

Social validation, reciprocation, and sustainable orientation: Cultivating “clean” codes of conduct through social influence

Tobias Otterbring^{a,*}, Michał Folwarczny^b

^a Department of Management, University of Agder, Kristiansand, Norway

^b Discipline of Marketing, J.E. Cairnes School of Business & Economics, University of Galway, Ireland

ARTICLE INFO

Keywords:

Sustainability
Environmental issues
Sustainable behaviors
Social validation
Reciprocity
Social influence

ABSTRACT

The current research examined the effectiveness of two social influence strategies—reciprocity and social validation—in promoting sustainable consumer behavior. In an initial behavioral field experiment (Study 1), consumers were either exposed to a reciprocity, social validation, or control message distributed in the changing rooms of a sporting goods store. The daily number of cleanups carried out by store employees were then monitored as a function of message type. Results revealed that messages based on reciprocity and social validation led to a significant reduction in the number of cleanups compared to the control message, with no significant difference between the reciprocity and social validation conditions. In a follow-up online experiment with increased rigor and control (Study 2), participants were randomly assigned to a reciprocity, social validation, or control condition and subsequently indicated their willingness to shop sustainably. Consistent with the findings from Study 1, both the reciprocity and social validation conditions outperformed the control condition regarding participants' willingness to engage in sustainable consumer behavior, with no significant difference between the reciprocity and social validation conditions. Together, this research suggests that the strategic use of reciprocity or social validation messages can help store managers reduce the environmental impact of consumers' shopping responses, while simultaneously decreasing operating costs.

1. Introduction

Mitigating human-induced environmental harm necessitates a reduction in greenhouse gas emissions (Montzka et al., 2011). Overlooked by conventional discussions, some changes in consumer behavior can significantly reduce our environmental footprint (Wynes and Nicholas, 2017). Sustainable consumption, a key goal of the United Nations Sustainable Development Goals (UNDP, 2021), emphasizes the environmentally friendly and socially responsible purchase, use, and disposal of goods and services (Wolff and Schönherr, 2011). Sustainable consumer behavior, which is the focal outcome of the current research, refers to the conscious decisions of consumers to choose environmentally friendly goods and services and to think about the broader social and ethical impact of their behavior in the marketplace (Trudel, 2019). Importantly, sustainable consumer behavior encompasses more than just consumption. It also includes behaviors like energy conservation and how consumers manage and utilize products (Soyer and Dittrich, 2021) as well as social actions linked to human cooperation (Boon-Falleur et al., 2022; Raworth, 2017).

Tactics to promote sustainable consumer behavior in the retail sector should ensure business profitability while encouraging consumers to adapt their behavior in an environmentally desirable way (Folwarczny et al., 2022). Social influence strategies have proven influential across industries, encouraging proenvironmental behaviors without compromising business performance (Cialdini et al., 1990; Loschelder et al., 2019; Terrier and Marfaing, 2015). Simple but effective messages often embody these strategies (Baca-Motes et al., 2013; Goldstein et al., 2008; Schultz et al., 2007). For example, social influence messages such as “75% of the guests participated in our new resource savings program by using their towels more than once” effectively encourage hotel guests to reuse towels, thus reducing electricity and water consumption (Goldstein et al., 2008). This practice provides a double benefit by reducing operating costs and promoting sustainability (Terrier and Marfaing, 2015). By employing messages akin to the one described above, a mid-sized hotel in the U.S. can save approximately \$500,000 annually at a 66% occupancy rate (Baca-Motes et al., 2013). This underscores the significant economic and environmental benefits that can be achieved through the successful use of messages based on social influence

* Corresponding author. Department of Management, University of Agder, Kristiansand, Norway.

E-mail address: tobias.otterbring@uia.no (T. Otterbring).

<https://doi.org/10.1016/j.jretconser.2023.103612>

Received 28 May 2023; Received in revised form 15 September 2023; Accepted 17 October 2023

Available online 21 October 2023

0969-6989/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

strategies in retail and service industries.

Recent meta-analyses and quantitative literature reviews on nudging and resource-efficient behaviors (Hummel and Maedche, 2019; Mertens et al., 2022; Nisa et al., 2017) show that appeals based on decision information (e.g., social reference) are among the most effective. Yet, the effectiveness of this type of information in increasing customers' sustainable orientation—defined as concern for environmental protection as well as environmentally friendly attitudes and behaviors (Sun et al., 2014)—depends on the specific social influence strategy used (Abrahamse and Steg, 2013). Moreover, the literature is inconclusive with respect to which social influence strategies (e.g., reciprocity versus social validation) are most persuasive in inducing desirable behavioral changes (Cialdini et al., 1991; Milkman et al., 2021b; Schultz et al., 2007). In sum, social influence strategies are influential in promoting sustainability, but it is unclear whether these strategies differ in their effectiveness. Furthermore, to our knowledge, no studies conducted in retail contexts have examined the extent to which the two widely used social influence strategies of reciprocity (i.e., an internalized social norm based on mutual exchange, wherein kindness is rewarded; Ashraf et al., 2006; Gallucci and Perugini, 2000) and social validation (i.e., feedback about the characteristics, behaviors, or beliefs that others approve of or consider desirable; Ashforth et al., 2008; Smith et al., 2015) can promote sustainable consumer behavior.

To fill this gap, the current research aimed to test the impact of messages based on reciprocity and social validation under realistic conditions using behavioral evidence, while also examining the external validity of such strategies. To maximize the generalizability of our studied social influence strategies, we investigate their impact and applicability across study paradigms, samples, and settings. Doing so is one of the best ways to examine the robustness and replicability of former findings (Fabrigar et al., 2020; Otterbring et al., 2023a; Shrout and Rodgers, 2018), which is particularly important when it comes to sustainable consumer behavior, given the urgency of addressing this societally relevant issue (Mäkipierikko et al., 2023; Siepelmeyer and Otterbring, 2022; Yan et al., 2021).

2. Theoretical background

2.1. Reciprocity

The principle of reciprocity, rooted in social psychology, operates on the premise that people are naturally inclined to return favors or acts of kindness (Cialdini, 1984). In the area of sustainable consumer behavior, the mechanism of reciprocity suggests that consumers perceive environmentally friendly or socially responsible activities by brands as gestures of goodwill. Because consumers feel obliged to reciprocate to such activities, they are more likely to choose sustainable products or align themselves with other environmentally friendly behaviors (Griskevicius et al., 2012). In fact, humans have evolved as a social species and cooperation with others is key for accessing resources that are needed for survival and reproduction (Folwarczny et al., 2023; Söderlund, 2022). From an evolutionary perspective, cooperation between genetically related people is beneficial (Otterbring and Folwarczny, 2022), but the benefits of cooperating with strangers are less obvious. One reason for the latter relates to the principle of reciprocity, because the recipient of a favor will feel obliged to give something back in return (Nowak and Sigmund, 2005). Every human society known to researchers relies heavily on this principle, implying that reciprocity is a universal tool of social influence (Sundie et al., 2012). Reciprocity has been frequently explored in disciplines ranging from game theory and anthropology to social, cultural, and evolutionary psychology (e.g., Cialdini and Goldstein, 2002; Falk and Fischbacher, 2006; Hoffman et al., 1998; Miller et al., 2017). Importantly, reciprocity is bidirectional, meaning that people tend to reciprocate both benefits and punishments, although the degree of reciprocity varies across cultures (Gächter and Herrmann, 2009).

Despite the potential of reciprocity to influence consumer responses, little research has been conducted on the effects of reciprocity regarding sustainable consumer behavior in retail and service settings. De Wulf et al. (2001) found that a retail store's perceived relationship investment—which is theoretically related to reciprocity—was positively associated with relationship quality and ultimately behavioral loyalty. Reciprocity is also positively associated with customer commitment, indicating a positive link between this social influence principle and long-term customer relationship facets (Palmatier et al., 2009). Similarly, Bettencourt (1997) found that perceived support for customers, as measured by items such as “This store really cares about my well-being,” was positively associated with customer voluntary performance (CVP), defined as “helpful, discretionary behaviors of customers that support the ability of the firm to deliver service quality” (p. 384). Given that these items resemble the mutual exchange process embedded in the reciprocity principle, it is plausible that reciprocity-based messages are positively associated with sustainable consumer behavior. Indeed, CVP involves customers engaging in behaviors that are not necessarily expected of them, such as providing feedback, participating in company-sponsored programs, or volunteering to help others (Dai et al., 2023; Rosenbaum and Massiah, 2007; Yi et al., 2011). These behaviors contribute significantly to improving the service delivery process and typically boost organizational performance (Groth, 2005), meaning that customers who think a firm is treating them well are more inclined to reciprocate. Further, when sales personnel use reciprocity in the form of discounts, customers show a higher propensity to purchase products and engage in other acts of kindness (Blanchard et al., 2016). However, aside from these studies examining the effect of reciprocity on consumer-related outcomes, retail research has overlooked the role of reciprocity-based communication in promoting sustainable consumer behavior.

2.2. Social validation

The principle of social validation, also known as social proof, is based on the recognition that individuals often judge the appropriateness of their actions by what others do (Cialdini, 1984; Van Tonder et al., 2023). In the context of sustainable consumer behavior, social validation can be understood as follows: When consumers observe that a significant proportion of their peers or influential figures endorse or adopt sustainable products and practices, they are more likely to view such behaviors as normative and desirable (Cialdini and Goldstein, 2004; Otterbring, 2021b). This recognition creates a kind of social pressure that leads them to align their own behavior with those of the larger group and thereby act more sustainably themselves (Bicchieri and Xiao, 2009). The social validation principle suggests that demonstrating widespread adoption of environmentally friendly behaviors can be a catalyst for further sustainable actions. This concept has been supported by empirical studies highlighting the role of peer behavior and community norms in shaping individual actions toward sustainability (Goldstein et al., 2008; Nolan et al., 2008).

People who see others picking up their trash or who are exposed to other forms of social validation messages designed to stimulate sustainable behaviors tend to be less likely to leave trash in public places (Cialdini et al., 1990; Reno et al., 1993). Goldstein et al. (2008) tested the effectiveness of two social validation messages to encourage hotel guests to reuse towels—a behavior aimed at reducing water and electricity waste. When they used a generic social validation message, such as “the majority of guests in this hotel reuse their towels,” towel reuse rates increased significantly compared to a control message emphasizing the environmental benefits of reusing towels. Moreover, towel reuse rates went up even further when the social validation message was specific rather than generic, communicating that “the majority of guests in this room reuse their towels” (Goldstein et al., 2008). However, not all studies using similar social validation strategies provide conclusive results. For example, Mair and Bergin-Seers (2010) compared four

different types of messages to promote hotel towel reuse. Other than a tendency suggesting that all messages—including those based on social validation—performed equally well in increasing towel reuse rates, it is difficult to draw firm conclusions from their study because they did not report whether there were statistically significant differences between conditions.

The effectiveness of social validation messages in promoting sustainable practices is contextually sensitive. In fact, such messages can sometimes lead to an undesirable “boomerang” effect, whereby consumers *increase* rather than *decrease* their consumption in an *unsustainable* way (Schultz et al., 2007). Therefore, considering the lack of former retail-relevant studies using social validation messages and the fact that most prior studies using this principle have mainly been investigated in relation to towel reuse or electricity consumption, it remains to be examined whether social validation messages can effectively promote sustainable consumer behavior in retail contexts.

2.3. Interim summary and hypotheses

People often reciprocate favors, generous gestures, and helpful behaviors performed by others (Cialdini, 1984; Sundie et al., 2012). In retail and service settings, the use of the reciprocity principle has proven successful in promoting purchases and various acts of kindness (Blanchard et al., 2016). A reciprocal and mutually beneficial relationship between a company and its customers also seems to make the customers more inclined to engage in voluntary behaviors, such as helping other customers (Rosenbaum and Massiah, 2007). Therefore, it is reasonable to assume that the reciprocity principle can be applied to promote sustainable consumer behavior.

The social validation principle is based on the concept that people, especially when they feel uncertain about how to act, mimic the behavior of the majority (Cialdini and Goldstein, 2004). Prior work has highlighted the effectiveness of this principle in terms of reducing littering in certain consumption contexts (Cialdini et al., 1990; Reno et al., 1993). Accordingly, it is plausible that the social validation principle might constitute another way of fostering sustainable consumer behavior. Based on these findings and recent evidence highlighting the effectiveness of reciprocity and social validation-based messages in promoting desirable behavior change (e.g., Melnyk et al., 2022; Mertens et al., 2022; Milkman et al., 2021b), we hypothesize:

H1. Compared to a control condition, reciprocity and social validation messages increase consumers' sustainable behaviors in retail stores.

“Willingness to do” is a frequently studied construct that refers to a person's propensity or predisposition to engage in a particular behavior (Barber et al., 2012). This predisposition often serves as a precursor to actual behavior and provides insight into the possible course of future actions. Although the “willingness to do” construct is distinct from behavioral intentions (Gibbons et al., 1998), these aspects tend to be strongly positively correlated (Konuk and Otterbring, 2024), and typically serve as valid predictors of behavior (e.g., Pomeroy et al., 2009). Therefore, we hypothesize:

H2. Compared to a control condition, reciprocity and social validation messages increase consumers' willingness to shop sustainably in retail stores.

3. Overview of studies

In an initial behavioral field experiment with high ecological validity (Study 1), we manipulate the message that consumers are exposed to in the changing rooms of a sporting goods store and analyze the number of necessary cleanups carried out by store employees. We test whether messages based on two distinct social influence strategies can outperform a standard control message in cultivating customer cleanliness, such that customers leave the changing rooms ordered rather than

disorganized. Specifically, we investigate whether messages based on reciprocity (e.g., “We are happy to help you—all you have to do is to X”) and social validation (e.g., “75% of the customers in this store engage in X”) can promote more sustainable consumer responses than a control message that has no clear connection to any social influence strategy (H1). Next, in a follow-up online experiment (Study 2), we conceptually replicate the results from Study 1 using an improved experimental design with increased rigor, control, and internal validity. More precisely, we examine whether reciprocity and social validation messages can increase individuals' willingness to shop sustainably in the same retail context compared to control participants (H2).

4. Study 1: behavioral field experiment

Study 1 aimed to test H1 under ecologically valid conditions (i.e., settings that are generalizable to the real world outside the laboratory; Kihlstrom, 2021) through a field study taking place during four consecutive weeks at sporting goods store in a medium-sized Danish city. In total, the data collection lasted for 21 days. The store contained four changing rooms, where customers could try clothes for various sporting and leisure activities. During the study, different signs were used in the changing rooms, such that customers could be exposed to one of three different messages: control, reciprocity, and social validation. As such, the study used a single-factor design, with message type as the between-subjects factor. Similar research designs have been used in other field settings, both in recent research (Bergquist et al., 2021; Milkman et al., 2021a; Staats et al., 2017) and in classic articles on social influence (Cialdini et al., 1990; Kallgren et al., 2000; Reno et al., 1993).

In the control condition, customers were exposed to a sign that simply asked them to return the apparel they did not intend to buy in the cash register area. In the reciprocity condition, in contrast, customers were exposed to a sign that emphasized that the employees working in the store would be happy to put the apparel back in place (i.e., an act of kindness), and all customers had to do was to leave it at the cash register area. Finally, in the social validation condition, customers were exposed to a sign announcing that 75% of other customers in this specific sporting goods store leave the changing rooms ordered when they have used them.

Two strategies were implemented to minimize confounding factors, while maximizing rigor and control. First, customers could select a changing room of their own choice without a store employee directing them to a particular room, thus ensuring random assignment to the different conditions. Second, to make the study design balanced, the messages were altered between the different changing rooms, both between and within days (before vs. after lunch), ascertaining that all message types were equally represented across the different changing rooms during the study period (see Table A1 in the Appendix for a representation of how the conditions were distributed between and within days). Third, day of week was monitored as a relevant control variable to isolate the effect of the experimental manipulation.

As the dependent variable, we used the daily number of necessary cleanups¹ carried out by store employees per condition (control vs. reciprocity vs. social validation) during the study period of 21 days. We define a cleanup as the act of removing litter, products, hangers, or packages from a given changing room. One extreme value that scored

¹ The frequency of cleanups in changing rooms has several implications for sustainable consumer behavior. First, untidy environments can decrease consumers' willingness to act sustainably, reducing the effectiveness of anti-littering appeals and even encouraging undesirable behaviors like theft (Keizer et al., 2008). Second, dirty and dusty clothes like those lying on the floor in a disorganized changing room lose consumer appeal, resulting in unsold items and wasted resources in production. Thus, the impact of disorganized changing rooms requiring cleanups extends beyond the immediate retail store environment to broader sustainability efforts.

more than two standard deviations away from the group-specific mean of the dependent variable was treated as an outlier (Cowley, 2005; Otterbring, 2020), and was therefore excluded from the analyses. Including the outlier did not change the nature or significance of our results. Note that the aggregated data points of 21 observations per condition or 63 observations in total correspond to 56 observations per condition and 168 total observations, given that the specific changing rooms and time periods (i.e., before or after lunch) in which the signs were implemented were combined into a total cleanup score per day for each condition (see the Appendix for details). Each changing room was equipped with a counter/calculator, which the employees were instructed to press every time they had to clean a changing room. No distinction was made between materially or marginally disorganized changing rooms as long as a store employee deemed it necessary to engage in a cleanup. This decision was made for pragmatic reasons to make the study feasible to carry out in a real sporting goods store without putting too much pressure on the store employees, but also to boost the realism and relevance of our research (Morales et al., 2017; Otterbring et al., 2023b). After all, store employees are the ones who decide whether a given changing room needs a cleanup. Thus, regardless of whether the room is extremely disorganized or only slightly messy, store employees still need to clean it to make it tidy and appealing to other customers. To minimize the likelihood of hypothesis guessing among employees and enable them to serve incoming customers, the cleanups-counting process was monitored by a confederate, not part of the store staff, who summarized the number of cleanups per condition each day.

4.1. Validation study

We conducted a validation study to test the effectiveness of our manipulation instead of including a formal manipulation check in our main study (cf. Gruijters, 2022; Otterbring et al., 2022b). We considered the manipulation to be effective if (a) the control message was rated highest of the three messages in terms of *not* conveying cues either to kindness or majority-related aspects, (b) the social validation message was rated highest in terms of conveying cues linked to majority-related aspects, and (c) the reciprocity message was rated highest in terms of conveying cues linked to kindness.

Forty-five participants (40.0% female; $M_{\text{age}} = 40$ years) recruited on Prolific Academic read three messages (Control: "Please return the apparel you don't buy in the cash register area"; Social validation: "75% of the customers in this store leave the changing rooms ordered when they have used them"; Reciprocity: "We are happy to put the apparel back in place for you—all you have to do is to leave it at the cash register area"). For each statement, participants indicated their agreement (1 = disagree strongly; 7 = agree strongly) on three items ("This message focuses on the behavior of the majority"; "This message focuses on doing something kind and the concept of 'give and you will receive'"; "This message neither contains cues to kindness nor the behavior of the majority").

As expected, the effectiveness of the manipulation was confirmed. More precisely, planned contrasts through repeated-measures analyses of variance (ANOVAs) revealed that the social validation message ($M_{\text{social validation}} = 5.53$, $SD = 1.65$) was evaluated as significantly more related to the behavior of the majority than both other messages ($F(1, 44) = 9.05$, $p = .004$, $\eta^2 = 0.17$), whereas the reciprocity message and the control message did not differ from one another on this first aspect ($M_{\text{reciprocity}} = 4.44$, $SD = 1.87$ vs. $M_{\text{control}} = 4.42$, $SD = 1.79$; $F < 1$). Similarly, the reciprocity message ($M_{\text{reciprocity}} = 5.33$, $SD = 1.51$) was evaluated as significantly more related to cues linked to kindness than both other messages ($F(1, 44) = 36.79$, $p < .001$, $\eta^2 = 0.46$), with the social validation message and the control message not differing significantly on this second aspect ($M_{\text{social validation}} = 3.89$, $SD = 1.85$ vs. $M_{\text{control}} = 3.62$, $SD = 1.83$; $F < 1$). Finally, the control message ($M_{\text{control}} = 3.69$, $SD = 1.81$) was evaluated as significantly higher in terms of not

conveying cues either to kindness or majority-related aspects compared to both other messages ($F(1, 44) = 5.29$, $p = .026$, $\eta^2 = 0.11$), whereas the social validation message and the reciprocity message did not differ from one another on this third and final feature ($M_{\text{social validation}} = 2.89$, $SD = 1.76$ vs. $M_{\text{reciprocity}} = 3.07$, $SD = 1.66$; $F < 1$).

4.2. Results and discussion

To test our key hypothesis (H1), we investigated potential differences in the average number of daily cleanups by store employees as a function of the specific message implemented in the store's changing rooms (control, reciprocity, or social validation). A one-way ANOVA on this metric revealed a significant omnibus effect, $F(2, 59) = 5.63$, $p = .006$, $\eta^2 = 0.16$. Supporting H1, follow-up planned contrasts (Field, 2013; Otterbring and Lu, 2018; Rosenthal and Rosnow, 1985) found a significant difference between the social influence conditions and the control condition ($t(59) = 3.18$, $p = .002$),² such that the number of cleanups were consistently smaller in the reciprocity and social validation conditions compared to the control condition. Moreover, the reciprocity condition did not differ significantly from the social validation condition ($t(59) = 1.12$, $p = .269$), indicating that both social influence strategies resulted in a similar reduction of cleanups; see Fig. 1.

To demonstrate robustness of these findings and given that sporting goods stores typically have a larger number of customers closer to weekends, we added weekday as a covariate in an analysis of covariance (ANCOVA). The inclusion of this control variable was deemed important considering that several studies have found day of week effects on consumer behavior (e.g., Bussière, 2011; Fitzsimmons, 1985; Khare and Inman, 2009). Indeed, the covariate was significantly positively associated with the number of cleanups, $F(1, 58) = 38.53$, $p < .001$, $\eta^2 = 0.40$. Crucially, the effect of condition on the number of cleanups was still significant and, if anything, just became stronger, $F(2, 58) = 8.48$, $p < .001$, $\eta^2 = 0.23$.

As a second robustness check and considering that the data violated the assumptions for parametric tests in terms of normality and equality

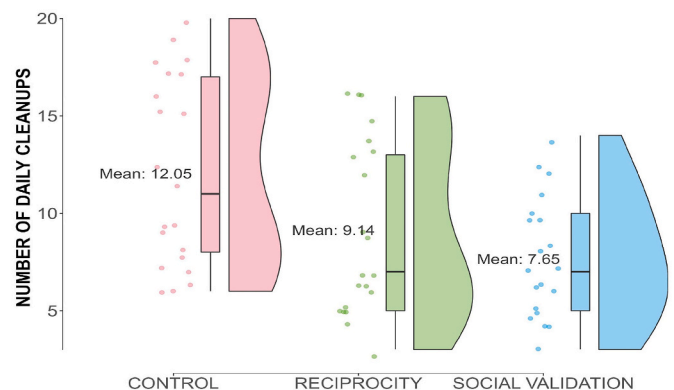


Fig. 1. Daily number of cleanups across conditions.

Note. Vertical lines in the centers of the boxplots indicate medians. The shaded areas on the right of the boxplots depict distributions of data points.

² Despite their greater statistical power when testing theory-based predictions and their widespread adoption in consumer research and psychological science (e.g., Rosenthal et al., 2000; Rosnow and Rosenthal, 1989; Otterbring and Shams, 2019), an anonymous reviewer raised concerns regarding our use of planned contrasts. For brevity, we present the alternative approach of relying on post-hoc testing in the Appendix. Importantly, the nature and significance of all our hypothesized results remain unchanged by using this different analytic approach.

of variance, we also conducted equivalent non-parametric tests. The results of a Kruskal-Wallis test again revealed a significant difference between conditions, $H(2) = 9.52, p = .009$. Follow-up contrasts using Mann-Whitney's U test found a significant difference between the social influence conditions ($Mdn = 7$) and the control condition ($Mdn = 11; Z = 2.94, p = .003$), thus offering additional support for H1. Further, the reciprocity condition ($Mdn = 7$) did not differ significantly from the social validation condition ($Mdn = 7; Z = 0.90, p = .366$).

In sum, regardless of the analytic approach used and the inclusion or exclusion of a meaningful covariate, the results suggest that social influence strategies influenced the number of cleanups in the store, and that both social influence strategies were equally efficient in reducing cleanups. As both the mean and the median values indicated a daily reduction by three to four cleanups by simply putting up one of these social influence messages in the changing rooms, the present study clearly communicates the persuasive potential of social influence.

5. Study 2: conceptual replication

Study 2 sought to conceptually replicate the effects reported in Study 1 on participants' willingness to shop sustainably in the same retail context, while simultaneously testing the generalizability of both these social influence strategies. Study 1 was conducted in actual field settings characterized by high external validity but lower internal validity. By contrast, Study 2 was conducted under more controlled conditions, which provide lower external but high internal validity (Alboqami, 2023; Arsenovic et al., 2023; Söderlund and Julander, 2009). Thus, these studies are methodologically complementary.

A limitation of Study 1 was that we did not examine potential alternative explanations for our findings. For instance, it could have been antecedents linked to customer voluntary performance (CVP) that drove our results rather than any of the two social influence messages. Another possible confounding variable could be social desirability, or the tendency to behave in a manner perceived as socially acceptable (Larson, 2019). Indeed, previous research has shown that sustainable behaviors, or the predisposition toward such actions, correlate with the desire to present oneself in a socially desirable manner (Folwarczny et al., 2023; Gasiorowska et al., 2023; Griskevicius et al., 2010). To enhance rigor and control, we considered several established antecedents of CVP and social desirability as covariates in Study 2 to isolate the effect of our experimental manipulation on our dependent variable.

Additionally, the control condition in Study 1 conveyed a message that may have influenced our results. To account for this potential error source, we included a control condition in Study 2 in which no message other than a fictitious store name was displayed. Moreover, the reciprocity condition used in Study 1 could have been interpreted as containing traces linked to another social influence principle (i.e., liking and sympathy; Cialdini, 2003). Therefore, in Study 2, we adapted an established reciprocity message used in previous related research ("You can count on our employees acting sustainably, can they count on you?"; Krupka and Croson, 2016). This message rests on the assumption that if employees act sustainably and hence exhibit a behavior that is typically perceived as positive and prosocial (Konuk and Otterbring, 2024), customers should be more willing to reciprocate by acting sustainably themselves.

A total of 209 US participants were recruited via Prolific Academic, with 6 extreme values excluded prior to analysis based on the same outlier criterion used in Study 1. The remaining 203 participants (48.8% females, 48.8% males, 2.5% did not indicate their sex; $M_{age} = 36$ years, $SD_{age} = 13$; mean annual income = \$46,400) were randomly assigned to one of three conditions: control, reciprocity, or social validation. Therefore, a between-subjects design was used in Study 2, where condition assignment (control vs. reciprocity vs. social validation) served as the between-subjects factor. We followed the principles of the World Medical Association (Declaration of Helsinki) in conducting the study. All participants agreed to an informed consent form, were paid

regardless of whether they provided responses on all items, had the right to contact the principal investigator for further information about the study, and could withdraw at any time without adverse consequences.

The study was conducted using PsyToolkit, which is a free software for conducting online experiments (Stoet, 2010, 2017). Prolific Academic, which we used for data collection in this study, provides high-quality data in all critical aspects considered by the behavioral research community, i.e., attention, comprehension, honesty, and reliability; in fact, the average data quality on Prolific is considerably higher than that of many other crowdsourced platforms, with this difference sometimes being as large as Cohen's $d = 3.70$ (Peer et al., 2022). To further ensure high data quality, only participants with a Prolific acceptance rate of 99% or higher were allowed to take part in the study. In addition, to ensure that all participants understood the instructions, we prescreened them through Prolific so that only US citizens who were fluent in English were recruited. Some other crowdsourced platforms have struggled with low data quality because many submissions are completed by "bots"—computer programs that mimic human respondents (Chmielewski and Kucker, 2020). Aside from the steps mentioned earlier to ensure data quality, we also explored participants' task completion time. Because the software we used automatically records the time participants spend answering the questions, we found that only two participants, or less than 1% of the total sample, took 2 min or less to complete their tasks. This means that almost all participants had enough time to read the instructions.

Participants were only allowed to complete the study once because (a) Prolific blocks repeated submissions (participants can only join a study once), and (b) the software we use allows participants to log in only once. All in all, we took multiple steps to ensure high data quality. Our sample demographics do not differ substantially from a representative sample of US participants, suggesting that our manipulation, rather than sample-specific characteristics, should be the main driver of the effects reported in our analyses.

Across conditions, participants were pictorially exposed to a mock-up entrance of a fictitious sporting goods store named "Spanp." The image was synthesized using the AI image generator, Midjourney (<https://www.midjourney.com/app/>). Participants were asked to imagine themselves shopping in the depicted store. In the control condition, participants simply saw the store's brand name displayed above the store entrance. In the reciprocity condition, participants were exposed to the same image but with the slogan, "You can count on our employees acting sustainably, can they count on you?" added (cf. Krupka and Croson, 2016). Lastly, in the social validation condition, the slogan displayed was, "75% of our customers shop sustainably" (cf. Goldstein et al., 2008).

Participants' willingness to engage in six sustainable consumer behaviors (i.e., paying extra for sustainable shopping bags, asking the cashier not to wrap purchases to save materials, paying more for sustainably made clothes, buying secondhand items to conserve resources, buying less but higher quality items to reduce resource usage, donating old clothes for recycling before buying new ones) served as our dependent variable. These items were author-generated but closely mimicked measures from previous related research (Baca-Motes et al., 2013; Goldstein et al., 2008). Participants indicated their agreement with performing each of the six sustainable actions on a scale ranging from −100 (Strongly disagree) to 100 (Strongly agree) and the items were averaged to form a composite index of sustainable consumer behavior ($\alpha = 0.73$, $\omega = 0.73$, CI 95 [0.66, 0.79]).

As sustainable behaviors can be perceived as socially desirable, care was taken to address issues associated with response bias. Therefore, participants also replied to a 16-item social desirability scale (Larson, 2019), which includes binary "True" or "False" statements such as, "When I have made a promise, I keep it—no ifs, ands, or buts." We averaged the number of "true" answers to create a social desirability index ($\alpha = .83$, $\omega = 0.83$, CI 95 [0.79, 0.86]). Further, past research has identified three critical antecedents to CVP: customer commitment,

overall customer satisfaction, and perceived support for customers (Bettencourt, 1997). Therefore, we utilized Bettencourt's (1997) 20-item scale designed to gauge CVP antecedents. To align with the context of our study, we modified two items that originally referred grocery stores by omitting the word "grocery." Participants were asked to express their agreement with each item, using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scale consisted of three items measuring customer commitment (e.g., "I am very committed to this store"), three items assessing overall customer satisfaction (e.g., "Based on all my experiences with this store, I am very satisfied"), and 14 items examining perceived customer support (e.g., "This store genuinely cares about my well-being"). We computed index variables for customer commitment ($\alpha = 0.85$, $\omega = 0.86$, CI 95 [0.82, 0.89]), overall customer satisfaction ($\alpha = 0.87$, $\omega = 0.86$, CI 95 [0.81, 0.90]), and perceived customer support ($\alpha = 0.95$, $\omega = 0.86$, CI 95 [0.82, 0.90]) by averaging the respective responses.

The study concluded with participants providing demographic information and completing three manipulation check items. Here, participants were instructed to recall the "Spanp" store they viewed earlier and indicate their agreement with three statements presented in a randomized order to prevent order effects. Participants provided their responses pertaining to the statements on a scale from 1 (disagree strongly) to 7 (agree strongly). Each statement was designed to measure the perception of different aspects related to the experimental conditions, similar to the approach used in the validation study of Study 1: one measured the perception of social validation ("The image of the store emphasized the behavior of the majority"), another gauged the perception of reciprocity ("The image of the store highlighted the theme of reciprocity or 'give and you will receive'"), and the last determined if the control image was perceived as not related to any of these concepts ("The image of the store did not include any cues related to reciprocity or the behavior of the majority"). Importantly, the manipulation check items were included after, as opposed before, the dependent variable. This was done to ensure that any effect on this focal outcome would be due to the manipulation in and of itself rather than demand or expectancy effects (e.g., hypothesis guessing) stemming from the manipulation check items (Rosenthal, 1994; Rosenthal and Rosnow, 2009). Indeed, manipulation check items have sometimes been found to manipulate participants' subsequent responses (Kühnen, 2010), which we actively avoided by including these items in the end of the survey (Ejelöv and Luke, 2020; Hauser et al., 2018; O'Keefe, 2003; Sigall and Mills, 1998).

5.1. Results and discussion

Manipulation Checks. To verify the effectiveness of our manipulation, we performed three one-way ANOVAs on the manipulation check items. We found a significant omnibus effect on the first 'social validation' item, $F(2, 200) = 26.85$, $p < .001$, $\eta^2 = 0.21$. Planned contrasts revealed that participants' scores on this item were significantly higher in the social validation condition ($M = 5.24$, $SD = 1.98$) than in both other conditions ($t(200) = 6.11$, $p < .001$). Although the means differed significantly also between the reciprocity condition ($M = 4.29$, $SD = 1.57$) and the control condition ($M = 3.05$, $SD = 1.51$; $t(200) = 4.33$, $p < .001$), both these means were considerably lower.

We also found a significant omnibus effect on the second 'reciprocity' item, $F(2, 200) = 8.05$, $p < .001$, $\eta^2 = 0.07$. As expected, planned contrasts revealed that participants' scores on this item were significantly higher in the reciprocity condition ($M = 3.89$, $SD = 1.76$) than in both other conditions ($t(200) = 3.90$, $p < .001$), with no significant difference between the control condition ($M = 3.06$, $SD = 1.66$) and the social validation condition ($M = 2.76$, $SD = 1.79$; $t(200) = 0.97$, $p = .331$).

Finally, there was a significant omnibus effect on the third 'control' item, $F(2, 200) = 29.09$, $p < .001$, $\eta^2 = 0.23$. As anticipated, planned contrasts revealed that participants in the control condition scored significantly higher on this item ($M = 5.33$, $SD = 1.66$) compared to

those in the other two conditions ($t(200) = 7.59$, $p < .001$), with no significant difference between the social validation condition ($M = 3.10$, $SD = 1.96$) and the reciprocity condition ($M = 3.46$, $SD = 1.74$; $t(200) = 1.20$, $p = .232$). Taken together, these analyses indicate that our manipulation was successful.

Main Analyses. A one-way ANOVA on participants' willingness to engage in sustainable consumer behavior yielded a significant omnibus effect, $F(2, 200) = 4.08$, $p = .018$, $\eta^2 = 0.04$. Consistent with our theorizing (H2), follow-up planned contrasts revealed that both social influence conditions differed significantly from the control condition ($t(200) = 2.77$, $p = .006$), such that participants were significantly more willing to engage in sustainable consumer behavior in the reciprocity and social validation conditions compared to the control condition; see Fig. 2. Moreover, the reciprocity condition did not differ significantly from the social validation condition ($t(200) = 0.82$, $p = .413$).

We then tested the robustness of these results by performing an ANCOVA with the following covariates: customer commitment, global customer satisfaction, perceived support for customers, and social desirability. The overall model explained slightly more than 20 percent of the variance in participants' willingness to engage in sustainable consumer behavior ($R^2 = 0.225$). Notably, the effect of experimental condition remained significant, $F(2, 196) = 4.15$, $p = .017$, $\eta^2 = 0.04$. There was also a significant positive association between customer commitment and willingness to shop sustainably, $F(1, 196) = 10.63$, $p = .001$, $\eta^2 = 0.05$. However, the other three covariates were not significantly associated our focal outcome: global customer satisfaction, $F(1, 196) = 0.45$, $p = .503$, $\eta^2 < 0.01$; perceived support for customers, $F(1, 196) = 0.01$, $p = .911$, $\eta^2 < 0.01$; social desirability, $F(1, 196) < 0.01$, $p = .925$, $\eta^2 < 0.01$.³

In sum, Study 2 shows that both social influence conditions, regardless of whether they were based on reciprocity or social validation, consistently outperformed the control condition in increasing participants' willingness to engage in sustainable consumer behavior. As such, we conceptually replicate the main findings from Study 1 and demonstrate a considerable generalizability of different reciprocity and social validation manipulations.



Fig. 2. Participants' willingness to engage in sustainable consumer behavior. Note. Vertical lines in the centers of the boxplots indicate medians. The shaded areas on the right of the boxplots depict distributions of data points. Some data points exceed the response format limits due to the jittering function used in R for the purpose of making data visualizations clearer.

³ Exploratory analyses revealed that none of our control variables mediated or moderated the effect of our experimental manipulation on participants' willingness to engage in sustainable consumer behavior.

6. General discussion

In the current research, we examined whether using messages based on two social influence principles—reciprocity and social validation—generates more sustainable behaviors than applying control messages that are not based on any social influence principle. Moreover, we tested the replicability, generalizability, and cross-cultural stability of social validation messages by combining behavioral data from a retail field study at a Danish sporting goods store with US participants' willingness to shop sustainably in a controlled online experiment.

In Study 1, we found that messages based either on reciprocity or social validation in the changing rooms of a sporting goods store reduced the daily number of cleanups carried out by store employees by approximately 30% compared to a neutral control message, with both social influence messages being equally effective in cultivating customer cleanliness (i.e., displaying a sustainable consumer behavior). In Study 2, we replicated these findings in a controlled online experiment and found that reciprocity and social validation messages effectively increased participants' willingness to engage in sustainable consumer behavior. Further, we found no significant difference between these two messages, underscoring their generalizability across cultures and contexts. Hence, our findings indicate that messages based on reciprocity and social validation can be used to increase sustainable consumer behavior not only in well-researched English-speaking nations, such as the US, but also in Scandinavia. Our findings are consistent with the extensive literature demonstrating the effectiveness of social influence strategies in influencing desired behavioral outcomes in contexts other than retailing (e.g., Baca-Motes et al., 2013; Cialdini et al., 1990; Goldstein et al., 2008; Loschelder et al., 2019; Schultz et al., 2007).

6.1. Theoretical contributions

Conceptual replications, in which researchers test the same underlying theory using different methods or in different contexts, offer notable advantages over direct replications. First, they play a critical role in improving the generalizability of results by ensuring that findings do not depend only on specific experimental conditions, manipulations, measures, or sample characteristics (Schmidt, 2009). Second, conceptual replications help refine and advance theory. By using different methods or sample types, they allow for a more nuanced understanding of the conditions under which a phenomenon occurs (Crandall and Sherman, 2016). Finally, they can highlight boundary conditions and help delineate the contexts in which a given theory does and does not hold (Earp and Trafimow, 2015). These benefits underscore the value of conceptual replications in strengthening and extending scientific knowledge.

Our work was inspired by the conceptual replication approach, given its greater ability to progress and test theories across methods (Crandall and Sherman, 2016; Derksen and Morawski, 2022; Otterbring et al., 2022a). Study 1 focused on increasing sustainable consumer behavior in terms of customers leaving changing rooms tidy rather than disorganized, leading to fewer cleanups, whereas Study 2 focused on participants' willingness to shop sustainably. Both these studies tested hypotheses based on the same social influence principles (reciprocity and social validation). Accordingly, the current research used illustrative data to test and provide empirical support for important parts of the social influence framework, as called for to bring a better balance between theory testing and methodological matters (Sutton and Staw, 1995).

Considering that existing studies on related topics are often based solely on self-report (Bateson and Martin, 2021; Baumeister et al., 2007; Cialdini, 2009), our approach of combining behavioral evidence (Study 1) with self-report (Study 2) attests to the generalizability and real-world implications of our research (Berkman and Wilson, 2021; Doliński, 2018). Specifically, our findings suggest that scenario-based online experiments with high rigor and control produce comparable

results as “noisy” field studies with high ecological validity, despite their vastly different settings, samples, and ways of capturing the focal variable of interest (self-report vs. real behavior). This insight is important for scholars conducting retail-relevant research for at least two primary reasons. First, self-report data should not automatically be discarded, at least not in experimental settings (online as well as offline) where the perceived realism has been boosted through stimuli resembling the actual retail store environment (Morales et al., 2017). Second, given that consumer research is a contextually sensitive discipline (Otterbring et al., 2020), which overlaps with other adjacent fields wherein lab-based and online studies often yield findings that are in direct contrast to results obtained from actual field settings (Mitchell, 2012), scholars who conduct research in retail and service settings can nevertheless rest assured that controlled experiments that closely mimic naturalistic conditions can be used to draw accurate inferences about consumer behavior “in the wild.”

Although reciprocity has been shown to be successful in changing people's behavior and willingness to act in a variety of disciplines (e.g., Cialdini and Goldstein, 2002; Falk and Fischbacher, 2006; Hoffman et al., 1998; Miller et al., 2017), few studies have tested the effectiveness of this social influence principle with respect to sustainable consumer behavior. Similarly, previous research on sustainable consumer behavior has largely focused on the role of social validation in the hospitality industry (Baca-Motes et al., 2013; Goldstein et al., 2008; Terrier and Marfaing, 2015), but has neglected other empirical contexts. Our work underscores the broad utility of two distinct social influence principles, thereby contributing to the literature by showing that reciprocity and social validation can promote sustainable consumer behavior and consumers' willingness to shop sustainably both on-site and online. As such, the findings reported herein document that the umbrella framework of social influence can be effectively extended to sustainable consumer behavior in the retail environment.

In our second study, we controlled for social desirability bias and three established antecedents of CVP (Bettencourt, 1997), finding that the effectiveness of messages based on reciprocity and social validation predicted customers' intentions to shop sustainably even after accounting for these theoretically relevant control variables. Interestingly, only one of the three CVP antecedents (customer commitment) was positively associated with our focal outcome, indicating that our findings cannot solely be explained by CVP facets. Nevertheless, the current results contribute to the CVP literature by showing—beyond the social influence focus of the present studies—that customer commitment is another influential predictor of consumers' willingness to shop sustainably.

6.2. Managerial implications

Because we find reciprocity and social validation messages to independently reduce the number of cleanups performed by employees at sporting goods stores (Study 1), and to consistently increase consumers' willingness to engage in sustainable consumer behavior (Study 2), retail managers can easily apply our results to maximize the effectiveness of their sustainability-oriented policies. Indeed, given the small costs and little effort retailers need to devote for disseminating social influence messages, our findings demonstrate that such messages have the potential to promote behaviors recommended to address environmental challenges, while also being financially beneficial for businesses. Such strategies may be considerably safer to implement compared to communicating about environmental challenges or simply presenting facts associated with global warming, given that these latter message types paradoxically can induce more *unsustainable* consumption responses (Folwarczny et al., 2021; Morris et al., 2019).

Retailers and marketers can harness these principles to design more effective sustainability campaigns. For instance, brands might offer eco-friendly incentives or rewards, capitalizing on the innate human tendency to reciprocate acts of kindness (Cialdini, 1984). Similarly, by

spotlighting consumers who engage in sustainable practices, companies can leverage the power of social validation, as individuals often model their behavior after peers (Cialdini and Goldstein, 2004). Thus, integrating these social influence strategies can lead to more impactful and actionable sustainability initiatives in the retail landscape.

Apart from promoting sustainable shopping responses, our findings can be used in communication campaigns for a wider audience. Contrary to evidence suggesting that different types of communication lead to different outcomes (e.g., Yadav et al., 2011), we find that both printed messages and online appeals lead to an increased willingness to act sustainably. Similarly, we find that both reciprocity and social validation are equally effective in terms of promoting sustainable consumer behavior. Therefore, practitioners can apply our findings by adapting social influence messages to the communication format that is best suited to meet unique organizational, institutional, or firm-related goals (cf. Zielke et al., 2023). This is particularly important from a moral standpoint (Elbæk et al., 2023), because using social validation messages that emphasize how the majority act may be both unrealistic and unethical if such communication is based on false information, potentially leading to negative side effects with costly consequences. Practitioners can avoid lying to their target audience by using reciprocity-based messages that communicate *actual* engagement in caring for the planet rather than relying on immoral messages linked to “greenwashing” or false claims based on social validation. Relatedly, in the age of personalized online communications, which can be substantially more effective in shaping desired responses than a “one-size-fits-all” approach (Kosinski et al., 2013; Matz et al., 2017), tailoring social influence strategies to consumers’ online behavioral footprints (e.g., based on likes, comments, and sharing of content) could lead to even stronger effects of interventions aimed at promoting sustainable consumer behavior (Folwaczny and Otterbring, 2021; Youyou et al., 2015).

Recently, an increasing number of retail-related studies have emphasized the importance of improving operational efficiency, including that related to sustainability (e.g., Gupta et al., 2023; Prentice and Nguyen, 2020). One emerging pathway to efficiency optimization, as suggested by our findings, is to reduce in-store cleanups. Indeed, when retailers minimize the number of cleanups, they can effectively allocate their human resources to value-adding tasks such as providing superior customer service. By incorporating messages based on social validation and reciprocity in store design, our results indicate that retail managers can reduce the likelihood of customers leaving changing rooms careless, cluttered, and chaotic. These strategies not only yield cost savings in terms of cleaning supplies and materials but could potentially also improve the overall customer experience, leading to more favorable merchandise evaluations and increased brand loyalty (Chen, 2015; Cortiñas et al., 2004; Doucé et al., 2014).

Together, we demonstrate the effectiveness of reciprocity and social validation messages, irrespective of the precise context in which they are implemented (behavioral field study vs. controlled online experiment) and the specific communication format adopted (printed messages vs. online appeals). Considering that intentions and actual behaviors do not always overlap (Gidlöf et al., 2021; Manaktola and Jauhari, 2007), and that field studies and controlled experiments have different strengths (Berkowitz and Donnerstein, 1982; Otterbring, 2021a), our work offers complementary support for our theorizing across study paradigms, samples, and settings. Given the generalizability of our results, they should be particularly relevant for retail practice.

6.3. Limitations and future research

Although a critic might argue that our focal behavioral outcome in Study 1 has little to do with sustainability, we contend that the frequency of cleanups is strongly associated with consumers’ environmental impact. First, people who are exposed to disorganized environments (e.g., trash left in changing rooms) become less inclined to engage in sustainable behaviors and are more inclined to litter and

neglect anti-littering appeals (Cialdini et al., 1990; Kallgren et al., 2000; Schultz et al., 2013). Second, littered environments can activate social norms that lead to an increase in other undesirable behaviors, such as various acts of immorality (Cialdini, 2003a,b; Cialdini et al., 1991; Keizer et al., 2008). As such, the effects of disorganized changing rooms (requiring more frequent cleanups) go far beyond the changing rooms themselves, with consumers who are confronted with such spaces being less likely to recycle and conserve energy themselves (Bergquist et al., 2021; Keizer et al., 2008; Reno et al., 1993). This, in turn, risks resulting in detrimental effects from a sustainability perspective. For instance, leaving clothes on the floor in changing rooms may make those clothes dirty, dusty, and undesirable, leading to some pieces of apparel not being sold at all due to contamination and contagion concerns by consumers (Argo et al., 2006; Castro et al., 2013; Morales and Fitzsimons, 2007; Rozin et al., 1994). Consequently, consumers’ reluctance to buy such clothes implies wasted resources in terms of overproduction of goods, including raw materials, water, and electricity needed to produce clothing. If cleanups could be reduced across multiple industries, businesses, and brands, the net effect might help to decrease overproduction of certain goods, while simultaneously making customers less likely to litter (Bergquist et al., 2021; Cialdini et al., 1990; Kallgren et al., 2000).

Despite the use of behavioral data in Study 1, we only compared one reciprocity message with one social validation message. Although no differences were found between these two messages across studies, there could still be some situations under which customers respond differently after being exposed to such communication. The existing literature has identified a discrepancy between intention and behavior (de Mesquita et al., 2023; Sheeran and Webb, 2016), particularly regarding sustainable consumer responses (Loebnitz et al., 2022; Nguyen et al., 2019). Therefore, to fully test the effectiveness of different messages based on reciprocity and social validation, further research is warranted, preferably with additional behavioral evidence (Cialdini et al., 1990; Goldstein et al., 2008).

Considering that the content of the reciprocity and social validation messages used in Studies 1–2 was almost identical from a conceptual point of view, with both these conditions outperforming the control condition across studies, we are confident that our work is generalizable and applies to consumers in both Denmark and the US. If anything, the fact that we conducted our studies in different countries should be perceived as a strength, given the prevalent WEIRD bias in the academic literature (Henrich et al., 2010), with most studies being based on samples from Western, educated, industrialized, rich, and democratic societies (i.e., WEIRD samples), typically in the form of North American university students or online panel participants. However, we did not collect psychographic data in our behavioral field study, although previous work suggests that customers’ nationality and certain individual differences factors may moderate the effects of social influence strategies on behavioral and attitudinal responses (Cialdini et al., 1999; Pettifor et al., 2017). Controlling for various psychographic variables (e.g., consumers’ prosocial and cooperative tendencies as well as their altruism levels) may help to further generalize our obtained results, beyond what we have already done through our combination of behavioral data from actual field settings in Denmark with a controlled online experiment on US participants. Future research should address this possibility and should optimally seek to shed light on the psychological mechanisms driving our obtained results (mediation) as well as the boundary conditions explaining under what precise circumstances our findings hold (moderation). Nevertheless, it should be stressed that consumers in real retail settings are often skeptical when requested to fill out lengthy survey instruments simply to help researchers rule out alternative explanations or isolate their studied effects (Cialdini, 2009). Therefore, considering that some of the major strengths of field studies are realism, relevance, and behavioral evidence rather than rigor and control, they should not be assessed using the same evaluation criteria as studies conducted under more controlled conditions (Otterbring et al., 2023b).

Declaration of competing interest

The authors do not have any conflict of interest to disclose.

Data availability

Data will be made available on request.

Acknowledgement

50% of the authors contributed actively to the current manuscript. Order of authorship was determined by a reciprocity agreement.

Appendix

Table A1

(Study 1): Distribution of conditions between and within days. The store was closed on Sundays.

Day	Weekday	Room 1	Room 2	Room 3	Room 4
1, Before Lunch	Tuesday	C	SV	R	R
1, After Lunch	Tuesday	R	C	SV	R
2, Before Lunch	Wednesday	SV	R	C	C
2, After Lunch	Wednesday	C	SV	R	C
3, Before Lunch	Thursday	R	C	SV	SV
3, After Lunch	Thursday	SV	R	C	SV
4, Before Lunch	Friday	C	SV	R	R
4, After Lunch	Friday	R	C	SV	R
5, Before Lunch	Saturday	SV	R	C	C
5, After Lunch	Saturday	C	SV	R	C
6, Before Lunch	Monday	R	C	SV	SV
6, After Lunch	Monday	SV	R	C	SV
7, Before Lunch	Tuesday	C	SV	R	R
7, After Lunch	Tuesday	R	C	SV	R
8, Before Lunch	Wednesday	SV	R	C	C
8, After Lunch	Wednesday	C	SV	R	C
9, Before Lunch	Thursday	R	C	SV	SV
9, After Lunch	Thursday	SV	R	C	SV
10, Before Lunch	Friday	C	SV	R	R
10, After Lunch	Friday	R	C	SV	R
11, Before Lunch	Saturday	SV	R	C	C
11, After Lunch	Saturday	C	SV	R	C
12, Before Lunch	Monday	R	C	SV	SV
12, After Lunch	Monday	SV	R	C	SV
13, Before Lunch	Tuesday	C	SV	R	R
13, After Lunch	Tuesday	R	C	SV	R
14, Before Lunch	Wednesday	SV	R	C	C
14, After Lunch	Wednesday	C	SV	R	C
15, Before Lunch	Thursday	R	C	SV	SV
15, After Lunch	Thursday	SV	R	C	SV
16, Before Lunch	Friday	C	SV	R	R
16, After Lunch	Friday	R	C	SV	R
17, Before Lunch	Saturday	SV	R	C	C
17, After Lunch	Saturday	C	SV	R	C
18, Before Lunch	Monday	R	C	SV	SV
18, After Lunch	Monday	SV	R	C	SV
19, Before Lunch	Tuesday	C	SV	R	R
19, After Lunch	Tuesday	R	C	SV	R
20, Before Lunch	Wednesday	SV	R	C	C
20, After Lunch	Wednesday	C	SV	R	C
21, Before Lunch	Thursday	R	C	SV	SV
21, After Lunch	Thursday	SV	R	C	SV

Note: C = Control; R = Reciprocity; SV = Social Validation. The sporting goods store had four changing rooms and the different conditions were altered before and after lunch each day for 21 days. Therefore, the total number of datapoints can be computed as follows: 4 (changing rooms) $\times$ 2 (before lunch and after lunch) $\times$ 21 days of data collection = 168. Considering that we had three distinct conditions, which were equally represented, we get $168/3 = 56$ observations per condition.

Alternative Analytic Approach

In our main analyses, we relied on planned contrasts, which are statistical procedures for focused and theory-based predictions rather than more vague omnibus questions (Rosenthal et al., 2000). Contrasts are characterized by greater statistical power coupled with improved conceptual clarity when investigating such focused predictions (Rosnow and Rosenthal, 1996) and can be described as “1 *df* tests of significance for comparing the pattern of obtained group means to predicted values, with predictions made on the basis of theory” (Rosnow and Rosenthal, 1989, p. 1281). Although researchers “may not think of *t* as a test for comparing more than two means with the predictions made from theory [...] this application of *t* can be very useful” (Rosnow and Rosenthal, 1996, p. 333). Still, as an alternative to planned contrasts, post-hoc tests can be also performed. Indeed, “many researchers engage in a kind of ‘Simon says game’ in which they believe they must [...] perform a preliminary pirouette of significance tests on unrelated effects before they feel it is ‘safe’ to address their specific prediction of interest” (Rosnow and Rosenthal, 1996, p. 331). To counter concerns raised by an anonymous reviewer about our use of planned contrasts, we performed a series of post-hoc tests using Fisher’s Least Significant Difference (LSD). This post-hoc test should generally be avoided in the case of many experimental conditions, as it provides weak control of Type I errors under

such circumstances. However, the LSD procedure is recommended in the specific case of three experimental conditions (as in the current research), given that it then maximizes statistical power while simultaneously controlling for Type I errors through the omnibus ANOVA test (Baguley, 2018; Howell, 2012). Accordingly, we relied on the LSD procedure in our supplementary analyses presented below.

Study 1

In further support of H1, follow-up post-hoc tests using Fisher's LSD found a significant difference between the control condition ($M = 12.05$, $SD = 4.93$) and the reciprocity condition ($M = 9.14$, $SD = 4.52$; $p = .032$) as well as between the control condition and the social validation condition ($M = 7.65$, $SD = 3.12$; $p = .002$). However, the reciprocity condition did not differ significantly from the social validation condition ($p = .269$). Thus, the number of cleanups was consistently smaller in the reciprocity and social validation conditions compared to the control condition.

Study 2

Manipulation Checks

Post-hoc tests (Fisher's LSD) on the first manipulation check item linked to the behavior of the majority revealed that all conditions differed significantly from one another (all $ps \leq .001$). Importantly, however, the highest mean emerged in the social validation condition ($M = 5.24$, $SD = 1.98$), with considerably lower means in the reciprocity condition ($M = 4.29$, $SD = 1.57$) and the control condition ($M = 3.05$, $SD = 1.51$). Similar post-hoc tests on the second manipulation check item linked to the concept of 'give and you will receive' found, as desired, that the reciprocity condition ($M = 3.89$, $SD = 1.76$) differed significantly from both the control condition ($M = 3.06$, $SD = 1.66$; $p = .005$) and the social validation condition ($M = 2.76$, $SD = 1.79$; $p < .001$), with no difference between the latter two conditions ($p = .331$). Finally, post-hoc tests (LSD) on the last manipulation check item linked neither to reciprocity nor social validation found, consistent with a successful manipulation, that the control condition ($M = 5.33$, $SD = 1.66$) differed significantly from both the reciprocity condition ($M = 3.46$, $SD = 1.74$; $p < .001$) and the social validation condition ($M = 3.10$, $SD = 1.96$; $p < .001$), with no significant difference between the latter two conditions ($p = .232$).

Main Results

Attesting to the robustness of our main findings, and in line with H2, follow-up post-hoc tests (Fisher's LSD) found a significant difference between the control condition ($M = 23.46$, $SD = 29.48$) and the reciprocity condition ($M = 34.17$, $SD = 32.85$; $p = .041$) as well as between the control condition and the social validation condition ($M = 38.46$, $SD = 28.96$; $p = .006$). However, the reciprocity condition did not differ significantly from the social validation condition ($p = .413$). As such, participants' intentions to shop sustainably was consistently higher in the reciprocity and social validation conditions compared to the control condition.

References

- Abrahamse, W., Steg, L., 2013. Social influence approaches to encourage resource conservation: a meta-analysis. *Global Environ. Change* 23 (6), 1773–1785.
- Alboqami, H., 2023. Trust me, I'm an influencer!-Causal recipes for customer trust in artificial intelligence influencers in the retail industry. *J. Retailing Consum. Serv.* 72, 103242.
- Argo, J.J., Dahl, D.W., Morales, A.C., 2006. Consumer contamination: how consumers react to products touched by others. *J. Market.* 70 (2), 81–94.
- Arsenovic, J., Edvardsson, B., Otterbring, T., Tronvoll, B., 2023. Money for nothing: the impact of compensation on customers' bad-mouthing in service recovery encounters. *Market. Lett.* 34 (1), 69–82.
- Ashforth, B.E., Harrison, S.H., Corley, K.G., 2008. Identification in organizations: an examination of four fundamental questions. *J. Manag.* 34 (3), 325–374.
- Ashraf, N., Bohnet, I., Piankov, N., 2006. Decomposing trust and trustworthiness. *Exp. Econ.* 9, 193–208.
- Baca-Motes, K., Brown, A., Gneezy, A., Keenan, E.A., Nelson, L.D., 2013. Commitment and behavior change: evidence from the field. *J. Consum. Res.* 39 (5), 1070–1084.
- Baguley, T., 2018. *Serious Stat: A Guide to Advanced Statistics for the Behavioral Sciences*. Bloomsbury Publishing.
- Barber, N., Kuo, P.J., Bishop, M., Goodman Jr., R., 2012. Measuring psychographics to assess purchase intention and willingness to pay. *J. Consum. Market.* 29 (4), 280–292.
- Bateson, M., Martin, P., 2021. *Measuring Behaviour: an Introductory Guide*. Cambridge University Press.
- Baumeister, R.F., Vohs, K.D., Funder, D.C., 2007. Psychology as the science of self-reports and finger movements: whatever happened to actual behavior? *Perspect. Psychol. Sci.* 2 (4), 396–403.
- Bettencourt, L.A., 1997. Customer voluntary performance: customers as partners in service delivery. *J. Retailing* 73 (3), 383–406.
- Bergquist, M., Blumenschein, P., Karinti, P., Köhler, J., Ramos, É.M.S., Rödström, J., Ejelöv, E., 2021. Replicating the focus theory of normative conduct as tested by Cialdini et al. (1990). *J. Environ. Psychol.* 74, 101573.
- Berkman, E.T., Wilson, S.M., 2021. So useful as a good theory? The practicality crisis in (social) psychological theory. *Perspect. Psychol. Sci.* 16 (4), 864–874.
- Berkowitz, L., Donnerstein, E., 1982. External validity is more than skin deep: some answers to criticisms of laboratory experiments. *Am. Psychol.* 37 (3), 245–257.
- Bicchieri, C., Xiao, E., 2009. Do the right thing: but only if others do so. *J. Behav. Decis. Making* 22 (2), 191–208.
- Blanchard, S.J., Carlson, K.A., Hyodo, J.D., 2016. The favor request effect: requesting a favor from consumers to seal the deal. *J. Consum. Res.* 42 (6), 985–1001.
- Boon-Falleur, M., Grandin, A., Baumard, N., Chevallier, C., 2022. Leveraging social cognition to promote effective climate change mitigation. *Nat. Clim. Change* 12 (4), 332–338.
- Bussière, D., 2011. The day of the week effect in consumer behavior: analyzing utilitarian and hedonistic consumer modes. *J. Promot. Manag.* 17 (4), 418–425.
- Castro, I.A., Morales, A.C., Nowlis, S.M., 2013. The influence of disorganized shelf displays and limited product quantity on consumer purchase. *J. Market.* 77 (4), 118–133.
- Chen, S.C., 2015. Customer value and customer loyalty: is competition a missing link? *J. Retailing Consum. Serv.* 22, 107–116.
- Chmielewski, M., Kucker, S.C., 2020. An MTurk crisis? Shifts in data quality and the impact on study results. *Soc. Psychol. Personal. Sci.* 11 (4), 464–473.
- Cialdini, R.B., 2003a. Crafting normative messages to protect the environment. *Curr. Dir. Psychol. Sci.* 12 (4), 105–109.
- Cialdini, R.B., 2003b. *Influence: How and Why People Agree to Things*. Quill, New York.
- Cialdini, R.B., 2009. We have to break up. *Perspect. Psychol. Sci.* 4 (1), 5–6.
- Cialdini, R.B., 1984. *Influence: the Psychology of Persuasion*. Harper Collins.
- Cialdini, R.B., Goldstein, N.J., 2002. The science and practice of persuasion. *Cornell Hotel Restaur. Adm. Q.* 43 (2), 40–50.
- Cialdini, R.B., Goldstein, N.J., 2004. Social influence: compliance and conformity. *Annu. Rev. Psychol.* 55, 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. *Adv. Exp. Soc. Psychol.* 24, 201–234.
- 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. *J. Pers. Soc. Psychol.* 58 (6), 1015–1026.
- Cialdini, R.B., Wosinska, W., Barrett, D.W., Butner, J., Gornik-Durose, M., 1999. Compliance with a request in two cultures: the differential influence of social proof and commitment/consistency on collectivists and individualists. *Pers. Soc. Psychol. Bull.* 25 (10), 1242–1253.
- Cortinas, M., Elorz, M., Villanueva, M.L., 2004. Retail store loyalty management via an analysis of heterogeneity of the service elements. *Int. Rev. Retail Distrib. Consum. Res.* 14 (4), 407–437.
- Cowley, E., 2005. Views from consumers next in line: the fundamental attribution error in a service setting. *J. Acad. Market. Sci.* 33 (2), 139–152.
- Crandall, C.S., Sherman, J.W., 2016. On the scientific superiority of conceptual replications for scientific progress. *J. Exp. Soc. Psychol.* 66, 93–99.

- Dai, Y.D., Liu, Y.C., Zhuang, W.L., Wang, C.H., 2023. Using social exchange perspective to explain customer voluntary performance behavior. *Serv. Ind. J.* 43 (9–10), 764–784.
- de Mesquita, J.M.C., Shin, H., Urdan, A.T., Pimenta, M.T.C., 2023. Measuring the intention-behavior gap in service failure and recovery: the moderating roles of failure severity and service recovery satisfaction. *Eur. J. Market.* 57 (7), 1826–1853.
- Derksen, M., Morawski, J., 2022. Kinds of replication: examining the meanings of ‘conceptual replication’ and ‘direct replication. *Perspect. Psychol. Sci.* 17 (5), 1490–1505.
- De Wulf, K., Odekerken-Schröder, G., Iacobucci, D., 2001. Investments in consumer relationships: a cross-country and cross-industry exploration. *J. Market.* 65 (4), 33–50.
- Doliński, D., 2018. Is psychology still a science of behaviour? *Social Psychological Bulletin* 13 (2), 1–14.
- Doucé, L., Janssens, W., Swinnen, G., Van Cleempoel, K., 2014. Influencing consumer reactions towards a tidy versus a messy store using pleasant ambient scents. *J. Environ. Psychol.* 40, 351–358.
- Earp, B.D., Trafimow, D., 2015. Replication, falsification, and the crisis of confidence in social psychology. *Front. Psychol.* 6 (621), 1–11.
- Ejelöv, E., Luke, T.J., 2020. Rarely safe to assume”: evaluating the use and interpretation of manipulation checks in experimental social psychology. *J. Exp. Soc. Psychol.* 87, 103937.
- Elbak, C.T., Mitkidis, P., Aarøe, L., Otterbring, T., 2023. Subjective socioeconomic status and income inequality are associated with self-reported morality across 67 countries. *Nat. Commun.* 14 (1), 5453.
- Fabrigar, L.R., Wegener, D.T., Petty, R.E., 2020. A validity-based framework for understanding replication in psychology. *Pers. Soc. Psychol. Rev.* 24 (4), 316–344.
- Falk, A., Fischbacher, U., 2006. A theory of reciprocity. *Game. Econ. Behav.* 54 (2), 293–315.
- Field, A., 2013. *Discovering Statistics Using IBM SPSS Statistics*. Sage, London, England.
- Fitzsimmons, J.A., 1985. Consumer participation and productivity in service operations. *Interfaces* 15 (3), 60–67.
- Folwarczny, M., Christensen, J.D., Li, N.P., Sigurdsson, V., Otterbring, T., 2021. Crisis communication, anticipated food scarcity, and food preferences: Preregistered evidence of the insurance hypothesis. *Food Qual. Preference* 91, 104213.
- Folwarczny, M., Otterbring, T., 2021. Secure and sustainable but not as prominent among the ambivalent: attachment style and proenvironmental consumption. *Pers. Individ. Differ.* 183, 111154.
- Folwarczny, M., Otterbring, T., Ares, G., 2023. Sustainable food choices as an impression management strategy. *Curr. Opin. Food Sci.* 49, 100969.
- Folwarczny, M., Otterbring, T., Sigurdsson, V., Tan, L.K., Li, N.P., 2022. Old Minds, New Marketplaces: How Evolved Psychological Mechanisms Trigger Mismatched Food Preferences”. *Evolutionary Behavioral Sciences*.
- Gallucci, M., Perugini, M., 2000. An experimental test of a game-theoretical model of reciprocity. *J. Behav. Decis. Making* 13 (4), 367–389.
- Gasiorowska, A., Folwarczny, M., Tan, L.K., Otterbring, T., 2023. Delicate dining with a date and burger binging with buddies: impression management across social settings and consumers’ preferences for masculine or feminine foods. *Front. Nutr.* 10, 1127409.
- Gächter, S., Herrmann, B., 2009. Reciprocity, culture and human cooperation: previous insights and a new cross-cultural experiment. *Phil. Trans. Biol. Sci.* 364 (1518), 791–806.
- Gidlöf, K., Lahm, E.S., Wallin, A., Otterbring, T., 2021. Eco depletion: the impact of hunger on prosociality by means of environmentally friendly attitudes and behavior. *J. Retailing Consum. Serv.* 62, 102654.
- Gibbons, F.X., Gerrard, M., Blanton, H., Russell, D.W., 1998. Reasoned action and social reaction: willingness and intention as independent predictors of health risk. *J. Pers. Soc. Psychol.* 74 (5), 1164–1180.
- Goldstein, N.J., Cialdini, R.B., Griskevicius, V., 2008. A room with a viewpoint: using social norms to motivate environmental conservation in hotels. *J. Consum. Res.* 35 (3), 472–482.
- Gupta, A., Pachar, N., Jain, A., Govindan, K., Jha, P.C., 2023. Resource reallocation strategies for sustainable efficiency improvement of retail chains. *J. Retailing Consum. Serv.* 73, 103309.
- Griskevicius, V., Cantú, S.M., Van Vugt, M., 2012. The evolutionary bases for sustainable behavior: implications for marketing, policy, and social entrepreneurship. *J. Publ. Pol. Market.* 31 (1), 115–128.
- Griskevicius, V., Tybur, J.M., Van den Bergh, B., 2010. Going green to be seen: status, reputation, and conspicuous conservation. *J. Pers. Soc. Psychol.* 98 (3), 392–404.
- Groth, M., 2005. Customers as good soldiers: examining citizenship behaviors in internet service deliveries. *J. Manag.* 31 (1), 7–27.
- Gruijters, S.L., 2022. Making inferential leaps: manipulation checks and the road towards strong inference. *J. Exp. Soc. Psychol.* 98, 104251.
- Hauser, D.J., Ellsworth, P.C., Gonzalez, R., 2018. Are manipulation checks necessary? *Front. Psychol.* 9, 998.
- Henrich, J., Heine, S.J., Norenzayan, A., 2010. The weirdest people in the world? *Behav. Brain Sci.* 33 (2–3), 61–83.
- Hoffman, E., McCabe, K.A., Smith, V.L., 1998. Behavioral foundations of reciprocity: experimental economics and evolutionary psychology. *Econ. Inq.* 36 (3), 335–352.
- Howell, D.C., 2012. *Statistical Methods for Psychology*. Cengage Learning.
- Hummel, D., Maedche, A., 2019. How effective is nudging? A quantitative review on the effect sizes and limits of empirical nudging studies. *Journal of Behavioral and Experimental Economics* 80, 47–58.
- Kallgren, C.A., Reno, R.R., Cialdini, R.B., 2000. A focus theory of normative conduct: when norms do and do not affect behavior. *Pers. Soc. Psychol. Bull.* 26 (8), 1002–1012.
- Keizer, K., Lindenberg, S., Steg, L., 2008. The spreading of disorder. *Science* 322 (5908), 1681–1685.
- Khare, A., Inman, J.J., 2009. Daily, week-part, and holiday patterns in consumers’ caloric intake. *J. Publ. Pol. Market.* 28 (2), 234–252.
- Kihlstrom, J.F., 2021. Ecological validity and ‘ecological validity. *Perspect. Psychol. Sci.* 16 (22), 466–471.
- Krupka, E.L., Croson, R.T., 2016. The differential impact of social norms cues on charitable contributions. *J. Econ. Behav. Organ.* 128, 149–158.
- 2024 Konuk, F. A. and Otterbring, T. (2024), “The dark side of going green: dark triad traits predict organic consumption through virtue signaling, status signaling, and praise from others”, *J. Retailing Consum. Serv.*, Vol. 76, pp. 103531..
- Kosinski, M., Stillwell, D., Graepel, T., 2013. Private traits and attributes are predictable from digital records of human behavior. *Proc. Natl. Acad. Sci. USA* 110 (15), 5802–5805.
- Kühnen, U., 2010. Manipulation checks as manipulation: another look at the ease-of-retrieval heuristic. *Pers. Soc. Psychol. Bull.* 36 (1), 47–58.
- Larson, R.B., 2019. Controlling social desirability bias. *Int. J. Mark. Res.* 61 (5), 534–547.
- Loebnitz, N., Frank, P., Otterbring, T., 2022. Stairway to organic heaven: the impact of social and temporal distance in print ads. *J. Bus. Res.* 139, 1044–1057.
- Loschelder, D.D., Siepelmeyer, H., Fischer, D., Rubel, J.A., 2019. Dynamic norms drive sustainable consumption: norm-based nudging helps café customers to avoid disposable to-go-cups. *J. Econ. Psychol.* 75, 102146.
- Mair, J., Bergin-Seers, S., 2010. The effect of interventions on the environmental behaviour of Australian motel guests. *Tourism Hospit. Res.* 10 (4), 255–268.
- Mäkiwierikko, A., Siepelmeyer, H., Shahrokhi, H., Enarsson, D., Kordas, O., 2023. Pause hours -A community-based behavioural demand response approach to peak load reduction. *J. Clean. Prod.*, 137064.
- Manaktola, K., Jauhari, V., 2007. Exploring consumer attitude and behaviour towards green practices in the lodging industry in India. *Int. J. Contemp. Hospit. Manag.* 19 (5), 364–377.
- Matz, S.C., Kosinski, M., Nave, G., Stillwell, D.J., 2017. Psychological targeting as an effective approach to digital mass persuasion. *Proc. Natl. Acad. Sci. USA* 114 (48), 12714–12719.
- Melnyk, V., Carrilatt, F.A., Melnyk, V., 2022. The influence of social norms on consumer behavior: a meta-analysis. *J. Market.* 86 (3), 98–120.
- Mertens, S., Herberz, M., Hahnel, U.J., Brosch, T., 2022. The effectiveness of nudging: a meta-analysis of choice architecture interventions across behavioral domains. *Proc. Natl. Acad. Sci. USA* 119 (1), e2107346118.
- Milkman, K.L., Beshears, J., Choi, J.J., Laibson, D., Madrian, B.C., 2021a. Using implementation intentions prompts to enhance influenza vaccination rates. *Proc. Natl. Acad. Sci. USA* 108 (26), 10415–10420.
- Milkman, K.L., Gromet, D., Ho, H., Kay, J.S., Lee, T.W., Pandiloski, P., Park, Y., Rai, A., Bazerman, M., Beshears, J., et al., 2021b. Megastudies improve the impact of applied behavioural science. *Nature* 600 (7889), 478–483.
- Miller, J.G., Goyal, N., Wice, M., 2017. A cultural psychology of agency: morality, motivation, and reciprocity. *Perspect. Psychol. Sci.* 12 (5), 867–875.
- Mitchell, G., 2012. Revisiting truth or triviality: the external validity of research in the psychological laboratory. *Perspect. Psychol. Sci.* 7 (2), 109–117.
- Montzka, S.A., Dlugokencky, E.J., Butler, J.H., 2011. Non-CO2 greenhouse gases and climate change. *Nature* 476 (7358), 43–50.
- Morales, A.C., Amir, O., Lee, L., 2017. Keeping it real in experimental research—understanding when, where, and how to enhance realism and measure consumer behavior. *J. Consum. Res.* 44 (2), 465–476.
- Morales, A.C., Fitzsimons, G.J., 2007. Product contagion: changing consumer evaluations through physical contact with “disgusting” products. *J. Market. Res.* 44 (2), 272–283.
- Morris, B.S., Chrysochou, P., Christensen, J.D., Orquin, J.L., Barraza, J., Zak, P.J., Mitkidis, P., 2019. Stories vs. facts: triggering emotion and action-taking on climate change. *Climatic Change* 154 (1), 19–36.
- Nguyen, H.V., Nguyen, C.H., Hoang, T.T.B., 2019. Green consumption: closing the intention-behavior gap. *Sustain. Dev.* 27 (1), 118–129.
- Nisa, C., Varum, C., Botelho, A., 2017. Promoting sustainable hotel guest behavior: a systematic review and meta-analysis. *Cornell Hospit. Quart.* 58 (4), 354–363.
- Nolan, J.M., Schultz, P.W., Cialdini, R.B., Goldstein, N.J., Griskevicius, V., 2008. Normative social influence is underdetected. *Pers. Soc. Psychol. Bull.* 34 (7), 913–923.
- Nowak, M.A., Sigmund, K., 2005. Evolution of indirect reciprocity. *Nature* 437 (7063), 1291–1298.
- O’Keefe, D.J., 2003. Message properties, mediating states, and manipulation checks: claims, evidence, and data analysis in experimental persuasive message effects research. *Commun. Theor.* 13 (3), 251–274.
- Otterbring, T., 2020. Appetite for destruction: counterintuitive effects of attractive faces on people’s food choices. *Psychol. Market.* 37 (11), 1451–1464.
- Otterbring, T., 2021a. Evolutionary psychology in marketing: deep, debated, but fancier with fieldwork. *Psychol. Market.* 38 (2), 229–238.
- Otterbring, T., 2021b. Peer presence promotes popular choices: a “Spicy” field study on social influence and brand choice. *J. Retailing Consum. Serv.* 61, 102594.
- Otterbring, T., Bhatnagar, R., Folwarczny, M., 2022a. Selecting the special or choosing the common? A high-powered conceptual replication of Kim and Markus’ (1999) pen study. *J. Soc. Psychol.* 1–7.
- Otterbring, T., Folwarczny, M., 2022. Firstborns buy better for the greater good: birth order differences in green consumption values. *Pers. Individ. Differ.* 186, 111353.
- Otterbring, T., Lu, C., 2018. Clothes, condoms, and customer satisfaction: the effect of employee mere presence on customer satisfaction depends on the shopping situation. *Psychol. Market.* 35 (6), 454–462.

- Otterbring, T., Rolschau, K., Furrebøe, E.F., Nyhus, E.K., 2022b. Crossmodal correspondences between typefaces and food preferences drive congruent choices but not among young consumers. *Food Qual. Prefer.* 96, 104376.
- Otterbring, T., Samuelsson, P., Arsenovic, J., Elbæk, C.T., Folwarczny, M., 2023a. Shortsighted sales or long-lasting loyalty? The impact of salesperson-customer proximity on consumer responses and the beauty of bodily boundaries. *Eur. J. Market.* 57 (7), 1854–1885.
- Otterbring, T., Shams, P., 2019. Mirror, mirror, on the menu: visual reminders of overweight stimulate healthier meal choices. *J. Retailing Consum. Serv.* 47, 177–183.
- Otterbring, T., Sundie, J., Li, Y.J., Hill, S., 2020. Evolutionary psychological consumer research: bold, bright, but better with behavior. *J. Bus. Res.* 120, 473–484.
- Otterbring, T., Viglia, G., Grazzini, L., Das, G., 2023b. Guest editorial: favoring fieldwork makes marketing more meaningful. *Eur. J. Market.* 57 (7), 1793–1803.
- Palmatier, R.W., Jarvis, C.B., Bechhoff, J.R., Kardes, F.R., 2009. The role of customer gratitude in relationship marketing. *J. Market.* 73 (5), 1–18.
- Pettifor, H., Wilson, C., Axsen, J., Abrahamse, W., Anable, J., 2017. Social influence in the global diffusion of alternative fuel vehicles—A meta-analysis. *J. Transport Geogr.* 62, 247–261.
- Peer, E., Rothschild, D., Gordon, A., Evernden, Z., Damer, E., 2022. Data quality of platforms and panels for online behavioral research. *Behav. Res. Methods* 54 (4), 1643–1662.
- Pomery, E.A., Gibbons, F.X., Reis-Bergan, M., Gerrard, M., 2009. From willingness to intention: experience moderates the shift from reactive to reasoned behavior. *Pers. Soc. Psychol. Bull.* 35 (7), 894–908.
- Prentice, C., Nguyen, M., 2020. Engaging and retaining customers with AI and employee service. *J. Retailing Consum. Serv.* (56), 102186.
- Raworth, K., 2017. A Doughnut for the Anthropocene: humanity's compass in the 21st century. *Lancet Planet. Health* 1, e48–e49.
- Reno, R.R., Cialdini, R.B., Kallgren, C.A., 1993. The transsituational influence of social norms. *J. Pers. Soc. Psychol.* 64 (1), 104–112.
- Rosenbaum, M.S., Massiah, C.A., 2007. When customers receive support from other customers: exploring the influence of intercustomer social support on customer voluntary performance. *J. Serv. Res.* 9 (3), 257–270.
- Rosenthal, R., 1994. Interpersonal expectancy effects: a 30-year perspective. *Curr. Dir. Psychol. Sci.* 3 (6), 176–179.
- Rosenthal, R., Rosnow, R.L., 2009. *Artifacts in Behavioral Research: Robert Rosenthal and Ralph L. Rosnow's Classic Books*. Oxford University Press.
- Rosenthal, R., Rosnow, R.L., 1985. *Contrast Analysis: Focused Comparisons in the Analysis of Variance*. Cambridge University Press, New York, NY.
- Rosnow, R.L., Rosenthal, R., 1996. Computing contrasts, effect sizes, and counternulls on other people's published data: general procedures for research consumers. *Psychol. Methods* 1 (4), 331–340.
- Rosenthal, R., Rosnow, R.L., Rubin, D.B., 2000. *Contrasts and Effect Sizes in Behavioral Research: A Correlational Approach*. Cambridge University Press.
- Rosnow, R.L., Rosenthal, R., 1989. Statistical procedures and the justification of knowledge in psychological science. *Am. Psychol.* 44 (10), 1276–1284.
- Rozin, P., Markwith, M., McCauley, C., 1994. Sensitivity to indirect contacts with other persons: AIDS aversion as a composite of aversion to strangers, infection, moral taint, and misfortune. *J. Abnorm. Psychol.* 103 (3), 495–504.
- Schmidt, S., 2009. Shall we really do it again? The powerful concept of replication is neglected in the social sciences. *Rev. Gen. Psychol.* 2 (13), 90–100.
- Schultz, P.W., Bator, R.J., Large, L.B., Bruni, C.M., Tabanico, J.J., 2013. Littering in context: personal and environmental predictors of littering behavior. *Environ. Behav.* 45 (1), 35–59.
- Schultz, P.W., Nolan, J.M., Cialdini, R.B., Goldstein, N.J., Griskevicius, V., 2007. The constructive, destructive, and reconstructive power of social norms. *Psychol. Sci.* 18 (5), 429–434.
- Sheeran, P., Webb, T.L., 2016. The intention–behavior gap. *Soc. Personality Psychol. Compass* 10 (9), 503–518.
- Shrout, P.E., Rodgers, J.L., 2018. Psychology, science, and knowledge construction: broadening perspectives from the replication crisis. *Annu. Rev. Psychol.* 69 (1), 487–510.
- Siepmeyer, H., Otterbring, T., 2022. Citizen coherence and cultivated cleanliness: using technology-induced social norms to strengthen sustainable household bonds. *Front. Sustain.* 3, 899938.
- Sigall, H., Mills, J., 1998. Measures of independent variables and mediators are useful in social psychology experiments: but are they necessary? *Pers. Soc. Psychol. Rev.* 2 (3), 218–226.
- Smith, L.G., Thomas, E.F., McGarty, C., 2015. We must be the change we want to see in the world: integrating norms and identities through social interaction. *Polit. Psychol.* 36 (5), 543–557.
- Soyer, M., Dittrich, K., 2021. Sustainable consumer behavior in purchasing, using and disposing of clothes. *Sustainability* 13 (15), 8333.
- Söderlund, M., 2022. When service robots look at themselves in the mirror: an examination of the effects of perceptions of robotic self-recognition. *J. Retailing Consum. Serv.* 64, 102820.
- Söderlund, M., Julander, C.R., 2009. Physical attractiveness of the service worker in the moment of truth and its effects on customer satisfaction. *J. Retailing Consum. Serv.* 16 (3), 216–226.
- Stoet, G., 2017. PsyToolkit: a novel web-based method for running online questionnaires and reaction-time experiments. *Teach. Psychol.* 44 (1), 24–31.
- Stoet, G., 2010. PsyToolkit: a software package for programming psychological experiments using Linux. *Behav. Res. Methods* 42 (4), 1096–1104.
- Sun, Y., Kim, K.H., Kim, J., 2014. Examining relationships among sustainable orientation, perceived sustainable marketing performance, and customer equity in fast fashion industry. *J. Glob. Fashion Market.* 5 (1), 74–86.
- Sundie, J.M., Cialdini, R.B., Griskevicius, V., Kenrick, D.T., 2012. The world's (truly) oldest profession: social influence in evolutionary perspective. *Soc. Influ.* 7 (3), 134–153.
- Sutton, R.I., Staw, B.M., 1995. What theory is not. *Adm. Sci. Q.* 40 (3), 371–384.
- Staats, B.R., Dai, H., Hofmann, D., Milkman, K.L., 2017. Motivating process compliance through individual electronic monitoring: an empirical examination of hand hygiene in healthcare. *Manag. Sci.* 63 (5), 1563–1585.
- Terrier, L., Marfaing, B., 2015. Using social norms and commitment to promote proenvironmental behavior among hotel guests. *J. Environ. Psychol.* 44, 10–15.
- Trudel, R., 2019. Sustainable consumer behavior. *Consumer Psychol. Rev.* 2 (1), 85–96.
- UNDP, 2021. *The 17 Goals*. <https://sdgs.un.org/goals>. (Accessed 29 November 2022).
- Van Tonder, E., Fullerton, S., De Beer, L.T., Saunders, S.G., 2023. Social and personal factors influencing green customer citizenship behaviours: the role of subjective norm, internal values and attitudes. *J. Retailing Consum. Serv.* 71, 103190.
- Wolff, F., Schönherr, N., 2011. The impact evaluation of sustainable consumption policy instruments. *J. Consum. Pol.* 34 (1), 43–66.
- Wynes, S., Nicholas, K.A., 2017. The climate mitigation gap: education and government recommendations miss the most effective individual actions. *Environ. Res. Lett.* 12 (7), 074024.
- Yadav, A., Phillips, M.M., Lundeberg, M.A., Koehler, M.J., Hilden, K., Dirkin, K.H., 2011. If a picture is worth a thousand words is video worth a million? Differences in affective and cognitive processing of video and text cases. *J. Comput. High Educ.* 23 (1), 15–37.
- Yan, L., Keh, H.T., Wang, X., 2021. Powering sustainable consumption: the roles of green consumption values and power distance belief. *J. Bus. Ethics* 169 (3), 499–516.
- Yi, Y., Natarajan, R., Gong, T., 2011. Customer participation and citizenship behavioral influences on employee performance, satisfaction, commitment, and turnover intention. *J. Bus. Res.* 64 (1), 87–95.
- Youyou, W., Kosinski, M., Stillwell, D., 2015. Computer-based personality judgments are more accurate than those made by humans. *Proc. Natl. Acad. Sci. USA* 112 (4), 1036–1040.
- Zielke, S., Komor, M., Schlöber, A., 2023. Coping strategies and intended change of shopping habits after the Corona pandemic—Insights from two countries in Western and Eastern Europe. *J. Retailing Consum. Serv.* 72, 103255.