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Influencing Willingness to Pay by Supraliminally Priming the Concept of Honesty

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ABSTRACT

Previous research has shown that priming can be used to influence peoples' perception, evaluations, motivations, and even behavior. Most of these studies have been conducted using laboratory experiments. We examined whether supraliminal priming can be effectively applied to affect peoples' behavior in a real consumption situation. In an experiment to test if supraliminally priming the concept of honesty via "mirrored words" influences peoples' behavior, we found that users of a toilet contributed significantly more money for using the bathroom when being primed with the concept of honesty than when that concept had not been primed. Implications and ethical considerations are discussed.

INTRODUCTION

When James Vicary, in 1957, claimed to have increased Coke sales by 18% and popcorn sales by over 50% by secretly flashing the words "EAT POPCORN" and "DRINK COKE" onto the movie screen at a local theatre, people were outraged and alarmed (Weir 1984). Today, we know that it was just a hoax. Nevertheless, numerous studies have been conducted over the last few decades, especially in social cognition research, to demonstrate that priming can be used to influence peoples' perception, evaluations, motivations, and even behavior (see Bargh 2006; Dijksterhuis, Aarts, and Smith 2005 for an overview). For example, Bargh and Pietromonaco (1982) showed that people previously subliminally primed with words semantically related to hostility rated a stimulus person according to the priming words: the more hostile the words presented earlier, the more negative the impression of the stimulus person became. Maxwell, Nye, and Maxwell (1999) demonstrated that, by priming a consideration for fairness, a seller can increase a buyer's satisfaction without sacrificing profit. In simulated negotiations, participants primed to consider fairness demonstrated more cooperative behavior, making greater concessions that led to faster agreement. Fairness-primed buyers consequently had a more positive attitude toward the seller and expressed significantly greater positive subjective disconfirmation of their expectations. Bargh, Chen, and Burrows (1996) found that participants primed with the concept of rudeness, interrupted the experimenter more quickly and frequently than did participants primed with politeness-related stimuli. Furthermore, participants for whom an elderly stereotype was primed walked slower down the hallway when leaving the experiment than did control participants, consistent with the content of that stereotype. Recently, much attention has been focused on the affect of non-conscious influences on consumer behavior and choice, but the field of consumer research is still largely dominated by the rationale of deliberate and cognitive decision-making processes (Bargh 2002). In terms of the latter, a consumer acting as a result of non-conscious stimuli would be succumbing to "hedonic impulses" (Alba 2000; Baumeister 2002). This study evaluates whether supraliminal priming can be used to influence consumer behavior (non-consciously) in a real consumption situation.

"Priming refers to the presentation of a stimulus that either facilitates or inhibits the processing of a subsequent stimulus. The prime precedes the target and has consequences for how well the

target is processed." (Kellogg 1997, 83) Several different types of priming can be distinguished. One basic separation is between direct priming and indirect priming. Direct—or repetition—priming is the facilitation of the processing of a stimulus as a function of a recent encounter with the same stimulus (Cofer 1967; Schacter 1987). In studies in which subjects are free to generate any response they wish to the test stimulus, prior study of items increases the likelihood that those items will be generated as responses. Indirect priming is any change in performance resulting from the presentation of information related in some way (associatively, semantically, graphically, phonemically, or morphologically) to test stimuli (Richardson-Klavehn and Bjork 1988). Here, changes in test results can be observed when information that is related to test stimuli is presented prior to the test. The typical example is the decrease in lexical decision latency as a consequence of presenting associatively or semantically related words prior to the test stimulus; a phenomenon known as associative or semantic priming (Fischler 1977; Meyer and Schvaneveldt 1971). Bargh and Chartrand (2000) refer to three priming techniques: conceptual priming, mindset priming, and sequential priming. In conceptual priming, the activation of mental representations in one context is used to exert a passive, unintended, and nonaware influence in subsequent, unrelated contexts. In mindset priming manipulations, the participant is actively engaged in a goal-directed type of thought in one context, to show that this mindset is more likely to operate later in an unrelated context. Sequential priming techniques test for chronic connections between two representations, across which activation automatically spreads. It is used to study the associative structure of the mind rather than to examine the residual effects of recent experience.

Priming stimuli (or primes) can be delivered in two ways: subliminally or supraliminally. In social cognition research, both forms have been shown to be successful in influencing judgments, motivations, and behaviors (Bargh 1992, 1999). Delivered subliminally, the primes themselves are not accessible to the person's awareness. For instance, they can be presented so weakly or briefly that subjects do not recognize them consciously. If primes are delivered supraliminally, the persons are aware of the primes but not of their potential influence. The "scrambled sentence test" is a very frequently used supraliminal priming technique (Bargh et al. 1996; Srull and Wyer 1979). In an ostensible test to measure language ability, participants are instructed to make coherent, grammatical sentences out of each string of words. The test contains some words related to the concept intended to be primed. Another established supraliminal priming technique is a word-search puzzle where priming words are embedded in a matrix of letters (Bargh et al. 2001). Crossword puzzles are also used to place priming words. While these priming techniques have been used successfully in various laboratory experiments, they seem not to be applicable in most real consumer behavior situations. Our aim was to find and evaluate a priming technique that can be used in real consumption situations, outside the laboratory. A supraliminal priming technique—used in laboratory experiments—but applicable in real consumption situations is where words are mirrored vertically on the baseline. We refer to these words as "mirrored words". Perrig, Wippich, and Perrig-Chiello (1993) used mirrored words in a perceptual priming task. In the learning phase, participants were shown 20 mirrored words for 1.5 seconds each. They were asked

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FIGURE 1
Priming stimuli: honest, dishonest, and control stimulus



about how many enclosed areas they were able to find in each mirrored word. In a second—seemingly independent—task, they had to identify words in a perceptual identification task. Words that had been presented as mirrored words before were identified more quickly than those not previously presented.

In our study, we examine whether supraliminal priming can be effectively applied to affect peoples' behavior in a real consumption situation. In a field experiment we test whether priming the concept of honesty would cause users of a toilet at a motorway service area to pay the requested contribution (30 cents) by putting the money voluntarily into a box without being obviously observed. Even though we expect people primed with the concept of honesty to contribute more money, we conservatively formulate a two-tailed hypothesis.

H1: There is a significant difference in money contributed for using a toilet between people whose concept of honesty was primed and people whose concept of honesty was not primed.

Guidebooks about affirmation techniques and autosuggestion recommend that affirmations be formulated positively, without negations or a prefix that negates a word because the unconscious does not consider such a prefix. Irrespective of the scientific credibility of these sources, we examine whether using the word “dishonest” as a prime would influence people when paying the requested contribution. This leads to hypotheses two and three:

H2: There is a significant difference in money contributed for using a toilet between people primed with the word “dishonest” and people not primed.

H3: There is a significant difference in money contributed for using a toilet between people primed with the word “dishonest” and people primed with the word “honest”.

Finally, we investigate whether there is a difference in money contributed between men and women, leading to our fourth hypothesis:

H4: Men and women differ significantly in money contributed for using the toilet.

METHOD

Participants

Participants were all people (1033 male, 896 female) who visited a toilet in a motorway service area over six consecutive days between 10 am and 1 pm or between 1 pm and 4 pm.

Materials

The priming manipulation took the form of words mirrored vertically over the baseline. Three different priming stimuli were used, constructed using the words “honest,” “dishonest”, or a meaningless control word (see figure 1).

Before carrying out the experiment, the stimuli were pre-tested in order to find out whether people could detect a stimulus word. None of the 30 pre-test participants recognized a word. Each of the stimuli was printed in black color on a light brown sheet of paper (297 x 210 mm), compatible with the color of the doors of the toilet cubicles. Each stimulus covered about two thirds of the sheet. The stimuli could be seen as posters, picturing some form of art. They were fixed on the inside of each door of the 22 toilets (14 for women, 8 for men) at the motorway service area. Additionally, a sticker (100 x 70 mm) of black print on white background, compatible with the background surface, was fixed above each of the 11 urinals in the men's bathroom. Each stimulus was placed at eye level. At the exit of each bathroom was a box with a sign requesting people to pay 30 cents for using the toilet. People directly encountered the box before leaving the bathroom.

Procedure and design

Our experiment was carried out at the (only) bathroom of a relatively modern and very clean motorway service area, downstairs from the restaurant. People did not recognize that they participated in an experiment. Our independent variable was the kind of priming condition: honest, dishonest, or control condition. Data were collected separately for men and women. One collection box was located at the women's bathroom exit and another at the exit of the men's bathroom. The amount of money people contributed was our dependent variable. Participants were not directly observed, in order to avoid unintended experimenter effects. When people left the bathroom, they came directly to a corridor leading back to the restaurant. Here, the experimenter (disguised as a staff member obviously working on something) counted the people leaving the two bathrooms. After one hour, the money received was counted and the priming condition was changed. Priming conditions were counterbalanced by time of day and day of the week. In total, 160 people (81 male, 79 female) were randomly selected after leaving the bathroom and were questioned about their satisfaction with the bathroom (cleanliness, etc.). They were also asked, whether they noted something strange. If their answer was yes, they were asked to specify it. None of the 160 people asked appear to have recognized a word in the priming stimuli.

RESULTS

Each of the three priming conditions (honest, dishonest, and control) was observed for a total of 12 hours. As we knew the total

TABLE 1
Descriptive statistics for the three priming conditions

| Prime | People | Money received in € | € per person x 1000 | Units of observation |
|------------------|--------|---------------------|---------------------|----------------------|
| Honest | 763 | 27.96 | 36.64 | 12 |
| Dishonest | 653 | 21.72 | 33.26 | 12 |
| Control stimulus | 513 | 13.82 | 26.94 | 10 |
| Total | 1929 | 63.50 | 32.92 | 34 |

amount of money received and the amount of people visiting the bathrooms each hour, we could calculate an average amount (money/person) for each of the 36 hours of observation (dependent variable). During the experiment, a cleaning lady—obviously uninformed about the experiment—removed the collection boxes from both the men’s and the women’s bathrooms, leaving us with a total of 34 units of observation. For each unit (= hour) of observation we generated a value “€ per person” by dividing the amount of money received within that unit by the amount of people studied within that unit. We call this value “average amount per unit.” These values were then used to statistically compare the different priming conditions.

A total of €63.50 was collected from the 1929 people studied (Table 1). The highest average per person donation was when the “honest” stimulus was used (€36.64 per 1000 people).

To test our first hypothesis, we compared the average donation per sampling unit in the “honesty” primed condition with those of the control condition. Since the distribution of the variable “average amount per unit” was determined to be non-normal and the number of values low, we used non-parametric tests. A Mann-Whitney U test revealed a significant difference ($z=-2.110$, $p=.035$, 2-tailed) between these two conditions. Participants in the “honesty”-primed condition contributed more money (mean rank=14.17) than did participants in the control condition (mean rank=8.30). This result supports our first hypothesis that there is a difference in contributing requested money for using a toilet between people whose concept of honesty was primed and people whose concept of honesty was not primed. People whose concept of honesty was primed by a supraliminal prime contributed significantly more money for using the bathroom.

The average donation per sampling unit in the “dishonesty”-primed condition was compared with that of the “honesty”-primed condition to test hypothesis two. A Mann-Whitney U test did not reveal a significant difference between these two conditions ($z=-1.328$, $p=.184$, 2-tailed). There was no significant difference in contributing money for using a toilet between people primed by the concept of dishonesty and people primed by the concept of honesty.

In order to test our third hypothesis we compared the average donation per sampling unit under the “dishonesty”-primed condition with those of the control condition. The Mann-Whitney U test did not reveal a significant difference between these two conditions ($z=-.198$, $p=.843$, 2-tailed). People whose concept of dishonesty was primed did not differ significantly from people whose concept of dishonesty was not primed (control stimulus).

In testing our fourth hypothesis, we found no significant gender difference for the total experiment (two tailed Mann-

Whitney U test $z=-.034$, $p=.973$), the “honesty”-primed situation ($z=-.160$, $p=.873$), the “dishonesty”-primed situation ($z=-.241$, $p=.810$), or the control ($z=-.313$, $p=.754$).

DISCUSSION

In our experiment to test if supraliminally priming the concept of honesty influences peoples’ behavior, we found out that users of a toilet at a motorway service area contributed significantly more money ($p=.035$) for using the bathroom when being primed with the concept of honesty than when that concept had not been primed. Whereas most priming experiments have been carried out in laboratory situations, we have been able to show that priming can also be applied to real consumption situations.

As many of the established supraliminal priming techniques—like scrambled sentence tests or word search puzzles—seem not to be applicable in most real consumption situations, we have been able to show that mirrored words are both applicable and useful as a priming stimulus. As far as we know, mirrored words have thus far only been employed as priming stimuli in perceptual priming tasks (Hofer 1992; Perrig et al. 1993). We have shown that mirrored words can also be effectively used for conceptual priming tasks. This finding suggests important consequences for the use of supraliminal priming in a variety of consumption environments, including shops, restaurants, and insurance companies, but also in fields such as health care and road safety. Priming for honesty in bathrooms can also be adapted to related situations such as self-service newspaper racks and supermarket checkouts, as well as other situations that seek to maximize honesty; most especially in courts, legal institutions, financial services and tax collection.

Our study only found a significant difference in money contributed between people primed with the concept of honesty and the control group. People primed with the concept of dishonesty did not differ significantly from people primed with the concept of honesty or the control group. One reason for this result could be that the word dishonesty could have been processed non-consciously in an ambivalent manner. It could be that the prefix “dis” was considered differently than the rest of the word, which could have led to the result that some people processed the prime dishonest similar to that of the prime honest. Further research would be necessary to confirm/negate this explanation. A variety of antonyms could be tested: some that differ only by a prefix, as well as others that are completely different, like “crooked” (vs. “honest”). As the amount of money people contributed for using the toilet was quite low in the control group (on average 2.69 cents per person, Table 1), the floor effect could make it difficult to undercut this amount. Another reason for the lack of significant differences could be that people

did not face the stimuli very intensively as they were not instructed to do so, as in many other priming experiments. In almost all experiments using visual supraliminal primes, participants were required to deal with the priming stimuli in some way—like writing the words to make sentences in a scrambled sentence test (Bargh et al. 1996) or counting the closed areas of mirrored words (Perrig et al. 1993)—but in our experiment, people were not actively engaged in dealing with the primes. Some people might only have gone to the bathroom to wash their hands or to freshen up and so may not have encountered the priming stimuli (located above the urinals and on toilet doors). Future experiments should attempt to further minimize the number of participants that do not encounter the priming conditions.

This study shows that the behavior of people can be influenced by supraliminal stimuli whose message can not be detected. The effectiveness of our priming experiment also highlights some important ethical considerations. Because stimuli are not consciously detected, the source of the influence is unknown to the individuals that are manipulated. It is impossible to deliberately avoid being exposed to stimuli that are genuinely undetectable. As the stimuli circumvent certain conscious processes—like critical analysis or evaluation of the context of the stimulus—the possibility of conscious counter-control over subliminal effects is minimal. Because non-conscious influences induce attitude and behavior changes without providing information regarding the source of the influence, people are forced to create post-hoc explanations for their attitudes and behaviors, justifying and rationalizing these attitudes and behaviors to themselves and others (Bornstein 1989).

The aim of this article, and of research in priming generally, should not be to identify techniques that allow companies or other organizations to influence people without their consent or awareness, but to show what kinds of influencing techniques work under what conditions and how misuse can be prevented. For instance, to successfully prime it is critical that people are not aware of how the primes might affect them (Bargh 2002). If people are informed about the function of priming techniques, they can have some control over unwanted influences and so allowing impure manipulations to be thwarted. The results of studies concerning the non-conscious manipulation of people should provide the basis for company policies, as well as political decision making, to avoid the misuse of influencing techniques.

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