



## SOCIAL BEHAVIOR AND ENVIRONMENT: THE INFLUENCE OF SOCIAL NORMS ON ENVIRONMENTAL BEHAVIOR

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*En los últimos años el uso de información normativa –normas sociales para la promoción de la conducta proambiental ha recibido una atención notable, mostrando un gran potencial para la intervención psicosocial. Este artículo pretende transferir y hacer accesible los principales resultados de los estudios sobre información normativa para incentivar el desarrollo de programas de intervención de carácter medioambiental. Se revisan los conceptos de normas sociales descriptivas y prescriptivas, así como las principales recomendaciones para que su uso en aplicaciones prácticas sea efectivo. Se atiende también a factores que afectan la efectividad de las normas sociales en la promoción de la conducta proambiental: uso de retroalimentación conductual, carácter dinámico de la norma e implicación personal. Las normas sociales suponen una importante aportación de la psicología ambiental para la intervención en la problemática ambiental.*

**Palabras clave:** Normas sociales, Conducta proambiental, Psicología ambiental, intervención psicosocial, Política social.

*In recent years, the use of normative information—social norms—for promoting pro-environmental behavior has received remarkable attention, showing great potential for psychosocial interventions. This paper makes research on normative information accessible with the aim of translating it into pro-environmental programs and public policy. The concepts of descriptive and prescriptive social norms are reviewed, as well as the main recommendations for their effective use in applied contexts. A number of factors found relevant for effective normative interventions on pro-environmental behavior are discussed: the use of behavioral feedback, the dynamic character of the norms, and personal involvement. Social norms represent an important contribution from environmental psychology to the intervention on environmental problems.*

**Key words:** Social norms, Pro-environmental behavior, Environmental psychology, Psychosocial intervention, Social policy.

**S**ocial intervention programs for the promotion of pro-environmental behaviors (e.g., reduction of water and energy consumption, increased recycling of paper, packaging, or mobile devices) are carried out from public and private entities, addressed to both the institution's own personnel and to the group of citizens of a specific population, and their scope of application can be both local and global. Similar to the ability of social psychology to base programs on classical behaviors of social intervention (e.g., promotion of healthy habits, reduction of prejudice, and discrimination), environmental psychology has a broad theoretical background for developing social intervention programs applied to the environment (see the various articles in this monograph).

This article describes the resources that environmental psychology has to promote pro-environmental behaviors based on social norms theory. This theoretical area has been of great relevance in the research in the last decade, showing great potential for intervention (Demarque & Lima, 2017; Farrow, Grolleau, & Ibanez, 2017; Miller & Prentice, 2016). The main

objective of the article is to transfer and make accessible part of the research carried out in environmental psychology, showing its potential and effectiveness for developing intervention programs aimed at the environment.

### THE IMPORTANCE OF THE BEHAVIOR OF OTHERS IN ENVIRONMENTAL BEHAVIOR

A widely accepted position regarding the role of psychology in the face of environmental issues is one that relates environmental problems to human behavior. It is assumed that to the extent that the individual behavior of people is modified to make it more pro-environmental, a more sustainable environment will be promoted (Fernández & López-Cabanas, 2017; Schultz, 2011). Reflecting this premise, most research on environmental problems has focused on personal variables (values, attitudes, beliefs, and motives) to incentivize pro-environmental behaviors (Schultz & Kaiser, 2012).

This article emphasizes, not so much how the individual is in terms of their degree of environmental concern and behavior, but how they perceive the environmental behavior of "others." Inferring that a behavior is frequently performed by a group of people is an important factor in deciding to carry it out. Assumptions about the behavior of others influence people's behavior even though they may not admit this influence. Thus, most people say that the behavior of people close to them, in

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favor or against the environment, does not affect them personally (Nolan, Schultz, Cialdini, Griskevicius, & Goldstein, 2008). However, it is striking that, both in the student population and in the general representative population at the national level, people indicate as an environmental problem people's lack of concern, the lack of awareness, or the little that people recycle (Aragonés & Sevillano, 2012; Santiago, 2006). Therefore, it seems that the attitudes and environmental behavior of society are important for the individual.

### **Theoretical conceptualization of the "behavior of others" in psychosocial terms**

How can the behavior of others motivate personal environmental behavior? The social influence of the behavior of others can be studied based on theoretical approaches such as social norms, social learning, social comparison, leadership, and public commitment (Abrahamse & Steg, 2013; Cinner, 2018). As mentioned, this article will focus on the first of these approaches.

Social norms refer to people's beliefs about the form of appropriate (common and socially accepted) behavior in a specific situation (Cialdini & Trost, 1998). The social norm offers information on how to conduct oneself in a situation, either by doing what most people do (descriptive norm) or by doing what should be done (prescriptive norm). In a given situation, the available normative information may indicate that it is appropriate to throw papers on the ground *because everyone does it*, or it may indicate that it is inappropriate to change the car's oil on the street *because it is prohibited*. In all these cases, the emphasis is on how others act or how they should act in relation to the environment and, as we shall see, this influences the behavior of individuals.

### **Personal norms and social norms**

Environmental research has traditionally focused on the personal norms of individuals and not so much on social ones. Thus, the theoretical models that have dominated research in pro-environmental behavior, the model of personal normative influences (Schwartz, 1977) and the theory of planned behavior (Ajzen, 1991), include normative components of a personal and interpersonal nature. The model of normative influence, originating from the theoretical framework of altruism, proposed the personal norm as the factor that explains prosocial behavior (helping) and, applied to the environment, pro-environmental behavior (Stern, Dietz, Abel, Guagnano, & Kalof, 1999). The personal norm is the behavioral expectation related to personal principles (Oceja & Fernández-Dols, 2006). People who have developed a personal norm or personal obligation to care for the environment (e.g., *I do not have to change my cell phone very often*) will behave environmentally. According to this model, the personal norm is an individual's obligation to act that does not receive external sanction if it is not complied with.

On the other hand, the theory of planned behavior (Corral-

Verdugo, Aguilar-Luzón, & Hernández, 2019) proposes the subjective norm as one of the factors that predict behavioral intention. In this case, the subjective norm is the behavior expected of you by people that are close or important to you. This theory emphasizes the social component of the norm, but only of the nearby environment, as a generator of a personal norm, always mediated by the relative importance that the individual attributes to the opinion of the people around him/her.

As we have just mentioned, the norms that guide people's behavior can come both from the individual him- or herself, and from the close social environment. In line with the classic characterization of social psychology (Ross & Nisbett, 1991), norms can also come from the *situation* that the person is in. Unlike the previous approaches, Cialdini and collaborators operationalized the obligation to act in situational terms, proposing the focus theory of normative conduct. In a given context, the social norm of behavior that is clearer or more noteworthy will direct people's behavior. In this case, the norms are social insofar as they involve a broad and organized set of people.

### **Descriptive and prescriptive social norms**

Following the focus theory of normative conduct (Cialdini, Reno, & Kallgren, 1990), social norms are categorized as they refer to the behaviors that people actually perform, which are called *descriptive norms*; or to the behaviors that should be performed, called *prescriptive norms* (see Figure 1). Descriptive norms indicate "typical" behavior, things that most people do that motivate behavior because they are effective in decision making, and are a source of gratification for social recognition. In addition, in a situation of uncertainty, imitating what other people do is adaptive. Prescriptive norms indicate the rules of behavior, what is approved or disapproved of socially, and involve a sanction if they are not met. Usually both types of norms are congruent, people do what should be done. However, it is not always so.

The theory predicts that the use of situational guidelines, which point to normative objectives and guide people's attention to norms, can increase compliance (Cialdini et al., 1990).

Below, we will see the main results of research on social norms applied to environmental behavior, focusing on the effects of using one norm or the other to promote environmental behavior.

### **Use of descriptive and prescriptive social norms for pro-environmental intervention**

Messages of the type, "37% of Spanish people, that is, two out of five, say they change their cell phones more than once a year" (ABC, 2017) or "Only three out of four Spaniards recycle their cell phone when acquiring a new device" (ABC, 2018) are not very effective in reducing cell phone consumption or increasing their recycling. As it has been elegantly argued (Cialdini, 2003), these types of messages



warn about the large number of people who perform a certain anti-environmental behavior, indicating the seriousness of the situation. However, they also report the impressive percentage of people who conduct the behavior. By finding, for example, that many people frequently change their mobile phones and that few people recycle their mobile phones, they are indirectly legitimizing anti-environmental consumption behavior, which is why this type of message would be more effective to increase the consumption of mobile phones or to reduce their recycling than to reduce their consumption or increase their recycling (Cialdini, 2003).

When the prevalence of anti-environmental behaviors is very high, it is not recommended to create messages that show the prevalence (anti-environmental descriptive norm) but instead to create messages with clear indications of what not to do (prescriptive norm). Compare the following messages from the research of Cialdini et al. (2006) carried out in the Petrified Forest National Park of Arizona:

- 1) "Many past visitors have removed the petrified wood from the park, changing the state of the Petrified Forest"
- 2) "Please don't remove the petrified wood from the park, in order to maintain the natural state of the Petrified Forest"

The first message indicates the prevalence of an anti-environmental behavior. The second indicates what must be done. It was the second message, the prescriptive one, that proved most effective in reducing the subtraction of wood from the Park.

The effectiveness of the prescriptive norm has also been found in a daily situation such as turning off the lights in a public restroom. Oceja and Berenguer (2009) showed that the situational context, a public restroom with the lights on or off, guided attention to the descriptive norm of leaving the lights on or off, respectively. That is, people who entered a bathroom with the lights on, tended to leave the lights on and people who entered a bathroom with the lights off, tended to leave them off (Study 1). This difference disappeared when the following prescriptive message was presented: "When you leave, please turn off the light" (Study 2). Thus, only if participants were explicitly asked to turn off the light (prescriptive norm), it prevailed over the descriptive norm. A subsequent study conducted in Norway found the same result on the same type of behavior in public restrooms (Bergquist & Nilsson, 2016). However, the Spanish study also revealed that if they were only asked to "save energy" (a more nonspecific prescriptive norm), the descriptive norm prevailed, whether it was to leave the bathroom light on or off.

If the prescriptive norm is accompanied by an indicator of success, its effectiveness is greater. In the study of Corrége, Clavel, Christophe, and Ammi (2017) sixty participants had to design 3D projects of refurbishments to improve the thermal performance of a building. Participants who received instructions according to a prescriptive norm relevant to the context (the construction regulations) plus a visual marker that indicated the achievement of the goal, designed their buildings more efficiently than those who only received the prescriptive normative message.

Another strategy in the research has focused on the pro-environmental descriptive normative information as a precursor to pro-environmental behavior. Schultz (1999) offered general information on the participation rate of a community of neighbors in a recycling program (descriptive norm). Both the participation and the amount of recycled material increased among program participants.

The research has questioned whether it is equally beneficial to show descriptive normative information as it is to give non-normative practical information on how to carry out pro-environmental behavior. Showing that most people behave pro-environmentally (e.g., 77% of the population uses fans instead of air conditioning - descriptive norm) is more effective in reducing subsequent energy consumption than providing information on how to save electricity (Nolan et al., 2008).

The effect of presenting a pro-environmental descriptive norm while carrying out a task that generates commitment to the desired behavior has also been studied. Terrier and Marfaing (2015) aimed to increase towel reuse among guests of more than one hundred hotel rooms in Lausanne, Switzerland. To do this, they used simple messages inside the rooms reminding guests that they could contribute to the conservation of the environment by reusing their towels; a descriptive normative appeal added to the previous message (for example, "75% of

**FIGURE 1**  
RECOMMENDATIONS FOR THE USE OF DESCRIPTIVE AND  
PREScriptive NORMS

Descriptive norms "Everyone does it"	Prescriptive norms "What should be done"
 <ul style="list-style-type: none"> <li>✓ Do not use these for <b>anti-environmental</b> behavior</li> <li>✓ Take into account the <b>previous behavior</b> of participants so as not to reduce the desired behavior among those who already perform it (boomerang effect).</li> <li>✓ Indicate a <b>goal</b> that represents the desired level for a significant impact of compliance with the norm.</li> <li>✓ Clear identification with others (high belonging, specific, and acquaintance).</li> </ul>	 <ul style="list-style-type: none"> <li>✓ Indicate the <b>specific behavior</b> desired (specify which behaviors are expected to be modified; present the norm contingent to this behavior).</li> <li>✓ Ensure the <b>correct understanding of the information</b> provided (for example, use measures that are comprehensible to the ordinary citizen).</li> <li>✓ Add an <b>achievement indicator</b> related to compliance with the norm.</li> </ul>



guests reuse their towels"); and an instruction to generate a behavioral commitment (explicitly requesting help by pasting an informative announcement about towel reuse). They noted that the descriptive normative message and commitment had an independent and positive effect on reuse behavior, but the combined use of the two strategies did not. Thus, despite an additive effect not being confirmed, from a practical point of view the result reveals the advantage of having two different strategies to promote reuse behavior in this context.

The use of the pro-environmental descriptive norm may be more effective if the individual's own behavior aligned with the norm is anticipated. Moussaoui and Desrichard (2017) observed this effect in situations where pro-environmental behavior is framed in a collective context, such as achieving a reduction in energy consumption in a neighborhood. The authors showed the pro-environmental descriptive norm (e.g., "If 75% of the people who live in the neighborhood buy or plan to buy a low-consumption refrigerator") and anticipated the pro-environmental behavior of the people aligned with the norm ("I will also buy one"). The result was that people perceived the pro-environmental behavior of buying a low-consumption refrigerator as more useful because they and their neighbors in the area were going to carry out the behavior.

As noted by the example of the messages for cell phone reuse, it has also been observed that the use of a descriptive anti-environmental norm can promote anti-environmental behavior, rather than reduce it. If an environment is full of garbage, it is more common for people to throw garbage there. But this effect is greater if people see others throwing garbage. A dirty environment indicates a descriptive anti-environmental norm and a person throwing garbage in a dirty environment makes clearer the norm that "littering is allowed" (Cialdini et al., 1990).

In applied contexts, the use of the actual descriptive norm of a group, community, or population in a campaign can have a counterproductive effect, known as the *boomerang effect*. This negative effect occurs due to an individual variable, the prior behavior of individuals, which interacts with the descriptive norm communicated in the campaign. Thus, providing information about the descriptive norm can trigger different reactions depending on the previous behavior of people. If a person who usually saves energy receives information that indicates that the level of average consumption in the population/group/community is higher than their own, they could increase their energy consumption so that their behavior is similar to that expressed by the social norm received. In other words, they interpret the message as the availability of a margin to increase their consumption to reach the consumption of the majority ("after all, everyone does it"). Alternatively, people with higher energy consumption than that given in the information on average consumption could try to save energy to conform to the norm ("how can I be the only one?"). Then, given the same information provided by means of a descriptive norm, different people will react differently and the behavior of the people who

previously saved energy would be impaired. These are precisely the results found by Schultz, Nolan, Cialdini, Goldstein, and Griskevicius (2007) in a study of 290 homes with visible energy consumption meters, who were exposed to normative messages through brochures hanging on the door knobs of their houses.

Therefore, the descriptive norm can have the counterproductive effect of increasing anti-environmental behavior. How to avoid it? Schultz et al. (2007) used the prescriptive norm to do so, but in a very imaginative way. In general, the sanctions that the prescriptive norm promises are irrelevant in the private environment. Consuming more energy in the home will not receive much disapproval. The authors, instead of informing about a possible sanction while showing the descriptive information, showed the "social approval" (prescriptive norm) of the energy-saving behavior of the people or the "social disapproval" of the excessive energy consumption behavior. Specifically, people received information on their electricity consumption in their homes, the average consumption of the population (descriptive norm), and the assessment of their consumption (prescriptive norm). This is similar to the use of achievement indicators or success goals associated with the norms (Corrége et al., 2017; Moussaoui & Desrichard, 2017).

In the case of the study by Schultz et al. (2007), experimental manipulation of the prescriptive norm was carried out using emojis (J or L). When people consumed electricity below the average consumption of the population, their behavior received social approval through the smiley emoji (J) and this prevented an eventual increase in energy consumption (Schultz et al., 2007). It is worth noting that the procedure in this research has been successfully implemented in several states of the United States (Alcott & Mullainathan, 2010). In addition, subsequent studies have confirmed that the use of positive feedback expressions such as "Excellent" or "Great", accompanied by stars, increases the motivation for the conservation of electricity after exposure to descriptive normative messages (Komatsu & Nishio, 2015). However, it is also important to note that in the study by Komatsu and Nishio (2015), the effects of a descriptive norm accompanied by positive feedback occur among the most economical consumers, since the most wasteful participants continued to believe that they consumed relatively less. In addition to the individual's behavior, factors such as prior knowledge about energy consumption, as well as the impact on the bill and the understanding of information on the magnitude of consumption, are key to pro-environmental change, even if the participants inhabit constructions designed for energy efficiency (Rubens et al., 2016).

#### **Norms that vary and matter to people**

To the conditions of the aforementioned studies, other factors to be taken into account for the design of normative messages must be added: the temporal variation of a norm, personal involvement in a behavior, and social identity.

Until now, the use of normative messages in which the norm is



presented statically has been discussed, referring to cross-sectional information ("30% of Spaniards recycle their mobile phone"). However, the message can be presented dynamically, referring to a variation of the normative behavior in a specific period of time ("in the last 5 years 30% of Spaniards have started to recycle their mobile phone"). This novel way of presenting messages is of interest for interventions on widespread anti-environmental behaviors for which it would be inappropriate to display a static descriptive message. Dynamic descriptive normative messages would motivate adherence to a pro-environmental behavior that is uncommon in the population (e.g., recycling phones) because they cause two processes in people. On the one hand, people think that if other people are starting to recycle their phones, it is necessary to conform to that behavioral norm. This process has been called "preconformity" (Spakman & Walton, 2017). On the other hand, people may think that if other people are starting to recycle their phones it is because it is important and not so difficult. This process has been called the *perceived importance to other people* (Spakman & Walton, 2017). Current empirical evidence indicates that people exposed to dynamic descriptive normative messages were more willing to reduce their meat consumption (a behavior indirectly involved in climate change) and performed more water-saving behaviors in a laundromat than those exposed to static messages (Spakman & Walton, 2017). It was even observed that some of these effects lasted at least three weeks after the intervention.

The involvement of people in pro-environmental behavior affects their perception of descriptive and prescriptive norms. In Portuguese communities in three protected areas of the Natura 2000 network, Mourão and Castro (2017) found that the people involved with the conservation of the Iberian lynx showed a higher level of agreement between descriptive and prescriptive norms compared with other people in the community. In other words, the most involved people believed that the community was in fact involved in the conservation of the lynx (descriptive) and that the community should protect the lynx (prescriptive). On the other hand, people not involved in conservation perceived a greater discrepancy between what the community actually does and what should be done. This result indicates the usefulness of using the prescriptive norm in the design of communication campaigns aimed at communities located in protected areas.

If the variation of the norm over time and based on personal involvement is important, so is the variation of the effect of the norm depending on the group to which people belong. The study of identity has taken on an increasingly important role in environmental psychology (Clayton, 2012; Olivos & Aragónés, 2014; Olivos & Clayton, 2017), because it is a relatively stable psychosocial factor, which involves a wide range of behaviors and, being anchored to the self, it can influence behavior in different environmental contexts and situations (Gatersleben, Murtagh, & Abrahamse, 2014; McGuire, 2015). In this sense,

appealing in a normative message to the people of our neighborhood, our local area, our peer group, or our work is relevant to ensure the effectiveness of the normative interventions (Terry & Hogg, 1996).

Some research has shown the importance of carefully identifying the others to which the descriptive norms (neighbors, compatriots, guests, etc.) refer, for the design of normative messages. Thus, for example, when the norm refers to the expectations of behavior maintained by one's partner and children, it is more effective than when it refers to the expectations of the neighbors (Bratt, 1999).

When, in identifying others, reference is made to larger membership groups, such as national groups, the effects of the social norm are diluted. Studying how guilt mobilizes pro-environmental action better than anger or shame, Mallett, Melchiori, and Strickroth (2013) observed that when people face the evidence that their compatriots (high identity) had a higher than average carbon footprint, compared to other industrialized nations, they experience a greater sense of collective ecological guilt than when the carbon footprint was lower than that of the other countries.

The role of others nearby may even be greater than that of the personal norm. Toner, Gan, and Leary (2014) observed that a group of university students expressed greater intention to carry out behaviors that require high pro-environmental commitment to reduce their carbon footprint, when their personal feedback was worse than that of their membership group (restrictions in the diet, active research on ecological actions, dissemination of environmental information). These effects were independent of individual attitudes, which, according to the authors, suggests that the effect occurred because the participants felt bad about themselves when their behavior differed with that of their peer group.

#### ANALYSIS OF AN ADVERTISEMENT ON RECYCLING

In 2012, Ecovidrio, a non-profit organization responsible for managing the recycling of glass packaging waste in Spain, launched the national "Reciclas o collejas" [Either you recycle, or you get a slap] campaign aimed at promoting the recycling of glass among citizens (Ecovidrio, 2012)<sup>1</sup>. The campaign, with an investment of 1,500,000 euros, had a presence on television, radio, and internet and starred famous actors such as Mariví Bilbao, a well-known Spanish actress from the series "Aquí no hay quien viva" [No one could live here] and José Mota, a well-known television comedian. In one of the commercials the actress suddenly appears on the scene, with an angry expression, just when the character throws a glass bottle into a non-recycling bin. Surprised in fraganti, he babbles the typical excuses for not recycling, but the actress gives him a slap on the back of the neck saying, "Either you recycle, or you get a slap." The video ends with the slogan: "Excuses in the trash, glass in the green container".

While the advertisement, in a humorous tone, delegitimizes the

reasons for people not to recycle, a more detailed analysis shows the functioning of the revised constructs that the advertisers have probably used involuntarily. First, a non-recycling behavior is shown, with indirect information being given about its prevalence based on the normality of the scene (descriptive normative information) and then a person outside the situation (the actress), which indicates that it could be anyone, directs the viewer's attention to the obligation to recycle (prescriptive normative information) and the corresponding sanction, in this case physical (a slap on the back of the neck). Therefore, what the person does and what they should do are shown, as well as the negative consequence of not having done what they should do.

The commercial is very effective for several reasons. Among them, it does not fall into the error of showing a large number of people carrying out non-environmental behaviors, which would indicate that *it is normal not to recycle* (anti-environmental descriptive norm). Instead, short scenes are shown starring individuals in everyday situations. On the other hand, it indicates what people *should do* (environmental prescriptive norm), as well as the humorous consequence of not doing so (a slap-sanction). The fact that the actress appears "out of nowhere" is an elegant way to solve the problem of sanctioning a behavior that is carried out in the private sphere, representing the role of the social norm. In general, the influence of the prescriptive norm is less on the behaviors that are carried out in the private sphere (people do not receive any type of social sanction when they do not conduct the behaviors in their own home).

## CONCLUSIONS

Research on social norms in pro-environmental behavior has been applied both to civic behavior (littering) and to *actual* pro-environmental behaviors: energy savings in homes and hotels, environmental vandalism, species conservation, and recycling. However, regardless of the type of behavior in question, the studies reviewed in this article allow us to propose a series of recommendations to be taken into account to improve the effectiveness of environmental interventions based on normative messages, highlighted in Figure 1.

Environmental psychology has a broad theoretical background to promote pro-environmental behavior. From applied fields such as energy saving, recycling, or conservation biology, the contributions of psychology for intervention in pro-environmental problems are being valued (Cinner, 2018; Schultz, 2011). This article and the present monographic issue attempt to make visible the contributions of the discipline to environmental interventions.

## CONFLICT OF INTERESTS

<sup>1</sup> Campaign videos available from: <https://www.youtube.com/watch?v=CQwcjexM7wg>; <https://www.youtube.com/watch?v=od-fhJcJFcQ>

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