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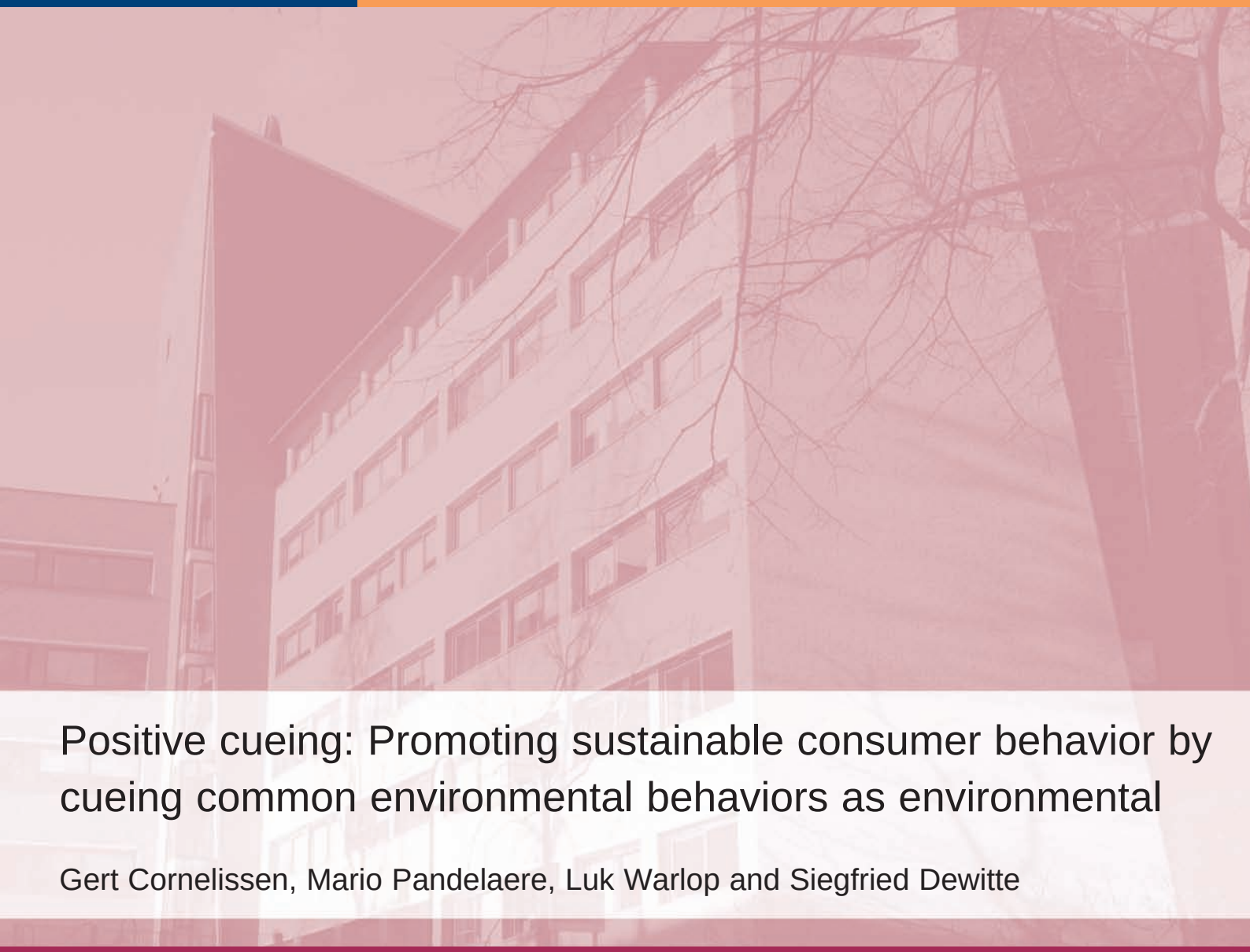

Positive cueing: Promoting sustainable consumer behavior by cueing common environmental behaviors as environmental

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Abstract

In the present article we test a social marketing tool, to induce pro-environmental consumer behavior. The tool intends to do so by changing a target's self-perception from someone who usually does not engage in pro-environmental behavior to someone who usually engages in pro-environmental behavior. It is based on the assumption that people may fail to view themselves as environmentally conscious because they consider the common ecological behaviors they display as non-diagnostic for the self-perception at hand (Study 1). Cueing commonly performed ecological behaviors (positive cueing) may render these behaviors more diagnostic (Study 2). As a result, people cued with commonly performed ecological behaviors view themselves more environmentally conscious than people who are not cued or who are cued with non-commonly performed ecological behaviors (Study 3). In addition, positive cueing leads to an increase in pro-environmental choices and behavior (Study 4). Implications for effective social marketing campaigns are discussed.

Keywords: (pro-environmental) attitudes, ecological consumer behavior, self-perception theory, social marketing, accessibility-diagnosticity framework.

The call for social marketing research to address sustainable consumption issues has been put forward repeatedly since the early 70's (Andreasen, 1995; Crane & Desmond, 2002; Kotler & Zaltman, 1971). In this paper we describe and test a social marketing tool for the promotion of environmental - and, by extension, sustainable - behavior.

The promotion of sustainable consumption behavior has shown to be an arduous task. Despite an increased interest of the general public in sustainable development (European Commission, 2005; DEFRA, 2002), many individuals do not translate this increased interest in altered consumption decisions (Grunert, 1993; Pieters, Bijmolt, van Raaij, & de Kruijk, 1998). An often cited reason for this phenomenon is that people associate sustainable behaviors with behavioral costs like money, time, effort, and inconvenience (Follows & Jobber, 2000; Pieters, 1989; Pieters et al., 1998; Thøgersen, 1994). This suggests that people's attitudes towards specific *ecological behaviors* have an important impact on their decisions, over and above their attitudes towards *the environment* (Ajzen, 1996; McCarthy & Shrum, 1994; Thøgersen & Grunert-Beckmann, 1997). The social marketing tool we present in this paper, *positive cueing*, aims at promoting pro-environmental behavior by improving those specific attitudes.

The Role of the Perception of Previous Behavior in the Formation of Attitudes

Changing people's attitudes towards ecological behavior requires an understanding of how people construct such attitudes. In the current research we focus on self-perception as a route to persuasion. Self-perception theory (Bem, 1972) suggests that people derive their attitudes from their own previous behavior. People readily use

their previous behavior as a heuristic basis for later decisions (Taylor, 1975). If one engaged in a given behavior in the past, that person infers that he or she must like that behavior and the object toward the behavior was directed (Albarracín & Wyer, 2000). Relevant for the present research, people may derive their attitudes towards ecological behaviors from the perception of their past (lack of) pro-environmental conduct (Salancik & Conway, 1975).

Two heuristics are likely to be applied when creating a perception of previous pro-environmental behavior. First, the availability heuristic (Tversky & Kahneman, 1973) uses the experienced ease of retrieval (Schwarz et al., 1991) as a source of information. More specifically, the easier it is to come up with a few examples of own past environmental behavior, the more pro-environmental the derived self-perception will be. Second, the representativeness heuristic (Kahneman & Tversky, 1972) relies on a judgment of the similarity of a recalled event with an internalized representation or prototype for that event. This means that if a certain recalled behavior is judged to be more typical for the category of ecological behavior (e.g. going to work by bike versus putting off the lights in unused rooms), the more pro-environmental the inferred self-perception and attitude.

Based on the conceptual model of Raghubir and Menon (2005), we hypothesize that applying the representativeness heuristic in the context of environmental behaviors leads to *underestimating* the extent to which past behavior was pro-environmental. The main reason is that many commonly displayed environmental behaviors are somewhat ambiguous with respect to their ecological nature. Larger ambiguity renders a behavior less diagnostic to infer an attitude from. Raghubir and Menon (2005) identify several reasons why a certain behavior might be considered ambiguous as to how diagnostic it

is to infer attitudes from, or how typical it is of a certain category (Sperling & Dosher, 1986). Two of those reasons particularly apply to the representativeness of ecological behaviors: frequency of occurrence and causal clarity. Frequency of occurrence refers to the consensus construct in Kelley's attribution theory (1973). A behavior that has a higher frequency of occurrence in the population (e.g., avoiding to litter) may appear to be more normal and therefore less diagnostic with regard to a disposition like ecological concern. Causal clarity refers to the number of reasons a behavior can be attributed to (Morris & Larrick, 1995). Switching off lights in a room that is not used, for example, is an environmentally friendly behavior but it is more readily attributed to a concern to keep the electricity bill low. Causally unclear acts are more ambiguous because they can be attributed to more than one reason; therefore they will be dismissed as non-diagnostic. For these two reasons, a large number of ecological behaviors may be judged non-representative for the category of ecological acts and non-diagnostic to infer attitudes from. Because these behaviors are not perceived as diagnostic, they may be disregarded when people construct a self-perception of environmental consciousness on the basis of past pro-environmental behavior. As a result, people will fail to infer a self-perception as someone who usually engages in pro-environmental behavior.

Cueing Common Ecological Behaviors

We hypothesize that cueing commonly performed ecological behaviors *as environmental* (i.e., positive cueing) increases the perception of engaging in pro-environmental behavior in the past. By emphasizing those environmental behaviors one previously performed, that person will infer he or she must have pro-environmental

attitudes and will derive a self-perception as someone who usually behaves ecological. Positive cueing may increase the extent to which previous behavior is perceived as pro-environmental through two routes. The first route involves accessibility: if one is cued with 'cycling to work' one retrieves instances of 'cycling to work' more easily than if one is not cued. Importantly, this straightforward accessibility effect will only be effective if the retrieved behaviors are judged to be diagnostic for the inference of pro-environmental attitudes (e.g., when there are perceived as being pro-environmental in nature).

A second route through which people may come to view themselves a environmentally conscious involves diagnosticity.: From a logic of conversation-perspective (Grice, 1975; Schwarz, 1994), cueing these behaviors *as environmental* may render them more relevant to derive attitudes from, than if they were not cued. It implies that the messenger, who communicates the cues (e.g., the government acting as a social marketer), does consider these behaviors as relevant to derive attitudes from. As a result, emphasizing the ecological nature of common environmental behaviors may motivate targets to reinterpret them as diagnostic to infer environmental attitudes from. This increased diagnosticity of behaviors one engages in will result in an increased self-perception as an environmentally friendly person. For an overview of our conjectures, see Figure 1.

Using common environmental behaviors as cues has a two-fold advantage. First, by using behaviors in which most people engage, the technique can be used to address a large target audience with an identical message. The large majority of this audience will recognize that, indeed, they do engage in the mentioned behaviors. Second, since common behaviors in particular are spontaneously considered as non-diagnostic, they

are affected most by a message which increases their diagnosticity by emphasizing the ecological nature of these behaviors.

The Current Studies

We tested our conjectures in four studies. In Study 1, we verified our assumption that a given environmental behavior tends to be regarded as less diagnostic for the actor's green attitudes, when that behavior is performed by a larger number of people (i.e. when there is high consensus or high frequency of occurrence), or when the behavior can be attributed to alternative causes (high causal unclarity). In Study 2, we tested whether positive cueing leads to an increased perceived diagnosticity of these acts (arrow 1 in Figure 1). In Study 3, we tested the effect of the same manipulation on participants' self-perception and attitudes (arrow 2 in Figure 1). In the final study, we put our proposed technique to the real test and observed its potential for actually influencing people's environmental choices (arrow 3 in Figure 1).

Insert Figure 1 about here

Study 1

We argue that people engage in several ecological behaviors that they do not spontaneously label as ecological. When using the representativeness heuristic, people tend to consider some behaviors non-diagnostic for making an inference about their

green attitudes. We propose two reasons for the tendency to disregard some common ecological behaviors, when deriving someone's position on the environmental consciousness trait. First, these behaviors may have a low causal clarity, because they might be attributed to other reasons than to the goal to behave environmentally. Second, they might be the type of behaviors most people engage in (high consensus or high frequency of occurrence), and therefore are not considered to be informative for inferring green attitudes. In this first study we want to verify our assumption that the perceived diagnosticity of any given environmental behavior for deriving one's own or someone else's green attitudes is smaller if a behavior has a high frequency of occurrence or a low causal clarity.

Method

Participants and procedure. Thirty-two students participated in this study in exchange for partial course credit. Upon arrival in the lab, they were seated individually in front of a computer screen. Everyone was asked to rate forty environmentally-friendly behaviors, using a 100-point visual analog scale.

Materials. Sixteen of these 40 behaviors were selected from a pretest ($N = 42$) in which we asked participants to list as many as possible environmental behaviors in which they usually engage. We selected the eight most often mentioned examples. These were 'selectively disposing of household garbage', 'using the bike instead of the car when possible', 'avoid littering', 'turn off electrical appliances (to save energy)', 'using both sides of scratch paper', 'disposing cans and milk cartons in a separate garbage bag', 'leaving a clean spot after a picnic' and 'buying a less polluting product if there is a choice in the shop'. These eight behaviors constituted the high frequency set

of behaviors. A low frequency set was constructed to contain eight *environmental behaviors which people usually do not perform*. These were selected from a second task in the same pretest, in which we asked to list as many as possible environmental behaviors in which participants usually do *not* engage. Most often mentioned behaviors were 'using saving lamps in my house', 'using public transportation instead of my own car', 'reduce shower time', 'buy glass instead of plastic bottles', 'being a member of environmental organizations', 'actively looking for the most environmentally friendly products', 'using a reusable shopping bag' and 'buying bio-products'. We added 24 other behaviors from the pretest as fillers to arrive at a list of 40 statements.

Design. Participants were randomly assigned to one of three groups. Each group rated the 40 behaviors on a different dimension. A first group rated the 'degree to which [each behavior] is informative about someone's environmental consciousness' (*Diagnosticity*), with 'not at all' and 'perfectly' being the extremes of the scale. A second group rated 'the percentage of people usually performing [each behavior]' (*Frequency of Occurrence*), the scale ranging from 0% to 100%. A third group rated 'the degree to which people may have other than ecological reasons to perform [each behavior]' (*Causal Unclarity*), on a scale ranging from 'none at all' to 'many'.

The Cronbach alphas, representing interjudge reliability scores, were .66, .88, and .86 for the three groups, respectively (see Holbrook & Lehmann, 1980). For every group, we calculated the mean of the ratings given by the participants. This way we obtained a score for all forty behaviors on each of the three dimensions: Diagnosticity, Frequency of Occurrence and Causal Unclarity. By using separate sets of judges, we rule out alternative explanations for possible correlations based on shared method variance (MacKenzie, Lutz, & Belch, 1986). We then analyzed these data using the 40

behaviors as the rows in the data matrix (the units of observation), the three dimensions as columns, and the sample-average response of subjects as cell entries (subjects are considered as replicates, see Holbrook & Batra, 1987; Vanden Abeele & MacLachlan, 1994).

Results

Consistent with our assumptions, the judgments of Causal Unclarity and Frequency of Occurrence correlate negatively with the Diagnosticity of the behaviors ($r(40) = -.43$, $p < .01$ and $r(40) = -.45$, $p < .01$ respectively). Causal Unclarity and Frequency of Occurrence were not significantly correlated, $r(40) = .03$, $p = .86$. In addition, regressing Causal Unclarity and Frequency of Occurrence onto Diagnosticity showed that both Causal Unclarity and Frequency of Occurrence contributed independently to the prediction of Diagnosticity ($t(37) = -3.20$; $p < .01$ and $t(37) = -3.41$; $p < .01$, respectively, $R^2 = .38$).

We conducted additional analyses on the ratings for the high and low frequency set of behaviors. As expected, an ANOVA showed that the high frequency set ($M = 50.60$, $SD = 11.64$) was judged to contain more frequently performed behaviors (higher Frequency of Occurrence) than the low frequency set ($M = 29.54$, $SD = 11.75$, $F(1, 14) = 12.91$, $p < .01$). Not surprisingly, considering the reported correlations, the high frequency set ($M = 60.89$, $SD = 3.64$) was considered less diagnostic to infer environmental attitudes from, compared to the low frequency set ($M = 70.79$, $SD = 9.04$, $F(1, 14) = 8.60$, $p < .01$). Both sets did not differ on Causal Unclarity, $F < 1$. The high and the low frequency sets will be used in the following studies.

Discussion

This first study confirms our assumption that certain ecological behaviors are deemed less relevant to infer (some)one's green attitudes from. An instance is judged to be less diagnostic when it is considered to be normative (i.e., when many people display that behavior) or when alternative reasons exist to attribute the behavior to. Because commonly performed behaviors tend to be considered non-diagnostic, people may disregard them when inferring their attitudes form their past ecological behavior.

Study 2

In this study we test whether cueing common environmental behaviors increases their diagnosticity, see arrow 1 in Figure 1. The results of Study 1 and the Frequency of Occurrence factor in the framework of Raghubir and Menon (2005) suggest that uncommon environmental behaviors are generally considered more diagnostic than common ones. Conversational logic, however, suggests that positive cueing may increase environmental behaviors' diagnosticity to derive environmental attitudes from: Cueing these behaviors *as environmental* implies that the entity, which communicates the cues, does consider the cued behaviors as relevant (i.e., diagnostic). As a result, emphasizing the ecological nature of common environmental behaviors by positive cueing may motivate targets to reinterpret them as diagnostic to infer environmental attitudes from.

Possibly, this positive cueing effect is limited to the behaviors that initially are not considered very diagnostic. This implies that positive cueing would affect the diagnosticity of common environmental behaviors more than the diagnosticity of

uncommon environmental behaviors. In addition, positive cueing may affect not only the diagnosticity of the cued common environmental behaviors but also of non-cued common environmental behaviors.

Method

Participants and design. Eighty undergraduate students took part in exchange for partial course credit. They came to the lab in groups of five to eight and were seated individually in front of a computer screen in semi-closed cubicles. Participants were randomly assigned to one of three conditions: the High Frequency, the Low Frequency, or the Control condition.

Materials. We constructed three sets of behaviors. In the method section of Study 1, we clarified the content of the high frequency set, containing common behaviors, and the low frequency set, containing uncommon behaviors. We altered one of the items in the low Frequency set: 'Using public transportation instead of my own car' became 'I *always* use public transportation' to further decrease the frequency and, hence, increase the diagnosticity of this item. A control set contained eight behaviors which were not related to ecology (e.g., 'reading a newspaper every day', 'often eating French fries'). A pretest showed that the high and low frequent sets do not differ with respect to the average *environmental friendliness* of the behaviors ($N = 19$, $t(18) = -0.30$, $p = .77$). Study 1 showed that both sets do not differ in causal unclarity.

Our dependent measure consisted of 20 behaviors which were to be rated on their diagnosticity to infer someone's environmental friendliness from. Those 20 items were of three types. First, the list included the eight uncommon environmental behaviors that were used as cues in the Low Frequency condition. Second, it included the eight

common behaviors used as cues in the High Frequency condition. Third, we included four new common environmental behaviors, to find out whether the effect of the manipulation would generalize to common behaviors which were not used as cues themselves.

Procedure. Participants in the High Frequency, the Low Frequency and the Control condition were presented the high frequency, the low Frequency or the control set of behaviors, respectively. We instructed them to indicate whether or not they usually display each of the eight environmental behaviors included in their list, on a seven point scale (ranging from I *do not agree at all* to *I fully agree*). In the control condition, we deleted the word 'environmental' from the instructions.

In the second phase of the experiment, after 10 minutes of unrelated filler tasks, participants completed the dependent measure. We asked them to indicate to which extent observing each of the 20 behaviors in others allows an inference of a person's 'environmental consciousnesses' on a 100-point visual analog scale anchored at *not at all* and *perfectly*.

Results

Manipulation check. As intended, participants in the High Frequency condition indicated they engaged more in the behaviors included ($M = 6.12$, $SD = .50$) than participants in the Low Frequency condition ($M = 3.66$, $SD = .85$; $F(1, 51) = 170.18$, $p < .01$).

Diagnosticity. We averaged the diagnosticity-ratings for each of the three types of behaviors. Cronbach alpha's for the common, uncommon, and new common behaviors were .84, .66 and .64, respectively. We then conducted a repeated measures ANOVA

with cueing condition (High Frequency, Low Frequency, or Control) as a between subjects and type of behavior (common, uncommon, and new common) as within subjects factor. As predicted, the analysis revealed a significant interaction effect, $F(4, 154) = 6.64$, $p < .01$, see Figure 2.

In the Control condition, uncommon behaviors ($M = 77.62$, $SD = 9.50$) were indeed judged as more diagnostic than common ($M = 71.89$, $SD = 12{,}39$, $F(1, 77) = 12{,}74$, $p < .01$) and new common behaviors ($M = 68.51$, $SD = 14.07$, $F(1, 77) = 28.12$, $p < .01$). New common behaviors were considered less diagnostic than the common behaviors ($F(1, 77) = 4.59$, $p < .04$). The latter difference is small compared to that between the uncommon and both types of common behaviors and may be due to sampling effects.

In the Low Frequency condition, uncommon behaviors ($M = 78.71$) were judged to be more diagnostic than common ($M = 71.25$, $F(1, 77) = 19.21$, $p < .01$) and new common behaviors ($M = 69.52$, $F(1, 77) = 25.41$, $p < .01$). The difference between the common and the new common behaviors did not reach significance ($F(1, 77) = 1.06$, $p = .31$.

In the High Frequency condition, we expected that positive cueing would increase the diagnosticity of common and possibly of new common behaviors. In line with this prediction we did not observe any differences in the High Frequency condition between the uncommon behaviors ($M = 76.29$) and common ($M = 77.82$, $F(1, 77) <1$) and new common ones ($M = 76.38$, $F(1, 77) < 1$). In fact, we observed an increase of the diagnosticity of common behaviors in the High Frequency group compared with the Low Frequency ($F(1, 77) = 4.38$, $p < .04$) and the Control condition ($F(1, 77) = 3.80$, $p < .05$). Additionally, we found that new common behaviors were judged as more

diagnostic in the High Frequency condition, compared to the Low Frequency ($F(1, 77) = 4.33$, $p < .04$) and the Control condition ($F(1, 77) = 6.07$, $p < .02$).

The diagnosticity of uncommon behaviors was not affected by the manipulation. We found no significant differences between the Control condition and the High and Low Frequency conditions (Fs < 1).

Discussion

Common environmental behaviors are judged to be less diagnostic to derive environmental attitudes from than uncommon ones (Study 1). However, as Study 2 suggests, cueing these behaviors *as* environmental increases their diagnosticity. Importantly, this positive cueing effect generalizes to new common behaviors: we also observed an increased diagnosticity of common behaviors, which were not used as cues themselves, as the result of cueing with other common behaviors. Note that uncommon environmental behaviors, which are considered diagnostic before cueing, did not increase in diagnosticity after cueing with either common or uncommon behaviors. This indicates that cueing people with common environmental behaviors may affect their environmental self-perception more than cueing with uncommon environmental behaviors.

Study 3

In the current study, we examined participants' attitudes toward environmental behavior, their moral obligation to protect the environment, and their self-perceived environmental consciousness following no cueing (control condition), cueing with

common environmental behaviors (High Frequency condition) or cueing with uncommon environmental behaviors (Low Frequency condition). Considering that, by definition, people engage in common environmental behaviors, we expect that an increased diagnosticity of these behaviors should result in more environmentally friendly attitudes and self-perceptions and an increased moral obligation to protect the environment. Therefore, we expect more environmentally friendly attitudes, moral obligations and self-perceptions in the High frequency condition than in either the Low frequency or the Control condition. We did not expect any differences between the Low frequency and the Control condition.

Although we did not expect any differences between the Control condition and the Low frequency condition, we decided to retain the Low Frequent condition for two reasons. First, as a second control condition it excludes alternative explanations in terms of priming environmental behavior, since the *environmental friendliness* of the high and low frequency set was identical. Second, it is a way of simulating the traditional social marketing approach. Social marketing campaigns often emphasize these uncommon behaviors, in which people should but do not engage. Those campaigns might, temporarily, motivate targets to make pro-environmental decisions. However, we predict that such an approach is not likely to influence targets' self-perceptions.

Method

Participants and procedure. One hundred and sixty undergraduate students took part in exchange for partial course credit. They came to the lab in groups of five to eight and were seated individually in front of a computer screen in semi-closed cubicles. Participants were randomly assigned to one of three conditions: the High Frequency, the

Low Frequency, or the Control condition. These groups were presented with the high frequency, low frequency, and control set of behaviors, respectively. We instructed them to indicate whether or not they usually display each of the eight (environmental) behaviors included in their list, on a seven point scale (ranging from *I do not agree at all* to *I fully agree*). In the second phase of the experiment, after 20 minutes of filler tasks, we administered a questionnaire which measured environmental attitude, self-perception as a green consumer and sense of moral obligation to protect the environment.

Materials. We used the same positive cueing manipulation of Study 2. The dependent measure was a 3-item scale which probed participants' attitudes towards ecological behaviors. The attitude items were embedded in a longer questionnaire, to conceal the true purpose of the task. Additionally, we measured participant's self-perception as an ecological consumer (2 items). One additional item measured the degree to which participants feel morally obliged to protect the environment (see table 1).

Results

Manipulation check. As intended, participants in the High Frequency condition indicated they engaged more in the behaviors included (M = 5.53, SD = .79) than participants in the Low Frequency condition (M = 3.05, SD = .97, $F(1, 103) = 204.88$, $p < .01$).

Attitudes towards ecological behaviors. The three attitude-items loaded on one factor which explained 75.69 % of the variance (α = .84). The ANOVA on the mean of

these items revealed that the cueing manipulation significantly affected participant's attitudes towards ecological behaviors, $F(2, 157) = 7.47$, $p < .01$. Simple contrasts revealed that the attitudes in the High Frequency condition ($M = 5.21$, $SD = .92$) were more favorable than in the Control group ($M = 4.59$, $SD = .87$; $F(1, 157) = 14.41$, $p < .01$), and than in the Low Frequency group ($M = 4.79$, $SD = .82$; $F(1, 157) = 6.52$, $p < .01$). The latter two conditions did not differ significantly ($F(1, 157) = 1.50$, $p = .22$).

Self-perception and moral obligation. The two items probing self perception as a 'green consumer' loaded on one factor which explained 77.51% of the variance and they constituted a reliable scale ($\alpha = .71$). The ANOVA on the mean scores showed that our manipulation influenced the self-perception of participants, $F(2, 157)= 9.97$, $p < .01$. Simple contrasts revealed that participants in the High Frequency condition perceived themselves as more ecological ($M = 4.51$, $SD = .92$) than participants in the Control group ($M = 3.88$, $SD = 1.10$; $F(1, 157) = 9.80$, $p < .01$) and in the Low Frequency group ($M = 3.63$, $SD = 1.07$; $F(1, 157) = 18.80$, $p < .01$). Participants in the Low Frequency condition did not perceive themselves significantly different from those of the Control group ($F(1, 157) = 1.57$, $p = .21$).

The ANOVA on the item measuring participants' feeling of moral obligation to protect the environment, also revealed a significant effect of our manipulation ($F(2, 157) = 4.20$, $p < .02$). The High Frequency group scored marginally higher ($M = 5.29$, $SD = .16$) than the Control group ($M = 4.89$, $SD = .15$, $F(1, 157) = 3.35$, $p < .07$) and higher than the Low Frequency group ($M = 4.66$, $SD = .15$, $F(1, 157) = 8.21$, $p < .01$). Again, the Low Frequency group did not significantly differ from the Control group ($F(1, 157) = 1.14$, $p = .29$).

A Sobel test (Baron and Kenny, 1986) indicated that the attitude towards

environmental behaviors mediated the effect of our manipulation on participant's self-perception (Z = -3.06, p < .01) and moral obligation (Z = -3.32, p < .01). In both cases the bootstrapped estimate of the indirect effect was significant with 99% confidence (Preacher & Hayes, 2004)[1]. The effect of the manipulation on the mediator, environmental attitude, was significant, as shown above. The direct effects of environmental attitude on self-perception (t(159) = -3.71, p < .01) and on moral obligation (t(159) = 7.27, p < .01) were significant. The direct effects of the manipulation on self-perception (t(159) = -1.61, p = .11) and on moral obligation (t(159) = .11, p = .92) disappeared after adding attitude as a mediator.

Discussion

The current study demonstrates that positive cueing renders people's attitudes towards ecological behaviors more favorable, makes them perceive themselves as more environmentally friendly and increases their sense of moral obligation to act environmentally friendly. The effects of positive cueing on self-perception and on moral obligation are mediated by the positive cueing effect on the attitudes towards ecological behaviors.

In the current study, we did not observe any significant differences between the control condition and the Low frequency condition. This was to be expected, as Study 2 showed that cueing Low Frequent behaviors did not influence the diagnosticity of common or uncommon environmental behaviors. One might expect that an approach which emphasizes previous failures to behave environmentally friendly (the Low

[1] A reversed model shows that self-perception partially mediates the relation between our manipulation and attitude. The indirect effect is significant (Z = -2.59, p < .01) but the effect of the manipulation on attitude remains significant after controlling for self-perception (t = -2.67, p < .01). As the model in which attitude mediates the effect of manipulation on self-perception shows complete mediation, it is preferable.

Frequency condition) might induce hypocrisy (Aronson, Fried, & Stone, 1991). Induced hypocrisy might be effective at improving environmental attitudes. In our experiment, we did not observe any beneficial induced hypocrisy effects. It should be noted, however, that we did not include a phase in our experiment which elicits a (public) commitment to one's attitudes, as is usually done in induced hypocrisy studies. Without that step, emphasizing people's flaws seems not to be an efficient method to improve attitudes. On the other hand, we also did not observe backfire effects in the Low Frequency condition. So, making it salient to people that they usually do not engage in environmental behaviors, as is done in the Low frequency condition, did not adversely affect their attitudes towards ecological behaviors, self-perceptions and their sense of moral obligation to act environmentally friendly

Study 4

Assuming that a more favorable attitude towards ecological behavior should result in more environmentally friendly behavior (Ajzen, 1996; Gill, Crosby, & Taylor, 1986; Minton & Rose, 1997), we tested the potential of cueing common environmental behaviors for beneficially influencing actual ecological behavior.

To examine the effect of cueing on actual behavior, participants were presented with a product choice task in a simulated shop and another, consequential product choice. In both instances, one choice alternative was a more ecologically sound, but more expensive alternative of the other. In addition, we observed how efficiently participants used available scratch paper in a task where they were asked to make notes.

Several steps were taken to avoid demand effects or hypothesis guessing (cf.

Sawyer, 1975). First, we did not measure people's attitudes towards ecological behavior. Second, we included unrelated filler tasks. Third, the note task rendered a very subtle measure, unlikely to be sensitive to demand effects, as the environmental aspect of the task was not evident. Fourth, we made the product choices as consequential as possible. The notepad choice was an actual choice between an ecological and a more attractive non-ecological notepad. In the simulated shop task, participants were told that they would have to buy one randomly determined product chosen by them.

Considering the results of Study 2 and 3, we expected a higher number of pro-environmental choices in the High Frequency condition compared to the Low Frequency and Control condition. As we did not observe any differences between the latter two conditions in the previous experiments, we neither expected differences between these conditions in the current experiment.

Method

Participants and procedure. Sixty-six undergraduates were paid 6 € for participation in this study. They came to the lab in groups of five to eight. At the beginning of the session, before introducing our manipulation, we asked them to complete an environmental concern questionnaire. We used 13 of the 16 items of the environmental concern scale of Minton and Rose (1997), dropping three repetitive items, to keep the questionnaire as short as possible. Then participants were subjected to a cueing manipulation, which was identical with the one in the previous studies and resulted in a High Frequency, a Low Frequency, and a Control group.

Dependent variables. The remaining part of the session consisted of several tasks, measuring ecological behavior. After completing a filler task, participants were presented with a *product choice task.* They received ten product pairs: five filler pairs and five critical pairs. In each critical pair, one product was a more environmentally friendly but more expensive alternative of the other. We asked the participants to indicate which product they would pick if they were to purchase them now. To increase ecological validity, we informed participants that at the end of the session, they actually had to purchase the product of their choice from a randomly chosen product category. They would have to use part of their participation fee to do so.

The critical product categories were cookies (differing in the amount of plastic used for wrapping), kitchen paper, deodorants, (energy-efficient) lamps, and detergents, see Appendix. For eight product categories, the more expensive product cost 1.05 € whereas the less expensive product cost 0.95 €. For the lamps, the prices were 1.50 € and 1.30 €, respectively, and for detergents, they were 1.40 € and 1.30 €, respectively. These prices were pre-tested in a different sample of the same student population (N = 34) by informing participants about the shop value of a certain object and asking them which (higher) price they would be willing to pay for a more ecological variant of that product. We used the median price mentioned for the ecological products in the choice task.

After the choice task, we measured unobtrusively how efficiently respondents used *scratch paper*. We asked participants to write down a short summary of each of eleven elaborated product claims shown on the screen, under the pretext of investigating which pieces of information are judged as essential by consumers. We actually examined how economically participants used the available paper, counting the number

of sheets used and measuring the percentage of the surface actually used to write on.

The final measure was an actual product choice (*notepad choice).* After working 10 more minutes on filler tasks, participants learned that the experimental session was finished; they were asked to proceed to the exit of the lab, where the experimenter would pay them for their cooperation. The experimenter thanked them individually for their participation and paid the promised 6 €, casually mentioning the fact that, since summer holidays were coming up, some leftover material from previous experiments was to be given away. They could take a notepad from a nearby table. The notepads were piled up in two stacks. One stack contained notepads made from brownish, recycled paper; these notepads had a large "recycled" logo on the cover. The other stack contained notepads made from white, regular paper. The shop value of these notepads is 1.39 € and 1.30 €, respectively. The experimenter inconspicuously observed which notepad the participant chose.

Results

Manipulation check. Like in our previous studies, we compared the indicated frequencies with which the two experimental groups perform their set of activities as a manipulation check (we failed to record this frequency for 4 participants, because of a computer malfunction). Participants in the High Frequency condition indicated they engaged more in the behaviors included ($M = 5.96$, $SD = .77$) than participants in the Low Frequency condition ($M = 3.34$, $SD = .87$, $F(1, 39) = 104.61$; $p < .01$).

Product choice task. We performed an ANCOVA on the number of ecological choices made in the product choice task, using environmental concern as a covariate. The scree plot resulting from the factor analysis on these 13 environmental concern

items suggested a unidimensional solution. One factor explained 48.47% of the total variance (Cronbach's $\alpha = .90$).

The analysis revealed a significant effect of the manipulation on the number of ecological products chosen ($F(2, 62) = 8.22$; $p < .01$). Simple contrasts show that, on average, the High Frequency group chose more ecological products ($M = 3.12$, $SD = .79$) than the Control group ($M = 2.34$, $SD = 1.14$, $F(1, 62) = 7.07$; $p < .01$) and than the Low Frequency group ($M = 1.96$, $SD = 1.13$, $F(1, 62) = 15.89$; $p < .01$). The Low Frequency and the Control group did not significantly differ ($F(1, 62) = 1.69$; $p = .20$). The covariate, ecological concern, had a significant, positive relation with number of ecological products chosen ($F(1, 62) = 7.28$; $p < .01$), indicating that our dependent measure is indeed sensitive to the willingness to make the environmentally friendly choices.

Notepad choice task. Participants assumed the experiment was over when they were offered to take a notepad home. Two participants turned down the offer so we ended up with 64 observations. A chi-square test revealed a significant effect of cueing ($\chi^2(2, N = 64) = 14.59$; $p < .01$). The ecological notepad was chosen more often in the High Frequency condition (81%) than in the Control group (52%), $\chi^2(1, n = 42) = 3.86$, $p < .05$, and than in the Low Frequency condition (23%), $\chi^2(1, n = 43) = 14.58$, $p < .01$. Moreover, choosing the ecological notepad was also significantly more likely in the Control condition than in the Low Frequency condition, $\chi^2(1, n = 43) = 4.04$, $p < .04$.

Use of scratch paper. Participants were free to use as many sheets of paper as needed to summarize eleven elaborated product claims presented on the computer screen. The sheets were 9.7 cm by 10 cm. As a measure of paper usage efficiency, we used scanner software to determine which percentage of the total surface of used sheets

was actually written on. We squared this number to approximate a normal distribution. Higher numbers correspond with more efficient, and therefore more ecological, paper usage[2]. The ANCOVA, controlling for the number of words participants wrote, and for environmental concern, revealed a significant effect of cueing, $F(2, 59) = 3.74$, $p < .03$. The High Frequency group ($M = .30$, $SD = .26$) used the paper more efficiently than the Control group ($M = .13$, $SD = .10$; $F(1,59) = 7.28$, $p < .01$). The difference between the High- and the Low Frequency group ($M = .20$, $SD = .22$) was marginally significant, $F(1, 59) = 2.96$, $p < .09$, but we did not find a significant difference between the Low Frequency group and the Control group ($F(1, 59) = 1.13$; $p = .29$).

Additionally, we measured the size of participants' handwriting. In order to do so we chose three words that met two criteria. First, they should have been written down by (almost) all participants - because participants wrote down summaries, not everybody used the same words - and second, they should appear more or less in the middle or at the end of the sequence of claims, since the size of the handwriting was often very variable within each participant for the first claims. We found two words that were written down by everyone and one word that was written down by all but one participant. The selected words were 'glycerine', 'omega3' and 'celoxydatie' (Dutch for 'cell oxidation'). We measured the length of these words in centimeters for each participant. To control for objective word length, we standardized these scores and then calculated the average length of these three standardized scores. We found a significant effect ($F(2, 59) = 3.36$, $p < .04$) showing that participants in the High Frequency condition wrote smaller ($M = -.40$, $SD = .66$) than participants in the Control group ($M = .16$, $SD = .93$; $F(1, 59) = 5.63$, $p < .02$) and the Low Frequency group ($M = .10$, $SD =$

[2] The data of three participants were excluded from this analysis, for not following the instructions. They indicated whether they thought the statement was true or false, rather than writing down a summary.

.59; $F(1, 59) = 4.47$, $p < .04$). There was no significant difference between the Low Frequency group and the Control group, $F(1,59) < 1$.

Discussion

Positive cueing successfully increased the level of participant's environmental behavior. Participants in the High Frequency condition indicated a larger preference for buying a more expensive, but environmentally friendly variant of a common product in the simulated shop environment, and more often chose the less attractive but recycled notepad, which they could take home with them.

Since the environmental dimension of the choice tasks was very obvious – making a choice between a product and its environmental alternative – we also included a task for which the environmental dimension was not obvious at all: making notes on scratch paper. Even for that task, we found that cueing common environmental behaviors resulted in more efficient and therefore more environmentally friendly use of scratch paper compared to no cueing or cueing uncommon environmental behaviors. Participants even went as far as 'spontaneously' decreasing the size of their handwriting to make more efficient use of the provided paper. This suggests that the manipulation not merely primes the concept of ecology, which would influence subsequent choices with a clearly ecology-related dimension. Instead, those who are cued with commonly performed environmental behaviors seemed to look actively for ways in which they could adjust their behavior in order to minimize their environmental impact. Again, emphasizing the green behaviors that people generally do not engage in, a technique used by traditional social marketing campaigns (cf. the induced hypocrisy effect), did not result in more environmental choices. To the contrary, in the notepad choice task it

actually led to less environmental choices than in the Control condition. This is a result in line with the findings of Menon, Block, and Ramanathan (2002). They found that cueing uncommon behaviors that may lead to contracting hepatitis C led people to worry less about contracting this disease than a Control group. It could be that in our other measures, we observed a floor effect, because of which scores in the Low Frequency condition were not significantly lower than in the Control condition. We must be careful, however, when interpreting this result. Of a total of six measures, the notepad choice task was the only one in which we observed a difference between the Low Frequency and the Control condition. Therefore this result can not be considered to be as reliable as the beneficial effect of cueing common environmental behaviors, which was replicated six out of six times. Additionally, in the Menon et al. (2002) studies, results regarding a backfire effect of cueing uncommon behaviors were mixed as well. For example, they did not find a difference between the control and the uncommon behaviors condition on the estimated risk of contracting hepatitis C. Further research on this possible backfire effect is warranted.

We included some features to the design of this study to reduce the likelihood of a demand effect driving our results. For example, we added an environmental consciousness measure, which was administered right before our cueing manipulation. Doing so, we rule out an alternative explanation regarding environmental priming: all participants were primed with references to environmental behaviors. In fact, the High and Low Frequency condition did not differ at all regarding environmental references. Also, following guidelines of Sawyer (1975), we included multiple dependent measures in our study. Since both choice tasks were to some extent consequential and the note task hardly could be recognized as an environmental task and came with a distracting

cover story (writing down summaries of product statements), it is unlikely that the observed behavioral effects are due to a demand effect.

General Discussion

The current paper presents and tests a social marketing tool, positive cueing, which applies the idea that in some situations, attitudes are derived from prior behavior (Bem, 1972) or rather, the perception of that behavior (Salancik & Conway, 1975). This perception is based on the use of the accessibility and the representativeness heuristic (Kahneman & Tversky, 1972; Tversky & Kahneman, 1973). By emphasizing previous pro-environmental behavior, positive cueing results in increased pro-environmental decision making. We propose that this tool is equally applicable in other areas, like the promotion of healthy eating, physical exercise or driving safely.

Study 1 supports the assumption that not all ecological behaviors are considered equally diagnostic to infer attitudes from. It suggests that people may refrain from drawing inferences from behaviors that are easily explainable by other factors including its mere commonness (Raghubir & Menon, 2005). Study 2 showed that cueing such behaviors *as* environmental renders them more diagnostic and relevant than when they are not cued. The results of Study 3 show that positive cueing renders people's attitudes towards environmentally friendly behaviors more favorable. It favors perceiving one-self as an environmental person and increases the feeling of moral obligation to do an effort for the environment. In addition, Study 4 demonstrated that it is effective in promoting pro-environmental decision making.

These results allow us to propose some guidelines for designing effective social

marketing campaigns, in all areas of sustainable behavior (and beyond). Traditional social marketing campaigns often emphasize how poorly the target audience is doing with regard to a certain topic. These types of campaigns sometimes induce aversive feelings towards the request, and elicit feelings of guilt, reactance and resentment (Reich & Robertson, 1979), as people do not like being told what to do. Implicitly, traditional campaigns also tell the audience that they are just doing what every next person does (i.e. failing to make environmental choices), which has been shown to reinforce their (undesirable) behavior (Cialdini, 2003). Saying that "a problematic behavior needs urgent attention because it is very prevalent" implies that it *is* prevalent. Research on descriptive norms (Cialdini, Reno, & Kallgren, 1990) suggests that simply *doing what everyone else is doing* is often preferred over *doing the right thing*. Therefore such a message, ironically, might be interpreted as a justification to keep on engaging in the undesirable behavior. Our findings confirm that this may result in an ineffective social marketing effort. The Low Frequency condition simulated the type of campaign communication which emphasizes how little a target person is (and implicitly, how little most people are) doing for the environment. For all but one of our measures, the Low Frequency group did not differ from the Control group. And in the single case it did differ, it resulted in less environmentally-friendly behavior. We therefore propose an alternative approach, which emphasizes that people have, in fact, already adopted several changes for the better. Our data suggest that drawing attention to the ecological behavior people already engage in, improves their attitudes towards ecological behaviors. This makes them more sensitive to persuasive requests proposing to adopt additional pro-environmental behaviors. This idea is reminiscent to the use of descriptive social norms as a persuasion technique (Cialdini, 2003; Cialdini et al.,

1990). However, rather than invoking social norms, the social marketing tool we presented in this paper draws on suggesting the existence of *personal norms or values* to engage in pro-environmental behavior. Our data showed that suggesting that one has engaged in a certain behavior in the past will make it more likely that the target person repeats that type of behavior later on. Especially in situations where the social descriptive norm is *not to engage* in a certain social desirable behavior, our alternative might be a useful addition to the arsenal of the social marketer.

Second, traditional campaigns usually call upon people's sense of morality when asking them to do the 'right thing'. Because of the behavioral costs related to sustainable behaviors (Follows & Jobber, 2000; Pieters, 1989; Pieters et al., 1998; Thøgersen, 1994), these requests are only effective in the short term, until the costs regain salience. The technique we presented in this paper influences consumers' self-perception. People are led to see themselves as "someone who is willing to do an effort for the environment", or any other promoted cause, and act upon that self-perception (Osbaldiston & Sheldon, 2003). Someone who perceives himself as an environmentally friendly consumer is internally motivated to act upon this perception. It is a well-documented fact that internal motivation results in increased performance and persistence of a behavior (Ryan & Deci, 2000; Sheldon & Elliot, 1999). Therefore we expect a persuasion method based on a self-perception change to have a longer term effect (Albarracin & Wyer, 2001).

The technique we presented in this paper is related to a class of persuasion methods, which use consistency and self-perception as drivers for the effect. Compared to foot-in-the-door related strategies (Cialdini, 2001; Freedman & Fraser, 1966), the self-prophecy phenomenon (Spangenberg & Greenwald, 1999), the labeling technique

(Burger & Caldwell, 2003; Kraut, 1973; Miller, Brickman, & Bolen, 1975), and induced hypocrisy (Aronson et al., 1991), the advantage of the cueing technique is that it involves a less intrusive procedure. Unlike the mentioned strategies, the cueing technique does not require a first request (foot-in-the-door), an enquiry into future intentions (self-prophecy), the provocation of a certain behavior (labeling) or a communication emphasizing people's personal norms and reminding them of past failure to comply with these norms (induced hypocrisy). It merely consists of cueing instances of past engaging in the target behavior. Therefore the technique may be more appropriate for application in mass communication campaigns.

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Appendix

Product attribute specifications of the product choice task, Study 4

Product		Choice A	Choice B
Cookies	**Price**	1.05 €	.95 €
	Packaging	25 units in 1 plastic wrapping	Each unit wrapped individually
Kitchen paper	**Price**	1.05 €	.95 €
	Paper	100 % recycled	Non recycled
Deodorant	**Price**	.95 €	1.05 €
	Content	Containing propellants	Environmentally friendly vaporizer
Light bulbs	**Price**	1.30 €	1.50 €
	Type	Regular	Saving light bulbs
Detergent	**Price**	1.30 €	1.40 €
	Type	Regular	Ecological packaging and content

Tables

Table 1

Means and Standard Deviations of the Items of the Attitude, Self-perception and Moral obligation Scale in Study 3

	High Frequency		Low Frequency		Control	
	Mean	SD	Mean	SD	Mean	SD
How do you feel about environmental behaviors? (1= very negative, 7= very positive)	5.19	1.01	4.92	.81	4.78	.94
How do you feel about performing environmental behaviors? (1= very negative, 7= very positive)	5.35	1.05	5.00	1.04	4.62	1.05
How important is it that you perform environmental behaviors? (1= not important at all, 7 = very important)	5.08	.93	4.43	.91	4.36	1.04
I think I behave environmental. (1 = totally don't agree, 7= totally agree)	5.06	.85	3.60	1.18	4.31	1.12
When I buy a product, I take ecological considerations into account. (1 = totally don't agree, 7= totally agree)	3.96	1.25	3.66	1.18	3.46	1.36
I feel morally obliged to protect the environment (1 = totally don't agree, 7= totally agree)	5.29	1.18	4.66	1.21	4.89	.98

Figure Captions

Figure 1. The Positive Cueing effect on diagnosticity, self-perception, and behavior

Figure 2. Mean diagnosticity ratings of different types of environmental behaviors in the High Frequency, Low Frequency and Control condition.

Figures

Figure 1

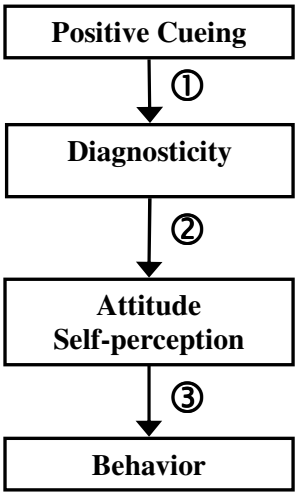
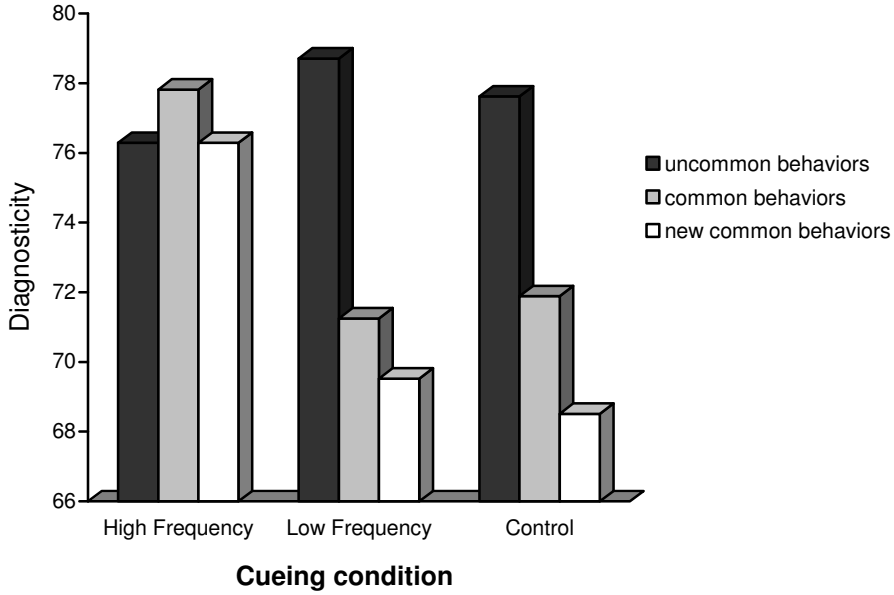


Figure 2


80
78
76
74
72
70
68
66
Diagnosticity
High Frequency
Low Frequency
Control
Cueing condition
uncommon behaviors
common behaviors
new common behaviors