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Article in *Social Influence* · March 2008

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Using normative social influence to promote conservation among hotel guests

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Three field experiments are reported on the ability of printed normative messages to influence conservation behavior among hotel guests. While prior research has shown that social norms can both guide and spur behavior, there are a number of questions about the generality of the effects, the impact of aligning descriptive and injunctive norms, and the relative impact of normative information about a specific versus general referent group. In the first experiment we demonstrate the basic influence of printed normative messages designed to promote towel reuse among a sample of hotel guests, and also that aligning the injunctive and descriptive elements of a normative message increases its impact on behavior. Experiment 2 extends this finding to guests staying in timeshare condominium units. In Experiment 3 we again replicate the effect, and also show that normative information about both generic and specific reference groups can affect behavior. Results are interpreted within the focus theory of normative conduct, and directions for future research are discussed.

Keywords: Social norms; Energy; Conservation; Normative influence.

The world faces a daunting energy crisis. As the demand for energy continues to rise, the supply has not kept pace. The result has been a sharp increase in the costs of oil, natural gas, and electricity, and increased attention to issues of conservation. But how do we persuade people to conserve?

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Funding for this study was provided by a grant from the Hewlett Foundation (2001-7396). Our appreciation goes to Randy Chapin for his support of these studies. We would also like to acknowledge the work of Jennifer Tabanico, Joy Francisco, Jodian Tyler, Michelle Hynan, and Leilani Lumaban on these experiments, and to Robert Cialdini and Noah Goldstein for their collaboration, critiques, and suggestions throughout these studies.

Portions of this paper were presented at the Society for Personality and Social Psychology, Los Angeles, 2003, and at the American Psychological Society, Los Angeles, 2005. Study 1 was the Masters Thesis for Azar Khazian.

Indeed, applications of psychological theory to promote conservation can be traced back to the 1970s, when the energy crisis of the time prompted hundreds of studies on conservation behavior (cf. Cunningham & Lopreato, 1977; Seligman, Darley, & Becker, 1978; Sonderegger, 1978). Although the crisis of the 1970s spurred creative and innovative approaches to understanding energy use and promoting conservation, few new intervention strategies have been developed since. In the current paper we summarize three studies in which we integrate principles of normative social influence into messages intended to promote conservation among hotel guests.

PROMOTING ENERGY CONSERVATION

By far the most commonly used strategy for promoting conservation is information dissemination. The approach is based on the assumption that people don't conserve because they don't know that they should, or that they don't know how to do it (Schultz, 2002). From this basic assumption, the way to increase conservation rates is to distribute educational materials. This *knowledge-deficit model* of behavior change leads to the hypothesis that increasing knowledge about conservation will cause a change in conservation behavior. Unfortunately, reviews of the research literature are clear in showing that the knowledge-deficit model of behavior change is faulty (Geller 1992; McKenzie-Mohr & Smith, 1999; Schultz, 2002). The problem appears to be not a lack of knowledge but rather a lack of sufficient motivation to act. The reason that information campaigns are often ineffective is that they ignore the motives behind behavior (see Costanzo, Archer, Aronson, & Pettigrew, 1986).

Yet even programs that provide a motive for action often fail to change behavior. In a random-digit dialing survey of Californians, Nolan, Schultz, Cialdini, Goldstein, and Griskevicius (2007) found that conserving energy at home was perceived by the public to be a socially desirable behavior. When asked about the importance of energy conservation, 90% of respondents indicated that it was "very" (42%) or "extremely" (48%) important. And when asked about various reasons for energy conservation, environmental protection was rated as the most important, followed by social responsibility, and finally saving money (see also Samuelson & Biek, 1991). However, when the researchers conducted field experiments promoting energy conservation, messages about environmental protection or social responsibility were not effective at changing behavior (Nolan et al., 2007).

AN ALTERNATIVE APPROACH: NORMATIVE SOCIAL INFLUENCE

Although information dissemination and messages trumpeting environmental protection or social responsibility are commonly used to promote

conservation, they are substantially limited in their ability to produce changes in behavior. It is interesting to point out that this conclusion was known from the research conducted in the 1970s, but needed to be rediscovered in the context of the current energy crisis.

One potentially new strategy for promoting conservation can be found in theories and research on normative social influence (Cialdini, 2003). Although there exists little research involving the use of normative message to promote conservation actions, an examination of norms seems warranted by their demonstrated ability to regulate social behavior in other contexts. Social norms are "rules and standards that are understood by members of a group, and that guide and/or constrain human behavior without the force of laws" (Cialdini & Trost, 1998, p. 152). Social norms are generally viewed as a result of social interaction: conforming to social norms is generally adaptive, and deviating from the norm can lead to sanctions and social disapproval (Schultz, Tabanico, & Rendón, in press). Recent social psychological literature has distinguished between different types of social norms: an *injunctive norm*, which involves an individual's beliefs about the level of approval or disapproval of others for a specific course of action; and the *descriptive norm*, which refers to beliefs about the actual behavior of others. For example, an individual might believe that others will approve of turning off lights when she leaves a room (an *injunctive norm*), but at the same time believe that most people *don't* turn off the lights when they leave a room (a *descriptive norm*).

Normative beliefs cause behavior

More than 70 years of social psychological research have shown the power of social norms to influence behavior (Cialdini & Goldstein, 2004; Goldstein & Cialdini, 2007). Witnessing the behavior of others can lead to increases in similar behavior among observers and a generally unstated pressure to conform to the norm (Asch, 1956; Darley & Latané, 1968; Lewin, 1952; Milgram, Bickman, & Berkowitz, 1969). However, normative social influence can also occur when messages are presented more indirectly, such as computerized feedback (Neighbors, Larimer, & Lewis, 2004), printed messages (Buunk, Van den Eijnden, & Siero, 2002; Schultz, 1999; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007), or newspaper stories (Blanton, Stuart, & Van den Eijnden, 2001).

In applied areas, normative messages are being increasingly used (and less widely evaluated) as an approach to reduce substance use (Agostinelli, Brown, & Miller, 1995). The social norms approach has emerged as an alternative to more traditional efforts like information campaigns, moral exhortation, or scare tactics to reduce substance use among students (Donaldson, Graham, & Hansen, 1994; Donaldson, Graham, Piccinin, &

Hansen, 1995; Haines & Barker, 2003; Perkins, 2002, 2003; Perkins & Berkowitz, 1986). The cornerstone of the approach is the consistent finding that many students overestimate the prevalence and approval of alcohol use among peers (Borsari & Carey, 2003). Because of this erroneous normative belief, both descriptive and injunctive, students are less likely to view their own alcohol use as problematic, and to feel pressure to use alcohol in order to gain acceptance by peers. A growing body of intervention work has attempted to change normative beliefs, with the ultimate goal of changing levels of substance use.

While the results from this line of research are encouraging, there are some failed examples of normative interventions. For example, Clapp, Lange, Russel, Shillington, and Voas (2003) reported results from a quasi-experiment with two college residence halls. The intervention used various media to convey messages indicating that most students have only a few drinks: "Seventy-five percent of [school name] students drink 0, 1, 2, 3 or 4 drinks when they party." The results showed that the messages were effective at changing normative beliefs, but were ineffective at changing behavior. In fact, the results showed a trend toward an increase in the number of drinking days in the past month. Similarly, Wechsler et al. (2003) reported a nationwide survey of colleges and universities that made use of a norms marketing approach to reduce alcohol use. The results from a cross-section of 118 schools showed no significant difference pre-post for schools that used social norms interventions versus schools that did not use a social norms approach.

While there is a sizable body of research on social norms and normative beliefs, there are a number of applied and theoretical questions that remain to be answered. In the current paper we seek to examine three research questions. First, will normative messages be an effective tool at promoting conservation behavior among hotel guests? Second, what is the relative impact of a normative-alone, descriptive-alone, and a combined norms message? And finally, does the norm referent used in the message alter the message's influence? To address these research questions, we conducted a series of experiments with hotel guests, using normative messages printed on in-room displays.

EXPERIMENT 1

The first experiment was designed to test the ability of printed normative messages to influence conservation behavior among hotel guests. Participants in this study were hotel guests who were provided with a randomly assigned printed message containing procedural and normative information urging them to reuse their bath towels. The study was part of a larger project examining the role of normative messages on conservation

behaviors. The signs replaced an existing towel reuse/energy conservation program that the hotel initiated approximately 3 ½ years earlier. The old program utilized printed door hangers that were placed on the inside bathroom door of each room and had a message that appealed to environmental protection and social responsibility.

Participants

Sample characteristics. Guests in 62 hotel rooms at an upscale beach resort were participants in this field experiment.

Sample size. The 62 hotel rooms varied along a number of dimensions, including size (one or two beds), smoking or non-smoking, and available kitchenettes. Each room was randomly assigned to one of six different conditions. Across all of the rooms, data from a total of 3210 guest stays were obtained. In this study, and throughout the manuscript, a *stay* is defined as the total number of nights that the guest remained in the hotel. For the purposes of conservation, only guests who stayed for 2 or more nights were analyzed (2 nights were required in order to reuse room towels). After omitting guest stays of only a single night, our final working sample for the experiment was 2359.

Materials

Six different messages concerning towel reuse were printed on signs and placed in visible locations in the hotel bathrooms: (1) a high injunctive norm for towel reuse, (2) a low injunctive norm, (3) a high descriptive norm, (4) a low descriptive norm, (5) a combined high descriptive and high injunctive norm, and (6) control. On the back of each sign, the phrase "Please Reuse The Towels" was printed in mirror-inverted font so that its reflection in the bathroom mirror would catch guests' attention and increase the likelihood that they would notice and read the message.

High injunctive: Many of our guests have expressed to us their approval of conserving energy. Because so many guests value conservation and are in the habit of conserving, this hotel has initiated a conservation program.

Low injunctive: Some of our guests have expressed to us their approval of conserving energy. Because some guests value conservation, this hotel has initiated a conservation program.

High descriptive: Nearly 75% of hotel guests choose to reuse their towels each day. To support our guests who want to conserve, this hotel has initiated a conservation program.

Low descriptive: Nearly 25% of guests choose to reuse their towels each day. To support our guests who want to conserve, this hotel has initiated a conservation program.

Combined message: included both the high injunctive and high descriptive message.

Control: This hotel has initiated a conservation program.

Beneath each of the respective messages, standard procedural information was provided (drawn from the language used in the hotel's existing program):

Washing towels every day uses a lot of energy, so reusing towels is one way you can conserve. If you would like your towels replaced, please leave your used towels in the basket on the bathroom floor. Towels left hanging on the towel rack tell us that you want to reuse them.

In addition to the printed messages, data-recording sheets were developed and utilized by the housekeeping staff to record relevant information, such as the specific staff member's name, the date, room number, number of occupants, whether they checked in or out that specific day, and the number of bath towels, hand towels, and wash cloths both placed in and taken out of the room per day.

Procedure

Baseline. Prior to our intervention, baseline towel usage data for each room were recorded by housekeeping staff as they made their cleaning rounds for 8 consecutive weeks. The staff used recording sheets to note the number of bath towels taken out of each room, per day. In addition to providing baseline data of towel usage for each of the rooms without the signs, this recording procedure enabled the staff to become accustomed to collecting the information before the intervention period.

For the first 2 weeks of baseline data collection, a researcher shadowed the housekeeping staff to ensure that the correct protocol was being followed, and that accurate information was being recorded. In addition, the Executive Housekeeper, who served as the primary gatekeeper in this field experiment, enforced proper tracking and recording of towel usage in the weekly staff briefings. Baseline data were recorded daily, and the data sheets were copied and collected by a researcher on a weekly basis.

Experiment. Each of the 62 hotel rooms was randomly assigned to one of the six different messages, with efforts made to match by room type. The

signs were placed in the rooms by both a researcher and the housekeeping staff, and sporadic weekly visits were made by a research assistant to ensure that the signs were placed in the correct rooms and location. Across all our verifications, not one sign was misplaced throughout the experiment.

As with the baseline data, the number of towels replaced in each room was recorded daily by the housekeeping staff, photocopied, and collected weekly by the research team. Signs were placed in the rooms in July and data collection lasted 9 months.

Results

The final sample was 2359 stays. Frequencies indicated that 410 cases were in the high injunctive condition, 374 were in the low injunctive, 396 were in the high descriptive, 413 were in the low descriptive, 394 were in the combined message condition, and 372 were randomly assigned to the control.

Descriptive statistics showed that guests stayed an average of 3.40 nights ($SD=2.52$), with a minimum stay of 2 nights and a maximum stay of 55 nights (single nights were excluded because they did not give the opportunity to reuse). The dependent variable was the total number of towels taken out of each guest's room on their first opportunity to conserve. Using data from the second night provided comparable, and independent, data points across the experimental conditions.¹ Across all conditions, the mean number of towels taken out of the rooms on the second day (their first opportunity to reuse) was 1.63 ($SD=1.45$). There was a maximum of four towels in each room, but occasionally a guest would request additional towels, so a few data points were larger than 4; these scores were recoded to the maximum value of 4 (winsorized). In addition, there was a minimum of zero towels taken from each room, but the zero scores could occur for a variety of reasons. On the one hand, it could mean perfect reuse. But zero scores could also occur for reasons other than reuse, including refused service or privacy requested. In the analyses reported here, the zero scores are included. It is useful to note that excluding the zero scores serves to *increase* the size of the effect, and in both cases, the conclusions are similar.

Effectiveness of the messages. A one-way Analysis of Covariance (ANCOVA) was conducted to examine differences in conservation efforts among guests who received different normative appeals to reuse their towels. The number of towels replaced in each of the rooms during

¹ Treating each night as a separate data point would violate independence of observations, and averaging towels used across all nights of the stay would involve comparisons of disparate scores (ranging from single data points, to the average of 55 nights).

the baseline period was entered as a covariate to remove any variance associated with room type. Findings from the ANCOVA revealed a significant difference in conservation efforts for the omnibus analysis, $F(5, 2352)=2.37, p=.037; \eta^2=.01$. In addition, results showed that the covariate explained a significant amount of variance, $F(1, 2352) = 97.42, p < .001; \eta^2 = .04$.

Planned comparisons were conducted to test the effectiveness of each message versus the control condition. While several of these pairwise comparisons approached significance, we focused our attention on the pairwise contrast of the combined message ($M_{\text{adjusted}}=1.51; SE=.07$) versus all other conditions ($M_{\text{adjusted}}=1.67; SE=.03$). This comparison was statistically significant, $t(2356)=4.02; p < .05$ (see Endnote 1).

EXPERIMENT 2

The results from Experiment 1 were mixed. Overall, the findings suggest that aligning a descriptive and injunctive normative message produced a reduction in the number of towels replaced in each room, but we failed to find effects for descriptive or injunctive norm messages presented in isolation. This finding is consistent with recent work on the focus theory of normative conduct, showing that aligning a descriptive and injunctive message can be more powerful than either alone (Cialdini, 2005). In order to replicate the findings from the first experiment in a different setting, and to more clearly demonstrate the impact of normative messages on behavior, we proceeded to conduct a second experiment. In this experiment, we utilized the 132 condominium units at the same beach resort. The condo units were operated by the same company, but located in separate buildings on the property. The condo units offered several advantages over the hotel rooms. First, guests arrive and depart on the same day in the week (with a few exceptions), and all rooms are cleaned on a fixed interval (i.e., Tuesday and Thursday). As a result, it is unusual for a room to refuse service (thus removing the ambiguity of the zero scores reported in our hotel data). Second, the rooms are nearly identical, thereby reducing the error variance associated with the physical features of the room. Finally, the staff were experienced in working with us, and we were able to add a binary measure of towel reuse for each room (yes or no). Given the results from the previous study, we chose to focus our efforts on the combined message (versus a control).

Participants

Sample characteristics. Participants in the field experiment were guests staying in timeshare condominium units at a beach resort. According to the hotel management, guests who stayed in the condo units were primarily

middle to upper class in socioeconomic status, but unlike the hotel sample consisted primarily of families on vacation.

Sample size. Prior to the intervention period, 132 condo units were randomly assigned to one of two different conditions. The condo units were located on three separate floors; 10 units on each floor were randomly assigned to receive a control message, whereas the remaining 34 units on each floor received the combined message. Consequently, this resulted in a total of 30 condo units with the control message, and 102 condo units with the combined message. The larger number of rooms assigned to the combined message condition occurred at the request of the resort in order to maximize energy savings. A sample of 30 rooms was determined to provide a stable control group and sufficient power to detect our anticipated effects. Across all of the rooms, data from a total of 1078 stays were obtained. Again, a *stay* represents the total number of nights that a guest remained in the unit. Cases in which guests stayed fewer or more than 7 nights were omitted from further analyses. Consequently, a total of 794 stays served as the final working sample.

Materials

Two different messages concerning towel reuse were printed on signs and placed in visible locations in the bathrooms. The messages were: (1) a combined high descriptive and high injunctive norm for towel reuse, and (2) a control. The messages were slight modifications of those used in Study 1. The normative aspect of the combined message read:

Many of our hotel guests have expressed to us their approval of conserving energy. When given the opportunity, nearly 75% of hotel guests choose to reuse their towels each day. Because so many guests value conservation and are in the habit of conserving, this hotel has initiated a conservation program. If you would like your towels replaced, please leave your used towels on the bathroom floor. Towels left hanging on the towel rack tell us that you want to reuse them.

The control read simply: "If you would like your towels replaced, please leave your used towels on the bathroom floor. Towels left hanging on the towel rack tell us that you want to reuse them." On the back of each sign, the phrase "Please Reuse The Towels" was printed in mirror inverted font so that its reflection in the bathroom mirror would catch guests' attention and increase the likelihood that they would notice and read the message.

Procedure

Data were recorded by the housekeeping staff as they made their cleaning rounds. Specifically, the staff used the data-recording sheets to note the number of bath towels replaced in each bathroom, per cleaning day. The data sheets were copied and collected by a researcher on a weekly basis. It is worthwhile to note that the same staff members were involved in Experiment 1, thus they were already familiar and accustomed to the data collection procedures. In addition, the Executive Housekeeper consistently enforced appropriate tracking and recording of towel reuse.

As previously mentioned, 30 of the condo units were randomly assigned to receive the control message, whereas the remaining 102 units received the combined message. The signs were placed in the rooms by the housekeeping staff, and sporadic visits were made by a research assistant to ensure the signs were placed in the correct rooms and location. As with Experiment 1, not one sign was misplaced throughout the experiment. Signs were placed in the rooms in January, and data collection proceeded for approximately 4 months.

Results

The final working sample consisted of 132 condominium units, which resulted in 794 seven-night stays. The dependent variable was the mean number of towels taken out of each guest's room on their first opportunity to conserve. Across all conditions, the mean number of towels taken out of the rooms on the first cleaning was 1.84 ($SD=1.72$).

Towel use and the normative messages. A one-way Analysis of Variance (ANOVA) was conducted to examine differences in conservation efforts among guests who received the combined message and those who received the control message. As predicted, findings revealed that guests who were exposed to the combined message used significantly fewer towels ($M=1.74$, $SD=1.69$; $N=655$) than guests exposed to the control message ($M=2.32$, $SD=1.80$; $N=135$); $F(1, 792)=13.40$, $p < .001$; partial $\eta^2=.02$ (see Endnote 2).

Towel reuse. Binary indications of reuse (towels explicitly left on the rack for reuse) were also tracked and recorded by the housekeeping staff. An indication to reuse was coded as 1, whereas no indication to reuse was coded as 0. A Pearson's correlation revealed a strong, negative correlation among this measure of reuse, and the number of towels used ($r=-.47$, $p < .001$; $N=689$). The negative correlation provides convergent evidence for the validity of our measures—guests who were coded as reusing had fewer towels replaced in their room. A 2 (condition) \times 2 (reuse) chi-square revealed no significant difference in reuse ($\chi^2=1.12$; $p=.30$), although the pattern of

means showed that guests who received the combined message were more likely to reuse (62%) than those who received the control message (57%).

EXPERIMENT 3: SPECIFIC NORMATIVE INFORMATION

Findings from Experiment 1 revealed an overall trend of lower towel use among hotel guests who received a combined normative message. Experiment 2 was an extension of the first study, and also revealed a significant difference, such that a message combining a descriptive and injunctive message produced significantly less towel use among resort guests. In order to replicate the findings from the previous studies, and to extend them in a new direction, we conducted a third experiment. In addition to replicating the basic effect from Experiment 2, we wanted to test the impact of a specific reference group (previous guests who stayed in this room) against the generic reference group (i.e., guests at this hotel) used in the previous studies.

While the question of referent group in normative messages has not been thoroughly explored in the research literature, there is some evidence to suggest that normative information about an outgroup does not produce changes in behavior, while normative information about an in-group does (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990; Ellemers, Spears, & Doosje, 2002; Hogg, 2003; Siegel & Siegel, 1957; Terry & Hogg, 1996). However, research in this area has also shown that behavior change can be induced by normative information about either a generic referent group (e.g., the general public) or a specific referent group (e.g., other students on a neighboring campus with the same major). While it seems reasonable to predict that normative information about a close referent would be more influential, this effect has not been clearly established (Ando, Ohnuma, & Chang, 2007; Goldstein, Cialdini, & Griskevicius, 2007; Rimal, Lapinski, Cook, & Real, 2005).

Participants

Sample. Participants in the field experiment were guests staying in the timeshare condominium units at the resort. (Experiment 3 was conducted 6 months after we completed the second experiment.) The 132 condo units reported in Experiment 2 were randomly assigned to one of three different conditions. A total of 30 condo units were in the control condition, 30 units were in the specific normative message condition, and the remainder ($N=72$) were in the generic normative message condition. Because of our previous findings showing the combined normative message to be an effective tool for reducing towel use, a larger number of rooms were assigned to the generic

normative message condition at the request of the resort in order to maximize energy (and cost) savings. While we hypothesized that the specific norm message would result in even greater levels of conservation, the hotel management requested that we assign the larger number of rooms to the generic norm condition because it had already been shown to be more effective than the control.

A total of 1256 stays were recorded across all rooms over the duration of the 5-month experiment. As with our previous study, only cases where guests stayed the full 7 nights were analyzed, yielding a final working sample of 865 stays. The dependent variable was the mean number of towels replaced in each room, on the first opportunity to conserve. Thus data were recorded from each family only once per stay.

Materials

Three different messages concerning towel reuse were printed on signs and placed in visible locations in the condo bathrooms. The control message contained only basic information describing how to reuse your towel: "*If you would like your towels replaced, please leave your used towels on the bathroom floor. Towels left hanging on the towel rack tell us that you want to reuse them ... PLEASE REUSE YOUR TOWELS.*" The generic normative message described overall past guests' behavior along with the general information described in the control message:

Many of our guests have expressed to us the importance of conserving energy. When given the opportunity, nearly 75% of hotel guests choose to reuse their towels each day. Because so many guests value conservation and want to conserve, this resort has initiated a conservation program. Washing towels every day uses a lot of energy, so reusing towels is one way you can conserve. If you would like your towels replaced, please leave your used towels on the bathroom floor. Towels left hanging on the towel rack tell us that you want to reuse them ... PLEASE REUSE YOUR TOWELS.

The specific normative condition described past guests' behavior specific to the room number that the new guest was staying in, along with the general information described in the control:

Many of our guests have expressed to us the importance of conserving energy. When given the opportunity, ___% of guests in this room (condo #___) chose to reuse at least one of their towels each day. Because so many guests value conservation and want to conserve, this resort has initiated a conservation program. Washing towels every day uses a lot of energy, so reusing towels is one way you can conserve. If you would like

your towels replaced, please leave your used towels on the bathroom floor. Towels left hanging on the towel rack tell us that you want to reuse them...PLEASE REUSE YOUR TOWELS.

On the back of each sign, the phrase "Please Reuse the Towels" was printed so its reflection in the bathroom mirror would catch guests' attention and increase the likelihood that they would notice and read the message. The ___ lines shown in the message above represent the actual percentages for each room, using data obtained in Experiment 2. The percentages were handwritten by the researchers, with a unique sign made for each room. The percentages ranged from a low of 33%, to a high of 92%.

Procedure

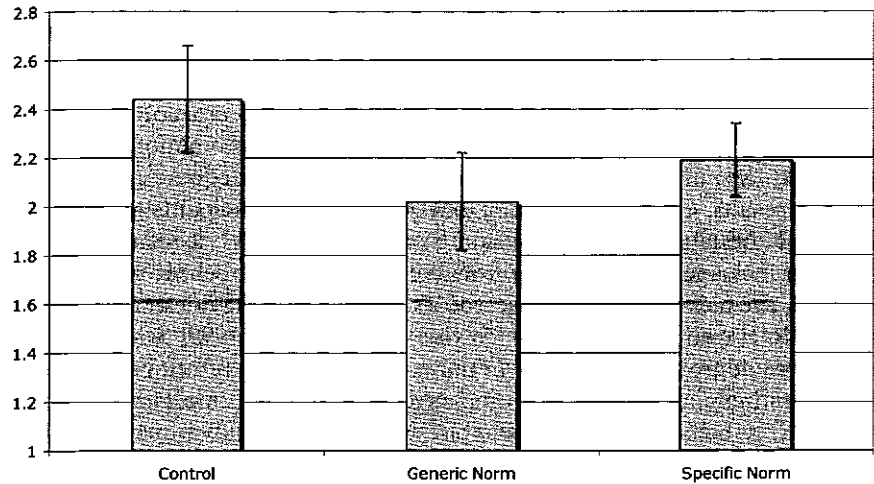
The signs were placed in the rooms by the housekeeping staff, and sporadic visits were made by a research assistant to ensure that the signs were placed in the correct rooms and location. The number of towels replaced in each room was recorded by the housekeeping staff at the mid-week cleaning. The experiment began in November and observations lasted 5 months.

Results

The sample included 132 rooms that yielded 1256 total stays. Only guests that stayed for a total of 7 days were included in the analysis ($N=865$). Within the final working sample of 865 stays, 187 stays were in the control condition, 152 were in the specific normative message condition, and 403 were in the generic norm condition. Out of the 865 stays, 48% of the guests indicated that they wanted to reuse their towel (i.e., towels were placed on the rack on cleaning day).

The normative messages. The mean number of towels replaced by the cleaning staff on the first cleaning day was 2.22 ($SD=1.40$). The mean number of towels replaced in the control condition was 2.44 ($SD=1.55$), specific normative condition 2.19 ($SD=1.41$), and generic normative condition 2.02 ($SD=1.14$). A one-way ANOVA was conducted and the difference between the three groups was significant, $F(2, 739)=4.09, p=.02; \eta^2=.01$. The number of towels for the control condition was significantly different than the generic normative message, $F(1, 739)=2.79, p < .01$ and the specific normative message, $F(1, 739)=2.12, p < .05$. The generic and specific conditions did not differ significantly from each other (see Endnote 3). Mean scores are shown in Figure 1.

Additional analyses examined the binary variable of reuse. A Pearson correlation coefficient showed a negative relationship between the number of towels replaced and whether the guests indicated that they wanted to



Note: Error bars represent 95% CI of the mean.

Figure 1. Mean number of towels replaced \times experimental condition.

reuse their towel ($r = -.61$; $p < .01$). Within the control group, 44% of the guests indicated that they wanted to reuse their towel on cleaning day, 53% of the guests in the specific normative message group, and 49% of the guests in the generic normative message group. However, a chi-square test showed that these differences were not significantly different, $\chi^2(2) = 2.40$, $p = .30$.

DISCUSSION

The results from the three field experiments reported above clearly demonstrate that normative messages can cause a change in behavior. These findings were demonstrated in a real-world context, on a behavior of considerable social and environmental importance. In Experiment 1 we found tentative evidence for the impact of normative messages on towel use among hotel guests. In Experiment 2 we clarified this effect and extended it to a different context. Finally, in Experiment 3 we replicated this basic effect and also showed that normative information about either a generic reference group or a specific reference group can influence behavior.

Several aspects of these findings are noteworthy. First, our results suggest that normative social influence can be invoked using a printed message. This approach has not been widely used by prior social psychological research. Indeed, most experimental studies of normative social influence have utilized confederates to convey "what other people do" (Asch, 1956; Cialdini, Reno, & Kallgren, 1990; Darley & Latané, 1970). Because the confederates are immediately present, the findings from these prior studies

have described normative social influence as an automatic response, requiring little cognitive elaboration (Cialdini, 2001; see also Bargh & Williams, 2006; Dijksterhuis & Nordgren, 2006). Our results suggest something different—a more elaborated pathway. We are not suggesting that normative influence cannot operate through an automatic pathway—only that the automatic pathway does not provide an adequate explanation for our results. Given the time delay between when participants would have read our message and their decision to reuse their towel, it seems unlikely that our message *activated* or *primed* an existing norm or behavioral pattern. Instead, the message may have served as a guide for behavior in the context of the hotel (see also Kluger & DeNisi, 1996; Schultz, 1999; Schultz et al., 2007 for additional evidence of norms as standards for future behavior).

Interestingly, the normative message found to be most effective at motivating behavior in our sample was the normative message that combined the descriptive and injunctive elements. Neither message alone (injunctive or descriptive) was sufficient in Experiment 1 to produce a significant change in behavior. This finding is consistent with research on the focus theory of normative conduct. Studies by Cialdini et al. (2006) have shown that aligning the normative elements can considerably strengthen the effect. If, as we have suggested in the preceding paragraph, normative messages are used as a standard against which to judge one's own behavior, then they can also act as a magnet—drawing behaviors toward them. For individuals who are not already engaging in the behavior, the isolated descriptive normative message can motivate them to reuse their towels. But for individuals who are already engaging in the behavior, the isolated normative message might act as a weight, reducing the frequency of the action. In other work we have shown that aligning the injunctive and descriptive aspects of a normative message can buffer this reduction for people already engaged in the behavior (Schultz et al., 2007).

A third finding worth noting pertains to the specific norm condition used in Experiment 3. It is interesting that the specific and generic conditions did not differ, although both differed significantly from the control condition. That is, the referent group didn't seem to alter the strength of the normative message. This was surprising, given previous findings that referent groups closer to self can have a stronger affect on an individual's behavior (Festinger, 1954). One possible explanation for the lack of difference comes from Christensen, Rothberger, Wood, and Matz (2004). Their results showed that greater identification with a group was associated with more positive evaluations of members who conformed to the group's norm. That is, participants who strongly identified with a group felt more positive about themselves when they conformed to an injunctive norm than when they violated it. This effect was not found for participants who were low in group identification, nor for participants who violated a descriptive group norm.

Thus, while group identification does appear to moderate the process of normative social influence, this effect is limited to injunctive norms and is not as powerful in inducing conformity to descriptive norms. Indeed, in many of the classic studies of conformity (e.g., Asch, 1956; Darley & Latané, 1968; Milgram et al., 1969), the participants were generally strangers. Using the behaviors of others as a guide for our own actions is an adaptive heuristic, even if the others are unfamiliar to us.

A fourth aspect of our findings pertains to the dependent variable. Unlike many previous studies, we did not rely on self-report as our primary outcome measure (Baumeister & Vohs, 2006). Our primary dependent variable was the number of towels replaced in each room. While we interpreted this measure as an indication of towel reuse among guests, there are other possible explanations. Most notably, guests might have been motivated to use fewer towels overall. In Experiments 2 and 3 we added a secondary measure of reuse, but the results were inconclusive. While reuse was strongly correlated with fewer towels replaced in the room, our experimental conditions did not produce significant differences in the likelihood that a guest would reuse—only that fewer towels were replaced in the room. While seemingly inconsequential, this issue offers an interesting perspective on normative social influence. Namely, the extent to which the pressure to conform is limited to the specific behavior, or whether it generalizes to a class of behaviors (cf. Hodges & Geyer, 2006). Our speculation is that normative pressure extends beyond the single target behavior to the class of actions—in this case, conservation. It's not that other guests at this hotel reuse their towels, but that other guests at this hotel try to conserve energy, and towel reuse is just one way to conserve. For a similar argument about the generalization to a class of behaviors, see Kaiser and Wilson (2004).

Finally, we want to comment on the size of the effects in this study. Ostensibly, the effects were small: $\eta^2 = .01$, $.02$, and $.01$ across the three studies. However, for the resort, the behavior change was quite respectable. In Experiment 2 the normative messages produced a 25% decrease in the number of towels replaced (from 2.32 in the control condition, to 1.74). In Experiment 3 the generic normative message produced a 17% decrease in the number of towels replaced in each room (from 2.44 in the control condition, to 2.02). Percentage changes of this size are quite respectable, and for a hotel management team looking for ways to cut costs, a 25% reduction in the laundry budget can be an enormous saving, not to mention the substantial environmental benefits resulting from using less energy, water, and phosphates from the cleansers.

While the results from these studies shed light on some aspects of normative social influence, there is still much more work to be done. Our findings suggest that normative messages can influence behavior, and that

social interaction is not required. But a number of aspects of the process of normative social influence are unanswered. We have suggested that normative messages are internalized and subsequently used as a guide for one's own behavior. But is this internalization process required? Perhaps the process is more peripheral, unmediated by cognitive elaboration or processing. Furthermore, how long does normative social influence last? Is the effect limited to the initial context (as a peripheral processing explanation would predict), or is the effect more long lasting (as an elaborated internalization processing model would suggest)? Perhaps both mediated and unmediated pathways can operate, depending on the nature of the behavior or context. Additional research is needed to answer these questions.

In sum, the results from these three field experiments clearly show that the process of normative social influence extends to a relatively private behavior and can be invoked through print messages. Our findings show that posting printed normative messages in hotel rooms produced a significant increase in the number of towels reused by hotel guests. This effect occurred without social interaction—the behavior occurred in the privacy of one's hotel room, and the normative information was presented on a printed card. Interestingly, our results do not show the normative information about a specific referent group is more influential a generic norm message, and both were effective at promoting conservation.

Manuscript received 4 July 2006
Manuscript accepted 16 October 2007

ENDNOTES

Note 1: For comparison, we also ran the analysis as a Hierarchical Linear Model, with towel use clustered within hotel room, and multiple observations within room. The intercept from the unconditional means ANOVA was 1.61, and the ICC was .05. Then we entered baseline towel use as a fixed factor, along with the dummy-coded experimental condition (1=combined norms, 0=all other conditions) as level 2 predictors. As expected, the baseline covariate was statistically significant ($\gamma_{01}=.73$), $t(48.85)=6.78$, $p < .001$, but the condition effect was not significant ($\gamma_{02}=-.16$), $t(49.85)=-1.44$; $p=.15$.

Note 2: As with Experiment 1, we also ran the analysis as a Hierarchical Linear Model, with towel use as continuous dependent variable, clustered within condo unit. In the unconditional means random effects ANOVA, the intercept was 1.80 and the ICC was .07. When the dichotomous experimental condition variable was added as a fixed factor at level 2, it was statistically significant ($\gamma_{01}=-.57$), $t(142.14)=-3.25$, $p < .001$.

Note 3: For comparison, the analyses were again run as a Hierarchical Linear Model, with towel use clustered within condo room. The unconditional means model resulted in an intercept of 2.22 and an ICC of .05. We proceeded to test directly the three planned comparisons: generic versus control, specific versus control, and generic versus specific. The first (generic versus control) was statistically significant ($\gamma_{01}=-.42$), $t(64.65)=-2.73$; $p < .01$. The second (specific

versus control; $\gamma_{01} = -.24$), $t(84.77) = -1.72$, $p = .09$ approached significance, and the comparison of general versus specific was not significant ($\gamma_{01} = .17$), $t(84.38) = 1.19$, $p = .24$.

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