

Effective Pro-environmental Communication: Message Framing and Context

Congruency Effect

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Abstract

This research investigates the effectiveness of two types of message framing in pro-environmental communication: prescriptive versus proscriptive appeals in daily and tourism contexts. Two experimental studies were conducted. Study 1a focused on natural park and street park scenarios, while Study 1b examined hotel and office scenarios. Study 2 replicated Study 1 and further explored the mediating role of anticipated pride and guilt. The results indicate that in tourism contexts, prescriptive-framed appeals are more effective than proscriptive-framed appeals, whereas in daily contexts, proscriptive-framed appeals are more effective. Furthermore, the message framing-context congruency effect is mediated by the anticipated pride and guilt. These findings fill a literature gap by revealing the interaction between message framing and context in pro-environmental communication, providing insights for managers to customize appeals, using prescriptive-framed messages in tourism contexts and proscriptive-framed messages in daily contexts, while leveraging anticipated pride and guilt to motivate eco-friendly actions.

Keywords: pro-environmental behavior, message framing, prescriptive appeal, proscriptive appeal, anticipated emotion

1. Introduction

The tourism and hospitality industries face significant challenges in minimizing their environmental impact (Wu, Font, & Liu, 2020; Yang et al., 2023). Understanding pro-environmental behavior through research is crucial for promoting sustainable development within these industries (Ballantyne & Packer, 2011; L. Wang & Lyu, 2019). Companies are actively seeking effective interventions to encourage tourists to adopt sustainable practices (Vlek & Steg, 2007; Xu et al., 2020). They often use pro-environmental appeals in their communication messages (León & Araña, 2020), framed in different ways to persuade their customers to act in a pro-environmental way (Tversky & Kahneman, 1981). However, the current theoretical frameworks are insufficient in explaining individuals' pro-environmental behaviors across different contexts, creating a knowledge gap that hampers the development of effective interventions. Research suggests that appeals proven effective in household settings may not have the same impact in the travel and tourism context, possibly due to the hedonic nature of tourism (Dolnicar, Knezevic Cvelbar, & Grün, 2017) or the context-dependent nature of pro-environmental behaviors (Miao & Wei, 2013; Wu, Font, & Liu, 2021).

Two prevalent framing approaches, the prescriptive and proscriptive frames, are often used to promote pro-environmental behaviors (Janoff-Bulman, Sheikh, & Hepp, 2009). The prescriptive frame emphasizes moral conduct by stating what people should do, while the proscriptive frame highlights refraining from harm by specifying what people should not do (Janoff-Bulman, Sheikh, & Hepp, 2009). The prescriptive frame is associated with the

approach system, aiming to elicit behavioral activation, whereas the proscriptive frame relies on the avoidance system, aiming for behavioral inhibition (Janoff-Bulman & Carnes, 2013). Empirical studies have suggested that individuals are less inclined to engage in pro-environmental practices during travel compared to at home (Dolnicar & Grün, 2009; Holmes, Dodds, & Frochot, 2019; Line, Hanks, & Miao, 2017). This implies that the same framing of a message could elicit different responses depending on the context. Matching messages to the context can be a powerful technique of persuasion (Teeny et al., 2021). However, little is known about how the prescriptive and proscriptive frames can be optimally aligned with the specific contexts of daily life and tourism in promoting pro-environmental behaviors.

This study aims to explore the effective strategies for promoting pro-environmental behaviors in the distinct settings of daily life and tourism, by delving into the intricate dynamics between the two message frames (prescriptive and proscriptive) and the two contexts. According to the construal level theory (Trope & Liberman, 2010; Trope, Liberman, & Wakslak, 2007), the tourism context is psychologically distant, where individuals tend to prioritize approach-related goals, this is in contrast to the home environment, where individuals are more focused on avoiding negative consequences (X.Liu, Wan, & Yi, 2022). We predict that in the tourism context, individuals are more likely to engage in pro-environmental behavior in response to the prescriptive-framed appeal; while in the daily context, they are more likely to engage in pro-environmental behavior in response to the proscriptive-framed appeal. Moreover, according to the theory of moral disengagement (Bandura et al., 1996), individuals may undergo a heightened sense of adventure along with a diminished sense of responsibility during travel. This shift in mindset during travel could

result in reduced motivation to adopt eco-friendly behaviors (Grazzini et al., 2018). The transition from the familiar home environment to the liberating “holiday mode” can lead individuals to become less receptive to pro-environmental appeals and more inclined to engage in irresponsible behaviors without experiencing guilt (Jørgensen & Reichenberger, 2022). Accordingly, we further predict that the effect of a prescriptive or proscriptive frame on behavior is mediated by the anticipated emotions of pride or guilt. This prediction is also supported by the notion that appeals framed positively or negatively can evoke feelings of pride or guilt (Tversky & Kahneman, 1981), and individuals are inclined to seek feelings of pride while avoiding guilt by regulating their behaviors (Steg & Vlek, 2009). To test the hypotheses, we conducted two major experimental studies. In Study 1a, a national park was set as the stimulus for the tourism context, while a street park was used as the stimulus for the daily context. Study 1b replicates the congruency effect in the office (daily) versus hotel (tourism) setting. Study 2 investigated the mediating role of anticipated pride and guilt.

This research contributes to the literature in several ways. First, our research uncovers the congruency effect between pro-environmental appeals and the contexts of home and away. It extends the prior works on pro-environmental communication, particularly the interaction between message appeals and situational factors (Steg and Vlek, 2009). It empirically verifies that to effectively communicate pro-environmental messages, there is a need for framing the appeal to the unique features of the tourism context. Second, this research deepens our understanding of how message appeal works by uncovering the mediating mechanism of how the two message appeals work through anticipated emotion, i.e. pride or guilt respectively, which then regulate an individual’s behavioral response (Antonetti

& Maklan, 2014; Patrick, Chun, & Macinnis, 2009). Third, the findings provide tourism and hospitality managers with practical implications to align the framing of pro-environmental appeals with the context to develop effective pro-environmental communications.

2. Literature Review and Hypotheses

2.1. Framing of pro-environmental appeal

The framing of appeals encodes persuasive messages either as positive frames, which focus on obtaining positive consequences, or negative frames, which focus on avoiding negative consequences (Levin, Schneider, & Gaeth, 1998). The positive-negative pro-environmental appeal frames are well examined in tourism literature but the findings are mixed. For example, while Bloise, Mack, and Pitts (2015) and Grazzini, et al. (2018) found that loss-framed messages are more effective than gain-framed ones, Chi, Denton, and Gursoy (2021) suggested a gain-framed (vs. loss-framed) message combined with objective information resulted in higher intentions of carbon offsetting behaviors. Though it was also argued that gain-framed appeals may create a bigger effect given the hedonic nature of tourism (Kim & Kim, 2014), it is still unclear whether and in what context positive frames or negative frames are more effective.

While prior research has investigated the effectiveness of pro-environmental appeals framed as descriptive versus injunctive (White & Simpson, 2013), prevention-focused versus promotion-focused (Lagomarsino, Lemarié, & Puntiroli, 2020), and loss versus gain (Grazzini, et al., 2018), little is known about the effectiveness of pro-environmental using prescriptive and proscriptive frames (Janoff-Bulman, Sheikh, & Hepp, 2009). The

prescriptive frame represents a norm-supporting persuasion, and the proscriptive frame represents a norm-violating persuasion (Steg et al., 2014). The former is sensitive to positive outcomes, and focuses on what we should do, while the latter is sensitive to negative outcomes, and focuses on what we should not do. Specifically in pro-environmental communications, prescriptive messages are those that tell people what they should do to be environmentally friendly. For example, “Please use reusable bags.” These messages suggest a specific action that people can take to help the environment. On the other hand, proscriptive messages are those that tell people what they should not do. For example, “Do not use single-use plastic bags.” Both prescriptive and proscriptive messages are often used in tourism and everyday situations, but their effectiveness at communicating environmental values and behaviors is not well scrutinized. Our research focuses on comparing the effectiveness of these two types of messages. By doing this, we hope to better understand which types of messages are more effective at promoting pro-environmental behaviors in the two different contexts.

2.2. Context matters

The construal level theory suggests that individuals perceive and mentally represent objects or events differently based on their psychological distance from “the self, here, and now” (Trope & Liberman, 2010). This distance is influenced by four dimensions, i.e., spatial, temporal, social, and probabilistic differences (Trope, Liberman, & Wakslak, 2007). The distinction between daily life and tourism reflects the “self-others” difference, compelling people to seek unique experiences and interact with individuals outside their usual social

circles. Spatially, tourism involves leaving one's home environment, and despite physically being present at the destination ("here"), tourists perceive it as a place belonging to "others". Temporally, tourism offers experiences that deviate from routine ("now"), such as heritage tourism's exploration of the "now-then" difference and connection to the past (Scarpi & Raggiotto, 2023). The probabilistic dimension adds an element of uncertainty and novelty in tourism, contributing to the psychological distance as individuals step outside their comfort zones.

The shift from the daily context to a tourism setting can have a significant impact on an individual's mental processes and behaviors (Miao & Wei, 2013; Qin & Hsu, 2022; Xu et al., 2020). Individuals often experience a mental shift when they go on vacation to "holiday mode" or "vacation mindset". This shift can be characterized by a feeling of detachment from their everyday lives, a sense of relaxation and adventure, and a reduced sense of responsibility. When tourists enter such a permissive domain without social constraints, they may engage in deviant behavior (Uriely, Ram, & Malach-Pines, 2011). For instance, tourists have a greater intention to misbehave (Wan, Hui, & Qiu, 2021), are more likely to commit acts of vandalism (Bhati & Pearce, 2016), and exhibit negative behavior (Jørgensen & Reichenberger, 2022). According to Jørgensen and Reichenberger (2022), tourism can be seen as a liminal space where moral disengagement can be more readily activated, that is, tourists may feel that they are in a temporary space where normal moral rules do not apply, which makes it easier for them to engage in negative behavior without feeling as guilty as they would in an everyday context.

Previous empirical studies on pro-environmental behavior consistently show that individuals are less likely to engage in pro-environmental practices when they are traveling compared to when they are at home (Dolnicar & Grün, 2009; Holmes, Dodds, & Frochot, 2019; Line, Hanks, & Miao, 2017), highlighting a spillover failure from home to tourism. This can be explained by the “vacation mindset” or the hedonistic nature of tourism (Grazzini et al., 2018). Moreover, there is also an intention-behavior gap, where people’s pro-environmental intentions elicited by the tourism environment fail to translate into actual behavior after travel (Ballantyne & Packer, 2011; Juvan & Dolnicar, 2014), highlighting a spillover failure from tourism to home. The aforementioned difficulties in behavioral transformation are relevant to contextual change and therefore can be better understood by considering the context-specific nature of pro-environmental intentions and subsequent behaviors (Wu, Font, & Liu, 2021).

2.3. Context and pro-environmental appeal

The effectiveness of pro-environmental appeals in triggering pro-environmental behaviors hinges on the context, in which actions are made (Dolnicar, Knezevic Cvelbar, & Grün, 2017). Dolnicar, Knezevic Cvelbar, and Grün (2017) concluded from their field experiment at a four-star hotel that interventions proven to be effective in the home context may not work in the tourism context. While various moderators, e.g., construal level (White, Macdonnell, & Dahl, 2011), egoistic values (Lagomarsino, Lemarié, & Puntiroli, 2020), and social group (Cvelbar, Grün, & Dolnicar, 2017; Gössling, Araña, & Aguiar-Quintana, 2019)

have been examined in the studies of message framing on pro-environmental behavior, the moderating role of context is largely overlooked.

According to the construal level theory, the greater the psychological distance, the higher the level of construal (Trope, Liberman, & Wakslak, 2007). Individuals tend to adopt a more abstract and general way of thinking about distant events or objects, whereas they tend to focus on concrete and specific details when dealing with proximal events or objects. Several studies have demonstrated people perceived themselves to be more positive and focused on the positive side in the distant future but paid more attention to the negative aspects in the near future (X.Liu, Wan, & Yi, 2022). When a decision is imminent, consumers respond more favorably to a prevention-framed message, while for distant decisions, they favor a promotion-focused message (Mogilner, Aaker, & Pennington, 2008). While such findings were based on the temporal dimension, we argue this effect may happen across other dimensions of psychological distance.

The tourism context is characterized by psychological distance from the home environment, which influences how individuals adopt the level of construal in their cognitive processes. In comparison to the daily life setting, the psychological distance is much greater in the travel setting. Specifically, during travel, individuals tend to operate at a higher level of construal, prioritizing abstract and general concepts over specific details, especially in certain tourism destinations that are psychologically more distant (Scarpi & Raggiotto, 2023). Conversely, in their daily lives, individuals tend to employ a lower level of construal, which prompts a focus on concrete and specific details. There is a match between a high construal

level and a promotion-focused message while a congruity between a low construal level and a prevention-focused message (Lee & Aaker, 2004). Prescriptive and proscriptive appeals represent promotion orientation and prevention orientation (Janoff-Bulman, Sheikh, & Hepp, 2009). A match between an individual's construal level and the message appeal type will increase the effectiveness of the message (Frías-Jamilena, Fernández-Ruano, & Polo-Peña, 2022; S. Wang & Lehto, 2020). Therefore, it is predicted that the match between the context and pro-environmental appeal would enhance the persuasion effect, that is, in the distal tourism context, the prescriptive appeal will be more effective, whereas, for proximal daily context, the proscriptive appeal will be more effective. Accordingly, we develop the following hypotheses:

Hypothesis 1a: In the tourism context, prescriptive-framed appeal is more effective than proscriptive-framed appeal.

Hypothesis 1b: In the daily context, proscriptive-framed appeal is more effective than prescriptive-framed appeal.

2.4. The mediating role of anticipated pride/guilt

Anticipated pride and guilt are self-conscious emotions that drive the self-regulation process (Antonetti & Maklan, 2014). Pride is a self-enhancing positive emotion that influences ethical judgment and decision (Patrick, Chun, & Macinnis, 2009), while guilt is a negative emotion that drives self-regulation and ethical behavior (Mishra & Mishra, 2011).

People tend to approach the feeling of pride and try to avoid feeling guilt by regulating their behaviors.

Pro-environmental appeals framed as positive or negative can elicit certain psychological evaluation processes (Tversky & Kahneman, 1981). The experiences of anticipated pride and guilt based on people's assessment of their moral standards arise from the evaluation of future behaviors (Shipley & van Riper, 2022) and both increased anticipated pride and guilt lead to pro-environmental behavior. Anticipated pride appears in the pursuit of valued goals or behaviors that conform to their moral standards (Williams & DeSteno, 2008) while anticipated guilt arises following a prediction of negative consequences "if not helping" (Mohr, Lichtenstein, & Janiszewski, 2012). When people see a pro-environmental appeal framed as "what we should do", they experience an orientation toward the achievement of that positive goal (anticipated pride), whereas when people see a pro-environmental appeal framed as "what we should not do", they will try to avoid these negative outcomes (anticipated guilt).

Tourism and daily contexts direct people to distinct moral emotions. As mentioned earlier, people tend to adopt a higher level of construal in the tourism context compared to the daily environment and this discrepancy in construal level activates different regulatory focus (Lee & Aaker, 2004; Trope, Liberman, & Wakslak, 2007; White, Macdonnell, & Dahl, 2011). According to Higgins (2002), regulatory focus comprises two motivational systems that guide self-regulation: the promotion system, which adopts an approach-oriented method to achieve goals and the prevention system, which uses avoidance strategies to prevent losses.

Additionally, the adoption of approach or avoidance strategies also renders positive or negative-valence emotional outcomes more accessible to individuals (Higgins, 2002). Specifically, people in a higher construal-level environment tend to activate the promotion system, prioritizing achievement outcomes and responding more positively to positive feelings. On the other hand, people in a lower construal-level environment are likely to adopt a prevention mindset, emphasizing avoidance goals and reacting more favorably to negative feelings (Cai & Leung, 2020). Anticipated pride is a positive emotion, and anticipated guilt is a negative emotion (Shipley & van Riper, 2022). Thus, the tourism context will elicit more reaction to anticipated pride, whereas the daily context will enhance the individual's response to anticipated guilt. Taken as a whole, we hypothesized that anticipated emotion mediates the appeal-context congruency effect on individual response:

Hypothesis 2a: The effect of prescriptive-framed pro-environmental appeal in the tourism context is mediated through anticipated pride, such that prescriptive-framed pro-environmental appeal increases anticipated pride in tourism settings, which prompts pro-environmental behavior.

Hypothesis 2b: The effect of proscriptive-framed pro-environmental appeal in the daily context is mediated through anticipated guilt, such that proscriptive-framed pro-environmental appeal increases anticipated guilt in daily settings, which prompts pro-environmental behavior.

[Figure 1.]

3. Methodology

Two pilot studies and three main studies were carried out to verify the proposed hypotheses. In the pilot studies, the effectiveness of experimental stimuli was examined for the success of manipulation. Study 1a investigated the congruency effect between pro-environmental appeals (prescriptive-framed vs. proscriptive-framed) and context (tourism vs. daily) on participants' responses (H1). A national park was set as the tourism context while a street park was used as the stimulus for the daily context. Study 1b enhanced the validity and robustness of the findings drawn from Study 1a and extended the applicable scenario by replicating the congruency effect in the office (daily) versus hotel (tourism) setting. Water conservation behavior was used as the proxy for pro-environmental behavior, which was highly specific to the context. Study 2 investigated the mediating role of anticipated pride and guilt (H2) in the effect of pro-environmental appeal and context on participants' responses. All data were collected from May 2022 to October 2022. The overview of the studies is presented in Table 1 and the profiles of the participants are shown in Table 2.

[Table 1.]

[Table 2.]

4. Pilot Studies

4.1. Pilot Study A: Context (daily vs. tourism)

Pilot study A includes two pretests to ensure the validity of context manipulation. One pretest validates the difference between daily and tourism contexts in a national park versus a

street park setting while the other validates in a hotel versus an office setting. Pictures of a national park and a street park were used as the tourism context and daily context manipulation respectively. A picture of a hotel was used as the tourism context while a picture of an office was used to represent the daily context (see Appendix A for pictures).

All stimuli' names and locations were not mentioned to control for the differences in familiarity. Participants were first assigned to either a tourism context or a daily context and then responded to questions measuring perceived psychological distance, e.g., "How far is the current environment from your usual place of residence?" or "How likely are you to be in the current environment compared to your usual place of residence?" (1 = very similar, 7 = very different). Both of the items were adopted from Zhang and Wang (2009).

For the park setting pretest, 120 participants (40.8% male; $M_{\text{age}} = 28.16$ years) were recruited from Credamo, a leading online survey platform in China, to complete the task. All participants were Chinese. Results of an independent sample t-test showed that the national park picture was perceived to show higher natural environmental differences ($M_{\text{national park}} = 5.53$) than in the daily context ($M_{\text{street park}} = 3.83$, $t(118) = 14.956$, $p < .001$). For the hotel/office setting pretest, 56 participants were recruited from Credamo (46.4% male; $M_{\text{age}} = 28.4$ years). Results also confirmed the successful manipulation of context, as the hotel ($M_{\text{hotel}} = 4.79$) was perceived to be more psychologically distant than the office ($M_{\text{office}} = 6.00$, $t(54) = -4.028$, $p < .001$).

Results of Pilot Study A showed the manipulations of context stimuli were appropriate and thus could be applied in subsequent studies.

4.2. Pilot Study B: Pro-environmental Appeal (prescriptive vs. proscriptive)

Pilot study B also consists of two groups of experiment stimuli to ensure the validity of pro-environmental appeal frames. The stimuli were developed using Photoshop. The prescriptive appeal used words starting with “Do” while the proscriptive appeal used words starting with “Don’t”. Specifically, in the park setting, the prescriptive appeal was “Please protect the environment” and the proscriptive appeal was “Please don’t damage the environment”. In the hotel/office setting, as we used water conservation behavior as the dependent variable, the prescriptive appeal wrote, “Please save water”, and the proscriptive appeal wrote, “Please don’t waste water” (see Appendix A for pictures). Variations between the two frames were controlled following Levin et al.’s (2002) suggestions that the positive and negative framing should be objectively equivalent and describe the same attribute.

Participants were first randomly presented with either a prescriptive pro-environmental appeal or a proscriptive pro-environmental appeal. After being asked to read the information presented in the picture attentively, participants answered the bipolar 7-point single-item question, “To what extent do you think this message appeal is framed as proscriptive (stressing what we should not do) or prescriptive (stressing what we should do) ?” (1 = very prescriptive, 7 = very proscriptive). To exclude influence from other attributes and ensure the effectiveness of framing, we also asked participants about their perceptions of the importance, credibility, and understandability of the message on single-item 7-point questions adapted from Lagomarsino, Lemarié, and Puntiroli et al. (2020) (1 = not at all, 7 = very much).

For appeals in the park setting, 120 participants were recruited from Credamo (40.8% male; $M_{age} = 28.16$ years). Results of an independent sample t-test showed that participants can successfully differentiate the two types of appeals ($M_{prescriptive} = 1.97$, $M_{proscriptive} = 6.43$, $t(118) = -21.098$, $p < .001$). There were no significant differences between the two groups of subjects on the perception of the importance ($M_{prescriptive} = 6.05$, $M_{proscriptive} = 6.18$, $t(118) = -.888$, $p > 0.1$), credibility ($M_{prescriptive} = 6.32$, $M_{proscriptive} = 6.43$, $t(118) = -.759$, $p > 0.1$) and understandability ($M_{prescriptive} = 6.48$, $M_{proscriptive} = 6.65$, $t(118) = -1.164$, $p > 0.1$) of the appeal. The other pretest conducted in the hotel setting showed consistency. Results of 69 participants recruited from Credamo (27.5% male; $M_{age} = 30.58$ years) suggested a significant difference between the two appeals regarding their frames ($M_{prescriptive} = 2.31$, $M_{proscriptive} = 5.79$, $t(67) = 8.788$, $p < .001$), but no significant differences between the perceptions of the importance ($M_{prescriptive} = 5.86$, $M_{proscriptive} = 6.03$, $t(67) = -.733$, $p > 0.1$), credibility ($M_{prescriptive} = 6.39$, $M_{proscriptive} = 6.24$, $t(67) = .762$, $p > 0.1$) and understandability ($M_{prescriptive} = 6.25$, $M_{proscriptive} = 6.67$, $t(67) = -1.924$, $p > 0.05$).

Results of pilot study B suggested the manipulations of prescriptive and proscriptive-framed appeals were successful and could be applied in subsequent studies.

[Table 2.]

5. Study 1a

5.1. Research Design

This study employed a two-factor between-subjects design. A total of 315 participants (30.5% male; $M_{\text{age}} = 28.25$ years) were recruited through Credamo and randomly assigned to a 2 (context: tourism vs. daily) x 2 (pro-environmental appeal: prescriptive vs. proscriptive) scenario. Participants were thanked with a monetary incentive of 1 Chinese Yuan (approx. 0.15 US Dollars).

Participants were first asked to imagine their presence in a national park (vs. a street park) that they visit for the first time (vs. visit regularly). To prime the psychological distance, participants were presented with a picture of the assigned park and asked to rate their perception of the psychological distance of the park compared to their usual place of residence. They were then randomly assigned to read a notice framed as prescriptive or proscriptive and answered questions measuring their responses using the intention toward pro-environmental behavior question on a ten-item 7-point scale adopted from Cheng, Wu, and Huang (2013) and Halpenny (2010). The ten items (e.g., “I will not drop litter in the park”, and “I will pick up litter dropped by others”; 1 = strongly disagree, 7 = strongly agree; $\alpha = 0.76$) were averaged to form the index of participant response to the pro-environmental message. Finally, participants completed their demographic information.

5.2. Results

5.2.1. Manipulation check

The results of an independent sample t-test showed that the perceived psychological distance was significantly higher in the tourism context ($M_{\text{tourism}} = 5.98$) than in the daily context ($M_{\text{daily}} = 3.42$, $p < .001$), participants could successfully differentiate the two types of

appeals ($M_{\text{prescriptive}} = 2.33$; $M_{\text{proscriptive}} = 5.83$, $p < .001$). Both manipulations were demonstrated effective.

5.2.2. *Hypothesis 1 testing*

The result of a two-way ANOVA with age, gender, education, income, and travel experience as covariates showed only a significant interaction effect ($F(1, 311) = 34.18$, $p < .001$), and the main effects of message appeal and context were not significant ($p > .10$). Further analysis (see Figure 2) showed that in the tourism context, participants' response to prescriptive-framed message appeal in terms of pro-environmental intention ($M_{\text{prescriptive}} = 6.03$) was higher than the proscriptive-framed message appeal ($M_{\text{proscriptive}} = 5.62$); while in the daily context, the response to the proscriptive-framed appeal in terms of pro-environmental intention ($M_{\text{proscriptive}} = 5.90$) was higher than the prescriptive-framed appeal ($M_{\text{prescriptive}} = 5.60$). These results supported H1.

5.3. *Discussion*

Study 1a provided initial evidence on the interaction effect between context and pro-environmental appeal. Given the tourism context of Study 1a is a nature-based attraction, a major concern lies in whether this interaction effect will happen in other kinds of tourism contexts. Individuals consume intangible experiences in tourism destinations but tangible services at hotels. Therefore, we replicated our research in Study 1b where a hotel was selected as the tourism context.

[Figure 2.]

6. Study 1b

6.1. Research Design

Study 1b also employed a two-factor between-subjects design. A total of 180 participants (44.4% male; $M_{\text{age}} = 28.48$ years) were recruited through Credamo and were randomly assigned to one of the 2 (context: hotel vs. office) x 2 (pro-environmental appeal: prescriptive vs. proscriptive) scenarios.

Participants were first asked to imagine they were at work or in a hotel, with pictures presenting either an office or a chain hotel. After that, they answered a manipulation check question, “How likely are you to be in the current environment compared with your usual place of residence?” (1 = not likely, 7 = very likely). Then, they were randomly shown with a water conservation appeal framed as prescriptive or proscriptive. They answered the items on their intention toward water conservation behavior on a 4-item 7-point scale adopted from H. Han and Hyun (2018) (e.g., “I will turn off the tap water while I am soaping”, and “I will expand effort on conserving water”; 1 = strongly disagree, 7 = strongly agree; $\alpha = 0.66$). The four items were averaged to form the index of the intention of water conservation behavior. Finally, participants completed their demographic information and were thanked for their participation with the monetary incentive of 1 yuan.

6.2. Results

6.2.1. Manipulation check

The result of an independent sample t-test showed that the tourism context was perceived to be psychologically more distant ($M_{\text{tourism}} = 5.11$) than the daily context ($M_{\text{daily}} = 6.19$, $p < .001$). Participants rated the prescriptive appeal to be more prescriptive-framed ($M_{\text{prescriptive}} = 1.77$) than the proscriptive appeal ($M_{\text{proscriptive}} = 5.57$, $p < .001$). The manipulations of the context and pro-environmental appeal were both successful.

6.2.2. *Water conservation*

The results of a two-way ANOVA with age, gender, education, income and travel experience as covariates showed only a significant interaction effect ($F(1, 176) = 20.31$, $p < .001$), and the main effects of water conservation appeal and context were not significant ($p > .10$). Further analysis (see Figure 3) showed that in the tourism context (the hotel), the participants presented with a prescriptive-framed appeal were more willing to conserve water ($M_{\text{prescriptive}} = 6.41$) than those with the proscriptive-framed appeal ($M_{\text{proscriptive}} = 6.09$); while in the daily context (the office), the participants who read a proscriptive-framed appeal showed a higher intention of water conservation ($M_{\text{proscriptive}} = 6.45$) than those who read the prescriptive-framed one ($M_{\text{prescriptive}} = 5.97$).

6.3. *Discussion*

The results of Study 1b were consistent with those of Study 1a. The conclusion that we drew from a park scenario could be successfully generalized to a hotel scenario, demonstrating the external validity of our findings. The interaction effect between context

and pro-environmental appeal was robust across the tourism and daily contexts. So far, these results have supported H1.

[Figure 3.]

7. Study 2

7.1. Research Design

A total of 161 participants (38.5% male; Mage = 28.81 years) were recruited via Credamo and randomly assigned to a 2 (context: tourism vs. daily) x 2 (pro-environmental appeal: prescriptive vs. proscriptive) between-subjects experiment design in exchange for a monetary incentive of 2 Chinese Yuan.

The experiment stimuli and procedures were identical to those of Study 1a. Participants also answered anticipated pride on a 4-item scale (Imagine you follow the appeal and protect the environment, how would you feel? [1]proud, [2]accomplished, [3]confident, [4]worthwhile; 1 = not at all, 7 = very much; $\alpha = 0.79$) and anticipated guilt on a 3-item scale (Imagine you don't follow the appeal and fail to protect the environment, how would you feel? [1]guilty, [2]sorry, [3]bad; 1 = not at all, 7 = very much; $\alpha = 0.79$). Both scales were adopted from H. Han and Hyun (2016).

Furthermore, to eliminate alternative mechanisms, we consider other potential mediators. In daily life, social norms that reflect people's conformity to collective standards (Ajzen, 1991) and social pressures (Steg, Dreijerink, & Abrahamse, 2005) play a significant role. Proscriptive appeals that emphasize not crossing the line are more persuasive in this context.

On the other hand, in the tourism environment, people are motivated by their personal beliefs about performing a specific action and are thus more likely to be persuaded by prescriptive appeals that imply providing help. From an efficacy-based perspective, the avoidance actions suggested by proscriptive appeals require less effort to follow and are easier to achieve, leading to greater self-efficacy (feasibility). In contrast, the approach goals reflected in prescriptive appeals make people feel more impactful, resulting in a higher perception of response efficacy (desirability). The increase in construal level redirects people's attention from feasible outcomes to desired results (D. Han, Duhachek, & Agrawal, 2016). Therefore, the favorable response of individuals to proscriptive appeals in daily life and prescriptive appeals in the tourism context could be mediated through different types of efficacy. Finally, the framing-context congruency effect could be driven by processing fluency, which is a common mediator in the matching effect of message-framing research (White, Habib, & Hardisty, 2019). The higher persuasion of appeals in each context may simply be a result of the fluency with which the message is processed.

Overall, in Study 2, we replicated the findings of Study 1a and 1b and tested anticipated pride and anticipated guilt as our proposed mediators, along with alternative mediators. Alternative mediators of personal norm and social norm, self-efficacy and response efficacy, and processing fluency were accessed using scales adopted from H. Han, Hwang, Lee, and Kim (2019), D. Han, Duhachek, and Agrawal (2016) and White, Macdonnell, and Dahl (2011).

7.2. Results

7.2.1. *Manipulation check*

The results of an independent sample t-test showed that both context and pro-environmental appeal were successfully manipulated. The environmental difference was significantly higher in the tourism context ($M_{\text{tourism}} = 6.29$) than in the daily context ($M_{\text{daily}} = 3.12$, $p < .001$), and appeal framed as prescriptive was perceived to be more prescriptive than appeal framed as proscriptive ($M_{\text{prescriptive}} = 1.76$; $M_{\text{proscriptive}} = 6.11$, $p < .001$).

7.2.2. *Hypothesis 1 testing*

Consistent with our previous finding, the results of a two-way ANOVA with gender, age, education, income and travel experience controlled showed only a significant interaction effect ($F(1, 157) = 14.01$, $p < .001$), and the main effects of message appeal and context were not significant ($p > .05$). Further analysis (see Figure 4) showed that in the tourism context, participants' response to prescriptive-framed message appeal in terms of pro-environmental intention ($M_{\text{prescriptive}} = 6.04$) was higher than proscriptive-framed appeal ($M_{\text{proscriptive}} = 5.51$); while in the daily context, participants' response to the proscriptive-framed appeal in terms of pro-environmental intention ($M_{\text{proscriptive}} = 5.89$) was higher than the prescriptive-framed message appeal ($M_{\text{prescriptive}} = 5.61$). H1 was again supported.

[Figure 4.]

7.2.3. *Moderated mediation*

To examine whether anticipated emotions mediate the effect of the interaction between context and pro-environmental appeal on participants' response (H2), the moderated

mediation analysis using the Bootstrapping analysis (SPSS PROCESS Model 8) based on 5000 samples was conducted (Hayes, 2013). Findings indicated that in the tourism context, the indirect effect of the two-way interaction on pro-environmental behavior through anticipated pride was significant ($a \times b = -.29$, 95% confidence interval [CI]: $-.46, -.13$) while the indirect effect through anticipated guilt was not ($a \times b = -.02$, 95% CI: $-.15, .12$). The index of moderated mediation was 0.27 (95% CI: $.09, .50$); while in the daily context, the indirect effect through anticipated guilt was significant ($a \times b = .16$, 95% CI: $.05, .32$), but the indirect effect through anticipated pride was not ($a \times b = -.05$, 95% confidence interval [CI]: $-.14, .02$). The index of moderated mediation was 0.22 (95% CI: $.07, .41$). These results supported H2.

The mediating effects of processing fluency (Index = $-.05$, 95% CI: $-.17, .08$), personal norm (Index = $.22$, 95% CI: $-.03, .57$) and social norm (Index = $.15$, 95% CI: $-.14, .49$), self-efficacy (Index = $.03$, 95% CI: $-.13, .21$) and response efficacy (Index = $.03$, 95% CI: $-.22, .31$) were not significant, thus, all alternative mediators were excluded.

7.3. Discussion

The empirical results confirmed that the interaction between context and message appeal on participants' response was mediated by anticipated pride in the tourism context and by anticipated guilt in the daily context respectively.

8. Discussion and Conclusions

Message framing is an important tool used in pro-environmental communication. This research investigates the relative effectiveness of the two types of message framing: prescriptive versus proscriptive appeal in the contexts of home and away. The results show that in the tourism context, the prescriptive-framed appeal is more effective than the proscriptive-framed appeal, while in the daily context, the proscriptive-framed appeal is more effective than the prescriptive-framed appeal. The research shows that anticipated pride and anticipated guilt mediate the interactive effect between pro-environmental appeal and context. These findings have both theoretical and practical implications.

8.1. Theoretical contributions

This research expands on previous studies examining the effectiveness of positive and negative framing in pro-environmental appeals (Olsen, Slotegraaf, & Chandukala, 2014; White, Macdonnell, & Dahl, 2011). By focusing on the effectiveness of prescriptive and proscriptive appeals, which have received limited attention in existing research (Smith et al., 2012; White & Simpson, 2013; Zhang et al., 2023), this study offers new insights into the effectiveness of different framing strategies within different contexts. Our findings contribute to a deeper understanding of aligning pro-environmental communication with the context to enhance its effectiveness.

Our study contributes to the understanding of persuasive message framing by considering the interaction between the context and pro-environmental appeals. By leveraging the construal level theory (Trope, Liberman, & Wakslak, 2007), we demonstrate that aligning the framing of pro-environmental appeals with the construal level of the context

enhances their persuasion effect. Specifically, in the distal tourism context, where individuals exhibit a higher construal level, prescriptive appeals are more effective. In contrast, in the proximal daily context characterized by a lower construal level, proscriptive appeals are more effective. Advancing the existing research on the impact of tourism as an unusual environment (Li, Wang, & Li, 2022; Li et al., 2021), we identify psychological distance as a core distinguishing factor between tourism and daily life. Our findings contribute to a deeper understanding of the dualistic conceptualizations prevalent in tourism, such as home/away, host/guest, self/other, and novelty/familiarity (White & White, 2007), and how psychological distance shapes individuals' perceptions, motivations, judgments, and decision-making processes in tourism.

Moreover, our research directly addresses the long-standing issue of inconsistent behaviors at home and away, which has been a subject of concern in the tourism literature (Dolnicar & Grün, 2009; Holmes, Dodds, & Frochot, 2019; Line, Hanks, & Miao, 2017). The influence of contextual factors on pro-environmental behavior has garnered increasing attention in recent literature (Qin & Hsu, 2022; Wu, Font, & Liu, 2021). The inconsistency between individuals' environmentally friendly behavior in their daily lives and their behavior while traveling has been a challenge for interventions aiming to promote sustainable practices (Dolnicar, Knezevic Cvelbar, & Grün, 2017). There has been a lack of effective interventions that can effectively target tourists' indulgent behavior (Qin & Hsu, 2022). By examining the alignment of pro-environmental communication with context, our research offers a promising approach to addressing this issue.

Furthermore, our research reveals anticipated moral emotions specifically anticipated guilt and pride (White, Habib, & Hardisty, 2019) as a key mechanism in pro-environmental communication effectiveness. Traditionally, drivers of pro-environmental behavior have been categorized into cognitive (e.g., norms and values) and affective factors (e.g., emotions) (Ru et al., 2018). Our research goes beyond this framework by examining and ruling out alternative mediators such as norms, efficacy, and processing fluency, and suggests that affective factors play a stronger role in shaping the effectiveness of pro-environmental communication compared to cognitive factors. This is in contrast to the findings of Schneider et al. (2017), which indicated that anticipated pride leads to higher pro-environmental motivation. Our research demonstrates that both positive and negative dimensions of anticipated affect directly contribute to the effectiveness of pro-environmental communication but through different routes depending on the context. Specifically, anticipated guilt is more influential in the daily context, while anticipated pride is more effective in the tourism context. These findings provide a nuanced understanding of the effectiveness of pro-environmental communication and contribute to the ongoing efforts in the sustainability literature to develop more impactful interventions that can effectively promote pro-environmental behaviors in different contexts (Holmes, Dodds, & Frochot, 2019; Yang et al., 2023).

8.2. Practical implications

This research identifies effective pro-environmental communication strategies that successfully induce an individual's pro-environmental response in the home versus away

context. Our findings offer significant managerial implications for tourism and hospitality managers.

First, our findings highlight the differences in appeal effectiveness between tourism and daily life contexts. Managers can optimize their pro-environmental campaigns and encourage more sustainable behaviors effectively by developing appropriate pro-environmental appeals that fit the context. In the tourism context, using prescriptive-framed appeals that emphasize the positive outcomes of pro-environmental behaviors could be more effective. On the other hand, in the daily context, focusing on proscriptive-framed appeals that highlight the negative consequences of not engaging in pro-environmental behaviors might be more persuasive. Simply put, in the tourism context, pro-environmental appeals should be organized in a “should” frame (such as “keep off the grass” or “be smoke-free”), while in the daily context, pro-environmental appeals should be organized in a “should not” frame (such as “don’t step on the grass” or “no smoking”).

In addition, campaign managers can identify target audiences more accurately by considering whether they are in a tourism-related setting or their daily lives, and tailor their campaigns accordingly to engage each group effectively. When targeting tourists or travelers, the campaign can center on how their pro-environmental actions can contribute to the preservation of natural landscapes and local communities. In contrast, when targeting daily behaviors, the campaign can focus on the potential harm that unsustainable practices may cause to the environment and the necessity of making eco-friendly choices. Furthermore, managers in the tourism and hospitality industries can incorporate prescriptive-framed

appeals in their communications to encourage sustainable practices among tourists. In daily life settings, managers can use proscriptive-framed appeals to design behavioral nudges that prompt people to adopt eco-friendly habits

Second, according to our findings, anticipated pride and anticipated guilt play a mediating role in influencing the effectiveness of pro-environmental behavior. Therefore, managers should leverage emotional responses to messaging as a powerful tool in encouraging pro-environmental behaviors in both tourism and daily life contexts. For example, managers can design pro-environmental campaigns that intentionally evoke anticipated pride in the tourism context and anticipated guilt in the daily context.

Additionally, highlighting the positive behaviors of others in similar contexts can further enhance anticipated pride in tourism settings and anticipated guilt in daily life.

For tourism-related businesses, emphasizing how sustainable actions contribute to the conservation of local environments and cultural heritage can increase anticipated pride and encourage responsible tourism. Eco-tourism packages can be designed to evoke anticipated pride through responsible travel practices. Lastly, when assessing the effectiveness of pro-environmental appeals, managers can measure the levels of anticipated pride and anticipated guilt among their target audience.

8.3. Limitations and further research

This research has several limitations that should be acknowledged. First, our study was restricted to park and hotel/office settings, which may limit the generalizability of our

findings to other contexts in the tourism and hospitality industry such as restaurants, museums, and amusement parks. To address this limitation, future research could include these additional contexts to broaden the applicability of our findings. Second, our study focused on the individual level without taking into account social psychological factors. Studies have examined pro-environmental behavior in group package tours where factors such as the presence of others, the diffusion of responsibility (Wu, Font, & Liu, 2020) and the signaling effect may become relevant. To address this limitation, future research should incorporate these social psychological factors. Third, some tourism products are psychologically further by nature, resulting in a higher construal level among tourists (Scarpi & Raggiotto, 2023). Future research could investigate the framing effect of prescriptive versus proscriptive appeals in varied tourism contexts. Last, our study only examined behavior intentions, and given the well-established intention-behavior gap, future studies should measure actual behaviors as the outcome variable to gain a more comprehensive understanding of the effectiveness of pro-environmental communication.

Appendix A. Stimuli

Context: street park vs. national park (Study 1a and Study 2)



Context: office vs. hotel (Study 1b)



Pro-environmental appeal: prescriptive vs. proscriptive (Study 1a and Study 2)



Water conservation appeal: prescriptive vs. proscriptive (Study 1b)



Please save water



Please don't waste water

Appendix B. Measurement items

study	Variable	Item	Reference
Pilot study A	Perceived psychological distance	How far is the current environment from your usual place of residence? How likely are you to be in the current environment compared with your usual place of residence?	Zhang and Wang (2009)
Pilot study B	Prescriptive/proscriptive (1 = prescriptive, 7 = proscriptive)	To what extent does the appeal focus on what should be done (the prescriptive side) ? / To what extent does the appeal focus on what should not be done (the proscriptive side) ?	Janoff-Bulman, Sheikh, and Hepp (2009)
Study 1a	Intention of pro-environmental behavior (1 = strongly disagree, 7 = strongly disagree)	I will follow the legal ways to stop visiting the closed area in the park I will volunteer to stop visiting a favorite spot in the park if it needs to recover from environmental damage I will not litter at the park I will try to convince partners to not litter at the park I will follow the legal ways to stop the destruction of the environment of the park I will learn more about the park's natural environment I will discuss with people the issues of environmental protection of the park I will volunteer my time to projects that help the park. or similar parks and nature areas I will donate to ensure the protection of the park I will pick up litter at the park left by other visitors	Cheng, C. Wu, and Huang (2013); Halpenny (2010)
Study 1b	Water Conservation behavior (1 = strongly disagree, 7 =	I turn off the tap water while I am soaping. I am willing to conserve water. I plan to engage in water conservation activities.	H. Han and Hyun (2018)

Study 2	strongly disagree)	I will expend effort on conserving water.	H. Han and
	Anticipated pride	Proud Accomplished	Hyun
	(1 = not at all, 7 = very much)	Confident Worthwhile	(2016)
	Anticipated guilt	Guilty	
	(1 = not at all, 7 = very much)	Sorry Bad	
	Personal norm (1 = strongly disagree, 7 = strongly disagree)	I feel an obligation to choose a sustainable way of using the park. Regardless of what other people do, because of my own values/principles, I feel that I should behave in an environmentally friendly way while visiting the park. I feel that it is important to make the park environmentally sustainable, reducing the harm to the environment. I feel it is important that park visitors in general make an eco-friendly decision while visiting the park.	H. Han, et al. (2019)
	Social norm (1 = strongly disagree, 7 = strongly disagree)	Most people who are important to me think I should travel in an environmentally responsible way while visiting the park. Most people who are important to me would want me to travel in an environmentally responsible way while visiting the park. People whose opinions I value would prefer me to travel in an environmentally responsible way while visiting the park.	
	Self-efficacy (1 = not at all, 7 = very much)	How good do you feel about taking care of the environment by following the appeal? How confident are you to protect the environment by following the appeal? How confident are you to be able to engage in pro-environmental behaviors suggested by the appeal?	D. Han, Duhachek, and Agrawal (2016)

	How confident are you to maintain your environmental practice every day by following the appeal?	
	How confident are you in reminding your friends to engage in pro-environmental behavior proposed by the appeal?	
Response efficacy (1 = not at all, 7 = very much)	To what extent do you think this appeal can prevent you from damaging the environment?	
	To what extent do you think the following actions suggested by this appeal can reduce the environmental threat faced by the park?	
	To what extent do you think this appeal can prevent environmental problems?	
Processing fluency (1 = not at all, 7 = very much)	Difficult to process. Difficult to understand. Difficult to comprehend.	White, Macdonnell, and Dahl (2011)

Appendix C. Scenarios

Tourism context: national park

Imagine that you are traveling to a national park far from your daily place of residence, beautiful and scenic, which you have planned to visit with your friends and family. At this moment, you see that there is a sign on the grassland of the park.

Daily context: street park

Imagine that you are relaxing at a street park near your home, beautiful and scenic, where you often come to relax with your friends and family. At this moment, you see that there is a sign on the grassland of the park.

Tourism context: hotel

Imagine that you are on a tour and staying at a hotel. Entering the bathroom, you see a sign posted on the wall with a water conservation appeal message.

Daily context: office

Imagine that you are at work and stay in the office. Entering the bathroom, you see a sign posted on the wall with a water conservation appeal message.

References

- Antonetti, P., & Maklan, S. (2014). Feelings that make a difference: how guilt and pride convince consumers of the effectiveness of sustainable consumption choices. *Journal of Business Ethics, 124*(1), 117–134.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.
- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development, 67*(3), 1206–1222.
- Ballantyne, R., & Packer, J. (2011). Using tourism free-choice learning experiences to promote environmentally sustainable behaviour: the role of post-visit “action resources”. *Environmental Education Research, 17*(2), 201–215.
- Bhati, A., & Pearce, P. (2016). Vandalism and tourism settings: An integrative review. *Tourism Management, 57*, 91–105.
- Blose, J. E., Mack, R. W., & Pitts, R. E. (2015). The influence of message framing on hotel guests’ linen-reuse intentions. *Cornell Hospitality Quarterly, 56*(2), 145–154.
- Cai, R., & Leung, X. Y. (2020). Mindset matters in purchasing online food deliveries during the pandemic: The application of construal level and regulatory focus theories. *International Journal of Hospitality Management, 91*, 102677.
- Cheng, T.-M., C. Wu, H., & Huang, L.-M. (2013). The influence of place attachment on the relationship between destination attractiveness and environmentally responsible behavior for island tourism in Penghu, Taiwan. *Journal of Sustainable Tourism, 21*(8), 1166–1187.

- Cvelbar, L. K., Grün, B., & Dolnicar, S. (2017). Which hotel guest segments reuse towels? Selling sustainable tourism services through target marketing. *Journal of Sustainable Tourism, 25*(7), 921-934.
- Chi, O. H., Denton, G., & Gursoy, D. (2021). Interactive effects of message framing and information content on carbon offsetting behaviors. *Tourism Management, 83*, 104244.
- Dolnicar, S., & Grün, B. (2009). Environmentally friendly behavior. *Environment and Behavior, 41*(5), 693–714.
- Dolnicar, S., Knezevic Cvelbar, L., & Grün, B. (2017). Do pro-environmental appeals trigger pro-environmental behavior in hotel guests? *Journal of Travel Research, 56*(8), 988–997.
- Frías-Jamilena, D. M., Fernández-Ruano, M. L., & Polo-Peña, A. I. (2022). Gamified environmental interpretation as a strategy for improving tourist behavior in support of sustainable tourism: The moderating role of psychological distance. *Tourism Management, 91*, 104519.
- Gössling, S., Araña, J. E., & Aguiar-Quintana, J. T. (2019). Towel reuse in hotels: Importance of normative appeal designs. *Tourism Management, 70*, 273–283.
- Grazzini, L., Rodrigo, P., Aiello, G., & Viglia, G. (2018). Loss or gain? The role of message framing in hotel guests' recycling behaviour. *Journal of Sustainable Tourism, 26*(11), 1944–1966.
- Halpenny, E. A. (2010). Pro-environmental behaviours and park visitors: The effect of place attachment. *Journal of Environmental Psychology, 30*(4), 409–421.

- Han, D., Duhachek, A., & Agrawal, N. (2016). Coping and construal level matching drive health message effectiveness via response efficacy or self-efficacy enhancement. *Journal of Consumer Research*, 43(3), 429–447.
- Han, H., Hsu, L.-T. (Jane), & Sheu, C. (2010). Application of the theory of planned behavior to green hotel choice: testing the effect of environmentally friendly activities. *Tourism Management*, 31(3), 325–334.
- Han, H., Hwang, J., Lee, M. J., & Kim, J. (2019). Word-of-mouth, buying, and sacrifice intentions for eco-cruises: Exploring the function of norm activation and value-attitude-behavior. *Tourism Management*, 70, 430–443.
- Han, H., & Hyun, S. S. (2016). Fostering customers' pro-environmental behavior at a museum. *Journal of Sustainable Tourism*, 25(9), 1240–1256.
- Han, H., & Hyun, S. S. (2018). What influences water conservation and towel reuse practices of hotel guests? *Tourism Management*, 64, 87–97.
- Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: Guilford Publications.
- Higgins, E. T. (2002). How self-regulation creates distinct values: the case of promotion and prevention decision making. *Journal of Consumer Psychology*, 12(3), 177–191.
- Holmes, M. R., Dodds, R., & Frochot, I. (2019). At home or abroad, does our behavior change? Examining how everyday behavior influences sustainable travel behavior and tourist clusters. *Journal of Travel Research*, 60(1), 102-116.

- Io, M.-U. (2016). Exploring the impact of hedonic activities on casino-hotel visitors' positive emotions and satisfaction. *Journal of Hospitality and Tourism Management*, 26, 27–35.
- Janoff-Bulman, R., & Carnes, N. C. (2013). Moral context matters. *Personality and Social Psychology Review*, 17(3), 242–247.
- Janoff-Bulman, R., Sheikh, S., & Hepp, S. (2009). Proscriptive versus prescriptive morality: Two faces of moral regulation. *Journal of Personality and Social Psychology*, 96(3), 521–537.
- Juvan, E., & Dolnicar, S. (2014). The attitude–behaviour gap in sustainable tourism. *Annals of Tourism Research*, 48(1), 76–95.
- Jørgensen, T., & Reichenberger, I. (2022). Breaking bad behaviour: understanding negative film tourist behaviour through moral disengagement. *Current Issues in Tourism*, 1-16.
- Kim, S.-B., & Kim, D.-Y. (2014). The effects of message framing and source credibility on green messages in hotels. *Cornell Hospitality Quarterly*, 55(1), 64–75.
- Lagomarsino, M., Lemarié, L., & Puntiroli, M. (2020). When saving the planet is worth more than avoiding destruction: The importance of message framing when speaking to egoistic individuals. *Journal of Business Research*, 118, 162–176.
- Lee, A. Y., & Aaker, J. L. (2004). Bringing the frame into focus: The influence of regulatory fit on processing fluency and persuasion. *Journal of Personality and Social Psychology*, 86, 205-218.
- León, C. J., & Araña, J. E. (2020). Tourist sustainable behaviour and personal communication. *Annals of Tourism Research*, 85, 102897.

- Levin, I. P., Gaeth, G. J., Schreiber, J., & Lauriola, M. (2002). A new look at framing effects: Distribution of effect sizes, individual differences, and independence of types of effects. *Organizational Behavior and Human Decision Processes*, 88(1), 411–429.
- Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76(2), 149–188.
- Line, N. D., Hanks, L., & Miao, L. (2017). Image matters: Incentivizing green tourism behavior. *Journal of Travel Research*, 57(3), 296–309.
- Liu, X. (Stella), Wan, L. C., & Yi, X. (Shannon). (2022). Humanoid versus non-humanoid robots: How mortality salience shapes preference for robot services under the COVID-19 pandemic? *Annals of Tourism Research*, 94, 103383.
- Li, C., Wang, Y., & Li, H. (2022). Effect of time pressure on tourism: How to make non-impulsive tourists spend more. *Journal of Travel Research*, 62(7), 1411–1426.
- Li, C., Wang, Y., Lv, X., & Li, H. (2021). To buy or not to buy? The effect of time scarcity and travel experience on tourists' impulse buying. *Annals of Tourism Research*, 86, 103083.
- Miao, L., & Wei, W. (2013). Consumers' pro-environmental behavior and the underlying motivations: A comparison between household and hotel settings. *International Journal of Hospitality Management*, 32, 102–112.
- Mishra, A., & Mishra, H. (2011). The influence of price discount versus bonus pack on the preference for virtue and vice foods. *Journal of Marketing Research*, 48(1), 196–206.

- Mogilner, C., Aaker, J. L., & Pennington, G. L. (2008). Time will tell: The distant appeal of promotion and imminent appeal of prevention. *Journal of Consumer Research*, *34*(5), 670–681.
- Mohr, G. S., Lichtenstein, D. R., & Janiszewski, C. (2012). The effect of marketer-suggested serving size on consumer responses: The unintended consequences of consumer attention to calorie information. *Journal of Marketing*, *76*(1), 59–75.
- Olsen, M. C., Slotegraaf, R. J., & Chandukala, S. R. (2014). Green claims and message frames: How green new products change brand attitude. *Journal of Marketing*, *78*(5), 119–137.
- Patrick, V. M., Chun, H. H., & Macinnis, D. J. (2009). Affective forecasting and self-control: Why anticipating pride wins over anticipating shame in a self-regulation context. *Journal of Consumer Psychology*, *19*(3), 537–545.
- Qin, Q., & Hsu, C. H. C. (2022). Urban travelers' pro-environmental behaviors: Composition and role of pro-environmental contextual force. *Tourism Management*, *92*, 104561.
- Ru, X., Wang, S., Chen, Q., & Yan, S. (2018). Exploring the interaction effects of norms and attitudes on green travel intention: An empirical study in eastern China. *Journal of Cleaner Production*, *197*, 1317–1327.
- Scarpi, D., & Raggiotto, F. (2023). A construal level view of contemporary heritage tourism. *Tourism Management*, *94*, 104648.
- Schneider, C. R., Zaval, L., Weber, E. U., & Markowitz, E. M. (2017). The influence of anticipated pride and guilt on pro-environmental decision making. *PLOS ONE*, *12*(11), e0188781.

- Shiple, N. J., & van Riper, C. J. (2022). Pride and guilt predict pro-environmental behavior: A meta-analysis of correlational and experimental evidence. *Journal of Environmental Psychology, 79*, 101753.
- Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014). An integrated framework for encouraging pro-environmental behavior: The role of values, situational factors and goals. *Journal of Environmental Psychology, 38*, 104–115.
- Steg, L., Dreijerink, L., & Abrahamse, W. (2005). Factors influencing the acceptability of energy policies: A test of VBN theory. *Journal of Environmental Psychology, 25*(4), 415-425.
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology, 29*(3), 309–317.
- Teeny, J. D., Siev, J. J., Briñol, P., & Petty, R. E. (2021). A review and conceptual framework for understanding personalized matching effects in persuasion. *Journal of Consumer Psychology, 31*(2), 382-414.
- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology, 17*(2), 83–95.
- Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance: Correction to Trope and Liberman. *Psychological Review, 117*(3), 1024–1024.
- Tversky, A., & Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science, 211*, 453–458.

- Uriely, N., Ram, Y., & Malach-Pines, A. (2011). Psychoanalytic sociology of deviant tourist behavior. *Annals of Tourism Research*, 38(3), 1051–1069.
- Vlek, C., & Steg, L. (2007). Human behavior and environmental sustainability: Problems, driving forces, and research topics. *Journal of Social Issues*, 63(1), 1–19.
- Wan, L. C., Hui, M. K., & Qiu, Y. (Chloe). (2021). Tourist misbehavior: Psychological closeness to fellow consumers and informal social control. *Tourism Management*, 83, 104258.
- Wang, L., & Lyu, J. (2019). Inspiring awe through tourism and its consequence. *Annals of Tourism Research*, 77, 106–116.
- Wang, S., & Lehto, X. (2020). The interplay of travelers' psychological distance, language abstraction, and message appeal type in social media advertising. *Journal of Travel Research*, 59(8), 1430-1446.
- Wang, X., Qin, X., & Zhou, Y. (2019). A comparative study of relative roles and sequences of cognitive and affective attitudes on tourists' pro-environmental behavioral intention. *Journal of Sustainable Tourism*, 28(5), 727–746.
- White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing*, 83(3), 22-49.
- White, K., Macdonnell, R., & Dahl, D. W. (2011). It's the mind-set that matters: The role of construal level and message framing in influencing consumer efficacy and conservation behaviors. *Journal of Marketing Research*, 48(3), 472–485.

- White, K., & Simpson, B. (2013). When do (and don't) normative appeals influence sustainable consumer behaviors? *Journal of Marketing*, 77(2), 78–95.
- Williams, L. A., & DeSteno, D. (2008). Pride and perseverance: The motivational role of pride. *Journal of Personality and Social Psychology*, 94(6), 1007–1017.
- Wu, J. (Snow), Font, X., & Liu, J. (2020). Tourists' pro-environmental behaviors: Moral obligation or disengagement? *Journal of Travel Research*, 60(4), 735-748.
- Wu, J. (Snow), Font, X., & Liu, J. (2021). The elusive impact of pro-environmental intention on holiday on pro-environmental behaviour at home. *Tourism Management*, 85, 104283.
- White, N. R., & White, P. B. (2007). Home and away. *Annals of Tourism Research*, 34(1), 88-104.
- Yang, C., Lin, Z., Huang, J., & Cheng, T. (2023). A dynamic tax model based on destination lifecycle for sustainable tourism development. *Journal of Travel Research*, 62(1), 217-232.
- Zhang, M., & Wang, J. (2009). Psychological distance asymmetry: The spatial dimension vs. other dimensions. *Journal of Consumer Psychology*, 19(3), 497–507.
- Zhang, J., Xie, C., Chen, Y., & Lin, Z. (2023). How risk messages influence tourist processing and sharing: The role of emojis. *Journal of Hospitality and Tourism Management*, 56, 454-468.

Table 1. Overview of the Studies.

Study	Sample	Purpose	Test
Pilot study 1	Credamo participants (N=120; 56)	The manipulation of the context (tourism; hospitality)	Independent sample t-test
Pilot study 2	Credamo participants (N=120; 69)	The manipulation of the pro-environmental appeal (environment protection; water conservation)	Independent sample t-test
Study 1a	Credamo participants (N=315)	H1 (tourism)	Two-way ANOVA
Study 1b	Credamo participants (N=180)	H1 (hospitality)	Two-way ANOVA
Study 2	Credamo participants (N=161)	H2	Two-way ANOVA and Hayes PROCESS Model 8

Table 2. Profile of Participants.

Variable	Study 1a (N=315)		Study 1b (N=180)		Study 2 (N=161)	
	N	P%	N	P%	N	P%
Gender						
Male	96	30.5	80	44.4	62	38.5
Female	219	69.5	100	55.6	99	61.5
Age						
17-19	20	6.3	7	3.9	6	3.7
20-34	240	76.2	136	75.6	126	78.3
35-44	31	9.8	29	16.1	18	11.2
45-55	21	6.7	8	4.4	10	6.2
>55	3	1.0	0	0.0	1	0.6
Education						
Junior high school or below	1	0.3	1	0.6	0	0
High school	12	3.8	7	3.9	8	5
University or college	264	83.8	150	83.3	131	81.3
Postgraduate or above	38	12.1	22	12.2	22	13.7
Monthly disposable income						
<1000	15	4.8	7	3.9	6	3.7
1000-1999	65	20.6	30	16.7	41	25.5
2000-4999	90	28.6	39	21.7	34	21.1
5000-9999	102	32.4	68	37.8	50	31.1
>9999	43	13.6	36	20.0	30	18.6
Travel frequency of last year (mean)	1.97 (sd=1.68)		2.77 (sd=1.79)		2.24 (sd=1.53)	

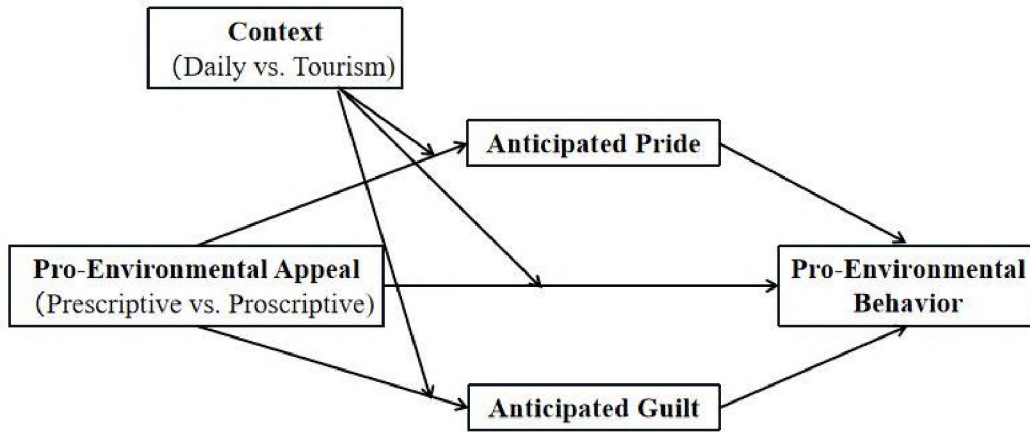
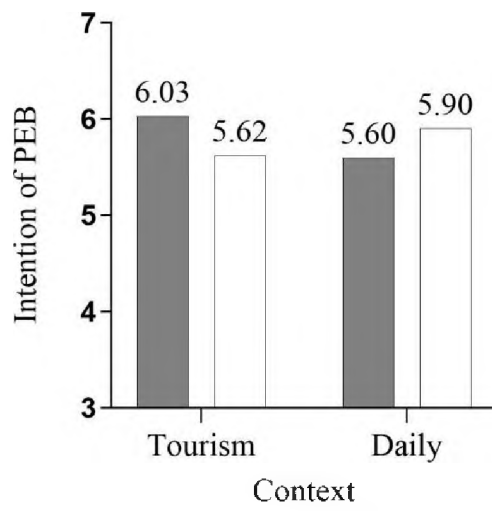
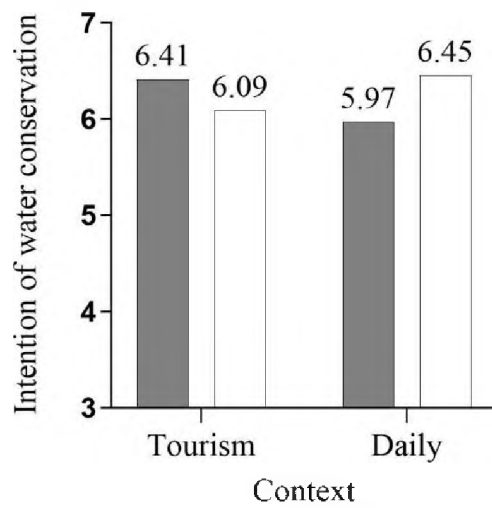


Figure 1. Conceptual model.



■ Prescriptive-framed appeal □ Proscriptive-framed appeal

Figure 2. Interaction effect between context and pro-environmental appeal on the intention of pro-environmental behavior (Study 1a).



■ Prescriptive-framed appeal □ Proscriptive-framed appeal

Figure 3. Interaction effect between context and pro-environmental appeal on the intention of water conservation behavior (Study 1b).

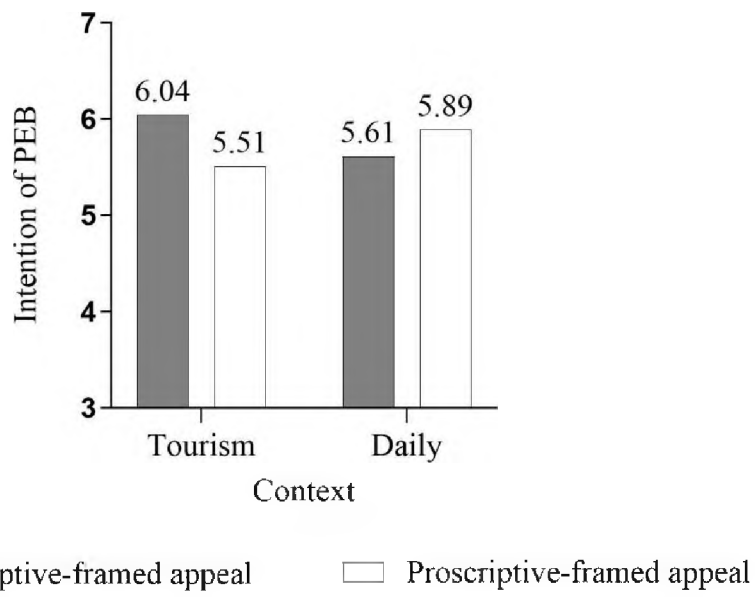


Figure 4. Interaction effect between context and pro-environmental appeal on pro-environmental behavior intention (Study 2).



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