2000), when attachment is increased (Carmon, Wertenbroch, and Zeelenberg 2003), or when individuals are chronically more likely to think (i.e., high in need for cognition; Mantel and Kardes 1999; Petty 2001), contextual influences on judgment and choice are more, rather than less, likely to occur (see also Griffin, Gonzalez, and Varey 2001). Note that we do not mean to suggest that all of these influences are the result of the same underlying psychological process. Rather, it is clear that at least for some decisional influences, thought affords, rather than dampens, these effects (Bettman et al. 1998). Whether thought affords or dampens the emergence of the Background Contrast Effect motivates experiment 1.

EXPERIMENT 1

The goal of experiment 1 is to examine which of the two hypotheses concerning the role of thought on the Background Contrast Effect holds. Support for either hypothesis would present the first boundary condition to the Background Contrast Effect and would thus help us better understand when and why this important effect emerges.

Overview

In experiment 1, we used the individual difference of need for cognition (Cacioppo and Petty 1982) to measure thoughtfulness. Need for cognition measures chronic tendencies of individuals to thoughtfully consider information (Cacioppo et al. 1996). Research has revealed that individuals high in need for cognition intrinsically enjoy elaboration and demonstrate a general tendency to thoughtfully elaborate information regardless of such factors as involvement and accountability (Petty et al. 2001; Priester, Godeck et al. 2004; Priester and Petty 1995). Participants completed the short need for cognition scale (Cacioppo, Petty, and Kao 1984) and subsequently made the two choices within the Expensive Background Condition (see tabulation above). Given the first choice, the Background Contrast Effect is evidenced by participants choosing the more expensive tire in the second choice more often than chance. Thus, the question of whether the nonthoughtful or thoughtful hypothesis holds is addressed by examining whether the Background Contrast Effect emerges more for individuals high or low in need for cognition.[3]

[3]The logic of experiment 1 rests upon the assumption that individuals should be indifferent to the second choice, regardless of need for cognition, absent the background context provided by the first choice. The results of a pretest, conducted with 331 participants, confirmed that neither high nor low need for cognition individuals chose the more expensive alternative more or less often than chance (50%). The mean results of this pretest are presented in fig. 1.

Method

Five hundred and thirty two undergraduate marketing students participated in the study in partial fulfillment of a class requirement. All participants completed two booklets. Participants first completed the short need for cognition scale (Cacioppo, Petty, and Kao 1984) and then, approximately 30 min. later, completed the two choices described above.

Results

Overall, 55.10% (293 of 532) of participants chose the more expensive tire in the second choice. This percentage is significantly greater than 50% ($\chi^2(1) = 5.48$, $p < .02$), and replicates the basic Background Contrast Effect finding that the first choice can systematically influence the second one.

Of greater importance, however, is the question of whether need for cognition influenced this tendency to choose the more expensive alternative (i.e., the emergence of the Background Contrast Effect). A logit model was fit in which the probability of choosing the more expensive tire as a function of need for cognition was examined. Similar results were obtained regardless of whether need for cognition was included as a categorical variable using a median split ($\beta = .34$, Wald statistic $= 3.87$, $p < .05$) or a continuous measure ($\beta = .02$, Wald statistic $= 4.86$, $p < .05$). Need for cognition was significant in both cases. As predicted by the thoughtful hypothesis, individuals high in need for cognition were more likely to choose the more expensive tire (158 of 266, or 59.40%) than individuals low in need for cognition (130 of 258, or 50.40%), $\chi^2(1) = 4.60$, $p < .05$. Further analyses revealed that whereas the percentage of participants high in need for cognition differed significantly from 50% ($\chi^2(1) = 10.01$, $p < .01$), the percentage of participants low in need for cognition did not differ significantly from 50% ($\chi^2(1) = .02$, $p > .80$). Refer to figure 1.

Discussion

Recall that experiment 1 was conducted in order to test between two competing hypotheses concerning whether the Background Contrast Effect is likely to emerge more under thoughtful or under nonthoughtful decision-making conditions. The results of experiment 1 are straightforward. In support of the thoughtful hypothesis, the Background Contrast Effect emerged more for high than for low need for cognition participants.

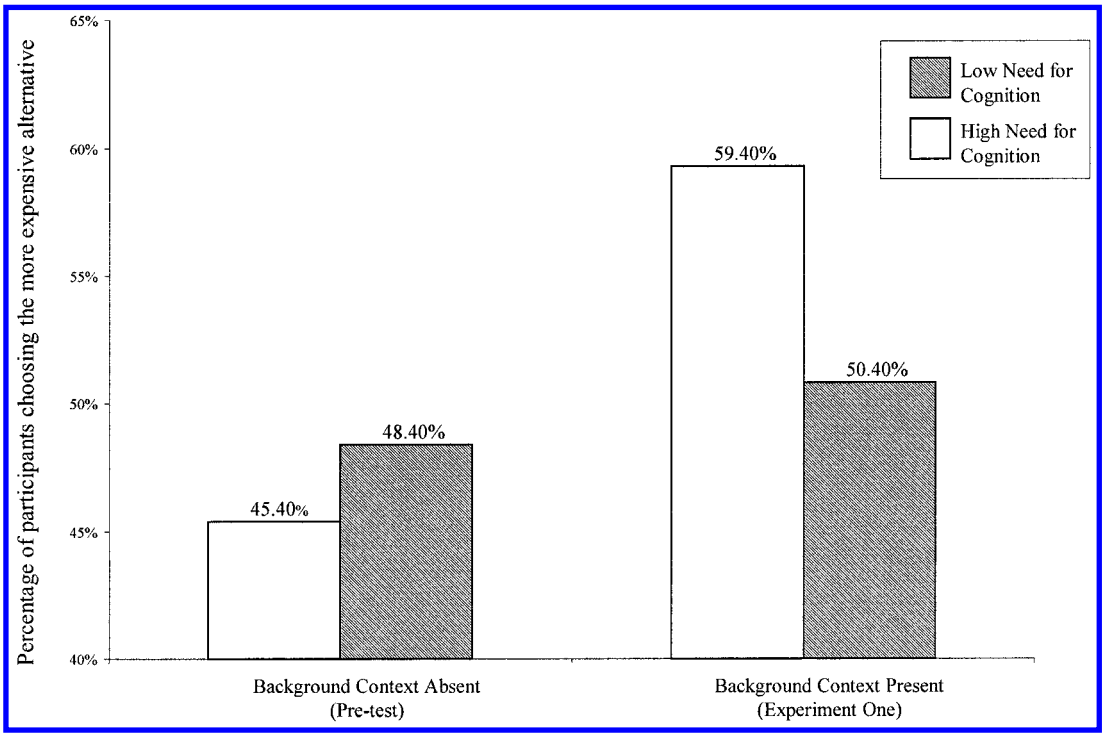
Alternative Explanations

Although the results of experiment 1 are consistent with the thoughtful hypothesis, there arise two strikingly different possible explanations for why thought affords the Background Contrast Effect.

Differential Diligence Hypothesis. The differences observed in experiment 1 have occurred simply because low

FIGURE 1

PERCENTAGE OF PARTICIPANTS CHOOSING THE MORE EXPENSIVE ALTERNATIVE IN THE KEY CHOICE AS A FUNCTION OF NEED FOR COGNITION WHEN BACKGROUND CONTEXT IS ABSENT (PRETEST) AND PRESENT (EXPERIMENT 1)



need for cognition participants did not consider trade-off values when making the first or second choice and instead provided random responses without having paid sufficient attention to the information provided in the first choice. That is, it is possible that the high need for cognition participants are diligent in performing the task, whereas the low need for cognition participants are providing random responses unrelated to information in the task.

Thought Engenders Meaning Hypothesis. In contrast, it is possible that both thoughtful and nonthoughtful individuals calculate the trade-off values when making the first choice, but that thought is necessary to generate an inference concerning and to subsequently apply the trade-off values of the first choice to the second. That is, thoughtfulness may afford the conditions under which the Background Contrast Effect emerges because the information gained from calculating the trade-off values in the first choice is used to provide meaning to the second (see also Prelec, Wernerfelt, and Zettelmeyer 1997; Wernerfelt 1995) under thoughtful conditions.

EXPERIMENT 2

To provide convergent evidence for the influence of decision-making thoughtfulness, we manipulated the thoughtfulness of the decision in experiment 2. A manipulation of the Background Context was also provided. Recall that experiment 1 established that the participants were indifferent to the second choice (absent Background Context) by means of a pretest. In contrast, Simonson and Tversky (1992) manipulated the initial choice such that the emergence of the Background Contrast could be inferred from differences in the second choice as a function of the manipulated initial choice. Such a manipulation not only provides a stronger inference as to the emergence of the Background Contrast Effect but also provides a means by which to test between the alternative explanations. Namely, the two conditions of the manipulated background context each suggest a specific preferred alternative for the initial choice: The less expensive alternative is preferable in the first choice for the Expensive Background conditions, whereas the more expensive alternative is preferable in the first choice for the Inexpensive Background Context Conditions (see tabulation above).

If the results of experiment 1 are due to differential diligence, then the nonthoughtful individuals (who are presumably providing random responses) should be less likely to choose the preferred first alternative than the thoughtful individuals, and thus no differences should emerge on the initial, as well as the second, choice. Therefore, on the initial choice there should emerge a Background Context × Thought interaction, such that individuals in the thoughtful conditions

are more likely to choose the preferred alternative associated with each of the background contexts for the first choice than the individuals in the nonthoughtful conditions. In contrast, if the thought engenders meaning hypothesis is responsible for the results of experiment 1, there should emerge only a main effect of Background Context, unmoderated by Thought on the initial choice. That is, both thoughtful and nonthoughtful individuals should be equally likely to choose the preferred alternative present in the initial choice that establishes the background context manipulation.

Method

One hundred and fifty five undergraduate marketing students participated in the study in partial fulfillment of a class requirement. Participants were randomly assigned to one of four cells in a 2 (Background Context: expensive or inexpensive) × 2 (Thought: high or low) between-subjects factorial design experiment.

Background Context. The Background Context was manipulated in the first choice such that half of the participants were exposed to the expensive background context and the others were exposed to the inexpensive background context (see tabulation above).

Thought. Decision-making thoughtfulness was manipulated by instructions that participants read prior to making the two choices. We based our manipulation of thoughtfulness on prior research examining how identifiability and accountability influence thoughtfulness.[4] We utilized these past research findings to develop a manipulation of the thoughtfulness by which participants made their decision. Specifically, participants in the "high thoughtfulness" condition read that "your responses to these choices will be kept separate from all of the other responses from all of the students who participate in the study. In this manner, it will be possible to tell which choices you specifically made. That is, we are interested in understanding how you, as an individual, feel about these choices. As such, your choices will matter greatly and are very important." In contrast, participants in the "low thoughtfulness" condition read that "your responses to these choices will be pooled with all of the other responses from all of the other students who participate in this study. In this manner, it will be impossible to tell which choices you specifically made. That is, we are interested in understanding how all students, as a group, feel about these choices. As such, your choices will not make much of a difference and are not very important." After completing the two choices, participants answered three measures designed to gauge the effectiveness of this manipulation.[5]

Results

Manipulation Checks. All three of the measures provided results in support of the effectiveness of our manipulation of thoughtfulness. For example, participants in the thoughtful conditions believed their responses to be more identifiable ($X = 6.10$) than those in the nonthoughtful conditions ($X = 4.90$, $F(1, 150) = 9.17$, $p < .01$).[6]

Initial Choice. A logit model was fit to examine the probability of choosing the more expensive tire (and thus not choosing the less expensive tire) for the first choice as a function of Background Context and Thought. Consistent with the thought engenders meaning hypothesis, and inconsistent with the differential diligence explanation, we found only a main effect of condition ($\beta = -3.36$, Wald statistic $= 4.56$, $p < .05$), wherein the more expensive alternative was chosen to a greater extent by the participants in the inexpensive background context conditions (71 of 77, or 92.21%) than participants in the expensive background context conditions (17 of 77, or 22.08%) regardless of thought. That is, neither a main effect ($\beta = -.42$, Wald statistic $= .58$, $p > .40$) of thoughtfulness nor the two-way interaction between condition and thoughtfulness ($\beta = -.29$, Wald statistic $= .08$, $p > .75$) emerged as significant.[7]

Second Choice. The probability of choosing the more expensive tire in the second choice was subjected to a 2 (Background Context) × 2 (Thought) logit analysis. Recall that the operation of the Background Contrast Effect predicts that participants should be inclined to choose the more expensive tire in the second choice when exposed to the expensive background context and to choose the less expensive tire in the second choice when exposed to the inexpensive background context. This prediction was supported by the emergence of a main effect of Background Context on the probability of choosing the more expensive tire ($\beta = -1.84$, Wald statistic $= 13.18$, $p < .01$). Specifically, participants exposed to the expensive background context were more likely to choose the expensive tire (50 of 77, or 64.90%) than the participants exposed to the inexpensive background context (30 of 77, or 38.96%). Each of these probabilities differed significantly from 50% ($\chi^2_{\text{expensive}} = 6.87$, $p < .01$, and $\chi^2_{\text{inexpensive}} = 3.75$, $p = .05$).

[4]Attitude research shows that individuals who believe that they are individually responsible for evaluating information are more likely to thoughtfully consider that information relative to those who believe that they are part of a collective responsible for evaluation (Petty, Harkins, and Williams 1980; see also Latane 1981). Other research suggests that individuals who feel accountable for a choice are more likely to make that choice thoughtfully compared to those who do not feel accountable (Lerner and Tetlock 1993).

[5]These three questions were chosen to provide evidence that the participants believed their responses to be more or less identifiable and more or less important as a function of the manipulation. In addition, participants were asked to what extent they perceived themselves to be involved with their choice (Petty, Cacioppo, and Schumann 1983).

[6]No other influences (either the main effect for background context or the two-way interaction) emerged as significant on the manipulation checks.

[7]Analyses of the initial choice for experiments 1, 3, and 4 provided similar findings, in which no differences as a function of Thought emerged as significant.

Thought and the Background Contrast Effect. Recall that the prediction for this experiment was that this influence of background context on choice would be moderated by thoughtfulness of decision making, as in experiment 1. As predicted, the main effect of background context was moderated by thoughtfulness ($\beta = 1.47$, Wald statistic = 4.65, $p < .05$). We interpreted this interaction by examining the influence of background context separately for thoughtful and nonthoughtful participants. The participants who made the decision under thoughtful conditions were influenced more by the background context (28 of 39, or 71.79%, of the participants in the expensive condition and 11 of 38, or 28.94%, of the participants in the inexpensive condition, $\chi^2 = 14.15$, $p < .01$) than the participants who made the decision under nonthoughtful conditions (21 of 38, or 55.26%, of the participants in the expensive condition and 18 of 39, or 46.15%, of the participants in the inexpensive condition, $\chi^2 = .64$, $p > .40$). Further analyses revealed that each of the probabilities associated with the thoughtful conditions differed significantly from 50% ($\chi^2_{\text{expensive}} = 5.16$, $p < .05$ and $\chi^2_{\text{inexpensive}} = 9.26$, $p < .01$), whereas neither of the probabilities associated with the nonthoughtful conditions differed significantly from 50% ($\chi^2_{\text{expensive}} = .23$, $p > .60$ and $\chi^2_{\text{inexpensive}} = .42$, $p > .50$). The results of this interaction are presented in figure 2.

Discussion

First, the results of experiment 2 provide convergent validity for the influence of thought on the emergence of the Background Contrast Effect. Both when thought is measured by individual differences and when it is manipulated, the Background Contrast Effect emerges only under conditions of thoughtful decision making. Note that although we used two specific approaches in examining the influence of thoughtfulness on the Background Contrast Effect, we do not mean to suggest that only these operationalizations would yield such results. In fact, from the results of experiments 1 and 2 we conclude that, all else being equal, any manipulation that increases thoughtfulness should similarly afford the Background Contrast Effect.

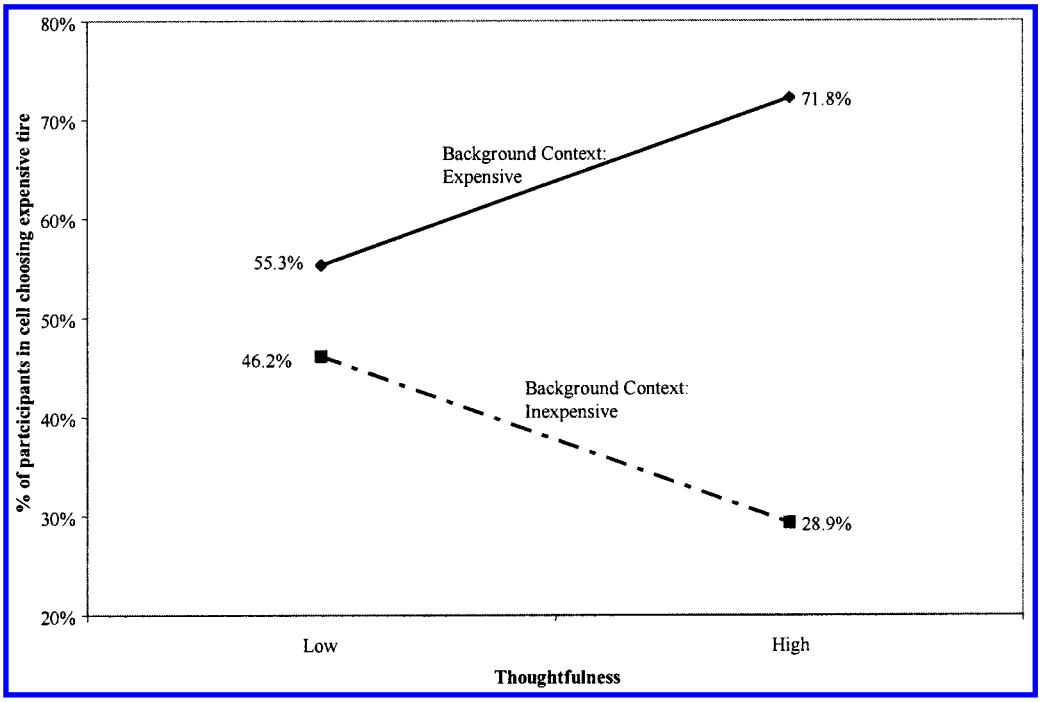
Second, recall that experiment 2 was conducted in order to examine whether the results of experiment 1 were due to the thought engenders meaning or the differential diligence hypothesis. The finding that the thoughtful and nonthoughtful individuals show a systematic preference in their initial choice suggests that the nonthoughtful individuals are not simply providing random responses. Rather, nonthoughtful individuals are aware of the trade-off values in the first choice and yet are not using the information from the trade-off values in making their second choice.

Alternative Explanations

Although the results of experiment 2 rule out the differential diligence explanation and support the thought engenders meaning hypothesis, they raise the question of how thought engenders meaning. Two possible explanations arise to account for why this process occurs for thoughtful but

FIGURE 2

PERCENTAGE OF PARTICIPANTS CHOOSING THE MORE EXPENSIVE ALTERNATIVE IN THE SECOND CHOICE AS A FUNCTION OF BACKGROUND CONTEXT (EXPENSIVE OR INEXPENSIVE) AND THOUGHT, EXPERIMENT 2



not for nonthoughtful individuals. Both explanations rely, in part, upon the Accessibility-Diagnosticity Model (Feldman and Lynch 1988). This model predicts that information will be used in a judgment to the extent that it is mentally available (i.e., accessible) and perceived as applicable (i.e., diagnostic). How and why information is mentally available and/or seen as applicable guide the two explanations.

Inference Generation Hypothesis. One possible reason why the thoughtful individuals are using the information from calculating the trade-off values in the first choice and the nonthoughtful individuals are not is differences in the generation of an inference about the product category from the initial choice. That is, it may be the case that the nonthoughtful individuals are less likely to generate an inference from the first task than thoughtful individuals. For example, although both the thoughtful and nonthoughtful individuals are equally likely to prefer the cheaper of the two alternatives in the expensive background context conditions of experiment 2, it is possible that the thoughtful individuals are more likely to take an additional step and generate the inference that warranty is relatively expensive than are nonthoughtful individuals. We refer to this as the inference generation hypothesis.

Perception of Applicability Hypothesis. Another possible reason why the thoughtful individuals are using the information and the nonthoughtful individuals are not is differences in the perception of applicability of the inference from the trade-offs in the first choice. That is, it may be the case that both thoughtful and nonthoughtful individuals make an inference about the product category from the trade-off values in the first choice, but that the thoughtful individuals are more likely to perceive the information from the first choice to be applicable to the second choice than are nonthoughtful individuals. We refer to this as the perception of applicability hypothesis.

EXPERIMENT 3

Experiment 3 was conducted in order to test between the two explanations for the results of experiment 2. To do so, experiment 3 replicated experiment 2 with one exception. After completing the first choice, individuals were asked two questions in order to examine whether thoughtful and nonthoughtful individuals differ in the extent to which they (1) generate inferences from the first choice and/or (2) perceive those inferences to be applicable to the second choice.

If the influence of thought on the emergence of the Background Contrast Effect observed in experiments 1 and 2 is the result of differences in inference generation, there should emerge a Background Context × Thought interaction on the inference measure. This interaction would reveal that there is a greater difference in how expensive additional warranty is perceived to be as a function of manipulated background context for the thoughtful individuals than for the nonthoughtful individuals. If, however, thoughtful and nonthoughtful individuals do not differ in inference generation, there should emerge only a main effect of Background Context. On the other hand, if the influence is the result of differences in the perception of applicability of an inference, there should emerge a main effect of Thought on the applicability measure, revealing that thoughtful individuals perceive the inference from the first choice to be more applicable to the second than do the nonthoughtful individuals.

Method

One hundred and twenty five undergraduate students participated in the study in partial fulfillment of a class requirement. As in experiment 2, participants were randomly assigned to one of four cells in a 2 (Background Context: expensive or inexpensive) × 2 (Thought: high or low) between-subjects factorial design experiment. Both Background Context and Thought were manipulated in a manner identical to that of experiment 2. Unlike in experiment 2, after participants completed the first choice they read the following instruction and answered two questions. Participants read that "in your next choice (on the following page), you will again be asked to choose between two different tires based upon their price and warranty. Before making the second choice, we would like to ask you two questions. Please answer these questions before turning to the next page."

Following these instructions, participants were asked, "In general, how expensive do you believe that it is to buy additional warranty?" and "Do you feel that the information from the previous choice is applicable (that is, relevant, or useful) to the next choice?" Participants responded on nine-point scales anchored with −4 equal to "not at all" and +4 equal to "extremely."

Results

Inference Generation. The extent to which participants perceived the cost of additional warranty to be more or less expensive as a result of the manipulated background context was subjected to a Background Context × Thought analysis of variance. From this analysis, a main effect of Background Context emerged as significant ($F(1, 121) = 8.82$, $p < .01$), indicating that participants in the expensive conditions perceived the cost of additional warranty to be more expensive ($X = 1.5$) than did participants in the inexpensive conditions ($X = 0.2$). Inconsistent with the inference generation hypothesis, this main effect was not moderated by thought ($F(1, 121) = 0.06$), nor did a main effect for Thought emerge as significant ($F(1, 121) = 0.77$).

Perception of Applicability. The extent to which participants perceived the first choice to be applicable to the second was subjected to a Background Context × Thought analysis of variance. Consistent with the perception of applicability hypothesis, a main effect of Thought did emerge as significant from this analysis ($F(1, 121) = 4.23$, $p < .05$), indicating that participants in the thoughtful conditions

perceived the first choice to be more applicable ($X = 1.7$) to the second choice than did participants in the nonthoughtful conditions ($X = 0.8$).[8]

Discussion

Recall that experiment 3 was conducted in order to test between the two competing explanations for the influence of thought on the emergence of the Background Contrast Effect, given that thoughtful and nonthoughtful individuals do not differ in awareness of the trade-off values in the first choice. The results of experiment 3 supported the perception of applicability hypothesis. Thoughtful individuals perceive the information from the first choice to be more applicable to the second than do nonthoughtful individuals. As such, the results of experiment 3, in combination with experiments 1 and 2, suggest that the Background Contrast Effect emerges when individuals are engaged in thoughtful decision making because the nature of this thoughtful decision making leads the information from the first choice to be perceived as applicable to the second. That is, thought engenders meaning from the first choice to the second because thoughtful individuals perceive the inferences from the first choice to be applicable to the second, whereas nonthoughtful individuals do not.

Although such an explanation is consistent with the results of experiment 3, there arises a possible concern over our methodological approach to making such an inference. A strength of this study is that it uses a measure of process to infer why the Background Contrast Effect emerges. A concern of this study is that such a process measure is possibly reactive in nature. Specifically, it is possible that the process of asking both thoughtful and nonthoughtful individuals about their inferences and perceptions of applicability influenced their answers and thus our understanding of their psychological processes. That is, asking, in and of itself, may have influenced the results. Experiment 4 was conducted in order to address this concern.

EXPERIMENT 4

Rather than rely upon self-reports of psychological processes as in experiment 3, experiment 4 manipulated perception of applicability directly and examined consequent choice. If the conclusion from experiment 3 holds, such a manipulation of applicability should influence thoughtful individuals but not nonthoughtful individuals. That is, since we hypothesize that thoughtful individuals perceive the information from the first choice to be applicable to the second, a manipulation that undermines such applicability should lead to an attenuation of the Background Contrast Effect for these thoughtful individuals. To the extent that perception of applicability is undermined, the Background Contrast Effect should be lessened. In contrast, since we hypothesize that the nonthoughtful individuals do not perceive the information from the first choice to be applicable to the second, a manipulation that undermines such applicability should have no effect.

Method

Three hundred and twenty four undergraduate and graduate business students participated in the study in partial fulfillment of a class requirement. Participants were randomly assigned to one of four cells in a 2 (Thought: high or low) × 2 (Applicability: applicable or inapplicable) factorial design experiment. All participants completed a set of choices identical to that used in experiment 1. Thought was manipulated in the same manner as in experiment 2.

Applicability was manipulated by providing participants in the inapplicable condition instructions that undermined the applicability of the first choice on the second. Participants in the inapplicable condition were provided with the following instructions after completing their first choice and immediately preceding their second choice.[9] This instruction was designed to suggest that the information from the first choice is inapplicable to the second one. Specifically, participants read that "When consumers make decisions, previous choices sometimes influence current choices and can lead to a bad decision. Please make sure that your choice in the current selection process is not influenced by the choice you just made."

Results

The probability of choosing the more expensive tire in the second choice was subjected to a 2 (Applicability) × 2 (Thought) logit analysis. There emerged from this analysis main effects of applicability ($\beta = .96$, Wald statistic = 8.99, $p < .01$) and thought ($\beta = .63$, Wald statistic = 3.78, $p < .05$) on choice. Of greater theoretical importance, these main effects were qualified by the predicted Thought × Applicability interaction ($\beta = -.96$, Wald statistic = 4.49, $p < .05$).

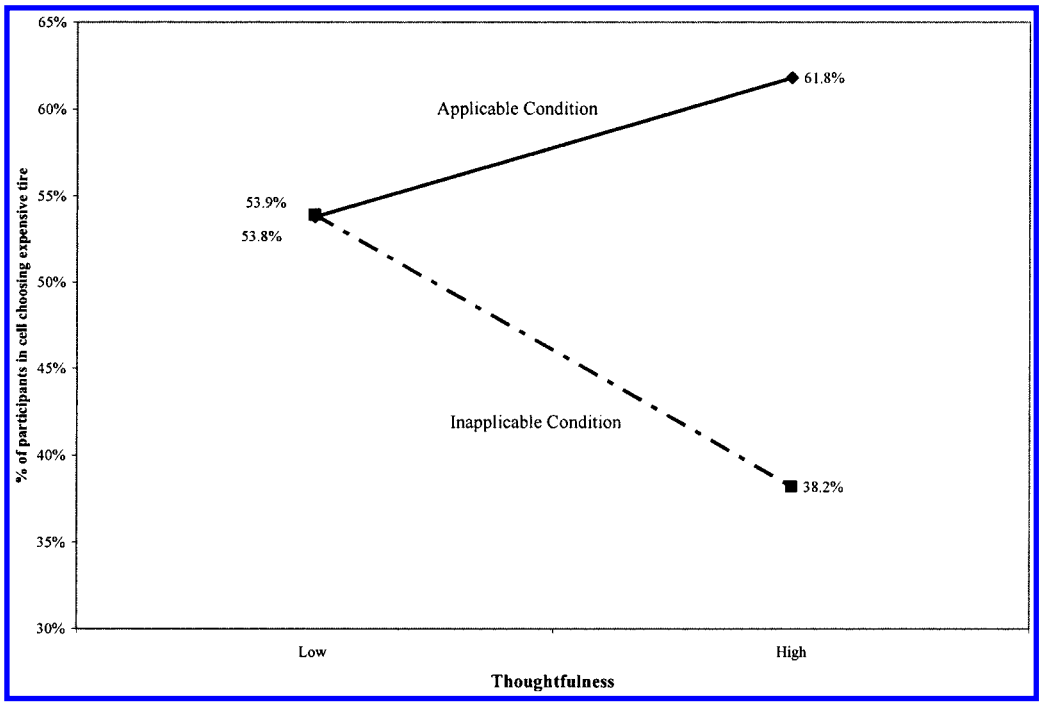
We decomposed this interaction by comparing the influence of applicability on choice for the thoughtful and nonthoughtful conditions. As predicted, the participants who made the decision under thoughtful conditions were influenced more by the applicability manipulation (55 of 89, or 61.80%, of the participants in the applicable condition and 29 of 76, or 38.20%, of the participants in the inapplicable condition chose the more expensive tire, $\chi^2 = 9.17$, $p < .01$) than the participants who made the decision under nonthoughtful conditions (43 of 80, or 53.75%, of the participants in the applicable condition and 42 of 78, or 53.85%, of the participants in the inapplicable conditions chose the

[8]This main effect was not moderated by Background Context ($F(1, 121) = 0.31$), nor did a main effect for Background Context emerge as significant ($F(1, 121) = 0.30$).

[9]Note that we did not measure the effectiveness of the applicability manipulation. We reasoned that the results for the initial choice of all the experiments, demonstrating that both thoughtful and nonthoughtful individuals alike pay sufficient attention that they make the same initial choice (see n. 5), provides assurance that any differences as a result of thought are not due to differential diligence paid to the applicability instruction.

FIGURE 3

PERCENTAGE OF PARTICIPANTS CHOOSING THE MORE EXPENSIVE ALTERNATIVE IN THE SECOND CHOICE AS A FUNCTION OF THOUGHT AND APPLICABILITY, EXPERIMENT 4



more expensive tire, $\chi^2 = .01$, $p > .95$). Further analyses revealed that each of the probabilities associated with the thoughtful conditions differed significantly from 50% ($\chi^2_{\text{applicable}} = 4.96$, $p < .05$, and $\chi^2_{\text{inapplicable}} = 4.26$, $p < .05$). In contrast, neither of the probabilities associated with the nonthoughtful conditions differed significantly from 50% ($\chi^2_{\text{applicable}} = .45$, $p > .50$, and $\chi^2_{\text{inapplicable}} = .44$, $p > .40$). The results of this interaction are presented in figure 3.[10]

Discussion

Recall that experiment 4 was conducted in order to examine the hypothesized role of perceived applicability on the emergence of the Background Contrast Effect by manipulating applicability directly. As hypothesized, undermining the perceived applicability of the first choice influenced the second choice of the thoughtful individuals but did not influence the second choice of the nonthoughtful individuals. This finding is consistent with the results of experiment 3 and provides convergent evidence for the hypothesis that thought engenders meaning by influencing the perception of applicability.

What is particularly intriguing about the results of experiment 4 is the extent to which undermining applicability influenced the second choices of thoughtful individuals. Not only did undermining the applicability attenuate the Background Contrast Effect for thoughtful individuals, it reversed it. One explanation for this opposite influence is that individuals are overcorrecting their judgment because they have an inaccurate theory of the extent to which their choice was influenced by applying the information from the first choice. Contemporary theory in marketing (e.g., Houghton, et al. 1999) and social psychology (e.g., Wegener and Petty 1997) has begun to explore the processes whereby individuals correct a judgment in order to adjust for any perceived illegitimate influence. In brief, this research suggests that individuals correct for bias by consulting their naive theory of the direction and extent of the biasing influence, and adjusting their judgment in the opposite direction and to an extent commensurate with the theory of bias (Wegener and Petty 1997). To the extent that individuals perceive that they are more biased than they actually were, overcorrection will occur. The reversal of the Background Contrast Effect could constitute such an overcorrection.

[10]Further analyses revealed that thoughtful individuals differed from nonthoughtful marginally in the applicable conditions and significantly in the inapplicable conditions.

GENERAL DISCUSSION

The present research provides support for a specific psychological process underlying the Background Contrast Effect, providing insight into when and why the effect is likely to emerge. Specifically, the results of the present research suggest that the Background Contrast Effect emerges because thought engenders meaning by influencing the per-

ception of the applicability of the inference from the trade-off values in the first choice on the second. That is, the Background Contrast Effect emerges because thoughtful individuals are using context in order to inform their choices. It is thought that elicits this use of context, because thought prompts the perception of applicability, and it is this perception of applicability that causes individuals to inform their second choice from the inferences available from the first. Thus, this research highlights the role of thought on applicability in generating meaning from context, in which context is used as information, as a key process underlying the Background Contrast Effect.

Future Research

Applicability versus Generation. It is somewhat remarkable that we find perceptions of applicability to be the process that differs between thoughtful and nonthoughtful decision making. For example, work on the ELM (Petty and Cacioppo 1986) suggests that what differs between high and low thought conditions are the issue-relevant inferences generated from persuasive materials. However, this suggestion has never been directly tested, and the present findings raise questions as to whether it is the inference generation or perception of applicability that drives differences between thoughtful and nonthoughtful individuals.

First, it may be the case that perceptions of applicability are what typically differ between thoughtful and nonthoughtful conditions, even in persuasion contexts. For example, the valence of cognitive responses with respect to an issue has been found to predict attitudes more for high than for low thought conditions, although in many cases there arises an equal number of cognitive responses (Petty and Cacioppo 1986). Given the present findings, it is unclear whether this differential influence of cognitive responses on attitudes is because thoughtful individuals are more likely to generate valenced issue-relevant cognitive responses, or because thoughtful individuals are more likely to see their cognitive responses as issue relevant (i.e., applicable to the attitude).

Alternatively, it may be the case that the current research examines not high versus low, but rather high versus moderate, thought conditions. The sample of participants in the current investigations (University of Michigan students) may consist of individuals who engage in at least a moderate amount of thinking, unless the ability to think is undermined. The ability to think was never undermined in these studies; the manipulation of thought manipulated participants' motivation to think, leaving their ability uncompromised. As such, it may be that perception of applicability underlies differences between high and moderate thought conditions, but that inference generation may be that which underlies differances between high and low thought conditions. This possibility could be examined by severely undermining elaboration (see, e.g., Priester, Nayakankuppam et al. 2004) and examining consequent inference generation and perception of applicability.

Finally, it is possible that under the spontaneous choice conditions in our studies (not being asked the questions in between), thoughtful individuals generated an inference, whereas nonthoughtful individuals did not, but the inference questions (experiment 3) prompted nonthoughtful individuals to generate an inference. This possibility could be examined in future research by measuring the time it takes thoughtful versus nonthoughtful individuals to respond to the inference and applicability measures.

The Nature of Decisional Influences

On a broader level, this research also raises the question of when and why some decisional influences appear to be accentuated by thought, whereas others are apparently attenuated by such thought. We would venture to suggest that these results and other emerging research provide the groundwork for a much needed, and theoretically important, reconceptualization of bias in consumer decision making. Specifically, this research raises the question of which decisional influences are the result of nonthoughtful processes and which, instead, are the result of thoughtful processes. Dhar and Simonson (2003) have provided initial evidence that some effects, such as the compromise effect (Simonson 1989), may be more susceptible to influence by thought than some others, such as the asymmetric dominance effect (Huber, Payne, and Puto 1982). Further research that explores which influences are thoughtful and which are nonthoughtful may provide further insight into the psychological processes underlying decisional influences (see also Bettman et al. 1998).

[*Dawn Iacobucci served as editor and Stephen Nowlis served as associate editor for this article.*]

REFERENCES

Bettman, James R., Mary Frances Luce, and John W. Payne (1998), "Constructive Consumer Choice Processes, "*Journal of Consumer Research*, 25 (3), 187–217.

Cacioppo, John T. and Richard E. Petty (1982), "The Need for Cognition," *Journal of Personality and Social Psychology*, 42 (1), 116–31.

Cacioppo, John T., Richard E. Petty, Jeffrey A. Feinstein, and W. Blair G. Jarvis (1996), "Dispositional Differences in Cognitive Motivation: The Life and Times of Individuals Varying in Need for Cognition," *Psychological Bulletin*, 119 (2), 197–253.

Cacioppo, John T., Richard E. Petty, and Chuan Feng Kao (1984), "The Efficient Assessment of Need for Cognition," *Journal of Personality Assessment*, 48 (3), 306–7.

Carmon, Ziv, Klaus Wertenbroch, and Marcel Zeelenberg (2003), "Option Attachment: When Deliberating Makes Choosing Feel Like Losing," *Journal of Consumer Research*, 30 (1), 15–29.

Chaiken, Shelly and Yaacov Trope (1999), *Dual Process Theories in Social Psychology*, New York: Guilford.

Dhar, Ravi, Stephen M. Nowlis, and Steven J. Sherman (2000), "Trying Hard or Hardly Trying: An Analysis of Context Ef-

fects in Choice," *Journal of Consumer Psychology*, 9 (4), 189–200.

Dhar, Ravi and Itamar Simonson (1999), "Making Complementary Choices in Consumption Episodes: Highlighting versus Balancing," *Journal of Marketing Research*, 26 (February), 29–44.

——— (2003), "The Effect of Forced Choice on Choice," *Journal of Marketing Research*, 40 (2), 146–60.

Drolet, Aimee, Dale Griffin, Mary Frances Luce, and Itamar Simonson (2003), "The Influence of Cognitive Load on Consumer Choice Processes," working paper, Anderson School of Management, University of California, Los Angeles.

Feldman, Jack M. and John G. Lynch, Jr. (1988), "Self-Generated Validity and Other Effects of Measurement on Belief, Attitude, Intention, and Behavior," *Journal of Applied Psychology*, 73 (3), 421–35.

Griffin, Dale, Richard Gonzalez, and Carol Varey (2001), "The Heuristics and Biases Approach to Judgment under Uncertainty," in *Blackwell Handbook of Social Psychology: Intraindividual Processes*, ed. Abraham Tesser and Norbert Schwarz, Malden, MA: Blackwell, 207–35.

Griffin, Dale and Daniel Kahneman (2002), "Judgmental Heuristics: Human Strengths or Human Weaknesses?" in *A Psychology of Human Strengths: Perspectives on an Emerging Field*, ed. Lisa Aspinwall and Ursual M. Staudinger, Washington, DC: APA.

Houghton, David C., Frank R. Kardes, Anne Mathieu, and Itamar Simonson (1999), "Correction Processes in Consumer Choice," *Marketing Letters*, 10 (2), 107–12.

Huber, Joel, John W. Payne, and Christopher Puto (1982), "Adding Asymmetrically Dominated Alternatives: Violations of Regularity and the Similarity Hypothesis," *Journal of Consumer Research*, 9 (June), 90–98.

Kahneman, Daniel and Shane Frederick (2002), "Representativeness Revisited: Attribute Substitution in Intuitive Judgment," in *Heuristics and Biases: The Psychology of Intuitive Judgment*, ed. Thomas Gilovich, Dale Griffin, and Daniel Kahneman, Cambridge: Cambridge University Press.

Kardes, Frank R. (1986), "Effects of Initial Product Judgments on Subsequent Memory-Based Judgments," *Journal of Consumer Research*, 13 (1), 1–11.

Latane, Bibb (1981), "The Psychology of Social Impact," *American Psychologist*, 36 (4), 343–56.

Lerner, Jennifer S. and Philip E. Tetlock (1993), "Accounting for the Effects of Accountability, *Psychological Bulletin*, 125 (2), 255–75.

Mantel, Susan Powell and Frank R. Kardes (1999), "The Role of Direction of Comparison, Attribute-Based Processing, and Attitude-Based Processing in Consumer Preferences," *Journal of Consumer Research*, 25 (March), 335–52.

Payne, John W., James R. Bettman, and Eric J. Johnson (1993), *The Adaptive Decision Maker*, New York: Cambridge University Press.

Petty, Richard E. (2001), "Subtle Influences on Judgments and Behaviors: Who Is Most Susceptible?" in *Social Influence: Direct and Indirect Processes*, ed. J. Forgas and K. D. Williams, Philadelphia: Psychology Press, 129–46.

Petty, Richard E. and John T. Cacioppo (1986), *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*, New York: Springer.

Petty, Richard E., John T. Cacioppo, and David Schumann (1983), "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," *Journal of Consumer Research*, 10 (2), 135–46.

Petty, Richard E., Monique A. Fleming, Amy S. Harasty, and Joseph R. Priester (2001), "Individual- versus Group-Interest Violation: Surprise as a Determinant of Argument Scrutiny and Persuasion," *Social Cognition*, 19 (4), 418–42.

Petty, Richard E., Stephen G. Harkins, and Kipling D. Williams (1980), "Effects of Group Diffusion of Cognitive Effort on Attitudes—an Information Processing View, "*Journal of Personality and Social Psychology*, 38 (1), 81–92.

Petty, Richard E. and Duane T. Wegener (1998), "Attitude Change: Multiple Roles for Persuasion Variables," in *The Handbook of Social Psychology*, vol. 1, 4th ed., ed. Dan Gilbert, Susan Fiske, and Gordon Lindzey, New York: McGraw-Hill, 323–90.

Prelec, Drazen, Birger Wernerfelt, and Florian Zettelmeyer (1997), "The Role of Inference in Context Effects: Inferring What You Want from What Is Available," *Journal of Consumer Research*, 24 (1), 118–25.

Priester, Joseph R., John Godek, Dhananjay Nayakankuppum, and Kiwan Park (2004), "Brand Congruity and Comparative Advertising: When and Why Comparative Advertisements Lead to Greater Elaboration," *Journal of Consumer Psychology*, 14 (1–2), 115–23.

Priester, Joseph R., Dhananjay Nayakankuppam, Monique A. Fleming, and John Godek (2004), "The A^2SC^2 Model: The Influence of Attitudes and Attitude Strength on Consideration and Choice," *Journal of Consumer Research*, 30 (4), 574–87.

Priester, Joseph R. and Richard E. Petty (1995), "Source Attribution and Persuasion: Perceived Honesty as a Determinant of Message Scrutiny," *Personality and Social Psychological Bulletin*, 21 (6), 639–56.

Raghunathan, Rajagopal and Julie R. Irwin (2001), "Walking the Hedonic Product Treadmill: Default Contrast and Mood-Based Assimilation in Judgments of Predicted Happiness with a Target Product," *Journal of Consumer Research*, 28 (3), 355–68.

Simonson, Itamar (1989), "Choice based on Reasons: The Case of Attraction and Compromise Effects," *Journal of Consumer Research*, 16 (2), 158–74.

Simonson, Itamar and Amos Tversky (1992), "Choice in Context: Tradeoff Contrast and Extremeness Aversion," *Journal of Marketing Research*, 29 (3), 281–95.

Sloman, Steven A. (1996), "The Empirical Case for Two Systems of Reasoning," *Psychological Bulletin*, 119 (1), 3–22.

Wegener, Duane T. and Richard E. Petty (1997). "The Flexible Correction Model: The Role of Naïve Theories in Bias Correction," in *Advances in Experimental Social Psychology*, vol. 29, ed. Mark P. Zanna, San Diego: Academic Press, 141–208.

Wernerfelt, Birger (1995), "A Rational Reconstruction of the Compromise Effect: Using Market Data to Infer Utilities," *Journal of Consumer Research*, 21 (4), 627–33.