

# Using social norms and commitment to promote pro-environmental behavior among hotel guests



Lohyd Terrier<sup>a, \*</sup>, Benedicte Marfaing<sup>b</sup>

<sup>a</sup> Ecole hôtelière de Lausanne, HES-SO/University of Applied Sciences Western Switzerland – Le Chalet-à-Gobet, 1000 Lausanne 25, Switzerland

<sup>b</sup> Laboratoire de Psychologie, Université de Fribourg, Switzerland

## ARTICLE INFO

### Article history:

Received 11 July 2014

Received in revised form

15 May 2015

Accepted 1 September 2015

Available online 6 September 2015

### Keywords:

Commitment

Norms

Pro-environmental behavior

Hotel

Towel reuse

## ABSTRACT

This research compares the effectiveness of commitment and normative strategies to promote towel reuse among hotel guests. We used a 2 (commitment vs no commitment) × 2 (norm vs no norm) between-participants quasi-experimental design to create four communication strategies. The first strategy consisted of a simple in-room message reminding guests that they could contribute to environmental conservation by reusing their towels. The second added a normative appeal to this message (i.e., “75% of guests reuse their towels”). The third used a commitment strategy whereby the initial message (simple in-room message) was combined with a preparatory request (i.e., hang a card on room door to show you support the hotel’s initiative). Finally, the fourth included both the normative appeal and the preparatory request. The results demonstrate that the isolated use of norms and commitment has a positive effect on guests’ pro-environmental behavior. We also observe that the combined use of these two strategies does not result in increased pro-environmental behavior in comparison to when they are used separately.

© 2015 Elsevier Ltd. All rights reserved.

## 1. Introduction

In the face of spiraling and increasingly urgent environmental concerns, the tourism and hospitality industry has had to adapt to provide services that integrate ecological initiatives (Henriques & Sadorsky, 1996; Van Vugt, 2009). Beyond its purely ecological aspect, green initiatives have also allowed hoteliers to generate considerable savings, especially in terms of labor, use of water, energy and detergents (Susskind & Verma, 2011). For example, the Energy Star program (2010, in Baca-Motes, Brown, Gneezy, Keenan, & Nelson, 2013) estimated that reducing energy consumption by 10% would allow the U.S. hotel industry to save approximately \$750 million per year.

Although some ecological initiatives require substantial financial investment, others such as encouraging guests to reuse their bath towels are much less onerous. This type of initiative meets guests’ desire to be more mindful of the environment (Laroche, Bergeron, & Barbaro-Forleo, 2001) and is becoming a standard approach in the hospitality industry (Goldstein, Cialdini, &

Griskevicius, 2008). Moreover, the associated profits – estimated to reach \$6.50 per occupant and per night (Griffin, 2001) – encourage hoteliers to place signs in bathrooms to give guests the possibility to reuse their towels.

Even if guests’ interest in ecological issues is obvious, there is still a gap between pro-environmental attitudes and sustainable behaviors (McKenzie-Mohr & Smith, 1999). Indeed, the tools used to promote sustainable behavior in the hospitality industry are often developed intuitively and their effectiveness seems limited (Cialdini, 2007; Goldstein, Griskevicius, & Cialdini, 2007; Goldstein et al., 2008). Hoteliers usually choose communication channels that inform their guests about the importance of adopting pro-environmental behaviors to preserve natural resources and contribute to the protection of the environment. The underlying assumption is that changing attitudes and/or knowledge might automatically trigger new guest behavior (Schultz, 2002). However, although there is a link between pro-environmental attitudes and pro-environmental behaviors, a pro-environmental attitude does not always foster pro-environmental behavior (Poortiga, Steg & Vlek, 2004; Schultz & Zelezny, 1999).

Two main research approaches are proposed to counter the limited effectiveness of hoteliers’ strategies and bridge the gap between attitude and behavior: the first is to use social norms to

\* Corresponding author.

E-mail addresses: [lohyd.terrier@ehl.ch](mailto:lohyd.terrier@ehl.ch) (L. Terrier), [benedicte.marfaing@gmail.com](mailto:benedicte.marfaing@gmail.com) (B. Marfaing).

trigger guests' pro-environmental behavior while the second is to use commitment tools.

## 2. Literature review

### 2.1. Social norms

Social norms can be defined as a set of “rules and norms 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). The focus theory of normative conduct (Cialdini, Kallgren, & Reno, 1991; Cialdini, Reno, & Kallgren, 1990; Kallgren, Reno, & Cialdini, 2000; Reno, Cialdini, & Kallgren, 1993) proposes to distinguish between two types of norms: 1) Injunctive norms, on the one hand, which refer to what most people approve of in a given culture. They guide behavior through social pressure linked to the potential evaluation of certain behaviors, often expressed through rewards and punishments; 2) Descriptive norms, on the other hand, refer to the most commonly observed behavior in a given situation, i.e. behavior adopted by a majority of people.

These two types of social norms refer to the two distinct functions that can be ascribed to the prescriptive function and the descriptive function of social norms.<sup>1</sup> In the first case, norms encourage individuals to behave in accordance with the values held by the broader society, while the second fosters actions that reflect what is most commonly done. A normative message is a message which, on the one hand, reminds guests of the value of their behavior and, on the other hand, highlights the fact that this behavior is adopted by a majority of people (Cialdini & Goldstein, 2004; Goldstein et al., 2007). Many studies have shown that a normative message is more effective in increasing sustainable behaviors than a simple persuasive message (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008; Schultz, 1999). For instance, in the hospitality industry, research has demonstrated that guests are more likely to reuse towels when they know that other guests are doing the same thing versus when they are merely informed of the environmental benefits of towel reuse. Several North American hotels already use this type of message successfully (Goldstein et al., 2008; Schultz, Khazian, & Zaleski, 2008). For example, Schultz et al. (2008) report a 25% increase in towel reuse when a normative message was used to inform guests that most of their peers had already adopted this kind of behavior (compared to rooms using standard message).

### 2.2. Commitment

People generally aim to be as consistent as possible in their commitments, choices and behaviors (Cialdini, 2007). Therefore, a number of studies have shown that the need to be consistent with one's commitments is a powerful influential tool (Cialdini, 2007; Cialdini & Goldstein, 2004). Commitment can be defined as ‘a pledging or binding of the individual to behavioral acts’ (Kiesler & Sakumura, 1966, p.349).

For example, the foot-in-the-door technique (Freedman & Fraser, 1966) demonstrates that obtaining low-cost behavior can promote more costly behavior. In their study, Freedman and Fraser (1966) demonstrated that individuals who had made the decision to perform a low-cost preparatory request - placing a small sign promoting road safety in front of their house - were more likely to

accept a more significant target request, such as putting up a large sign to promote road safety. In this study, the first decision (accepting to place the small sign in their yard) sent the participants on a behavioral path that created a need to uphold their commitment. Accepting to perform the target behavior (to put the large sign in their yard) is the consequence of this need. It is indeed logical to expect that a person who begins to fight for road safety by taking on a low-cost commitment will later engage in increasingly significant behavior to defend this cause. These results have since been confirmed by a number of studies that prove that making a commitment is an effective means of obtaining desired behaviors, especially in terms of sustainable behaviors (Lokhorst, Werner, Staats, Van Dijk, & Gale, 2013; Matthies, Klöckner, & Preissner, 2006).

However, the decision has to be made under specific conditions in order to generate commitment. According to Joule and Beauvois (1998), it is better that the decision is 1) sufficiently costly,<sup>2</sup> 2) sufficiently visible and 3) be motivated by internal reasons such as beliefs and attitudes rather than external factors such as fear of sanction or the expectation of reinforcements.

For example, different studies (Burger, 1999; Cialdini & Goldstein, 2004; Cialdini & Trost, 1998) have shown that public commitments, by reinforcing the link between an individual and his/her behaviors, create a significant need for consistency. Applied to the hospitality industry, Baca-Motes et al. (2013) and Terrier and Marfaing (2015) have demonstrated that the use of commitment tools motivate guests to engage in pro-environmental behaviors (respectively, in the United States and Europe). In these studies, guests were required to make a commitment in order to attain a target behavior, in this case reusing towels. Baca-Motes et al. (2013) committed guests by asking them – during the check in – to accept to wear a pin to show their pro-environmental commitment. Terrier and Marfaing (2015) allowed the guests to hang a sign on the door handle outside their room indicating whether or not they wished to participate in a towel reuse program. Here, the request was not made directly by the hotel staff but was written on a sign placed in the bathroom. Both studies underline the positive effects of commitment in order to increase pro-environmental behaviors.

The objective of this research paper is, on the one hand, to replicate the effects related to these two influential tools, and, on the other hand, to test for the possibility of associating them. To this end, we have set up a 2 (commitment vs. no commitment) X 2 (norm vs. no norm) between-participants quasi-experimental design. Several studies focusing on environmental psychology have shown that people's behaviors result from various motivations (Guagnano, Stern, & Dietz, 1995; Stern, Dietz, & Kalof, 1993). Using integrative strategies might have an effect on these various motivations (Steg & Vlek, 2009). In our study, the normative message could act on the person's normative motivation whereas the commitment could act on his motivation for consistency (Cialdini & Goldstein, 2004). Indeed, the commitment could tend to reinforce guests' perception of themselves as being environmentally friendly (Cialdini & Goldstein, 2004). We therefore created four communication tools that encouraged guests to reuse their towels; each sign matched a special experimental situation (no norm/no commitment; no norm/commitment; norm/no commitment; norm and commitment combined).

**H1.** We expected clients staying in rooms in which a committing message was placed to reuse a greater number of towels than those staying in rooms without the committing message. Indeed,

<sup>1</sup> These authors have concentrated their work on ecological behaviors by highlighting a standard of cleanliness. For example, in a parking lot, the descriptive norm is defined by the cleanliness of the ground; the injunctive norm is not directly linked to visible characteristics of the environment but rather to social knowledge.

<sup>2</sup> Here the cost is implied in financial terms as well as in terms of the efforts made to carry out the decision.

soliciting a commitment from guests should increase the probability that a target behavior (reusing towels) will match this initial commitment (Terrier & Marfaing, 2015; Baca-Motes et al., 2013).

**H2.** We expected clients staying in rooms in which a normative message was placed to reuse a greater number of towels than those staying in rooms without the normative message. Indeed, the use of social norms, i.e. reminding clients that the expected behavior is both encouraged and performed by the majority of clients, should cause them to perform the expected behavior (Cialdini et al., 1991; Goldstein et al., 2008; Schultz et al., 2008).

**H3.** We expected that the simultaneous use of commitment and norms would motivate clients to reuse a greater number of towels. In other words, we expected the simultaneous use of these two strategies to be more effective than the use of only one strategy. Indeed, these two tools could act on 1) the willingness of individuals to conform to social norms set by the group and 2) their willingness to maintain a sufficient level of consistency (Cialdini & Goldstein, 2004). Moreover, according to Grandjean and Gueguen (2011) combining a commitment with a persuasive message – i.e. the normative message – “converts the status of that individual from receiver to actor. This transformation enhances the probability that the individual will react in concrete terms to the message.” (p. 1212).

### 3. Method

#### 3.1. Participants

The guests from 110 rooms in a four-star hotel located in the Lausanne region (Switzerland) participated in this experiment (66 standard category rooms and 44 superior category rooms). Prior to the experiment, the rooms were assigned one of the four conditions of the 2 (commitment; no commitment) X 2 (norm; no norm) between-participants quasi-experimental design: 26 in the no norm/no commitment condition, 32 in the norm/no commitment condition, 26 in the no norm/commitment condition and 26 in the norm and commitment combined condition. We have tried to randomize room allocations to the fullest extent possible. Nevertheless, we had to deal with several constraints. For instance, rooms assigned to our different experimental groups were grouped by floors to facilitate the work of housekeeping and to make it possible to carry out our quasi-experimental design.

Because a stay of at least two nights is necessary to observe the behavior related to towel reuse (Schultz et al., 2008), we only selected two-night stays (or more). We also excluded clients who refused housekeeping service from the sample. A total of 803 usable stays<sup>3</sup> were obtained and data was gathered between January and March 2013.

#### 3.2. Material

Four different messages regarding towel reuse were printed on plastic cards (29.5 cm × 10.5 cm) and placed in visible locations in the hotel bathrooms.

In the rooms without normative appeals or commitment, the message was the following: *Dear Guest, in an effort to conserve natural resources, our hotel has implemented a towel reuse program. We can become committed advocates. **Only the towels placed in the shower will be replaced.***

In the rooms using commitment, a preparatory behavior was requested of the guest (Terrier & Marfaing, 2015; Baca-Motes et al., 2013;). The following comment was then added to the message (without or with a normative appeal): **To support our commitment, please hang this card on your bedroom door.** This message's purpose was to commit guests to support the hotel's eco-friendly strategy.

In the rooms using a normative appeal, the message included a reminder of the norms related to towel reuse (Goldstein et al., 2008). The message was the following: *Dear Guest, most of our guests express a desire to preserve natural resources. When an opportunity is provided, over 75% of them choose to reuse their bath towels. To respond to this, our hotel has set up a towel reuse program. You can help us become committed actors. **Only the towels placed in the shower will be replaced.*** The first sentence activated the injunctive norm and the second one the descriptive norm (Schultz et al., 2008).

In the rooms combining commitment and normative appeal, the preparatory behavior request followed the normative message.

#### 3.3. Procedure

Once the cards were placed in the bedrooms, the housekeeping staff was asked to record the number of towels placed in the shower, on a daily basis, using a special form jointly drafted by the management of the hotel. Prior to the experiment, the housekeeping staff was briefly trained to fill out the form. This document allowed us to record information such as the specific staff member's name, the date, room number, number of occupants or whether they checked in or out that specific day (Schultz et al., 2008).

#### 3.4. Measurement

Our objective was to increase the probability that hotel guests reuse their towels. Similarly to the experiment conducted by Schultz et al. (2008), our measurements were carried out during the first opportunity for reuse, thus the second day of a guest's stay (the morning after the first night). This ensured that data was consistent and comparable regardless of the duration of the stay (Schultz et al., 2008).

Our dependent variable was the number of towels placed in the shower. The chambermaids were required to change all the towels placed in the shower. Consequently, a higher number of towels in the shower indicated lower levels of reuse behavior. This measurement, present in all research pertaining to the reuse of towels (Goldstein et al., 2008; Schultz et al., 2008), allowed us to assess the importance of reuse behavior under each condition.

### 4. Results

Out of the 803 usable stays,<sup>4</sup> 151 were exposed to a no norm/no commitment message (59 in the standard category rooms and 92 in the superior ones), 211 to a norm/no commitment (161 in the standard category rooms and 50 in the superior ones), 209 were exposed to a no norm/commitment message (99 in the standard category rooms and 110 in the superior ones) and 232 were exposed to a combined message including norm and commitment (189 in the standard category rooms and 43 in the superior ones). The average number of nights was 3.07 (SD = 1.35), with a minimum of 2 nights and a maximum of 12 nights. In our sample, the

<sup>3</sup> As in Schultz et al. (2008) research, a stay is defined as the total number of nights that the guest remained in the hotel.

<sup>4</sup> 2 night stay or more/guests accepting housekeeping service.

**Table 1**

Adjusted mean number of towels placed in shower (standard deviations) as a function of message in room.

Normative appeal	Commitment			
	Without commitment		With commitment	
	M	SD	M	SD
Without normative appeal	1.95	0.08	1.57	0.07
With normative appeal	1.63	0.07	1.55	0.06

average number of towels placed in the shower on the first opportunity for reuse was 1.66 (SD = 1.02). For these measurements, we observed a minimum of 0 and a maximum of 6 towels.

Contrary to our expectations, in situations mobilizing the commitment, the preparatory behavior requested was almost never carried out (5/441). Because the actual performance of the preparatory behavior was not mandatory for generating the commitment (Cialdini, 2007; Cialdini & Goldstein, 2004), we conducted the data analysis under the commitment condition. Moreover, this being applied research, it was important to compare the effectiveness of the different tools, regardless of whether the preparatory behavior was carried out or not.

**Number of towels placed in shower.**<sup>5</sup> To test our hypotheses, we used a 2 (commitment/no commitment) X 2 (norm/no norm) ANCOVA. The number of guests in the room and the type of room were entered as covariates. As expected, the findings revealed that guests confronted with messages without normative appeal placed a significantly higher number of towels in the shower than those confronted with the normative message (respectively,  $M_{\text{adjusted/without}} = 1.76$ ,  $SD = .06$  versus  $M_{\text{adjusted/with}} = 1.59$ ,  $SD = .05$ ,  $F(1, 794) = 5.262$ ,  $p < .05$ ,  $\eta^2_{\text{partial}} = .007$ ). A main commitment effect was also observed whereby a committing message reduced the number of towels placed in the shower on the first opportunity for reuse (respectively,  $M_{\text{adjusted/without}} = 1.79$ ,  $SD = .05$  versus  $M_{\text{adjusted/with}} = 1.56$ ,  $SD = .05$ ,  $F(1, 794) = 10.507$ ,  $p < .01$ ,  $\eta^2_{\text{partial}} = .013$ ).

Finally, our results showed an interaction effect between commitment and norm variables ( $F(794, 1) = 5.178$ ,  $p < .05$ ,  $\eta^2_{\text{partial}} = .006$ ). Breaking down this effect, the Scheffé test demonstrated that guests receiving messages without a normative appeal or commitment placed a greater number of towels in the shower than those receiving messages with joint or isolated strategies ( $ps < .05$ , see Table 1). Nevertheless, the combined use of the commitment and norms was not significantly more effective than their individual use. Likewise, strategies using either commitment or norm do not differ significantly in terms of effectiveness.

Independent of our experimental manipulations, we also observed that the number of towels placed in the shower on the first opportunity for reuse was greater in the superior bedroom category than in the standard ones (respectively,  $M = 1.77$ ,  $SD = 1.01$  versus  $M = 1.59$ ,  $SD = 1.03$ ;  $t(801) = -2.34$ ,  $p < .05$ ,  $d = .17$ ).

Therefore, we included this variable in our analysis and carried out a 2 (no commitment/commitment) X 2 (norm/no norm) X 2 (standard/superior room) ANCOVA. The number of guests in the room was entered as a covariate. Here, although the effect of commitment ( $F(1, 791) = 9.880$ ,  $p < .01$ ,  $\eta^2_{\text{partial}} = .012$ ) was present again, the differences related to the use of norms ( $F(1, 791) = 1.893$ ,  $ns.$ ) and to the type of room ( $F(1, 791) = 2.458$ ,  $ns.$ ) were no longer significant. The interaction between the variables related to norms

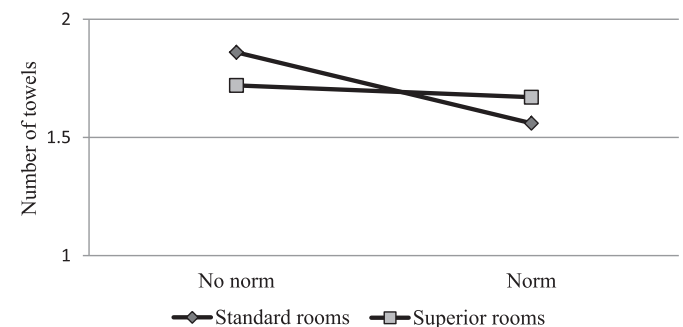
and commitment was also reproduced ( $F(1, 791) = 4.020$ ,  $p < .05$ ,  $\eta^2_{\text{partial}} = .005$ ). This analysis further demonstrated the interaction effect between the use of norms and the type of room ( $F(1, 791) = 9.852$ ,  $p < .01$ ,  $\eta^2_{\text{partial}} = .012$ ) whereby the use of normative messages reduced the number of towels placed in the shower only for standard rooms (see Fig. 1). Therefore, if the activation of norms in standard rooms significantly reduced the number of towels placed in the shower ( $M_{\text{without}} = 1.81$ ,  $SD = 1.01$  versus  $M_{\text{with}} = 1.49$ ,  $SD = 1.03$ ,  $t(506) = 3.25$ ,  $p < .001$ ,  $d = .31$ ), this was not the case for the superior category rooms ( $M_{\text{without}} = 1.71$ ,  $SD = .88$  versus  $M_{\text{with}} = 1.89$ ,  $SD = 1.24$ ,  $t(293) = -1.45$ ,  $ns.$ ). Finally, there was no interaction effect between the use of commitment and the type of room ( $F(1, 791) = .06$ ,  $ns.$ ). Likewise, the three-way interaction between norm, commitment and type of room was not significant ( $F(1, 791) = .057$ ,  $ns.$ ).

## 5. Discussion

The results obtained in this study are in line with our expectations and provide evidence that normative and committing communication strategies are effective in triggering sustainable behavior among hotel guests. Indeed, a reminder of social norms fosters guests' pro-environmental behaviors, such as the reuse of bath towels (Goldstein et al., 2008; Schultz et al., 2008). In addition, the recent findings related to the impact of commitment strategies in triggering pro-environmental behavior in hotels are replicated (Terrier & Marfaing, 2015; Baca-Motes et al., 2013). When they are requested to make an initial commitment, guests are more likely to engage in pro-environmental behaviors such as the reuse of bath towels. It is important to underline that the commitment does not need to be costly if it has other committing characteristics such as its visibility or the fact that the decision is based on guests' freewill (Joule & Beauvois, 1998). In this case, accepting to hang a sign on the door is relatively cheap but is also highly visible. It is also important to note that, unlike Baca-Motes et al. (2013), the commitment was not requested by a staff member. Indeed, our results show that this request can be made through a sign placed directly in the guests' bathrooms. Therefore, the proposed strategy allows for considerable time-savings at check-in, which is fundamental for guests.

We should mention that the commitment as used in our study is not a commitment to reuse towels but rather a commitment to support the hotel's pro-environmental initiative. We choose this commitment to allow guests to feel like "partners" alongside the hotel and its initiative. Indeed, it seemed more artificial to ask the client to sign on to a more personal commitment.

Lastly, our results show that the commitment is effective even though preparatory behavior was not carried out. Indeed, even if the preparatory behavior was not performed, the guests reused



**Fig. 1.** Number of towels placed in the shower as a function of use of normative appeal and room type.

<sup>5</sup> Consequently, a higher number of towels in the shower indicates lower levels of reuse behavior.

their towels substantially more often when they were confronted with the committing message. This could be explained by an attitudinal conception of commitment (Cialdini, 2007; Lokhorst et al., 2013) according to which the commitment reinforces individuals' attitudes, which in turn reinforce behavior in a more consequential way (Holland, Verplanken, & Van Knippenberg, 2002; Pardini & Katzev, 1983–1984). Here, the commitment triggered by the preparatory request could strengthen guests' pro-environmental attitudes. Consequently, the individuals would be more likely to reuse their towels so as to be consistent with their freshly strengthened environmental convictions.

However, our results do not allow us to conclude that the joint use of these two influential tools is more effective than their isolated use. Indeed, although the combined 'norm and commitment' communication strategy is significantly different from standard strategies it does not differ from the commitment strategy or the normative communication strategy (even if the difference is nearly significant). Steg and Vlek (2009) recommend the use of informational and structural intervention strategies to maximize the effectiveness of environmental campaigns. Therefore, it is possible that the use of two informational strategies in our combined strategy has reduced the overall effectiveness. We can further hypothesize that the use of norms has probably reduced the effectiveness of this strategy when applied to superior rooms. Indeed, the results show that the effectiveness of these strategies appears to be influenced by the type of room in which they are used. In concrete terms, the use of social norms seems more effective in standard rooms. These results could be explained by the different motivations of guests, in superior and standard rooms, to conform to descriptive norms. Using the aggregate/collection model (Lorenzi-Cioldi, 1998, 2009), we can hypothesize that the individual's tendency to conform to social norms partly depends on factors such as the perception of his/her status. Thus, in a hotel comprising various room categories, guests of superior rooms might think they enjoy higher status in the establishment (they stay in rooms that are more prestigious and more expensive). This perception could then lead them to define themselves as a "collection group" and they might wish to differentiate themselves from other guests (Lorenzi-Cioldi, 2009). A collection group can be defined as a group of individuals promoting personal identity, singularity and individual differences (Lorenzi-Cioldi, 2009). Different results (Lorenzi-Cioldi, 1998, 2006, 2009) show that this conception of the group seems to be more marked in socially dominant groups. This could explain the reduced prescriptive power of using social norms in superior rooms. On the contrary, we can hypothesize that the guests of standard rooms who cannot claim this dominant status define themselves as an "aggregate group" (Lorenzi-Cioldi, 2009). Unlike the collection group, this conception of the group is found, for the most part, in socially-dominated groups, which see themselves as homogenous and uniform (Lorenzi-Cioldi, 2009). In consequence, it should be easier for them to identify themselves with the model proposed by the normative message and thus be more inclined to follow its instructions. As a result, it would be pertinent to test the extent to which normative appeals using either the injunctive dimension or the descriptive dimension could have different effects depending on the type of room in which they are used.

This could also be explained by the fact that our normative appeal was too generic. Indeed, according to Cialdini and Goldstein (2004); Goldstein et al (2008), individuals' feeling of belonging to descriptive norms is affected by the degree of similarity and belonging between the individual and the group to which these norms refer. In the case of towel reuse, Goldstein et al. (2008) have shown that the use of provincial norms generates more reuse than the use of general norms. In other words, indicating to clients that

the majority of guests staying in the same room as them performed the requested behavior (specific norm) is more effective than merely referring to all of a hotel's clients (general norm). We hypothesize that clients in superior rooms do not identify themselves with the other guests, which explains why they are not motivated to follow the recommendations of the normative message. This hypothesis should be tested in future research.

The interaction observed between the norms and the room type was not expected. Actually, the results of our analysis should be nuanced for several reasons. First, the sample sizes were different between the two room types and the distribution of room types under the experiments' conditions was not equivalent. We maintained this analysis because the results were significant and can be backed up by theory. Moreover, our results pave the way for research that will control, more rigorously, how inter-individual differences and/or status of rooms can influence the effectiveness of the persuasion strategies used by hotels. Finally, the assignment of hotel rooms to the different experimental groups was not completely done at random. The main reason is that under certain conditions guests could put the sign outside their hotel room to show their commitment. Thus, we have chosen to group rooms with the same experimental conditions on the same floors to avoid situations in which guests see signs that are not available in their rooms. Consequently, these effects should be reproduced more formally before generalizations can be made.

It is interesting to note that, like other studies seeking to increase the effectiveness of messages encouraging guests to re-use their towels (Goldstein et al., 2008; Schultz et al., 2008), the effect sizes obtained in this study are relatively small. However, the behavioral changes obtained could be important for hoteliers. Indeed, compared with the usual strategy, the strategies offered (in this paper) enable hotels to significantly reduce the average number of towels they must replace. Compared with the standard situation, 1) the normative message led to a decrease of 18.18% in the number of towels to replace, 2) the commitment strategy led to a decrease of 19.69% in the number of towels to replace, and finally, 3) the combined strategy led to a decrease of 22.72% in the number of towels to replace. In consequence, we can consider that the changes obtained are satisfactory.

Researchers in the field of environmental psychology insist on the importance of developing intervention tools that are adapted to target situations and audiences (Steg & Vlek, 2009). The results obtained in the present study lead us to question the link between pro-environmental strategies and inter-individual differences. Future research should consider this dimension as it would make it possible to identify the most effective strategies depending on the targeted audience.

## Acknowledgments

This work was supported by the Haute Ecole Spécialisée de Suisse Occidentale under Grant Sage – X 32760.

We would like to thank Rosemarie Andrey and Andrew Brenner for her precious advice and proofreading.

## References

- Baca-Motes, K., Brown, A., Gneezy, A., Keenan, E. A., & Nelson, L. D. (2013). Commitment and behavior change: evidence from the field. *Journal of Consumer Research*, 39, 1070–1084.
- Burger, J. M. (1999). The foot-in-the-door compliance procedure: a multiple-process analysis and review. *Personality and Social Psychology Review*, 3, 303–325.
- Cialdini, R. B. (2007). *Influence: The psychology of persuasion*. New York: HarperCollins.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: compliance and conformity. *Annual Review of Psychology*, 55(1), 591–621.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative

- conduct : a theoretical refinement and reevaluation of the role of norms in human behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24). New York: Academic Press.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015–1026.
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: social norms, conformity, and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4ème ed., Vol. 2, pp. 151–192). New York: McGraw-Hill.
- Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: the foot-in-the-door technique. *Journal of Personality and Social Psychology*, 4, 195–202.
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). Room with a viewpoint using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, 35, 472–482.
- Goldstein, N. J., Griskevicius, V., & Cialdini, R. B. (2007). Invoking social norms: a social psychology perspective on improving hotels' Linen-reuse programs. *Cornell Hotel and Restaurant Administration Quarterly*, 48(2), 145–150.
- Grandjean, I., & Gueguen, N. (2011). Testing a binding communication strategy in a company: how could persuasive information be more efficient? *Social Behavior & Personality*, 39(9), 1209–1216.
- Griffin, P. (2001). *Green' hotels association says, hotels can save over \$6.50 a day per occupied guestroom and help protect our environment*. press release. Houston: "Green" Hotels Association <http://www.greenhotels.com/pressrel.php#a2>.
- Guagnano, G. A., Stern, P. C., & Dietz, T. (1995). Influences on attitude-behavior relationships: a natural experiment with curbside recycling. *Environment and Behavior*, 27, 699–718.
- Henriques, I., & Sadorsky, P. (1996). The determinants of an environmentally responsive firm: an empirical approach. *Journal of Environmental Economics and Management*, 30(3), 381–395.
- Holland, R. W., Verplanken, B., & Van Knippenberg, A. (2002). On the nature of attitude-behavior relations: the strong guide, the weak follow. *European Journal of Social Psychology*, 32, 869–876.
- Joule, R.-V., & Beauvois, J.-L. (1998). *The free will compliance: How to get people to freely do what they have to do*. Paris: P.U.F.
- Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: when norms do and do not affect behavior. *Personality and Social Psychology Bulletin*, 26, 1002–1012.
- Kiesler, C. A., & Sakumura, J. (1966). A test of a model for commitment. *Journal of Personality and Social Psychology*, 3(3), 349–353.
- Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, 18(6), 503–520.
- Lokhorst, A. M., Werner, C., Staats, H., Van Dijk, E., & Gale, J. L. (2013). Commitment and behavior change: a meta-analysis and critical review of commitment-making strategies in environmental research. *Environment and Behavior*, 45(1), 3–34.
- Lorenzi-Cioldi, F. (1998). Group status and perceptions of homogeneity. *European Review of Social Psychology*, 9, 31–75.
- Lorenzi-Cioldi, F. (2006). Group status and individual differentiation. In T. Postmes, & J. Jetten (Eds.), *Individuality and the group: Advances in social identity* (pp. 93–115). Londres: Sage.
- Lorenzi-Cioldi, F. (2009). *Dominants et dominés. Les identités des collections et des agrégats*. Grenoble: Presses Universitaires.
- Matthies, E., Klöckner, C. A., & Preissner, C. L. (2006). Applying a modified moral decision making model to change habitual car use: how can commitment be effective? *Applied Psychology*, 55, 91–106.
- McKenzie-Mohr, D., & Smith, W. (1999). *Fostering sustainable behavior: An introduction to community-based social marketing*. Gabriola Island, British Columbia, Canada: New Society.
- Nolan, J. P., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underdetected. *Personality and Social Psychology Bulletin*, 34, 913–923.
- Pardini, A., & Katzev, R. (1983–1984). The effect of strength of commitment on newspaper recycling. *Journal of Environmental Systems*, 13, 245–254.
- Poortinga, W., Steg, L., & Vlek, C. (2004). Values, environmental concern and environmental behavior: a study into household energy use. *Environment and Behavior*, 36, 70–93.
- Reno, R. R., Cialdini, R. B., & Kallgren, C. A. (1993). The transsituational influence of social norms. *Journal of Personality and Social Psychology*, 64(1), 104–112.
- Schultz, P. W. (1999). Changing behavior with normative feedback interventions: a field experiment of curbside recycling. *Basic and Applied Social Psychology*, 21, 25–36.
- Schultz, P. W. (2002). Knowledge, education and household recycling: examining the knowledge-deficit model of behavior change. In T. Dietz, & P. Stern (Eds.), *Education, information and voluntary measures in environmental protection* (pp. 67–82). Washington, DC: National Academy Press.
- Schultz, P. W., Khazian, A., & Zaleski, A. (2008). Using normative social influence to promote conservation among hotel guests. *Social Influence*, 3, 4–23.
- Schultz, P. W., & Zelezny, L. C. (1999). Values as predictors of environmental attitudes: evidence for consistency across 14 countries. *Journal of Environmental Psychology*, 19, 255–265.
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: an integrative review and research agenda. *Journal of Environmental Psychology*, 29, 309–317.
- Stern, P. C., Dietz, T., & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25, 322–348.
- Susskind, A. M., & Verma, R. (2011). Hotel guests' reactions to guest room sustainability initiatives. *Cornell Hospitality Reports*, 11(6), 4–13.
- Terrier, L., & Marfaing, B. (2015). Using binding communication to promote conservation among hotel guests. *Swiss Journal of Psychology*, 74(3), 169–175.
- Van Vugt, M. (2009). Averting the tragedy of the commons: using social psychological science to protect the environment. *Current Directions in Psychological Science*, 18, 169–173.