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Promoting energy conservation behavior in public settings: The influence of social norms and personal responsibility

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ABSTRACT

How might psychological science be utilized to encourage proenvironmental behavior? In two studies, interventions aimed at promoting energy conservation behavior in public bathrooms examined the influences of descriptive norms and personal responsibility. In Study 1, the light status (i.e., on or off) was manipulated before someone entered an unoccupied public bathroom, signaling the descriptive norm for that setting. Participants were significantly more likely to turn the lights off if they were off when they entered. In Study 2, an additional condition was included in which the norm of turning off the light was demonstrated by a confederate, but participants were not themselves responsible for turning it on. Personal responsibility moderated the influence of social norms on behavior; when participants were not responsible for turning on the light, the influence of the norm was diminished. These results indicate how descriptive norms and personal responsibility may regulate the effectiveness of proenvironmental interventions.

1. Introduction

Societal recognition of the importance of environmentally sustainable behavior has grown considerably over the past decade (Swim et al., 2011), with a particular emphasis on conserving energy. Whereas some conservation efforts have emphasized using more energy-efficient devices, others have focused on eliminating unnecessary usage (Gardner & Stern, 1996). For example, student-run organizations known as the "Power Police" patrol college campuses every night and turn off lights that have been left on in classrooms and public bathrooms (Nord, 2010). Could social psychological principles be used to encourage people to turn off the lights themselves, rendering such groups unnecessary? The present research examines the effects of social norm-based and personal responsibility-based interventions on electricity conservation behavior in public settings.

Social norms have been shown to exert a powerful influence on people's behavior (e.g., Aarts & Dijksterhuis, 2003; Goldstein, Cialdini, & Griskevicius, 2006). Attempts to encourage proenvironmental behavior often rely on the delivery of messages about other people's behavior, but this is not the only way normative information can be conveyed; features of the situation can also indicate what behavior is appropriate (e.g., Cialdini, Kallgren, & Reno, 1991). For instance, the light status (i.e., on or off) when a person enters an unoccupied public bathroom signals whether people typically turn the lights off, or leave them on, when exiting that bathroom. Therefore, the light status upon entry may influence whether a person turns the lights off upon exiting. Oceja and Berenguer (2009) unobtrusively manipulated the status of the lights (i.e., on or off) before someone entered a public bathroom, and found that participants were significantly more likely to turn the lights off if they were off when they entered, as compared to if the lights were on.

Although the hypothesized influence of descriptive norms provides a plausible account for the observed pattern of behavior, it could also reflect a sense of personal responsibility, which has been shown to influence other instances of prosocial behavior (Berkowitz, 1972; Darley & Latané, 1968). Both social norm and personal responsibility concerns may have been activated by the "lights off" condition in Oceja and Berenguer (2009), as participants in this condition not only witnessed the light status in the bathroom as they entered it (demonstrating the social norm), but they also had to turn on the lights themselves (increasing a sense of personal responsibility). Because they were physically responsible

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for turning on the lights, they may have felt a greater sense of personal responsibility to turn the lights off when they left, compared to participants who entered the bathroom when the lights were already on (i.e., who had to do nothing). This rationale is consistent with the observation that the occurrence of an action has a stronger influence on a person's self-perceptions and behavioral decisions than does an equally informative nonoccurrence of a behavior (e.g., Cioffi & Garner, 1996; Fazio, Sherman, & Herr, 1982). Based on these considerations, it seems plausible that this heightened sense of personal responsibility, and not the perceived social norm, may have guided participants' behavior.

We conducted two field experiments in public bathrooms on a university campus in order to examine the influence of both social norms and personal responsibility on energy conservation. Given the value afforded from replicating new empirical findings (Open Science Collaboration, 2012), our first experiment provided a conceptual replication and extension of Oceja and Berenguer (2009), where the light status was unobtrusively manipulated before a participant entered an unoccupied bathroom. We hypothesized that participants would be more likely to turn the lights off if they were off, as opposed to on, when they entered.

To extend this past research, in Study 1 we examined differences in conservation behavior across single- and multiple-user bathrooms, a distinction that was not considered by Oceja and Berenguer (2009). Participants would presumably feel a greater sense of responsibility for turning off the lights in a single-user bathroom as compared to a multiple-user bathroom, given the fact that in the single-user bathroom only the participant would be responsible for initially turning on the light (in the lights off condition), and nobody except the participant would be expected to turn off the light after the participant (as opposed to, for example, other people using the bathroom in a multiple-user bathroom). This factor provided an initial test of how personal responsibility might affect energy conservation behavior. We also examined differences in behavior between men and women. Although Oceja and Berenguer (2009) observed no differences between men and women, there is evidence that women are more likely to engage in some prosocial behaviors more frequently (e.g., Eagly, 2009), including proenvironmental behavior (e.g., Torgler, Garcia-Valiñas, & Macintyre, 2008). We set out to test this possibility as well. Finally, because Oceja and Berenguer (2009) conducted their study in Spain, Study 1 provides the first test of these hypotheses using a sample of participants from the United States.

2. Study 1: Method

2.1. Participants

447 people (233 females and 197 males)[2] who used one of six windowless public bathrooms (four multiple-user, two single-user) with manual light switches on the campus of a large university in the Midwestern United States.

2.2. Procedure

Bathrooms were monitored in one-hour daytime shifts, which were usually conducted on different days, although occasionally multiple shifts were conducted on the same day. Bathrooms were monitored on weekdays during the late morning and afternoon hours, when it was daylight outdoors, and when we expected the bathrooms to be used frequently by students attending class. All bathrooms were indoors and in public settings that had high levels of student traffic.

While each bathroom was unoccupied, the researcher manipulated the light status (i.e., on or off) according to a schedule for alternating the experimental conditions, such that each shift was assigned the opposite condition to the one that preceded it. Fifty-four shifts were conducted in each condition. The researcher sat inconspicuously nearby until a participant entered the bathroom. After the participant exited, the researcher recorded the light status, along with the type of bathroom (i.e., single- or multiple-user), participant gender, and whether anyone entered the bathroom while the participant was inside.[3] Then the researcher discretely returned to his or her original location, being careful not to attract the attention of others in the vicinity, and waited for another person to enter the bathroom. While waiting, the researcher acted as if they were studying for a class, which was normative behavior for each setting.

3. Study 1: Results and discussion

We hypothesized that participants would be more likely to turn the lights off when they exited a public bathroom if the lights were off, as opposed to on, when they entered. Consistent with this hypothesis, participants in the “lights off” condition were significantly more likely to turn the lights off when they exited (32.4%) than those in the “lights on” condition (11.7%); χ^2 (1, $N = 447$) = 28.46, $p < .001$, $d = .52$. Women were also more likely to turn off the lights (30.9%) than were men (9.6%), χ^2 (1, $N = 430$) = 28.91, $p < .001$, $d = .54$, as were participants in single-user compared to multi-user bathrooms (43.1% vs. 9.1%), χ^2 (1, $N = 447$) = 71.23, $p < .001$, $d = .87$.

A loglinear analysis tested whether gender and type of bathroom moderated the effect of the light status manipulation. The loglinear model converged on a solution that included the main effect of the light status manipulation, χ^2 (1, $N = 430$) = 25.19, $p < .001$, $d = .50$, and an independent interaction of gender and type of bathroom to predict whether or not participants turned off the lights, χ^2 (2, $N = 430$) = 7.54, $p < .001$, $d = .27$; overall χ^2 (6, $N = 430$) = 1.60, $p = .95$. This interaction revealed that although women were more likely than men to turn off the bathroom lights in both single- and multiple-user bathrooms, this difference was larger in multiple-user bathrooms. As illustrated in Fig. 1, the effect of the light status manipulation on behavior was observed across men and women as well as both types of bathrooms.

Our results concerning gender are consistent with past research showing women tend to have more positive attitudes toward, and are more likely to engage in, proenvironmental behaviors, as compared to men (e.g., Torgler et al., 2008). The distinction between single-user bathrooms and multiple-user bathrooms also proved to be an important one, and we suspect that the difference in conservation behavior observed between the two settings may have arisen due to differences in the sense of personal responsibility elicited in each. It seems likely that being the only person in the single-user bathroom could have made people feel more responsible for turning the lights off, and thus more likely to do so.

[2] The gender of 17 participants using single-user bathrooms was indiscernible.

[3] Eighty-seven participants were excluded because another person entered the multiple-user bathroom after them, reducing the likelihood that they would turn the lights off upon exit, leaving the other person in the dark. One additional participant was excluded as he entered, but did not exit, the bathroom during the monitoring period. Although we did not use data collected when there was more than one user in a multiple-user bathroom, the arrangement of the multiple-user bathroom environment still allows for the possibility that another person is present. Because a single-user bathroom is smaller and has no enclosed stalls the potential presence of others is less ambiguous.