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**Explicit or implicit? Norm communication and people's
experiences of normative influence attempts**

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Abstract. The aim of the present study was to provide a first experimental test of explicitly versus implicitly communicated descriptive norms. It was hypothesized that both explicitly and implicitly communicated norms would be more influential (i.e., yield higher acceptance toward an environmental policy) than a no-message control, and that the implicit norm would be more influential than the explicit. Moreover, it was investigated how the two norm messages differed in terms of people's experiences of the influence attempts. An online between-groups experiment ($N = 484$) was conducted, participants were randomly assigned to one of three conditions. None of the directional hypotheses were confirmed, and it was discussed whether the results might be due to a social norm that is already changing.

People follow social norms every day without even noticing or thinking much about it. Think, for example, about the following various situations where most people in Western cultures are likely to conform to social norms on an almost daily basis: standing in line in the grocery store, keeping appropriate distance to other people while waiting in that same line, avoiding littering on the ground while waiting for the bus, bringing a hostess (or host) gift when invited to a dinner, and being silent if entering a library. You can probably come up with several, and perhaps more specific, examples from your own life if you think for a while?

Social norms are the unwritten, although sometimes written, rules of conduct that are understood and accepted by members of a group, and that guide social behavior in a specific context without the force of laws (Cialdini & Trost, 1998). Psychologists often refer to social norms as normative beliefs that individuals hold, and these beliefs can differ in their degree of accuracy (Göckeritz et al., 2010). Moreover, a distinction is often made between descriptive norms, (beliefs about) what most others are doing, and injunctive norms, (beliefs about) what most others approve or disapprove of (Cialdini, Reno & Kallgren, 1990). Social norms are widely recognized to have powerful influence on human behavior, including pro-environmental behavior (i.e., behavior that benefits the environment) (Mortensen et al., 2019; Osbaldison & Schott, 2012), and social norm interventions have therefore been used to promote a wide range of pro-environmental behaviors, for example: to conserve energy (Bergquist & Nilsson, 2016), to order a meatless lunch (Sparkman & Walton, 2017), to use reusable takeout containers (Dorn & Stöckli, 2018) and to encourage hotel guests to reuse their washroom towels (Goldstein, Griskevicius & Cialdini, 2007).

In order to increase motivation to adapt to pro-environmental behaviors, interventions in the form of normative information are well suited strategies – especially when the target behavior is relatively easy and has low barriers (Schultz, 2014), as people seem to be motivated by conforming to other people's expectations, either in order to behave correctly, or in order to gain other people's approval (Deutsch & Gerard, 1955). Social norms may also motivate people to overcome the urge to act out of self-interest,

and instead accept and adapt to behaviors that are socially beneficial (Bicciari & Dimant, 2019), like pro-environmental behaviors. When utilizing the power of social norms in interventions, communication is a key component, because norms emerge partially through communication (Rimal & Lapinski, 2015). Therefore, in order for people to become aware of, more familiar with, and to respond positively to environmental interventions, knowledge on how to communicate pro-environmental messages, and how people react to them in certain situations is crucial (Kavvouris, Chrysochou & Thøgersen, 2020).

Social norms can be communicated in a variety of ways, and a recent meta-analysis of field experiments using descriptive social norms found that, norms communicated implicitly (i.e., communicated via cues in the environment) were significantly more influential than norms communicated explicitly (i.e., communicated via normative written messages), and the difference was of notable effect size (Bergquist, Nilsson & Schultz, 2019). As regards knowledge on how people react to environmental interventions, some research has previously been made on people's experience of being nudged (Hagman, Andersson, Västfjäll & Tinghög, 2015; Michaelsen, Johansson & Hedesström, 2020), because of unethicality concerns, accusing nudges of being, for example, manipulative and intrusive to people's freedom of choice (Michaelsen et al., 2020). However, both studies mentioned above found, in general, that people deemed nudges to be less manipulative and intrusive than feared. To my knowledge, no such studies have been made on how people experience influence attempts via descriptive social norm messages, and the present study could therefore contribute to expand the knowledge in this area. The aim of the present study was twofold: 1) to provide a first experimental test of explicitly versus implicitly communicated norms, and 2) to investigate how explicitly and implicitly communicated norms might differ in terms of people's subjective experiences of being exposed to normative influence attempts.

One plausible reason for the aforementioned effectiveness of implicitly communicated norms, could be that people might not be aware of implicit influence attempts, and are therefore more likely to conform. It has been suggested that people conform to social behavior automatically through imitation, via a "perception-behavior link", and that merely perceiving other people's behavior will result in an automatic and unconscious imitation of that behavior, for example matching an interaction partner's facial expression (Chartrand & Bargh, 1999). Furthermore, one observational field study found that, when people directly observed other people restoring order in a public space (e.g., dropping and empty soda can, and then picking it up again), they were more likely to engage in an unrelated prosocial behavior, like putting an accidentally fallen bicycle back up (Keizer, Lindenberg & Steg, 2013, Study 2). In other words, merely observing other people's respect for an anti-litter norm, made people more likely to respect another unrelated prosocial norm.

Other lines of research propose that people are in general unaware of social influence attempts, and moreover, tend to underestimate their own susceptibility to social pressure (Cialdini, 2005). An experimental study that examined people's self-reported reasons for conserving energy in their homes found that people rated a descriptive normative informational message about their neighbors' lower energy consumption as *least* motivating, compared to information about, for example, environmental protection. However, the normative message had, in fact, the largest effect on conservation behavior, thus implying that people weren't able to detect the influence attempt (Nolan, Schultz, Cialdini, Goldstein & Griskevicius, 2008, Study 2). These empirical premises formed the

basis for my assumption that an implicitly communicated norm would be less detectable than an explicitly communicated norm.

Another interesting phenomenon to examine when it comes to people's experience of normative influence attempts, a phenomenon that may also contribute to the weaker effect of explicitly communicated norms, is psychological reactance. Reactance theory (Brehm, 1966; Brehm & Brehm, 1981) proposes that people might perceive persuasive messages as a threat to their freedom, and may consequently behave in the opposite way (with reactance) in order to restore their freedom. However, for reactance to be aroused, there must first exist a threat to an individual's freedom of choice and, in cases of social influence, reactance is only produced if the influence attempt brings about a perceived pressure toward change (Clee & Wicklund, 1980). Recent research has confirmed that freedom threat is an antecedent of reactance (Dillard & Shen, 2005; Kavvouris et al., 2020), and one study found that descriptive normative appeals produced lower threats to freedom and consequently lower reactance, compared to injunctive normative appeals (Kavvouris et al., 2020). The study concluded that the gentler the nature of a pro-environmental normative message, the more positive the reactions toward the message. In sum, this body of research formed the basis for my assumption that, to the degree that descriptive social norms can be recognized as persuasion attempts, they could induce a mild form of reactance. And I argue that, individuals subjected to an implicitly communicated norm should perceive lower threat to freedom of choice (if any at all), and consequently lower psychological reactance, than individuals subjected to an explicitly communicated norm.

To sum up, these previous findings formed the basis for the hypotheses H2a–c (detailed below). To test the effectiveness of the norm messages (H1a–c), I employed the concept of acceptance (i.e., one of the main dimensions of attitudes according to De Groot & Schuitema, 2012) toward a fictitious environmental policy, where higher acceptance toward the policy would indicate a more motivating and, consequently, more influential norm message. Social norms are important determinants for people's acceptance of environmental policies, which has for example been demonstrated in two studies on acceptance toward road pricing policies (Jakobson, Fujii & Gärling, 2000; Schade & Schlag, 2003). Another study demonstrated the power of social norms on policy acceptance by showing that, a strong majority norm resulted in higher acceptance toward two different environmental policies: to reduce car use and to reduce littering in public areas (De Groot & Schuitema, 2012). Together, these findings led me to predict that, both an explicitly and an implicitly communicated norm will be more influential than a no-message control on policy acceptance. Moreover, I expected the implicitly communicated norm to be most influential, because of its assumed lower detectability and lower threat to freedom and psychological reactance arousal.

Overall, theory and previous findings led me to predict that 1) both explicit and implicit norm messages will be more influential (i.e., yield higher acceptance) than a no-message, and that an implicitly communicated norm will be the most influential, and 2) that an implicitly communicated norm will be less detectable, and arouse lower threat to freedom and psychological reactance than an explicitly communicated norm. For explorative purposes, I was also interested in measuring normative beliefs: “perceived descriptive norm” (H3a) attempted to measure people's beliefs about how often other people use reusable shopping bags, while “perceived injunctive norm” (H3b) attempted to measure the perceived social pressure to use reusable shopping bags. To test the hypotheses an online between-groups experiment was conducted.

Hypotheses

H1a. An explicitly communicated norm will be more influential (i.e., yield higher acceptance toward a fictitious environmental policy) than a no-message.

H1b. An implicitly communicated norm will be more influential (i.e., yield higher acceptance toward a fictitious environmental policy) than a no-message.

H1c. An implicitly communicated norm will be more influential (i.e., yield higher acceptance toward a fictitious environmental policy) than an explicitly communicated norm.

H2a. An implicitly communicated norm will be less detectable than an explicitly communicated norm.

H2b. Individuals subjected to an implicitly communicated norm will perceive lower threat to freedom of choice than individuals subjected to an explicitly communicated norm.

H2c. Individuals subjected to an implicitly communicated norm will perceive lower reactance than individuals subjected to an explicitly communicated norm.

H3a. Normative beliefs/perceived descriptive norm – was approached without a directional hypothesis. The aim was to explore if and how the three experimental groups differed in this aspect.

H3b. Normative beliefs/perceived injunctive norm – was approached without a directional hypothesis. The aim was to explore if and how the three experimental groups differed in this aspect.

Method

Participants

Participants were recruited via Amazon Mechanical Turk, and were paid \$0.30 for their participation. Based on the effect size for social norms found by Bergquist et al. (2019), I conducted a power analysis using G*Power ($f = .32$, $\alpha = 0.05$, $\beta = 0.80$), which indicated a minimum target sample of 381 participants, however in order to adjust for non-responses, 600 participants were recruited. Data from 64 participants were removed because of yes-response to the "previous involvement" question, data from another 46 participants were excluded because of failed attention check, and data from six participants in the control group were removed because of failed word check on the memory task (see "Exclusion criteria" below). There were no outliers identified in the dataset. The final sample consisted of 484 participants ($M_{age} = 38.9$, $SD = 12.2$; 45.5% female, 52.7% male, 1.8% "other" or "prefer not to answer"), and the final distribution between conditions was: explicit norm ($n = 157$), implicit norm ($n = 164$) and no-message control condition ($n = 163$).

Materials

The materials consisted of an online survey constructed using the Qualtrics software, and the cover story was "a study about perception and memory". The survey

was designed to measure acceptance toward a fictitious environmental policy after being exposed to one of the three stimuli: explicit norm message, implicit norm message or a no-message memory task. The experiment was followed by additional questions constructed to assess the experience of being exposed to a norm message and an attention check (presented to the two norm message conditions only), and lastly two control questions and two demographical questions presented to all participants.

Stimuli materials. The stimulus material for the explicit norm condition consisted of an advertisement-like message containing a short informational message to create the context, which was followed by a written descriptive norm (“*Did you know that, disposable shopping bags are typically used for less than an hour, and only about 1% of all plastic bags are returned for recycling? In order to reduce the use of plastic bags, many people bring their own reusable shopping bags when they shop for groceries.*”). The stimulus material for the implicit norm condition consisted of an identical advertisement-like message, but the written norm message was replaced by an image depicting three individuals carrying groceries in reusable shopping bags. Thus, implicitly implying that “many people use reusable shopping bags” (see Appendix A). The no-message control condition was given a simple memory task of 15 clustered words, and was subsequently asked to list as many words as they could recall from the list.

Questionnaire. After being exposed to one of the three stimuli described above, participants read the fictitious policy scenario:

Later this year a worldwide policy on single-use shopping bags will come into force, that require all countries to take significant measures to reduce the use of both plastic and paper single-use bags. This will be done by adding a tax that will significantly increase the price of all single-use shopping bags.

Subsequently, participants’ acceptance toward the policy was measured using three items: “*What is your general attitude to the policy?*”, “*Do you think the policy is a good or a bad idea?*” and “*How acceptable is the policy to you?*” (adapted from Nilsson, Schuitema, Jakobsson Bergstad, Martinsson & Thorson, 2016). The response scale ranged from 1 (Extremely negative/Extremely bad idea/Extremely unacceptable) to 7 (Extremely positive/Extremely good idea/Extremely acceptable). A Cronbach’s alpha analysis was performed for the three items ($\alpha = 0.95$, $M = 5.05$, $SD = 1.55$), and they were combined into a single index variable for the analysis. Participants in the two norm conditions were then directed to additional questions constructed to measure their experience of being exposed to the norm messages (described in detail below), while participants in the control condition were directed to the control questions.

Detectability/Awareness of being influenced was measured using two items: “*How much did the message above motivate you to agree with the policy?*” (adapted from Nolan et al., 2008) and “*To what extent did the message make you feel that someone tried to influence your opinions?*”. The response scale ranged from 1 (Not at all) to 7 (Extremely/Completely). A Cronbach’s alpha analysis was performed for the two items, but because the reliability wasn’t acceptable, and they were negatively correlated ($\alpha = -0.25$, $M = 4.59$, $SD = 1.27$), the two items were kept separate for the analysis.

Perceived threat to freedom of choice was measured using a slightly adapted four-item scale developed by Dillard and Shen (2005): “*The message tried to manipulate me.*”, “*The message tried to make a decision for me.*”, “*The message tried to pressure me.*” and “*The message threatened my freedom to accept/not accept the policy.*”. The response

scale ranged from 1 (Strongly disagree) to 7 (Strongly agree). A Cronbach's alpha analysis was performed for the four items ($\alpha = 0.91$, $M = 3.31$, $SD = 1.72$), and they were combined into a single index variable for the analysis.

Reactance was measured using two items developed by Edwards, Li and Lee (2002): "*When the message was shown, I thought it was intrusive.*" and "*When the message was shown, I thought it was irritating.*". The response scale ranged from 1 (Strongly disagree) to 7 (Strongly agree). A Cronbach's alpha analysis was performed for the two items ($\alpha = 0.85$, $M = 2.8$, $SD = 1.79$), and they were combined into a single index variable for the analysis.

Perceived descriptive norm was measured using one item: "*What do you think, how often do other Americans use reusable shopping bags?*" with a response scale ranging from 1 (Never) to 7 (Always), and perceived injunctive norm was measured using one item: "*To what extent do you believe that other Americans think you should use reusable shopping bags instead of single-use bags?*" with a response scale ranging from 1 (Never, they probably don't care) to 7 (Always).

When the dependent variables had been measured, an attention check followed (norm conditions only) asking participants to indicate with a few words or a short sentence what the initial message was about. All participants were then presented with a control question checking for current habits: "*How often do you typically bring reusable bags when you do your grocery shopping?*" with response alternatives: never/sometimes/often/always/I never do grocery shopping. The next question checked for previous involvement (because I conducted a similar pilot study a few weeks earlier): "*Have you taken this or a similar HIT (Human Intelligence Task) before?*" with response alternatives: yes/no/don't know, and the last two questions were demographical asking for age (numeric entry) and gender (male/female/other/prefer not to answer). For all questions, except the demographical ones, the function "force response" was used. For the demographical questions the function "request response" was used. The questionnaire was finished with a short debriefing where participants were informed of the true aim of the study, and they were also provided with an email address for any questions or concerns regarding the study. Stimuli materials and data are available online at <https://osf.io/xmry4/>.

Procedure

The study employed an experimental between-groups design, where the independent variable was manipulated using the two social norm messages or no-message described above. Data were collected using Amazon Mechanical Turk, via a link to the survey in Qualtrics. When the participants had read and agreed to the study's terms (i.e., that participation was voluntary, that they could withdraw from the study at any time and that the data would be treated anonymously and remain confidential at all times) and been informed about payment, time required to complete the survey (10 minutes max) and the cover story, they were randomly assigned (using the randomizer function within Qualtrics) to one of the three experimental conditions (explicit norm, implicit norm or no-message memory task).

The participants were asked to read and look carefully at the norm message or memory task, and could then continue at their own pace to read the policy scenario and respond to the three acceptance questions (the first dependent variable). Participants in

the two norm conditions were then directed to the remaining dependent variables (detectability/awareness of being influenced, perceived threat to freedom of choice, reactance, perceived descriptive norm and perceived injunctive norm), while participants in the control condition were directed to the control questions and demographical questions. Participants in the norm conditions were subsequently directed to the attention check, control questions and demographical questions. Lastly, all participants were debriefed and thanked for their participation.

Coding and analyses. Prior to the analyses, I examined and cleaned the data according to the “Exclusion criteria” described below, and a new grouping variable for the three experimental conditions was coded (the independent variable). Moreover, for all constructs measured with more than one item, I first performed Cronbach's alpha reliability analyses and, given acceptable reliability, I took the mean of the measured items to create indices for the analysis (see “Questionnaire” above).

The dependent variable “acceptance” was analyzed using ANOVA comparisons between the three conditions (explicit norm vs. implicit norm vs. control group), and post-hoc analysis was conducted using the Bonferroni test. The three dependent variables “detectability/awareness of being influenced”, “perceived threat to freedom of choice” and “reactance” were analyzed using independent samples t-test comparisons between two conditions (implicit norm vs. explicit norm). The two dependent variables “perceived descriptive norm” and “perceived injunctive norm” were analyzed using ANOVA comparisons between three conditions (explicit norm vs. implicit norm vs. control group), and post-hoc analyses were conducted using the Bonferroni test.

The standard $p < .05$ criterion was used for determining if the ANOVAs, post-hoc tests and t-tests suggested that the results were significantly different from those expected if the null hypotheses were correct. The post-hoc Bonferroni test adjusted for multiple comparisons.

Pilot study. A few weeks prior to the main study, I conducted an online pilot study in order to test the distribution of two potential dependent variables for the main study, namely “attitudes toward reusable shopping bags” and “acceptance toward a fictitious environmental policy”. The participants ($N = 305$) were randomly assigned to either the attitude or acceptance condition, and then randomly assigned again within the assigned condition to one of three experimental conditions (explicit norm, implicit norm or a no-message control group) in a between-groups design. Stimuli materials were the same as for the main study (see Appendix A).

In the attitude condition ($n = 152$) three items were used to assess participants' attitudes toward reusable shopping bags after being exposed to either the explicit norm, implicit norm, or no-message. The items were: “*I like the idea of bringing reusable bags to the store when I shop for groceries*”, “*Reusable grocery bags are a good alternative to single-use plastic bags*” and “*What is your general attitude toward reusable shopping bags?*”, and the response scale ranged from 1 (Strongly disagree/Extremely negative) to 7 (Strongly agree/Extremely positive). The three items were combined into a single index variable ($\alpha = 0.87$, $M = 5.65$, $SD = 1.34$).

In the acceptance condition ($n = 153$), after being exposed to one of the three norm messages, participants read a fictitious policy scenario about an added tax to all single-use shopping bags that would significantly increase their price (identical to the policy scenario in the main study). Three items were used to assess participants' acceptance toward the policy: “*What is your general attitude to the policy?*”, “*Do you think the policy is a good or a bad idea?*” and “*How acceptable is the policy to you?*” (adapted

from Nilsson et al., 2016), and the response scale ranged from 1 (Extremely negative/Extremely bad idea/Extremely unacceptable) to 7 (Extremely positive/Extremely good idea/Extremely acceptable). The three items were combined into a single index variable ($\alpha = 0.95$, $M = 5.18$, $SD = 1.62$).

A one-way ANOVA indicated that attitudes toward reusable shopping bags did not differ significantly between the three conditions; explicit norm ($M = 5.60$, $SD = 1.45$), implicit norm ($M = 5.65$, $SD = 1.26$) or control group ($M = 5.67$, $SD = 1.31$), $F(2, 149) = 0.068$, $p = 0.934$, $\eta^2 = 0.001$, and the distribution was negatively skewed (skewness = -1.24 , $SD = 0.197$). Another one-way ANOVA revealed that policy acceptance did not differ significantly between the three conditions either; explicit norm ($M = 5.28$, $SD = 1.55$), implicit norm ($M = 5.14$, $SD = 1.46$) or control group ($M = 5.12$, $SD = 1.85$), $F(2, 150) = 0.149$, $p = 0.862$, $\eta^2 = 0.002$. This distribution was also negatively skewed (skewness = -1.15 , $SD = 0.196$), but slightly less so than the distribution for attitudes. Based on these data, I decided to use the acceptance measure for the main study.

Exclusion criteria. Because the pilot study was conducted only a few weeks prior to the present (main) study, I controlled for previous involvement with the question “Have you taken this or a similar HIT before?” with response alternatives: yes/no/don’t know. All “yes”-responses were removed from the analysis. Prior to the study, it was also decided that those who failed the attention check (described under “Questionnaire” above) would be removed from the analysis, and that any outliers (observations ± 3 SD) would be removed.

While analyzing the data, I also discovered a few obvious cases in the control condition that was removed because of failed word check (inappropriate responses), however this exclusion criterion was not stated prior to the data collection.

Results

The aim of the present study was to examine 1) whether the two norm messages (explicit and implicit) respectively were more influential, and yielded higher policy acceptance, than a no-message control condition, and whether an implicitly communicated norm was more influential than an explicitly communicated norm (H1a–c), and 2) whether an implicitly communicated norm was less detectable, and aroused lower threat to freedom and psychological reactance than an explicitly communicated norm (H2a–c). For exploratory purposes, normative beliefs were also measured: “perceived descriptive norm” (H3a) attempted to measure people’s beliefs about how often other people use reusable shopping bags, whereas “perceived injunctive norm” (H3b) attempted to measure the perceived social pressure to use reusable shopping bags.

Hypotheses 1a–c

Acceptance. A one-way ANOVA revealed that acceptance toward the fictitious environmental policy did not differ significantly between the three conditions; explicit norm ($M = 5.03$, $SD = 1.59$), implicit norm ($M = 5.03$, $SD = 1.62$) or control group ($M = 5.09$, $SD = 1.43$), $F(2, 481) = 0.065$, $p = .937$, $\eta^2 = .000$. Hence there was no support for hypothesis H1a: that an explicit norm message would be more influential than a no-message control group. Furthermore, there was no support for the hypothesis that an

implicit norm message would be more effective than a no-message control (H1b), or that an implicitly communicated norm would be more influential than an explicitly communicated norm (H1c).

Hypotheses 2a–c

Detectability/Awareness of being influenced. As mentioned earlier, the two items for this construct had to be analyzed separately, because of the low reliability between the two measures. For the first item (“*How much did the message above motivate you to agree with the policy?*”), that attempted to measure the degree to which participants were aware of the motivational nature of the norm message, a two-tailed independent samples t-test did not detect any statistically significant differences between the means of the two groups: explicit norm ($M = 5.03$, $SD = 1.85$) and implicit norm ($M = 4.82$, $SD = 1.87$), $t(319) = 0.972$, $p = .332$, $d = 0.11$, 95% CI = [-0.11, 0.33].

For the second item (“*To what extent did the message make you feel that someone tried to influence your opinions?*”), that intended to measure the degree to which participants were aware of someone trying to influence their opinions toward the policy, a two-tailed independent samples t-test did not reveal any statistically significant differences between the means of the two groups either: explicit norm ($M = 4.34$, $SD = 2.04$) and implicit norm ($M = 4.20$, $SD = 1.85$), $t(319) = 0.655$, $p = .513$, $d = 0.07$, 95% CI = [-0.15, 0.29]. Hence, there was no support for hypothesis H2a: that an implicitly communicated norm would be less detectable than an explicitly communicated norm.

Perceived threat to freedom of choice. A two-tailed independent samples t-test could not detect any differences in perceived threat to freedom of choice induced by the normative message between the two groups: explicit norm ($M = 3.29$, $SD = 1.81$) and implicit norm ($M = 3.31$, $SD = 1.64$), $t(319) = 0.084$, $p = .933$, $d = 0.01$, 95% CI = [-0.23, 0.21]. Hence there was no support for hypothesis H2b.

Reactance. Another two-tailed independent samples t-test revealed that there were no differences to be found in terms of reactance toward the normative message between the two groups: explicit norm ($M = 2.78$, $SD = 1.84$) and implicit norm ($M = 2.81$, $SD = 1.75$), $t(319) = 0.137$, $p = .891$, $d = 0.02$, 95% CI = [-0.23, 0.20]. Thus, hypothesis H2c was not supported.

Hypotheses 3a–b (exploratory)

Perceived descriptive norm. A one-way ANOVA indicated that there was a significant difference between the means of the groups, $F(2, 481) = 4.135$, $p = .017$, $\eta^2 = .017$. Pairwise comparisons using the Bonferroni post-hoc test revealed two significant comparisons, namely that participants in the explicit norm condition ($M = 4.10$, $SD = 1.4$) perceived that other Americans use reusable shopping bags more often than did participants in the implicit norm condition ($M = 3.71$, $SD = 1.5$), $p = .045$, 95% CI = [0.01, 0.77]. Moreover, the Bonferroni test revealed that there was a significant difference between the means of the no-message control group ($M = 4.10$, $SD = 1.43$) and the implicit norm group ($M = 3.71$, $SD = 1.5$), $p = .036$, 95% CI = [-0.77, -0.02], indicating that participants in the no-message control group perceived that other Americans use reusable shopping bags more often than did participants in the implicit norm condition. In support

of hypothesis H3a, a significant difference was found between the groups, showing that participants in the implicit group perceived that other Americans use reusable bags less often than did participants in the explicit and in the no-message condition.

Perceived injunctive norm. Another one-way ANOVA demonstrated that there were no significant differences to be found in terms of perceived injunctive norm between the three conditions; explicit norm ($M = 4.74, SD = 1.52$), implicit norm ($M = 4.43, SD = 1.68$) or the no-message control group ($M = 4.75, SD = 1.42$), $F(2, 481) = 2.334, p = .098, \eta^2 = .010$. Thus, no differences were observed between the groups for hypothesis H3b.

For an overview of means and standard deviations for all dependent variables, see Table 1.

Table 1.

Means and standard deviations for all dependent variables

	Explicit norm message M (SD)	Implicit norm message M (SD)	No-message (control) M (SD)
Acceptance	5.03 (1.59)	5.03 (1.62)	5.09 (1.43)
Detectability, Item 1	5.03 (1.85)	4.82 (1.87)	-
Detectability, Item 2	4.34 (2.04)	4.20 (1.85)	-
Perceived threat to freedom of choice	3.29 (1.81)	3.31 (1.64)	-
Reactance	2.78 (1.84)	2.81 (1.75)	-
Perceived descriptive norm	4.10 (1.40)	3.71 (1.50)	4.10 (1.43)
Perceived injunctive norm	4.74 (1.52)	4.43 (1.68)	4.75 (1.42)

Note. All response scales ranged from 1-7. Acceptance: 1 (Extremely negative/Extremely bad idea/Extremely unacceptable) to 7 (Extremely positive/Extremely good idea/Extremely acceptable); Detectability, Item 1 and Item 2: 1 (Not at all) to 7 (Extremely/Completely); Perceived threat to freedom of choice and Reactance: 1 (Strongly disagree) to 7 (Strongly agree); Perceived descriptive/injunctive norm: 1 (Never) to 7 (Always).

Additional exploratory analyses

A descriptive analysis of the control variable checking for “current habits of using reusable bags” showed that, a majority of the participants indicated that they already used reusable bags “often” or “always” (Never: 16.7%; Sometimes: 26.4%; Often: 28.7%; Always: 27.5%). A correlation analysis indicated that there was a significant correlation between “acceptance” and “current habits of using reusable bags” $r(481) = .42$, 95% CI = [0.33, 0.49], $p < .001$. For these analyses, three cases were removed because of response alternative 5: “I never do grocery shopping” on the “current habits” variable.

Another correlation analysis revealed that “perceived threat to freedom” and “reactance” were positively correlated, $r(321) = .79$, 95% CI = [0.73, 0.86], $p < .001$.

Discussion

The aim of the present study was to examine 1) whether the two norm messages (explicit and implicit) respectively were more influential, and yielded higher policy acceptance, than a no-message control condition, and whether an implicitly communicated norm was more influential than an explicitly communicated norm (H1a–c), and 2) whether an implicitly communicated norm was less detectable, and aroused lower threat to freedom and psychological reactance than an explicitly communicated norm (H2a–c). For explorative purposes, normative beliefs (perceived descriptive/injunctive norm, H3a–b) were also measured. However, the results did not confirm any of the directional hypotheses (H1a–c and H2a–c), which is an interesting result in itself and deserves some reflection.

First, the results did not demonstrate any significant difference between the three conditions on policy acceptance, and the distribution was negatively skewed, meaning that there was a ceiling effect of positive attitudes (acceptance) toward the policy. Specifically, the means in the three groups were very similar, and interestingly, the no-message control group had a slightly higher mean than the two norm conditions. One possible explanation for this is that the norm manipulations were ineffective: either that they were too weak, or that they were overridden by the short introductory context-shaping message, and therefore hardly noticed. Another, perhaps more feasible, explanation is that the participants already possessed positive attitudes toward reusable bags, and were already to a large extent avoiding single-use bags. One previous study found that people who feel under social pressure from their neighbors and significant others are less prone to choose plastic bags, and more willing to use reusable bags (Arı & Yılmaz, 2017). In the present study, injunctive normative beliefs were stronger than descriptive normative beliefs, suggesting that the participants to some extent felt social pressure to avoid single-use bags and instead use reusable bags. Previous research has also shown that people conserved more energy when both descriptive and injunctive normative beliefs were high, and concluded that: “...high injunctive normative beliefs can strengthen the impact of descriptive normative beliefs on behavior.” (Göckeritz et al., 2010, p.520). Thus, possibly explaining the surmised preexisting positive attitudes, and why the norm messages in the present study had no effect.

In the present study, the additional explorative analysis showed that “acceptance” and “current habits of using reusable bags” were positively correlated (although only

modestly), which might be interpreted as an indication of a norm that has already changed, or is currently changing. Social norms are not static, but instead change and develop over time (Rimal & Lapinski, 2015; Van Kleef, Gelfand & Jetten, 2019), and it has been suggested that the cause-effect order between social norms and behavior can be reversed, so that behaviors might be the drivers of norms instead of what is traditionally assumed, namely that norms are the drivers of behavior (Rimal & Lapinski, 2015). Moreover, it has been suggested that, behaviors that are perceived as changing (i.e., dynamic norms), are more effective than static norms in promoting pro-environmental behaviors (Sparkman & Walton, 2017). Laws and social norms can also reinforce each other (Rimal & Lapinski, 2015). The present study was executed with an American sample, and because many American states have already banned single-use plastic bags (National Conference of State Legislatures, 2021), I speculate, in line with Rimal & Lapinski (2015), that the bans may have reinforced and accelerated, via behavior, a new social norm that supports the use of reusable bags, and disapproves of single-use bags.

Another explanation as to why the implicitly communicated norms had such large effect in the field study meta-analysis (Bergquist et al., 2019) that inspired the present study – but was non-existent here – is evidence that, descriptive norms might have larger effect on actual behavior than injunctive norms, and that injunctive norms have stronger effect on attitudes, but little effect on behavior (Melnyk, Van Herpen, Jak & Van Trijp, 2019). In other words, the meta-analysis by Melnyk et al. (2019) found that, descriptive norms appeared to affect behavior primarily in an unconscious way, thus changing behavior directly in the persuasive situation, without affecting attitudes. Whereas injunctive norms had the opposite effect: attitudes changed, but not behavior. In the present study, I wasn't able to study the effect of descriptive norms on *actual behavior*, but instead studied the effect of descriptive norms on acceptance (attitudes), which might explain the non-existent effect of the norm manipulations.

Second, contrary to what I anticipated, the implicitly communicated norm was no less detectable than the explicit norm. Instead, the high means on the first “detectability” item in both norm conditions indicated that, the participants were in fact quite aware of, and motivated by the norm messages. This contradicts what Nolan et al. (2008) found, namely that people are bad at detecting social influence attempts, and that they tend to underestimate their own susceptibility to social pressure. In the present study, however, one explanation for this is that the norm messages might have been confounded with the context-shaping introductory message, and that the introductory message was in fact what motivated the participants. Furthermore, again in contrast to what I expected, the norm conditions did not differ significantly on the second “detectability” item, that attempted to assess the degree to which the participants felt that someone tried to influence them. Instead, the results indicated that both groups were indeed aware of the influence attempts, and that someone tried to influence them, because the mean response was slightly above what would have been expected if the persuasion attempt hadn't been detected.

Third, there was no significant difference to be found between the two norm conditions as regards “threat to freedom of choice” or “psychological reactance”. Moreover, all response means for these constructs were low (below the middle response alternative), indicating that neither of the two norm messages were likely to have aroused any threat to attitudinal freedom, and consequently, no reactance effect (Clee & Wicklund, 1980). Similar results were found by Michaelsen et al. (2020), who measured

people's experiences of being nudged by so called default nudges, and concluded that, overall, people had positive choice experiences in all nudge conditions.

Finally, in the present study, a strong positive correlation was found between the two constructs just mentioned, which confirms their linear relationship, as the strength of the antecedent, "threat to freedom of choice", should be directly correlated with the magnitude of reactance (Dillard & Shen, 2005; Steindl, Jonas, Sittenthaler, Traut-Mattausch & Greenberg, 2015). Hence, from these results, I suggest that it might be safe to say that neither explicit, nor implicit descriptive norm messages, were perceived as threatening or persuasive – in the context used here, that is. However, it seems like a fruitful area for future research on explicit and implicit norms to study pro-environmental behaviors, or attitudes, with higher barriers that may consequently be harder to change (Schultz, 2014), like for example reducing car use or meat eating.

Limitations and directions for future studies

As mentioned at the outset of this discussion, it is possible that the norm messages used in the present study were confounded with the introductory context-shaping message. This could potentially pose a threat to the experiment's internal validity, and future research attempting to compare explicitly and implicitly communicated norm messages could take this into consideration when designing an experiment. A suggestion for improvement is to remove the introductory text altogether, or to reduce it to a minimum, in order to minimize its potential confounding effect.

Another methodological limitation of the present study is the possibility that the implicit norm message was too weak. The analysis of the "perceived descriptive norm" construct found that, participants in the implicit norm condition perceived that other Americans use reusable bags less often than did participants in the explicit, and in the no-message condition. Indeed, the difference between the groups was significant, but it could still have arisen by chance. An alternative explanation, however, is that, the manipulation of the implicit norm was weaker than the explicit norm manipulation, and for this reason the implicit norm condition had the lowest descriptive normative beliefs. One improvement that could be done to address this in future studies, is to strengthen the implicit norm message by depicting more than three individuals. However, I believe that there is a fine line between doing that, and at the same time preserving the trustworthiness of the image.

Conclusion

The present study found no statistically significant differences in effectiveness on policy acceptance between an explicitly and an implicitly communicated norm message or a no-message control. In fact, a ceiling effect of positive attitudes (acceptance) toward the policy was found across all three experimental conditions. It was discussed that this might be explained by the possibility that the participants already possessed positive attitudes toward reusable bags, and were already to a large extent avoiding single-use bags. Thus, implying that the social norm of using reusable shopping bags has already changed, or is changing.

Moreover, the present study found that both norm conditions were more motivated by the norm messages, and more aware of a persuasion attempt taking place than expected. But, they didn't seem to mind, as the measures of both "threat to freedom of choice" and "reactance" were low, thus implying that it should be safe to use both explicit and implicit descriptive messages as tools for persuasion, without arousing any negative affect. However, considering that the behavior of using reusable bags, and avoiding single-use bags, might be classified as a relatively easy behavior with low barriers, more research should be done on explicit and implicit normative influence attempts targeting pro-environmental behaviors and attitudes that have higher barriers, and might therefore be more difficult to change.

References

- Ari, E. & Yılmaz, V. (2017). Consumer attitudes on the use of plastic and cloth bags. *Environment, Development and Sustainability* 19(4), 1219–1234. <https://doi.org/10.1007/s10668-016-9791-x>
- Bergquist, M. & Nilsson, A. (2016). I saw the sign: Promoting energy conservation via normative prompts. *Journal of Environmental Psychology*, 46, 23–31. <https://doi.org/10.1016/j.jenvp.2016.03.005>
- Bergquist, M., Nilsson, A. & Schultz, P. W. (2019). A meta-analysis of field-experiments using social norms to promote proenvironmental behaviors. *Global Environmental Change*, 58. <https://doi.org/10.1016/j.gloenvcha.2019.101941>
- Bicciari, C. & Dimant, E. (2019). Nudging with care: the risks and benefits of social information. *Public Choice*, 1–22. <https://doi.org/10.1007/s11127-019-00684-6>
- Brehm, J. W. (1966). *A theory of psychological reactance*. New York, NY: Academic Press.
- Brehm, S. S. & Brehm, J. W. (1981). *Psychological reactance – A theory of freedom and control*. New York: Academic Press.
- Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology*, 76, 893–910. <https://doi.org/10.1037/0022-3514.76.6.893>
- Cialdini, R. B. (2005). Basic social influence is underestimated. *Psychological Inquiry*, 16, 158–161. https://doi.org/10.1207/s15327965pli1604_03
- Cialdini, R. B., Reno, R. R. & Kallgren, C. A. (1990). A theory of normative conduct: recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58, 1015–1026. <https://doi.org/10.1037/0022-3514.58.6.1015>
- 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* (Vol 2, pp. 151–192. Boston: McGraw-Hill.
- Clee, M. A., & Wicklund, R. A. (1980). Consumer behavior and psychological reactance. *Journal of Consumer Research*, 6, 389–405. <https://doi.org/10.1086/208782>
- De Groot, J., & Schuitema, G. (2012). How to make the unpopular popular? Policy characteristics, social norms and the acceptability of environmental policies. *Environmental Science and Policy*, 19–20, 100–107. <https://doi.org/10.1016/j.envsci.2012.03.004>

- Deutsch, M. & Gerard, H. B. (1955). A study of normative and informational social influence upon individual judgement. *Journal of Abnormal and Social Psychology*, 51, 629–636.
- Dillard, J. P. & Shen, L. (2005). On the nature of reactance and its role in persuasive health communication. *Communication Monographs*, 72, 144–168. <https://doi.org/10.1080/03637750500111815>
- Dorn, M. & Stöckli, S. (2018). Social influence fosters the use of a reusable takeaway box. *Waste Management*, 79, 296–301. <https://doi.org/10.1016/j.wasman.2018.07.027>
- Edwards, S. M., Li, H., & Lee, J. (2002). Forced exposure and psychological reactance: Antecedents and consequences of the perceived intrusiveness of pop-up ads. *Journal of Advertising*, 31, 83–95. <https://doi.org/10.1080/00913367.2002.10673678>
- Goldstein, N. J., Griskevicius, V., & Cialdini, R. B. (2007). Rooms for improvement. *Cornell Hotel and Restaurant Administration Quarterly*, 48, 145–150.
- Göckeritz, S., Schultz, P. W., Rendon, T., Cialdini, R. B., Goldstein, N., & Griskevicius, V. (2009). Descriptive normative beliefs and conservation behavior: The moderating roles of personal involvement and injunctive normative beliefs. *European Journal of Social Psychology*, 40, 514–523. <https://doi.org/10.1002/ejsp.643>
- Hagman, W., Andersson, D., Västfjäll, D., & Tinghög, G. (2015). Public views on policies involving nudges. *Review of Philosophy and Psychology*, 6, 439–453. <http://doi.org/10.1007/s13164-015-0263-2>
- Jakobson, C., Fujii, S. & Gärling, T. (2000). Determinants of private car users' acceptance of road pricing. *Transport Policy*, 7, 153–158. [https://doi.org/10.1016/S0967-070X\(00\)00005-6](https://doi.org/10.1016/S0967-070X(00)00005-6)
- Kavvouris, C., Chrysochou, P. & Thøgersen, J. (2020). “Be careful what you say”: The role of psychological reactance on the impact of pro-environmental normative appeals. *Journal of Business Research*, 113, 257–265. <https://doi.org/10.1016/j.jbusres.2019.10.018>
- Keizer, K., Lindenberg, S., & Steg, L. (2013). The importance of demonstratively restoring order. *PLoS ONE*, 8(6), E65137. <https://doi.org/10.1371/journal.pone.0065137>
- Melnyk, V., Van Herpen, E., Jak, S., & Van Trijp, H. C. M. (2019). The mechanisms of social norms' influence on consumer decision making. *Zeitschrift für Psychologie*, 227, 4–17. <https://doi.org/10.1027/2151-2604/a000352>
- Michaelsen, P., Johansson, L., & Hedesström, M. (2020). Experiencing default nudges: autonomy, manipulation, and choice-satisfaction as judged by people themselves. Preprint retrieved from <https://psyarxiv.com/utx3e>
- Mortensen, C. R., Neel, R., Cialdini, R. B., Jaeger, C. M., Jacobson, R. P. & Ringel, M. M. (2019). Trending norms: A lever for encouraging behaviors performed by the minority. *Social Psychological and Personality Science*, 10, 201–210. <https://doi.org/10.1177/1948550617734615>
- National Conference of State Legislatures. (2021, April 25). State plastic bag legislation. <https://www.ncsl.org/research/environment-and-natural-resources/plastic-bag-legislation.aspx>
- Nilsson, A., Schuitema, G., Jakobsson Bergstad, C., Martinsson, J., & Thorson, M. (2016). The road to acceptance: Attitude change before and after the

- implementation of a congestion tax. *Journal of Environmental Psychology*, 46, 1–9. <https://doi.org/10.1016/j.jenvp.2016.01.011>
- Nolan, J. M., 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. <https://doi.org/10.1177/0146167208316691>
- Osboldison, R. & Schott, J. P. (2012). Environmental sustainability and behavioral science: Meta-analysis of pro-environmental behavior experiments. *Environment and behavior*, 44, 257–299. <https://doi.org/10.1177/0013916511402673>
- Rimal, R. N., & Lapinski, M. K. (2015). A re-explication of social norms, ten years later. *Communication Theory*, 25, 393–409. <https://doi.org/10.1111/comt.12080>
- Schade, J. & Schlag, B. (2003). Acceptability of urban transport pricing strategies. *Traffic and Transportation Psychology*, 6, 45–61. [https://doi.org/10.1016/S1369-8478\(02\)00046-3](https://doi.org/10.1016/S1369-8478(02)00046-3)
- Schultz, P. W. (2014). Strategies for promoting proenvironmental behavior: Lots of tools but few instructions. *European Psychologist*, 19, 107–117. <https://doi.org/10.1027/1016-9040/a000163>
- Sparkman, G. & Walton, G. M. (2017). Dynamic norms promote sustainable behavior, even if it is counternormative. *Psychological Science*, 28, 1663–1674. <https://doi.org/10.1177/0956797617719950>
- Steindl, C., Jonas, E., Sittenthaler, S., Traut-Mattausch, E., & Greenberg, J. (2015). Understanding psychological reactance. *Zeitschrift für Psychologie*, 223, 205–214. <https://doi.org/10.1027/2151-2604/a000222>
- Van Kleef, G. A., Gelfand, M. J., & Jetten, J. (2019). The dynamic nature of social norms: New perspectives on norm development, impact, violation, and enforcement. *Journal of Experimental Social Psychology*, 84, 103814. <https://doi.org/10.1016/j.jesp.2019.05.002>

Appendix A

DID YOU KNOW THAT...?

... disposable shopping bags are typically used for less than an hour, and only about 1% of all plastic bags are returned for recycling.

”In order to reduce the use of plastic bags, many people bring their own reusable shopping bags when they shop for groceries.”

The “explicit norm” stimulus

DID YOU KNOW THAT...?

... disposable shopping bags are typically used for less than an hour, and only about 1% of all plastic bags are returned for recycling.



The “implicit norm” stimulus