

When the Same Prime Leads to Different Effects

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Research on priming effects has shown that primes with widely shared associations (i.e., stereotypes) affect the subsequent behavior of people in consistent ways (i.e., acting stereotypically). In this article, we present two experiments that show that the same primed construct can have different effects on the subsequent choices of different groups of people. These differences in effects are attributable to the groups having different prime associations. These results highlight the importance of understanding unique, personal associations to primes and suggest that segmentation is also important for predicting nonconsciously influenced choices.

Consumers' behavior can be influenced by subtle environmental features. One of the most widely studied means for subtly affecting behavior is the use of priming manipulations, whereby action-relevant constructs are made accessible and influence behavior without the actor's awareness (Dijksterhuis and Bargh 2001; Wheeler and Petty 2001). Because these effects are instigated relatively automatically on the basis of activated associations, they provide a potentially powerful tool for marketers (Bargh 2002; Dijksterhuis et al. 2005).

Although the automaticity of such effects may suggest that priming can be used to influence the behavior of diverse customers in similar ways, we would like to extend a note of caution. We suggest that the same prime can activate different associations among different consumers, and, consequently, the power of priming manipulations can be significantly enhanced by employing segmentation procedures similar to those used for more conscious behavior influence strategies. More specifically, we demonstrate that the same prime can affect the subsequent choices of individuals in different, and sometimes opposite, ways, depending on the unique, personal associations the individuals have with the primed construct. We further show that much of the differ-

ence in responses to primed constructs can be explained by identifying the systematically varying associations subgroups of people have with the primes. Additionally, the divergent effects of the primes on choices can be predicted on the basis of individuals' group memberships (e.g., gender) or personality characteristics and idiographic associations. These findings highlight the importance of segmentation procedures in predicting more automatically influenced choice.

PRIMING EFFECTS ON BEHAVIOR

Research has shown that individuals' behavior can be shaped by incidental exposure to stimuli and that such effects can occur without their intention or awareness (see Dijksterhuis and Bargh [2001]; Wheeler and Petty [2001] for reviews). In one example (Bargh, Chen, and Burrows 1996), some participants were primed with the elderly stereotype by unscrambling a series of sentences, a subset of which contained words relevant to the elderly stereotype (e.g., wrinkled). Other participants unscrambled sentences unrelated to the elderly stereotype. After completing the task, participants were told that the experiment had ended and were timed as they walked down the hallway to the elevator. Participants who unscrambled the elderly sentences walked more slowly to the elevator than those who unscrambled the control sentences, consistent with the elderly stereotype of slowness. These types of priming effects have been shown in a variety of domains, such as performance (Dijksterhuis and van Knippenberg 1998; Wheeler, Jarvis, and Petty 2001), helping behavior (Macrae and Johnston 1998), conformity (Epley and Gilovich 1999), product choice (Berger and Fitzsimons, forthcoming), and even voting behavior (Berger, Meredith, and Wheeler 2006).

Proposed mechanisms for these effects differ, but they

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share in common the notion that the primes activate action-relevant constructs associated in memory that then influence behavior. Through conditioning (Feinberg 1986) or through processes like normative and informational social influence (Aarts and Dijksterhuis 2003), individuals come to link action-relevant constructs with the primed concepts in memory, which can be spontaneously activated upon exposure to the stimuli. For example, Aarts and Dijksterhuis (2003) showed that norms are automatically activated by depictions of situations. Participants exposed to a picture of a library (and who had a goal to visit a library) were quicker to identify words related to silence than participants shown a picture of a railway station platform. Similarly, participants exposed to pictures of business-related objects (e.g., briefcases) were more likely to complete word fragments (e.g., c_ _ p_ _ _ tive) with words related to competition than with words related to cooperation (Kay et al. 2004). As a result of this construct activation, the behavior of prime recipients is altered (e.g., made more quiet or more competitive) without their intention or awareness of the change.

Many different types of prime associations have been proposed to drive behavior, including behavioral representations (Bargh et al. 1996), norms (Aarts and Dijksterhuis 2003), evaluations (Ferguson and Bargh 2004), and aspects of the self-concept (DeMarree, Wheeler, and Petty 2005; Wheeler, DeMarree, and Petty, forthcoming). A full review of these underlying representations and associated mechanisms (e.g., direct behavioral change, biased perceptions of others, biased perceptions of the situation) is beyond the scope of this article, but research clearly suggests that a wide variety of associations can be automatically activated by situational stimuli and can affect subsequent behavior.

Because these processes can operate outside of conscious awareness (Chartrand 2005), cues in the environment could alter the choices and actions of diverse groups of consumers in consistent and similar ways. Priming shoppers with the athlete stereotype, for instance, might make them more likely to purchase a sport drink (e.g., Gatorade), regardless of whether they were athletes. If this were true, it would be a boon to marketers. In contrast to the laborious segmentation strategies that are employed for more consciously processed marketing attempts, one-size-fits-all marketing interventions could be used to induce behavior more automatically.

MODERATORS OF PRIMING EFFECTS

Research, however, suggests that the magnitude of priming effects, much like more conscious effects, can also be moderated by situational or personal characteristics. For example, one factor concerns the extent of prime-related knowledge individuals have stored in memory. Some research has shown that the effects of primes on judgment (Herr 1989) and behavior (Dijksterhuis et al. 2000) are larger among those high in knowledge, whereas other research has shown larger priming effects among those low in knowledge (Bettman and Sujun 1987). Still other research has shown that the effects of priming are largest among those with

moderate amounts of knowledge (Yi 1993). These various effects can arise because knowledge can have opposing effects: some amount of knowledge is necessary for the prime to sufficiently increase accessibility, but too much knowledge can be associated with chronic accessibility, thereby making it difficult to detect any additional effects of accessibility from the prime.

In addition to moderating the magnitude of prime effects, expertise can also moderate the process by which primes affect behavior. One set of studies (Mandel and Johnson 2002) showed that visual primes (e.g., a Web site background consisting of pennies, flames, or plain white color) affected the preferences of both novices and experts, but for different reasons. The primes induced novices to search more for prime-consistent information but did not affect the search of experts, whose choices might have instead been due to making different product inferences.

Effects can also be moderated by chronic behavioral tendencies. Judgmental assimilation in stereotypical impressions was found to be strongest among those with lower tendencies to stereotype, because the chronic tendencies make the prime effectively redundant (Johar, Moreau, and Schwarz 2003). In a similar vein, individuals with consistent behavioral tendencies sometimes exhibit smaller behavioral effects of cooperation and competition primes (Smeesters et al. 2003).

Features of the judgment target or environment can also moderate the prime's effect. For example, priming effects depend on the similarity of the target to the prime recipient. Comparison targets that are similar to individuals are more likely to lead to assimilation in self-judgments and expectations for the future than those that are highly discrepant (Mandel, Petrova, and Cialdini 2006; Smeesters and Mandel 2006). Effects also depend on the ambiguity of the target, such that primes have larger effects on judgments of ambiguous targets than on unambiguous targets. Because primes sometimes affect judgment by influencing the interpretation of stimulus features (e.g., a target's actions), effects can be larger to the extent that judging the target requires active interpretation processes (see Higgins [1996] for a review), though high levels of accessibility can compensate for low prime applicability (Higgins and Brendl 1995). Similarly, behavioral effects of primes can be larger in situations with ambiguous norms (Kay et al. 2004).

In addition to affecting interpretation, features of the environment can affect the magnitude of priming effects by making an action more or less desirable. For example, in one experiment (Macrae and Johnston 1998), participants primed with helping words were subsequently more likely to help a stranger pick up dropped pens, but only when the pens were not leaking. The leaky pens made the helping behavior less desirable (perhaps because of a competing goal to stay clean) and therefore dampened the behavioral effects of the prime.

Understanding these types of "second generation" moderation effects is important for both theoretical and practical reasons (Bargh 2006). From a theoretical perspective, un-

covering moderators of basic effects lends insight into the mechanisms by which these effects operate. From a practical perspective, uncovering moderators permits greater prediction of behavior and greater understanding of the types of effect sizes that can be expected in different settings or among different people. Important to both perspectives, if effects are operating among only a subset of people—or worse, are operating in opposite directions across subgroups of people—one may conclude that the primes are having little or no effect, when in fact the effects may be sizable, at least among some people.

DIFFERING PRIME ASSOCIATIONS

One important moderator of priming effects could be the differing associations subgroups of people might have with a prime. As noted earlier, because both judgmental and behavioral priming effects occur as the result of activated prime associations, differing associations could lead to different or even opposite effects. Hence, differences in associations to a prime could be considered a basis for segmentation. To date, research has focused on priming stimuli for which people have shared associations (e.g., words, stereotypes, normative settings). In addition to shared associations, however, we propose that in some cases, different groups of people can have different or even contradictory associations with the same stimulus. For example, users and nonusers of a credit card can have highly discrepant brand associations, even when aware of the brand's overall image (Blackston 1993).

People are not likely to only have different associations to brands, however. For example, thinking about the first day of classes may activate different behavior-relevant associations among students (e.g., taking notes) than among professors (e.g., delivering lectures); a retail setting is likely to activate different associations among employees (e.g., to sell) than among patrons (e.g., to buy); and a basketball game may activate different motivations among fans (e.g., to have one's preferred team win) than among referees (e.g., to be unbiased). If subsets of people have different associations with situations, objects, and social targets, it suggests that exposure to the same objective stimulus could result in diverse patterns of behavior.

In the present experiments, we examined whether subgroups of individuals have different associations with the same situational stimuli and whether this leads to different choices across these groups in an unrelated subsequent context. Additionally, we tested whether these differential associations could be predicted a priori by individuals' demographic or personality characteristics. To the extent that this is possible, it would suggest that practitioners could use standard segmentation strategies to accurately predict the different associations, and hence different behaviors, of new customers.

For example, men and women may differ in the associations they have with clothes shopping, and this could lead to opposite influences on their behavior following a clothes shopping prime. We predicted that men would have moti-

vations of pragmatic expedience associated with clothes shopping. These associations of shopping only for a specific item and only when that item is needed we call "purpose-driven" behavior. We predicted that women, however, would view shopping as more of an experience of discovery. For example, one survey (Frank About Women 2004) indicated that 72% of women shopped for reasons other than getting a specific item (e.g., as an escape), whereas only 18% sought efficient experiences. Similarly, systematic interviews of men and women about shopping behaviors suggest that "women are trained . . . to shop around a lot. [Men find the] browsing aspect of shopping boring" (Fischer and Arnold 1990, 336). In support of this assertion, women spend more hours shopping for a gift and start longer before the gift date than do men (Fischer and Arnold 1990). These associations of browsing and shopping to "see what's out there," rather than to expediently get a necessary item we labeled "possibility-driven" behavior.

By proposing these group distinctions, we do not intend to engage in gender stereotyping or to suggest that all women view shopping as an experience of discovery or all men are purpose-driven shoppers. Rather, consistent with a market segmentation approach, we are using gender as a basis for predicting the associations different individuals will have. Although marketers now rely less on demographic segmentation in favor of an attitudinal segmentation approach, there may be contexts (such as this) in which there are reliable attitudinal or behavioral correlates with demographic variables. Indeed, these relationships are empirically supported in the study I pretest.

We propose that the simple act of imagining a situation such as shopping for clothes can activate different associations (in this case, purpose-driven vs. possibility-driven associations) for different groups of people (in this case, men and women). As a result of the activation of these different associations, we predict that the primes will affect the subsequent behavior of these groups in different ways and will do so even when the behavioral context is completely unrelated to the imagined situation. As suggested by the discussion above, we further predicted that these prime-induced choices would be mediated by primed associations unique to the individual. In the present research, we tested whether the different choice patterns induced by the primes are explained by individuals' personal associations to those primes.

We conducted two experiments that test these hypotheses. In each experiment, participants were encouraged to think about prototypical situations before making a series of consumer choices in an ostensibly unrelated context. In the first experiment, men and women thought about shopping for clothes before making a series of choices between more purpose-driven or possibility-driven courses of action. In the second experiment, introverts and extroverts thought about attending a party before making a series of choices between more and less arousing items.

EXPERIMENT 1: PURPOSE-DRIVEN VERSUS POSSIBILITY-DRIVEN CHOICES

In experiment 1, we used the situation of shopping for clothes as our prime stimulus. As indicated in the introduction, we suggest men and women often have different behavioral associations with clothes shopping. On the one hand, men tend to be more driven to expedient shopping experiences prompted by necessity, what we call "purpose-driven" behaviors. Women, on the other hand, tend to be more driven to open-ended browsing shopping experiences, what we call "possibility-driven" behaviors. Participants were first instructed to write about shopping for clothes (or the geography of their home state). Then, in an ostensibly separate task, they made a series of choices between more possibility-driven and more purpose-driven courses of action (e.g., taking a direct route vs. stopping to sightsee on a cross-country trip). We predicted that the different associations men and women have with clothes shopping (i.e., purpose-driven versus possibility-driven) would lead to different choices on the subsequent task. Specifically, we predicted that men would choose more purpose-driven courses of action in the subsequent task, whereas women would choose more possibility-driven courses of action.

Pretest

We conducted a pretest to ensure that our hypotheses regarding the clothes-shopping associations of men and women differed along the possibility-driven and purpose-driven dimension we proposed. Thirty-four participants (18 males and 16 females) participated in a pretest containing four items relevant to the possibility-driven versus purpose-driven dimension as well as numerous unrelated items. The first item, "When shopping for clothes, how likely are you to browse items you had not planned to buy?" was assessed on a 10-point scale, anchored by 1 = not at all likely and 10 = very likely. Results indicated that women were more likely to browse for unplanned items than men ($M_{\text{women}} = 7.50$ vs. $M_{\text{men}} = 5.28$, $t(1, 32) = -2.10$, $p = .04$).

The remaining items asked participants which of two clothes-shopping behaviors and motivations were more typical of them. Fifty-six percent of women reported that they go shopping just to look around (vs. to buy a specific item), whereas only 22% of men did ($\chi^2 = 4.15$, $p = .04$). Sixty-nine percent of women reported that they shop even when they have no specific need (vs. having a specific need), whereas only 11% of men did ($\chi^2 = 11.92$, $p = .001$). Seventy-five percent of women reported browsing until they had seen most things in the store (vs. getting what they need and leaving), whereas only 33% of men did ($\chi^2 = 5.90$, $p = .02$). These results provide robust support for the notion that women have more possibility-driven motivational and behavioral associations with clothes shopping, and men have more purpose-driven associations. More generally, these results suggest that differential associations can be reliably predicted by demographic variables.

Method

One hundred thirty-five participants (mean age = 34, 70% female) were recruited through a nationwide database of people who indicated they were interested in completing psychological experiments on the Internet. They completed a combination of ostensibly unrelated studies online for the opportunity to win a \$15 gift certificate.

In the first study (titled "Writing Survey"), participants were randomly assigned to write about one of two different topics (shopping or control). Experimental participants read: "Imagine you are shopping for clothes. What would the experience be like? Write about your typical thoughts, behaviors, and experiences while clothes shopping." Control participants wrote about an unrelated topic with associations that should not differ by gender (i.e., the geography of their home state). Three participants wrote only a few words and were thus removed from any further analyses.

Participants then moved on to the second study, labeled "Decision Making Study." They were presented with 11 choice scenarios (four target scenarios and seven filler scenarios) and asked to choose between two options. In each of the target scenarios, one option was more purpose-driven (e.g., taking a direct route on a cross-country trip) and the other option was more possibility-driven (e.g., stopping to look around along the way; see the appendix for a full description of the items). After participants made their choices, they reported their demographic characteristics (e.g., gender). Finally, they completed a funneled debriefing in which they were asked the purpose of the experiment, if they saw a connection between the studies, and whether what they wrote influenced their subsequent choices. Three participants perceived some possible connection between the writing and choice tasks and were removed from further analyses.

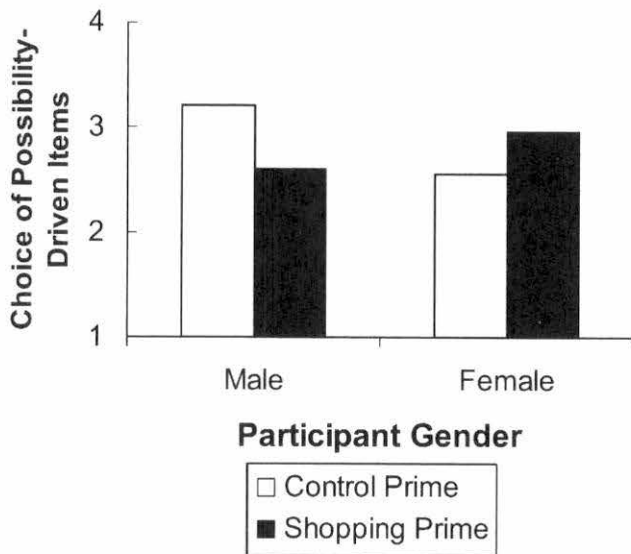
Results

The four target measures were summed to yield a choice index (theoretical range and actual range = 0–4), scored such that higher values indicated more possibility-driven choices. A 2 (prime: clothing shopping vs. geography) \times 2 (gender: male vs. female) ANOVA was used to examine the influence of gender and prime on purpose-driven versus possibility-driven choices. We predicted that the same prime would have opposing effects on the subsequent choices of men and women. Specifically, we predicted that men would make more purpose-driven choices following the prime, whereas women would make more possibility-driven choices following the prime.

Supporting our predictions, there was a significant prime \times gender interaction ($F(1, 129) = 7.35$, $p = .01$; see fig. 1). Whereas the prime significantly increased women's possibility-driven choices ($M_{\text{con}} = 2.56$ vs. $M_{\text{exp}} = 2.95$; $F(1, 125) = 3.97$, $p < .05$), it significantly decreased men's possibility-driven choice ($M_{\text{con}} = 3.20$ vs. $M_{\text{exp}} = 2.61$; $F(1, 125) = 3.76$, $p = .05$). Looked at another way, in the control (geography) condition, men ($M = 3.20$) were more

FIGURE 1

CHOICE OF POSSIBILITY-DRIVEN ITEMS AS A FUNCTION OF GENDER AND PRIME (EXPERIMENT 1)



likely than women ($M = 2.56$) to select possibility-driven options ($F(1, 125) = 6.57, p = .01$). The direction of this effect was reversed in the shopping prime condition, however, in which women ($M = 2.95$) tended to select a greater number of possibility-driven choices than men ($M = 2.61$; $F(1, 125) = 1.70, p = .19$), although this difference was not statistically significant.

Discussion

Experiment 1 provided evidence that the same prime can have different (and opposite) effects on different individuals as a function of the different associations they have with the prime. Whereas most priming research has focused on stimuli for which people are likely to have the same associations (e.g., speaking quietly in a library), experiment 1 showed that different groups of people can also have divergent associations to primes that will affect their behavior in divergent ways. After briefly thinking about clothes shopping, women subsequently made more possibility-driven choices in an unrelated context (e.g., choosing to stop and sightsee on a cross-country trip). Conversely, men subsequently made more purpose-driven choices (e.g., choosing to drive the most direct route). These findings are consistent with the pretested personal associations men and women generally have with clothes shopping and support the account that the primes affected behavior by activating their different personal associations.

It is interesting to note that these activated motivations extended beyond the context and content of the prime. Whereas previous research on automatic effects of situation primes on behavior has measured behaviors actually relevant to that context (e.g., people really do speak quietly in li-

braries and eat neatly in exclusive restaurants; Aarts and Dijksterhuis 2003), the behaviors we measured were unrelated (e.g., determining a route for a cross-country trip has nothing to do with clothes shopping). Hence, this study shows that situation primes can affect behaviors even beyond those relevant to the primed context. These results therefore bear similarity to research on mind-set priming (see, e.g., Galinsky and Moskowitz 2000; Hirt, Kardes, and Markman 2004) in that approaches to thinking in one context carry over to a subsequent, unrelated context.

EXPERIMENT 2: PARTIES AND SEEKING COMFORT

Experiment 2 examines whether the differing effects of primes on choice will be mediated by differences in behavior-relevant associations to the prime. Further, to increase the realism of the choice situation, participants chose between actual objects that they would receive upon the conclusion of the experiment. Finally, experiment 2 introduced a new variable for predicting prime associations. Rather than relying on the demographic characteristic of gender, experiment 2 used a personality variable.

The personality dimension we used in experiment 2 was extroversion. We chose extroversion for two reasons. First, extroversion has been shown to be one of the most central dimensions of personality, and it explains the most variance in personality differences across individuals (McCrae and Costa 1987). Second, extroversion is associated with different optimal levels of arousal, which has been shown to be important for understanding consumer's reactions to products (see, e.g., Duhachek and Iacobucci 2005; Joachims-thaler and Lastovicka 1984; Steenkamp and Baumgartner 1992).

Eysenck's (1967) theory of extroversion holds that individuals differ in the arousal characteristics of the cerebral cortex. Specifically, extroverts have a higher optimal level of arousal and so are likely to be at that optimal level under relatively stimulating conditions. By contrast, introverts have a lower optimal level of arousal and, therefore, are likely to be overstimulated in relatively stimulating conditions. For example, extroverts are more aroused than introverts by the same stimulus (Geen 1984) and are more likely to value excitement and prefer arousing activities (Furnham 1984).

Because of these differences in optimal arousal, we predicted that introverts and extroverts should have different associations with parties that could, if activated, affect their subsequent choices in a separate context. The high levels of arousal and stimulation present at a party should suit extroverts well, but those same events should leave introverts overstimulated and seeking ways to reduce arousal. Hence, we predicted that imagining attending a party would have different effects on introverts and extroverts. Specifically, we predicted that imagining attending a party would make introverts choose more comforting, low-arousal products in an unrelated subsequent context, consistent with their

desire to reduce arousal in such situations. We predicted that extroverts would exhibit no effects of the prime, because the high levels of stimulation present at parties match their optimal level of arousal.

To provide more conclusive evidence for the mechanism of the predicted effects, we also measured the associations that each individual in our study had to attending parties. If extroverts and introverts have different associations with parties, this should be evident on both the mediation measure and participants' subsequent choices. We predicted that introverts and extroverts would have different associations with the prime that would mediate their choice in an unrelated subsequent context.

Method

Eighty-seven participants (66% female, mean age = 30) recruited through the same database as experiment 1, completed a combination of ostensibly unrelated studies online for the chance to win one of the options they selected during the study. In the first study (titled "Writing Survey"), participants were told the experimenters were "interested in the language people use to write about various topics" and asked to read a statement and write 3–4 sentences based on it. Participants were randomly assigned to either the prime or control conditions. Participants in the experimental condition were asked how they would feel about going to a party where they did not know many people:

Imagine your friend is throwing a party this weekend and you've promised to go. Your friend said the party should be lots of fun, but while you know a couple of their friends, you realize that you won't know most of the people that will be there. What types of thoughts and feelings would go through your head?

Control condition participants were asked to write about an unrelated topic (i.e., geography).

Participants then completed a "Consumer Choices Survey" in which they were asked to choose between two options in each of 10 different categories (e.g., CDs, posters, meal coupons). These items constituted our dependent variable. Participants were also told that "everyone who participates in the study will be entered in a random drawing, and if you are selected, you will receive one of the options you selected during the study, so be sure to select whichever option you would like to receive." Two of the pairs were made up of filler items (e.g., choice between pencils or pens), but for eight target sets the options were chosen so that one was more arousing than the other (see the appendix for the eight target sets). In the CD category, for instance, they could choose either *Best of Ultimate Dance Party* or *Jazz After Dark*. Similarly, in the cookbook category, they chose between a comfort food cookbook and a spicy food cookbook.

To ensure that our choice items were perceived to differ in how arousing they were, we conducted a pretest. Ten participants rated each choice pair on a series of 10-point

scales anchored by -5 (category A is more stimulating/high arousal) and 5 (category B is more stimulating/high arousal). Items were reverse scored, where appropriate, such that higher scores indicated that the high arousal item was rated as more arousing. A t -test indicated that the items selected to be more arousing were in fact rated as more arousing than the other option in each pair ($M = 1.88$; $t(1, 9) = 4.32$, $p = .002$).

After making their choices, participants completed a brief introversion/extroversion scale (Eysenck, Eysenck, and Barrett 1985). They indicated whether each of 12 questions regarding their social behavior (e.g., "Are you a talkative person?" "Do you enjoy meeting new people?" "Do you usually take the initiative in meeting new friends?"; $\alpha = .79$) were true of them generally. Finally, to ensure that participants were not aware of the purpose of the study, they completed a funneled debriefing task in which they were asked about the purpose of the experiment, whether they saw a connection between the studies, and whether what they wrote during the writing portion influenced their choices later in the study. Two participants perceived some connection between the prime and the choices and were removed from the analyses.

Four days after they completed the main study, participants in the experimental condition completed what was presented as an unrelated study on "Situations and Emotions" that measured their associations with the prime situation. This measure (intended for the mediation analysis) was collected after the experiment, rather than between the independent and the dependent variables, because we were concerned that a measurement at that time could create demand effects. Participants were told that the experimenters were interested in the emotions elicited by various situations and that they would be asked to write about how they would feel in different situations. They were then given the same party situation they had been given in the main study, and after writing a few sentences about their feelings, they completed three items measuring how they would feel after socializing (e.g., "after a party I feel," 1 = drained, 7 = energetic; "After socializing with a large group of people, I usually" 1 = want some time to myself, 7 = want to socialize again soon; "After meeting lots of new people I feel" 1 = worn out, 7 = excited; $\alpha = .80$).

Results

A median split was performed on the introversion scale, creating two groups of participants based on their level of introversion. Participants' choices on the target items were summed to form a choice index for each participant such that higher scores indicate greater choice of less arousing items (theoretical range = 0–8, actual range = 1–7). The choice index was then examined in a 2 (prime: party vs. geography) \times 2 (level of introversion: extrovert vs. introvert) ANOVA.

There were significant main effects of prime ($M_{\text{con}} = 4.44$ vs. $M_{\text{exp}} = 5.07$; $F(1, 85) = 5.46$, $p = .02$) and level of introversion ($M_{\text{introv}} = 5.14$ vs. $M_{\text{extrov}} = 4.38$; $F(1, 85) =$

8.06, $p = .01$), but as predicted, these main effects were qualified by a prime \times level of introversion interaction, $F(1, 85) = 4.02$, $p = .05$; see figure 2. Whereas the party prime increased choice of less arousing options for introverted participants ($M_{\text{con}} = 4.56$ vs. $M_{\text{exp}} = 5.71$; $F(1, 85) = 10.57$, $p = .01$), it had no effect on the choices of extroverted participants ($M_{\text{con}} = 4.33$ vs. $M_{\text{exp}} = 4.42$; $F < 1$). Looked at another way, introverts and extroverts made very similar choices in the control (geography) condition ($M_{\text{introv}} = 4.56$ vs. $M_{\text{extrov}} = 4.33$; $F < 0.5$) but differed significantly in the party prime condition ($M_{\text{introv}} = 5.71$ vs. $M_{\text{extrov}} = 4.42$; $F(1, 85) = 10.81$, $p = .001$).

We also examined the data using multiple regression analysis and found similar results. Introversion was mean centered, and choice of comforting options were submitted to a condition \times introversion multiple regression analysis. There was a marginal main effect of prime ($\beta = .18$, $t = 1.72$, $p = .09$), but it is important that this was qualified by the predicted prime \times introversion interaction ($\beta = -.30$, $t = -2.09$, $p = .04$). Decomposition of this interaction one standard deviation above and below the mean introversion level indicated that there was a significant effect of condition among introverts ($\beta = .39$, $t = 2.70$, $p = .01$) but not among extroverts ($\beta = -.04$, NS; see Aiken and West [1991] for more details regarding centering and decomposition of interaction effects in multiple regression analysis).

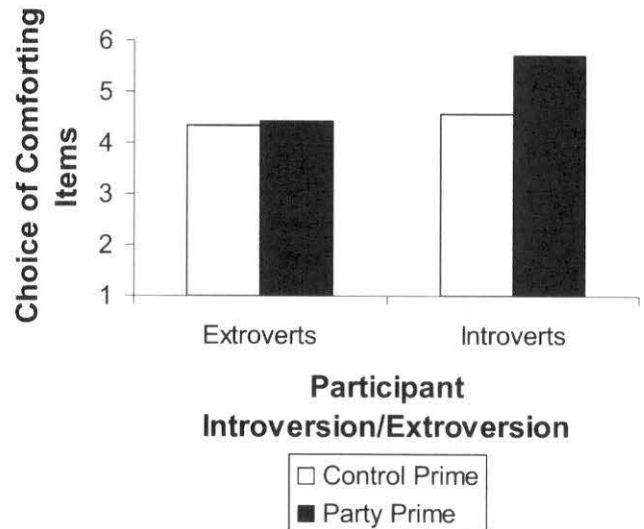
Mediation Analysis. We also examined whether the prime had differential effects on different groups of participants due to the different personal associations individuals in these groups have with the primed situation. Whereas extroverts may enjoy the high levels of stimulation afforded by parties with many unfamiliar people, introverts may be overstimulated by such events. These activated associations could then spill over to the choice context to affect choice. We tested this mediation hypothesis using procedures recommended by Baron and Kenny (1986).

Results supported our predictions. The analysis showed that level of introversion was significantly associated with both choice of low arousal options ($\beta = -.55$, $t(39) = 4.05$, $p = .001$) and overstimulation from parties ($\beta = -.61$, $t(39) = 4.76$, $p = .001$). When level of introversion and overstimulation were both entered in a regression predicting choice, overstimulation emerged as a significant predictor of choice ($\beta = .38$, $t(39) = 2.31$, $p = .03$), while level of introversion was no longer significant ($\beta = -.32$, $t(39) = 1.97$, $p = .06$). To determine if the effect of introversion was significantly decreased by the introduction of the mediator (i.e., overstimulation) into the regression, a Sobel test was conducted. In support of our hypothesis, this test revealed a significant effect ($z = 2.08$, $p = .04$) indicating that the effect of level of introversion on choice was significantly decreased by the introduction of the mediator.

The mediation was also significant when extroversion was included as a continuous variable. Introversion was significantly correlated with both choice of low arousal options ($\beta = .49$, $t(39) = 3.51$, $p = .001$) and overstimulation from parties ($\beta = .65$, $t(39) = 5.30$, $p = .001$). When introver-

FIGURE 2

CHOICE OF COMFORTING ITEMS AS A FUNCTION OF INTROVERSION/EXTROVERSION AND PRIME (EXPERIMENT 2)



sion and overstimulation were both entered in a regression predicting choice, overstimulation emerged as a significant predictor of choice ($\beta = .37$, $t(39) = 2.09$, $p = .04$), while introversion was no longer significant ($\beta = .25$, $t(39) = 1.44$, $p = .16$). The Sobel test was also significant ($z = -1.95$, $p = .05$).

Discussion

Experiment 2 shows that the same prime can have different effects on the subsequent choices of introverts and extroverts. Specifically, after thinking about attending a party, introverts (but not extroverts) were more likely to choose a series of comforting items in an unrelated choice context. As in experiment 1, the choice options bore little relation to the prime context (e.g., choice of one poster over another does not correspond to behaviors one would engage in at a party), suggesting that these associations can carry over to unrelated contexts and behavioral domains. Additionally, experiment 2 provided support for our hypothesis that activated associations mediate the diverse effects of the primes on choice. Specifically, there was a linear relationship between being overstimulated from parties and choosing low-arousal items. Those who are energized by parties, and were primed with thinking about a party, tended to choose more high-arousal items relative to those who are overstimulated by parties (who tended to choose more low-arousal items).

The associations that mediated our effects in experiment 2 were participants' responses to being in a party environment, in particular, their feelings after attending parties. As indicated in the introduction, a wide variety of associations can mediate the effect of primes on subsequent behavior.

Most research using situations as primes has focused on norm activation (e.g., Aarts and Dijksterhuis 2003). The present research suggests that feelings associated with the situation can also sometimes affect behavior.

GENERAL DISCUSSION

Across two experiments, we demonstrated strong differences in choice behaviors resulting from the same prime. These differences corresponded to the different associations participants had with contexts similar to those represented by the primes. The findings suggest that, although different groups of individuals can have similar associations to, and therefore have their behavior similarly affected by, environmental stimuli, they can also have very different and even opposite associations with the same object. As a result, the same stimulus can lead to divergent behaviors among identifiable groups that occur without their intention or awareness.

Experiment 1 showed that, consistent with the different shopping associations of men and women, women made more possibility-driven choices (e.g., taking a scenic route on a cross-country trip) following a shopping prime, whereas men made more purpose-driven choices (e.g., taking a direct route). Experiment 2 showed that, consistent with the different associations of introverts and extroverts with parties, introverts chose to receive more low-arousal objects (e.g., a comfort food cookbook vs. a spicy food cookbook) following a party prime than did extroverts. This experiment demonstrated these effects with actual products that participants chose and received and showed that the choices were mediated by participants' self-reported associations with the primed situation.

Theoretical and Practical Implications

Casual observation reveals considerable differences in behavior across individuals, even within the same situation. Although the actions of individuals sometimes exhibit remarkable convergence (e.g., postural conformity and mimicry; Chartrand and Bargh 1999), the more complicated types of behavior typically of interest to marketers (e.g., choices) and typical of the behavioral priming literature (e.g., aggressive responding) often exhibit equally remarkable divergence. Such observations lead to one of two conclusions: either subtle environmental stimuli exert rather little influence on behavior in "noisy" real-world environments

(Simonson 2005) or individuals are responding differently to the same stimuli.

The findings in this article provide support for the latter assertion. Activation of the same abstract concept can lead to subsequent activation of divergent associations that can influence subsequent behavior. This is consistent with the notion that environmental stimuli may be having substantial effects on the behavior of individuals in real-world settings, even though such effects may not be immediately apparent (also see Berger et al. 2006).

The present research suggests the viability of predicting peoples' different prime associations on the basis of demographic and personality characteristics. Nevertheless, individuals are also likely to have idiographic responses to stimuli that are less easily captured on the basis of their group memberships or personality characteristics (Fitzsimons and Bargh 2003). These idiographic associations are likely to lead to additional error in the prediction of automatic behavioral priming responses (if such associations are not known and controlled for by the experimenter) and a subsequent underestimation of the importance of subtle situational influences on behavior. Nevertheless, the present research suggests that prediction of prime-induced behavioral change (here, in choice responses) can be significantly improved by knowing an individual's group memberships or personality characteristics and their relationship to prime-relevant cognitive associations. In some cases, such as in experiment 1, in which men and women had opposing associations to the prime stimulus, it can reveal significant effects of the prime where none would be perceived if one only examined the main effect.

Conclusion

In conclusion, the present research shows that a single prime is capable of generating diverse, and sometimes opposite, effects on consumer choice, depending on the specific personal associations people have with the prime. These findings do not diminish the importance of nonconscious behavioral change processes but, rather, enhance them by showing that the amount of variance accounted for by such processes may be larger than would be assumed from a main-effect approach to understanding contextual influences. Considering the diversity of behaviors that can result from exposure to a single stimulus suggests not only the importance of nonconscious influences on consumer behavior but also the necessity of accounting for diversity across consumers.

APPENDIX**TABLE A1**

TARGET PAIRS FROM EXPERIMENT 1

Imagine that you need to mail a parcel in an unfamiliar part of your city. It is the first time you have been there, and you are surprised to discover that there are a number of shops that may be of interest to you. Which are you more likely to do?

Mail the parcel and leave.

Mail the parcel and visit some of the shops.

You have just started shopping for a futon and stopped by a store. You find a futon that you generally like, but you might be able to find something better somewhere else. Which are you more likely to do?

Buy the current futon.

Shop around for something better.

Imagine that you are on vacation in an unfamiliar city. You are trying to decide what to do. On the one hand, you could try to see the major attractions listed in your guidebook. On the other hand, you could wander around the city and take in some of the local culture that you happen across. If you had to choose one, which would you choose?

See all the major attractions.

Wander around.

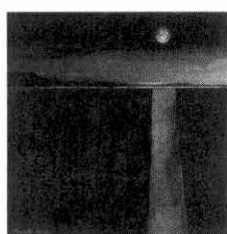
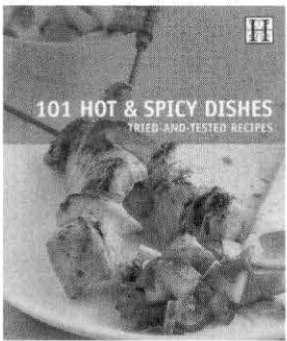
You are driving across the country to help out your friend. How would you prefer to do it?

Do it in the fewest days possible to save time.

Take a longer time but make an event out of it, stopping along the way.

TABLE A2

TARGET PAIRS FROM EXPERIMENT 2: CONSUMER CHOICES SURVEY

	Option 1	Option 2
1) Which CD would you choose?	<i>Best of Ultimate Dance Party</i>	<i>Jazz After Dark</i>
2) Which would you choose?	Coupon for a free takeout meal (up to \$40) from a local restaurant	Coupon for a free eat-in meal (up to \$40) from a local restaurant
3) Which poster would you choose?		
4) Which cookbook would you choose?		
5) Which option would you choose?	Coupon for a free book from a local bookstore	Coupon for a free movie ticket at a local theater
6) Which poster would you choose?		
7) Which option would you choose?	Coupon for a free freshly scooped ice cream from a local ice cream place	Coupon for a free pint of ice cream from the grocery store
8) Which poster would you choose?		

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