

Emotion–Message Congruency in Sustainability Communication: The Interactive Effects of Discrete Emotions and Message Framing in Reducing Single-Use Plastic Consumption

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Abstract

Global plastic waste is a critical environmental challenge, with approximately 67 million plastic bottles discarded daily. This research investigates the independent and interactive effects of discrete emotions (disgust vs. sadness) and message framing (gain vs. loss) on reducing plastic consumption, while examining the moderating role of psychological distance across three studies. Study 1 demonstrated that loss-framed messages were more effective than gain-framed or control messages in increasing intentions to avoid single-use plastics, with psychological distance exerting a conditional moderating effect. Study 2 found that sadness elicited a significantly higher willingness to donate than disgust, an effect further moderated by psychological distance. Study 3 revealed a significant two-way interaction between emotions and message framing regarding the choice of glass bottles: sadness was more effective when paired with a gain frame, whereas disgust was more effective when paired with a loss frame. Psychological distance moderated glass bottle choice only in the sadness/gain-frame condition. Overall, these findings suggest that emotion–message congruency enhances persuasion in sustainability communication, with psychological distance regulating behavioral outcomes.

1. Introduction

Human-induced pollution has generated a wide range of severe environmental consequences, including climate change, biodiversity loss, and freshwater depletion (Landrigan et al., 2020). Among non-recyclable waste streams, plastic waste represents one of the most pressing environmental challenges. Between 1950 and 2015, global plastic production reached approximately 8.3 billion tonnes, of which 6.3 billion tonnes ultimately became waste. Of this waste, only about 9% was recycled, while 12% was incinerated and 79% accumulated in landfills or the natural environment (Geyer et al., 2017). The very characteristics that make plastics highly useful in everyday life also render them extremely resistant to natural degradation. Indeed, some researchers estimate that plastics may persist in the environment for hundreds of thousands of years (Xanthos & Walker, 2017). Consequently, even under optimal conditions, recycling alone is insufficient to prevent plastic waste from entering landfills and natural ecosystems (Zink & Geyer, 2018).

Single-use plastic water bottles constitute one of the most common forms of plastic waste, with approximately 67 million bottles discarded worldwide each day (Galati et al., 2022). If current production and consumption trends continue, an estimated 12 billion tonnes of plastic waste will accumulate in landfills and the natural environment by 2050 (United Nations Environment Programme, 2018, 2021).

Addressing this challenge requires consumers to modify their consumption patterns in order to reduce the harmful and potentially irreversible environmental impacts of their behaviour (White et al., 2011; Moser, 2015; Xanthos & Walker, 2017). Within this context, message framing has emerged as an important area of research. Broadly defined, framing is a persuasive communication strategy designed to determine which message format is more effective in achieving a desired behavioural outcome. Although framing has been widely examined in health communication research, relatively few studies

within the sustainable consumption literature have focused on recycling behaviours and green product purchase intentions. Existing evidence suggests that message framing can significantly influence sustainable consumption behaviours, with loss-framed messages generally outperforming gain-framed messages in encouraging environmentally responsible actions (Amatulli et al., 2019; Armbruster et al., 2022; Bilandzic et al., 2017; Chang & Wu, 2015; Dedman & Lee, 2023; Khalil et al., 2022; Li et al., 2021; Moon et al., 2016; Septianto et al., 2019; Zubair et al., 2020). However, studies specifically examining single-use plastic consumption and the effectiveness of message framing in reducing such consumption remain limited (Skoric et al., 2022). To address this gap, Study 1 investigates the effects of gain- and loss-framed messages on intentions to avoid single-use plastics. It is hypothesised that loss-framed messages will exert a stronger persuasive effect on behavioural change than gain-framed messages.

Beyond message framing, emotions have long been recognised as powerful determinants of human judgement, decision-making, and behaviour (Lerner et al., 2015). Indeed, emotions are widely regarded as a primary driver of many important life decisions (Lerner et al., 2015). Nevertheless, research examining the role of emotions in sustainable consumption remains relatively limited (Koenig-Lewis et al., 2014), with most studies focusing primarily on fear and guilt. Comparatively little attention has been devoted to other discrete emotions (Amatulli et al., 2019). Accordingly, Study 2 examines the effects of emotional framing on donation behaviour and donation amount by focusing on disgust and sadness. Disgust was selected because it promotes avoidance-oriented responses that are relevant to changing undesirable behaviours and conditions (Lazarus, 1994; Rozin & Fallon, 1987; So et al., 2015), while plastic waste itself may evoke disgust due to its material characteristics. Sadness was included because feeling sadness for others has been shown to increase altruistic behaviour significantly (Lu, 2016). Moreover, sadness, classified as an approach-oriented emotion, motivates individuals to engage in emotionally restorative actions (Nabi, 1999). Accordingly, sadness is expected to exert a stronger influence on the dependent variable than disgust.

Nabi's (1999) Cognitive Functional Model proposes that persuasive messages are most effective when paired with discrete emotions that promote the intended behavioural response. Building on this perspective, Study 3 investigates the interaction effects of message framing and emotional framing on reducing plastic consumption. Given the growing recognition of emotions as influential factors in gain-loss framing research (Nabi, 2003), it is notable that previous studies have largely focused on the mediating role of emotions rather than examining emotions and message framing as interacting independent variables. Furthermore, the interaction between message-induced emotions and gain-loss framing remains largely unexplored (Lu, 2016). To address this gap, Study 3 examines how gain- and loss-framed messages interact with message-induced disgust and sadness in influencing consumers' choice of glass-bottled water. It is hypothesised that sadness will be more effective when paired with gain-framed messages, whereas disgust will be more effective when paired with loss-framed messages. Moreover, given the well-documented tendency for negative information to exert stronger effects on evaluation processes than equivalent positive information, it is further predicted that the disgust-loss frame combination will have the strongest influence on the choice of glass-bottled water.

Finally, psychological distance, a construct that plays a central role in how individuals mentally represent and interpret the world around them (Barnes, 2019), was incorporated into all three studies. Specifically, its moderating role was examined based on the assumption that perceptions of psychological distance may influence the effectiveness of emotional and message framing in promoting reductions in plastic consumption.

2. Literature Review

2.1 Message Framing – Loss and Gain

The framing effect was first introduced by Tversky and Kahneman in their seminal Prospect Theory, which explains how individuals make decisions under conditions of risk and uncertainty. Gain framing refers to presenting decision outcomes in terms of gains relative to a neutral reference point, whereas loss framing presents outcomes in terms of losses (Tversky & Kahneman, 1981).

Building on Prospect Theory, Levin et al. (1998) proposed two primary framing formats: attribute framing and goal framing. Attribute framing emphasizes the characteristics of an object or event, whereas goal framing focuses on the consequences of performing or not performing a particular behaviour. In goal framing, positive messages highlight the benefits of engaging in a behaviour, whereas negative messages emphasize the costs associated with failing to engage in that behaviour (Levin et al., 1998). The primary objective of goal framing is to determine which message format is more effective in promoting a desired behavioural outcome. Given that the present research aims to encourage consumers to reduce their use of single-use plastics, it focuses specifically on goal framing.

Message framing has been widely applied in social marketing (Pham & Septianto, 2020), particularly in health communication research (Amatulli et al., 2019; Cheng et al., 2011; Duhachek et al., 2012; Keller et al., 2003; Levin et al., 1998). A substantial body of evidence suggests that loss-framed messages are generally more persuasive than gain-framed messages in promoting health-related behaviours (Block & Keller, 1995; Collymore & McDermott, 2016; Gallagher et al., 2011; Homer & Yoon, 1992; Maheswaran & Meyers-Levy, 1990; Riet et al., 2010; Robberson & Rogers, 1988). Similar findings have been reported in the sustainable consumption literature, where loss-framed messages have been shown to be more effective than gain-framed messages in encouraging environmentally responsible behaviour (Chang & Wu, 2015; Dedman & Lee, 2023; Li, 2021; Moon et al., 2016; Zubair et al., 2020).

These findings suggest that the way a message is framed plays a critical role in shaping recipients' attitudes, intentions, and behaviours (Lu, 2016). The greater effectiveness of loss framing is often attributed to the negative emotions it evokes, which motivate individuals to avoid undesirable outcomes (Cheng et al., 2011; McKinley & Limbu, 2020; Nabi et al., 2019; Septianto et al., 2019). This effect has also been linked to negativity bias, whereby individuals assign greater weight to negative information than to comparable positive information and process such information more carefully (White et al., 2011).

Relatedly, loss aversion suggests that the psychological impact of losses is typically stronger than that of equivalent gains (Meyerowitz & Chaiken, 1987; Peeters & Czapinski, 1990).

Against this background, Study 1 examines the effect of message framing on persuasion and intentions to avoid single-use plastics. Consistent with previous research, it is hypothesised that loss-framed messages will be more effective than gain-framed and control messages in promoting intentions to reduce single-use plastic consumption.

H1: Message framing influences intentions to avoid using single-use plastics.

H1(a): Loss-framed messages have a stronger positive effect on intentions to avoid using single-use plastics than gain-framed or control messages.

2.2 Psychological Distance

The concept of psychological distance is rooted in Construal Level Theory (CLT), developed by Liberman and Trope. Psychological distance refers to the extent to which an individual perceives an event or object as temporally, socially, spatially, or hypothetically near or distant. Because the self, situated in the present moment, serves as the primary reference point, perceptions of events and objects are shaped by their distance from the individual across these dimensions. Consequently, psychological distance influences how people evaluate, predict, and respond to events and objects (Liberman & Trope, 2010).

A psychologically distant event is typically perceived as occurring in the future, taking place in a different location, or affecting other people rather than oneself. In contrast, psychologically proximate events are perceived as occurring in the present and as having direct consequences for oneself and close others (Barnes, 2019; Milfont, 2010).

According to Construal Level Theory, psychological distance determines the level at which individuals mentally construe events and objects. As psychological distance increases, individuals tend to represent events in a more abstract manner, corresponding to a high-level construal. Conversely, psychologically proximate events are interpreted more concretely and are therefore associated with low-level construals (Barnes, 2019).

Previous research suggests that the various dimensions of psychological distance are interconnected and jointly influence individuals' evaluations, predictions, and behavioural responses. As a result, psychological distance has received considerable attention in environmental research (Barnes, 2019; Milfont, 2010; Nan, 2007; White et al., 2011; Zhang et al., 2022). Studies have examined its role in a wide range of environmental contexts, including air pollution, recycling, corporate sustainability, green consumption, and climate change (Keller et al., 2022).

Given the focus of the present research on reducing single-use plastic consumption, psychological distance is expected to play an important role in shaping responses to both message framing and

emotional framing. Accordingly, psychological distance was incorporated as a moderating variable in all three studies.

H1(b): The relationship between message framing (gain vs. loss) and intentions to avoid using single-use plastics is moderated by psychological distance.

Figure 1 presents the conceptual model for Study 1.

2.3 Emotion Framing – Disgust and Sadness

For many years, decision-making research focused primarily on cognitive processes (Lerner et al., 2015; Loewenstein & Lerner, 2003). However, the inability of purely rational models to fully explain human behaviour, combined with methodological advances in emotion research and growing evidence of the behavioural influence of emotions, has renewed scholarly interest in the role of emotions in decision making (Lerner et al., 2015). Since the 1980s, emotional factors have become increasingly central to decision-making research, and emotions are now widely recognized as key drivers of human judgment and behaviour (Lerner et al., 2015; Smith & Lazarus, 1990).

One of the dominant perspectives in emotion research has been the valence hypothesis, which proposes that positive emotions lead to positive judgments, whereas negative emotions lead to negative judgments. This approach treats emotions primarily according to their positive or negative valence, allowing researchers to draw broad conclusions regarding emotional effects. However, accumulating evidence suggests that emotions sharing the same valence may produce substantially different behavioural and cognitive outcomes. Emotions of similar valence have been shown to differ in their effects on judgments, decision-making processes, facial expressions, and patterns of neural activation (Griskevicius et al., 2010; Lerner et al., 2015; Smith & Lazarus, 1990). Consequently, the explanatory power of valence-based approaches has been increasingly questioned (Lerner et al., 2015; Raghunathan et al., 2006).

Alternative perspectives, such as the Appraisal Tendency Framework, argue that discrete emotions exert distinct effects on judgment and behaviour. According to this perspective, emotions with the same valence, such as fear and anger, may generate opposite outcomes, whereas emotions with different valences may produce similar effects. These findings support the view that emotions are multidimensional and discrete rather than simply positive or negative (Lerner et al., 2015). Despite growing recognition of the importance of discrete emotions, emotion-based consumer research has traditionally focused on emotions such as fear, anger, and happiness, while other emotions have received considerably less attention (So et al., 2015).

Among these understudied emotions, disgust is particularly relevant to the present research. Although emotions have increasingly been examined within the sustainable consumption literature, previous studies have primarily focused on fear and guilt, with relatively limited attention devoted to disgust (Amatulli et al., 2019). Yet disgust has been shown to trigger a powerful avoidance response that

motivates individuals to distance themselves from potentially harmful or undesirable stimuli, thereby influencing consumer judgments and behaviours (Morales & Fitzsimons, 2007). Consistent with Nabi's (1999) Cognitive Functional Model, disgust is classified as an avoidance-oriented emotion. Moreover, its avoidance-inducing effect appears to be robust across a wide range of disgust-eliciting stimuli (Rozin, 1999).

Several studies suggest that plastic waste may evoke feelings of disgust. For example, consumers have associated plastic materials with unpleasant sensory experiences due to their smell, texture, perceived contamination, and appearance after disposal (Fisher, 2004). Similarly, Douglas's (1966) concept of "dirt as disorder" highlights how waste can elicit disgust when it appears out of place or disrupts established norms of cleanliness and order. Waste that is improperly discarded or visibly accumulated is therefore particularly likely to trigger disgust responses (Lucas, 2002). Furthermore, consumers may experience disgust even toward products that pose no objective threat. Tybur et al. (2013) demonstrated that perceptions of contamination can influence evaluations of otherwise harmless products, while Meng and Leary (2021) found that consumers perceived clothing made from recycled plastic as contaminated, resulting in lower purchase intentions.

Taken together, these findings suggest that disgust may play an important role in reducing single-use plastic consumption. Accordingly, Study 2 incorporates disgust into the emotional framing condition using an image depicting an ocean polluted by plastic waste. Given that disgust promotes avoidance-oriented responses that may facilitate behavioural change (Lazarus, 1994; Rozin & Fallon, 1987; So et al., 2015), it is expected to influence participants' responses to environmental problems associated with plastic waste.

In addition to disgust, sadness was selected as a second focal emotion. Sadness is one of the most frequently experienced emotions and has been shown to exert a substantial influence on consumer behaviour. As an approach-oriented emotion, sadness motivates individuals to engage in emotionally restorative behaviours and to seek rewarding experiences that alleviate negative emotional states (Lefebvre, 2019; Nabi, 1999; Raghunathan & Corfman, 2004; Roseman et al., 1994). When sadness is experienced in response to another individual's suffering, it often evokes empathy, thereby increasing motivation to help (Small & Verrochi, 2009). Consistent with this perspective, sadness for others has been shown to increase altruistic behaviour significantly (Lu, 2016). Accordingly, the sadness condition in Study 2 highlights the harmful effects of plastic waste on wildlife.

Based on these theoretical arguments, Study 2 hypothesises that sadness will exert a stronger effect on donation behaviour than disgust. Although disgust is often associated with an immediate desire for behavioural change, Nabi (1999) argues that avoidance-oriented emotions require clear directional cues to translate emotional responses into action. Dillard and Nabi (2006) similarly suggest that emotional appeals are most effective when accompanied by information that supports the behavioural tendency elicited by the emotion. Because Study 2 focuses exclusively on emotional framing and does not provide additional behavioural guidance, participants experiencing disgust may lack sufficient motivation to

engage further with the donation task. In contrast, sadness is likely to promote empathy and altruistic concern, thereby increasing willingness to donate. The moderating role of psychological distance is also examined.

H2

The emotional context in which a donation is made has an effect on the behaviour of the donor.

H2(a)

The emotion of sadness is observed to have a greater impact on donation behaviour than the emotion of disgust.

H2(b)

The effect of the emotion frame on the amount of donation is moderated by psychological distance.

The conceptual model, which provides a summary of the variables and relationships investigated in the second study, is presented in Fig. 2.

2.4 Message Framing and Emotion Framing

Because emotions play an important role in information processing, memory, retrieval, attribution, and judgment formation (Nabi, 2003), they have become increasingly relevant in gain–loss framing research. Nevertheless, studies examining the interaction between message framing and emotional framing remain limited, particularly within the sustainable consumption literature (Amatulli et al., 2019; Lu, 2016). Existing research has primarily focused on emotions such as guilt, shame, and fear (Florence et al., 2022). Moreover, emotions have typically been examined as incidental affective states or mood variables that are unrelated to the message itself (Baek & Yoon, 2017).

Consequently, relatively little is known about how message-induced emotions interact with gain–loss framing to influence consumer behaviour (Lu, 2016). This gap is particularly important in light of Nabi's (1999) Cognitive Functional Model, which argues that persuasive messages are most effective when accompanied by discrete emotions that reinforce the intended behavioural response. Emotions that are directly related to the message content are more likely to motivate deeper message processing than emotions that are unrelated to the topic under consideration (Nabi, 1999).

To address this gap, Study 3 examines the interaction between message framing and message-induced emotions in shaping consumers' choice of glass-bottled water. Specifically, the study investigates whether the combined effects of emotions and message framing differ from their previously observed independent effects on sustainable consumption behaviour and whether the effectiveness of disgust changes when paired with a congruent message frame.

H3: The interaction between emotional framing and message framing influences consumers' choice of glass-bottled water.

Research on emotional appeals suggests that emotions are most effective when accompanied by messages that provide clear behavioural direction. Without such guidance, emotional responses may not translate into meaningful behavioural outcomes. Furthermore, emotions should be paired with messages that reinforce the behavioural tendency they evoke (Dillard & Nabi, 2006). Consistent with Nabi's (1999) classification of emotions as either avoidance-oriented or approach-oriented, the present study proposes that disgust and loss framing should work synergistically because both promote avoidance of undesirable outcomes. Similarly, sadness and gain framing are expected to complement one another because both are associated with approach-oriented tendencies and the pursuit of positive outcomes.

H3(a): Disgust has a stronger positive effect on the choice of glass-bottled water when paired with a loss-framed message.

H3(b): Sadness has a stronger positive effect on the choice of glass-bottled water when paired with a gain-framed message.

The expected superiority of the disgust–loss frame combination is further supported by theories of negativity bias and loss aversion. Negativity bias suggests that negative information exerts a stronger influence on evaluations than objectively equivalent positive information (Meyerowitz & Chaiken, 1987; Peeters & Czapinski, 1990; Zubair et al., 2020). Similarly, loss aversion proposes that individuals are more strongly motivated to avoid losses than to pursue comparable gains. Accordingly, the combination of disgust and loss framing is expected to exert the strongest influence on environmentally responsible product choices.

H3(c): The combination of disgust and loss framing has a stronger positive effect on the choice of glass-bottled water than all other emotion–message frame combinations.

The present study also examines the moderating role of psychological distance. Previous research suggests that avoidance responses become stronger as individuals perceive themselves to be closer to a disgust-eliciting object or situation (Rozin & Fallon, 1987). Therefore, the combination of disgust and loss framing is expected to be particularly effective among individuals who perceive environmental problems as psychologically proximate. In contrast, because sadness experienced on behalf of others can promote altruistic behaviour (Lu, 2016), the combination of sadness and gain framing is expected to be particularly effective among individuals who perceive environmental problems as psychologically distant.

H3(d): Psychological distance moderates the interaction effect of emotional framing and message framing on the choice of glass-bottled water.

H3(e): Among individuals with a proximate psychological distance to environmental problems, the combination of disgust and loss framing has a stronger positive effect on the choice of glass-bottled water than other emotion–message frame combinations.

H3(f): Among individuals with a distant psychological distance to environmental problems, the combination of sadness and gain framing has a stronger positive effect on the choice of glass-bottled water than other emotion–message frame combinations.

Figure 3 presents the conceptual model for Study 3.

3. Research Methodology

All studies were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Akdeniz University Social and Human Sciences Scientific Research and Publication Ethics Committee (Approval Date: 06 March 2023). All data were collected online through Twentify, a market research company specializing in consumer research. Informed consent was obtained from all participants by Twentify prior to data collection.

3.1. Study 1

Study 1 was designed to test H1, H1(a), and H1(b). Specifically, it examined whether loss-framed messages would be more effective than gain-framed and control messages in increasing intentions to avoid single-use plastics. The study also investigated whether psychological distance moderated this relationship.

3.1.1. Method

Data were collected from 380 participants (53.6% female, 46.4% male) across three experimental conditions. To ensure adequate statistical power, each condition included at least 75 participants.

The study employed a 3 (message frame: gain, loss, control) × 1 (psychological distance: continuous) between-subjects experimental design. Participants were randomly assigned to one of three conditions. In the gain-framed condition, the message emphasized the benefits of reducing single-use plastic consumption. In the loss-framed condition, the message emphasized the negative consequences of failing to reduce consumption. The control condition provided general information about plastics. All experimental messages were developed based on prior literature.

Psychological distance was measured to examine its moderating role in the relationship between message framing and intentions to avoid single-use plastics. Participants evaluated the consequences of plastic waste across four dimensions of psychological distance: temporal, social, spatial, and hypothetical. Psychological distance was assessed using an adapted version of the 13-item scale developed by Loy and Spence (2020; $\alpha = .94$), measured on a seven-point Likert scale (1 = strongly

disagree, 7 = strongly agree). Items originally developed in the context of climate change were adapted to reflect plastic waste pollution.

Intentions to avoid single-use plastics were measured using an adapted version of the 20-item scale developed by Skoric et al. (2022; $\alpha = .92$), also assessed on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree).

3.1.2. Results

3.1.2.1. Manipulation Check

Manipulation checks were conducted using condition-specific statements measured on a seven-point Likert scale. Participants in the gain-framed condition evaluated the statement, “This message emphasizes the benefits of reducing single-use plastic consumption.” Participants in the loss-framed condition evaluated the statement, “This message emphasizes the losses associated with not reducing single-use plastic consumption.” Participants in the control condition evaluated the statement, “This message provides information about plastics.”

To ensure successful manipulation, only participants who agreed with the statement corresponding to their assigned condition (scores of 5–7) were retained in the final sample. Participants who disagreed or were undecided (scores of 1–4) were excluded from the analyses. Following this procedure, the final sample consisted of 338 participants.

3.1.2.2. Analysis Results

To examine the effect of message framing on intentions to avoid single-use plastics, a one-way analysis of variance (ANOVA) was conducted. Message frame (gain, loss, control) served as the independent variable, whereas intention to avoid single-use plastics served as the dependent variable. The results are presented in Table 1.

Table 1
One-Way ANOVA Test Results

Conditions	N MSD			Fp
Gain Frame	119	5,48	0,943	17,030. ,000
Loss Frame	111	5,87	0,759	
Control	108	5,19	0,892	
Mean difference between control group vs. gain-framing group	-	0,290	0,115	- ,038
Mean difference between control group vs. loss-framing group	-	0,683	0,117	- ,000

3.1.2.2. Analysis Results

A one-way ANOVA was conducted to examine the effect of message framing on intentions to avoid single-use plastics. The results revealed a significant effect of message framing on behavioural intentions, $F(2, 335) = 17.03, p < .001$. Bonferroni post hoc comparisons indicated that the loss-framed message generated significantly higher intentions to avoid single-use plastics ($M = 5.87, SD = 0.75$) than both the gain-framed message ($M = 5.48, SD = 0.94$) and the control condition ($M = 5.19, SD = 0.89$). In addition, intentions were significantly higher in the gain-framed condition than in the control condition. These findings support H1 and H1(a).

To examine the moderating role of psychological distance, a simple moderation analysis was conducted using PROCESS Model 1 (Hayes, 2018) with 5,000 bootstrap samples. Message frame (gain vs. loss) was entered as the independent variable, psychological distance as the moderator, and intention to avoid single-use plastics as the dependent variable. The results revealed significant main effects of message framing ($B = 0.34, SE = 0.13, t = 2.52, p < .05$) and psychological distance ($B = 0.16, SE = 0.06, t = 2.48, p < .05$). However, the interaction between message framing and psychological distance was not statistically significant ($B = -0.19, SE = 0.12, 95\% CI [-0.449, 0.052], p > .05$). Despite the non-significant overall interaction effect, conditional effects analysis indicated that the effect of message framing remained significant at low and moderate levels of psychological distance but became non-significant at high levels. Accordingly, H1(b) received partial support.

3.2. Study 2

Study 2 was designed to test H2, H2(a), and H2(b). Specifically, it examined whether emotional framing influences donation behaviour, whether sadness is more effective than disgust in promoting donations, and whether psychological distance moderates this relationship.

3.2.1. Method

Data were collected from 194 participants (51.6% female, 48.4% male) across two experimental conditions. Each condition included at least 75 participants. The study employed a 2 (emotion frame: disgust vs. sadness) $\times$ 1 (psychological distance: continuous) between-subjects experimental design. To induce disgust and sadness, participants were randomly assigned to view either an image depicting an ocean polluted by plastic waste (disgust condition) or an image of an animal harmed by plastic waste (sadness condition).

Prior to the main study, the visual stimuli were pretested to ensure that they elicited the intended emotional responses. Emotional reactions were measured using items adapted from Harmon-Jones et al. (2016) on a seven-point Likert scale (1 = never, 7 = extremely). Disgust was measured using four items ("grossed out," "sickened," "nauseated," and "revulsion"; $\alpha = .88$), whereas sadness was measured using four items ("lonely," "grief," "sad," and "empty"; $\alpha = .85$). Mean scores for each emotional dimension were used in subsequent analyses. Psychological distance was measured using the same procedure employed in Study 1. To reduce the potential influence of social desirability associated with self-reported behavioural intentions, Study 2 incorporated behavioural measures. Participants indicated whether they

would be willing to donate to a research initiative promoting sustainable alternatives to single-use plastics (0 = no, 1 = yes) and, if willing, specified an amount between 0 and 45 TL (Amatulli et al., 2019).

3.2.2. Findings

3.2.2.1. Manipulation Check

Only participants who demonstrated successful emotional manipulation (scores of 5–7 on the intended emotional response) were retained for analysis. Participants scoring between 1 and 4 were excluded. Following this procedure, the final sample consisted of 161 participants. To verify the effectiveness of the manipulation, independent-samples *t*-tests were conducted. As expected, participants in the disgust condition reported significantly higher levels of disgust ($M = 6.45$) than participants in the sadness condition ($M = 2.94$), $t = 13.70$, $p < .05$. Conversely, participants in the sadness condition reported significantly higher levels of sadness ($M = 6.21$) than participants in the disgust condition ($M = 5.58$), $t = -4.21$, $p < .05$.

3.2.2.2. Analysis Results

A binary logistic regression analysis was conducted to examine the effect of emotional framing on donation behaviour. Emotion frame (disgust = 0, sadness = 1) was entered as the independent variable, and willingness to donate (yes = 1, no = 0) was entered as the dependent variable. The model correctly classified 53.4% of cases without the predictor and 72.7% of cases when emotion frame was included. The model explained between 20% (Cox & Snell R^2) and 27% (Nagelkerke R^2) of the variance in donation behaviour. Results indicated that participants in the sadness condition were significantly more likely to donate than those in the disgust condition ($\text{Exp}(B) = 8.46$, Wald = 31.78, $p < .001$). Specifically, exposure to sadness increased the likelihood of donation by a factor of 8.46 relative to exposure to disgust. Therefore, H2 and H2(a) were supported.

The detailed results are presented in Table 2.

Table 2 Logistic Regression Analysis Results						
Sadness Appeal (1)	B SE. Wald			p	Exp(B) (%95)	Lower Upper
	2,136	0,37	31,782	,000	8,462	4,027 17,778
Constant	-,0693	0,22	9,929	,002	0,500	

To examine whether psychological distance moderates the relationship between emotional framing and donation amount, a simple moderation analysis was conducted using PROCESS Model 1 (Hayes, 2018) with 5,000 bootstrap samples. Emotion frame (disgust vs. sadness) was entered as the independent variable, psychological distance as the moderator, and donation amount as the dependent variable.

The results revealed a significant main effect of emotion frame on donation amount ($B = 1.55$, $SE = 0.41$, $t = 3.74$, $p < .05$). In contrast, psychological distance did not have a significant direct effect on donation amount ($B = -0.45$, $SE = 0.50$, $t = -0.89$, $p > .05$). However, the interaction between emotion frame and psychological distance was statistically significant ($B = 0.82$, $SE = 0.35$, $t = 2.32$, $p < .05$), indicating that the effect of emotional framing on donation amount varied as a function of psychological distance. The inclusion of the interaction term increased the explained variance by 2.94%. Therefore, H2(b) was supported.

As illustrated in Fig. 4, the positive relationship between sadness and donation amount became stronger as psychological distance increased. In contrast, donation amounts in the disgust condition remained relatively stable across different levels of psychological distance.

3.1. Study 3

Study 3 was designed to test H3, H3(a), H3(b), H3(c), H3(d), H3(e), and H3(f). Specifically, it examined whether the interaction between emotional framing and message framing influences consumers' choice of glass-bottled water. It was hypothesised that congruent emotion–message combinations—namely disgust paired with loss framing and sadness paired with gain framing—would be more effective than incongruent combinations. Furthermore, it was expected that the disgust–loss frame combination would be particularly effective among participants with a proximate psychological distance to environmental problems, whereas the sadness–gain frame combination would be more effective among participants with a distant psychological distance. Finally, the disgust–loss frame combination was expected to exert the strongest influence on glass-bottled water choice relative to all other experimental conditions.

3.3.1. Method

Data were collected from 655 participants (52.7% female, 47.3% male) across six experimental conditions. Each condition included at least 75 participants to ensure adequate statistical power. The study employed a 3 (emotion frame: disgust, sadness, control) $\times$ 2 (message frame: gain, loss) $\times$ 2 (psychological distance: proximate, distant) between-subjects factorial design.

The emotional manipulations were implemented using the same visual stimuli employed and pretested in Study 2. In addition to the disgust and sadness stimuli, a neutral image of a plastic bottle was included as a control condition. Participants were randomly assigned to one of the emotion conditions and subsequently completed the measures of disgust and sadness used in Study 2.

Following the emotion manipulation, participants were randomly exposed to either a gain-framed or loss-framed message. Psychological distance was measured using the same procedure employed in Studies 1 and 2. Although psychological distance was treated as a continuous moderator in the previous studies, it was operationalized as a categorical variable (proximate vs. distant) in Study 3 to facilitate the interpretation of higher-order interaction effects.

Prior research suggests that categorization may improve interpretability when examining complex interactions and identifying potential threshold effects, despite the loss of some information associated with continuous measures (Aguinis, 2017; Dawson, 2014). Accordingly, categorizing psychological distance enabled a clearer comparison of emotion–message frame combinations across distinct psychological distance conditions and served as a robustness check for the findings obtained in Studies 1 and 2.

To reduce the influence of social desirability bias and provide behavioural evidence complementing the findings of the previous studies, product choice was used as the dependent variable. Participants were asked to choose between two bottled-water alternatives presented within a purchase scenario: a glass bottle (30 TL) or a plastic bottle (5 TL). Introducing a price differential created a meaningful trade-off between economic considerations and environmental responsibility, thereby providing a more realistic assessment of consumer choice behaviour.

3.3.2. Findings

3.3.2.1. Manipulation Check

Participants who demonstrated successful emotional manipulation (scores of 5–7 on the intended emotional response) were retained in the sample, whereas those scoring between 1 and 4 were excluded. To verify the effectiveness of the emotional manipulation, Kruskal–Wallis tests were conducted with emotion frame (disgust, sadness, control) as the independent variable and emotional responses (disgust and sadness) as the dependent variables.

Significant differences emerged across the three groups for both emotions. Participants in the disgust condition reported significantly higher levels of disgust (mean rank = 452.3) than participants in the sadness (mean rank = 239.7) and control conditions (mean rank = 193.8), $\chi^2 = 266.76$, $*p < .05$. Conversely, participants in the sadness condition reported significantly higher levels of sadness (mean rank = 428.7) than participants in the disgust (mean rank = 328.7) and control conditions (mean rank = 150.3), $\chi^2 = 280.83$, $*p < .05$.

For the message-framing manipulation, participants who agreed with the manipulation-check statements (scores of 5–7) were retained, whereas those who disagreed or were undecided (scores of 1–4) were excluded. Following the manipulation checks, 73 participants were removed from the dataset, resulting in a final sample of 582 participants.

3.3.2.2. Analysis Results

To examine the joint effects of emotional framing and message framing on product choice, a factorial analysis was conducted with emotion frame (disgust, sadness, control), message frame (gain, loss), and their interaction entered as independent variables. Product choice (glass bottle = 1, plastic bottle = 0) served as the dependent variable. The results revealed a significant main effect of emotion frame, $*F(2, 582) = 4.56$, $*p < .05$, whereas the main effect of message frame was not significant, $*F(1, 582) = 0.70$,

* $p > .05$. Importantly, a significant interaction effect emerged between emotion frame and message frame, $*F(2, 582) = 7.55$, $*p < .05$. Therefore, H3 was supported. Simple-effects analyses indicated that participants in the disgust condition were significantly more likely to choose glass-bottled water when exposed to a loss-framed message ($*M = 0.72$) than when exposed to a gain-framed message ($*M = 0.47$), $*F(1, 582) = 12.00$, $*p < .05$. In contrast, participants in the sadness condition were significantly more likely to choose glass-bottled water when exposed to a gain-framed message ($*M = 0.65$) than when exposed to a loss-framed message ($*M = 0.51$), $*F(1, 582) = 3.93$, $*p < .05$.

No significant differences were observed between gain-framed and loss-framed messages in the control condition ($*M_{\text{gain}} = 0.464$, $*M_{\text{loss}} = 0.467$), $*F(1, 582) = 0.002$, $*p > .05$. These findings support H3(a) and H3(b). Detailed results are presented in Table 3.

Table 3
Two-Way ANOVA Simple Effect Analysis Results

Emotion Framing	Message Framing	M	SE	Mean Square	F	p	Eta Square
Disgust	Gain	0,475	0,049	2,887	12,008	,001	0,020
	Loss	0,722	0,052				
Sadness	Gain	0,659	0,052	0,946	3,934	,048	0,007
	Loss	0,512	0,053				
Control	Gain	0,464	0,046	0,00	0,002	,964	0,00
	Loss	0,467	0,047				

The results further indicated that the combination of disgust and loss framing produced the highest rate of glass-bottled water choice among all experimental conditions. Therefore, H3(c) was supported. Figure 5 illustrates the differences among the emotion–message frame combinations in predicting glass-bottled water choice.

To examine whether psychological distance moderates the interaction between emotional framing and message framing on glass-bottled water choice, a three-way ANOVA was conducted. Emotion frame (disgust, sadness, control), message frame (gain, loss), psychological distance (proximate, distant), and all interaction terms were entered as independent variables, whereas product choice (glass bottle = 1, plastic bottle = 0) served as the dependent variable.

The results revealed that the main effects of emotion frame, $F(2, 582) = 0.76$, $p > .05$, message frame, $F(1, 582) = 0.002$, $p > .05$, and psychological distance, $F(1, 582) = 0.27$, $p > .05$, were not statistically significant. Likewise, neither the interaction between emotion frame and psychological distance, $F(2, 582) = 0.13$, $p > .05$, nor the interaction between message frame and psychological distance, $F(1, 582) = 0.30$, $p > .05$, reached statistical significance.

Importantly, a significant three-way interaction emerged among emotion frame, message frame, and psychological distance, $F(2, 582) = 3.47, p < .05$. Therefore, H3(d) was supported.

Simple-effects analyses indicated that, within the disgust condition, psychological distance did not significantly influence glass-bottled water choice in either the gain-framed condition ($M_{\text{proximate}} = 0.478, M_{\text{distant}} = 0.467; F(1, 582) = 0.012, p = .914$) or the loss-framed condition ($M_{\text{proximate}} = 0.726, M_{\text{distant}} = 0.706; F(1, 582) = 0.023, p = .878$). Consequently, H3(e) was not supported.

In contrast, psychological distance significantly moderated the effect of the sadness–gain frame combination. Participants with a distant psychological distance exhibited a substantially higher likelihood of choosing glass-bottled water ($M = 0.941$) than those with a proximate psychological distance ($M = 0.592$), $F(1, 582) = 7.029, p = .008$. No significant differences were observed between psychological distance groups in the sadness–loss condition ($F(1, 582) = 1.859, p = .173$). Accordingly, H3(f) was supported. Detailed results are presented in Table 4.

Table 4
Three-Way ANOVA Simple Effect Analysis Results

Emotion Framing	Message Framing	Psychological Distance	M SE	Mean Square	F p
Disgust	Gain	Proximal	0,478 0,059	0,003	0,012 ,914
		Distant	0,467 0,089	0,239	
	Loss	Proximal	0,726 0,057	0,006	0,023 ,878
		Distant	0,706 0,118	0,239	
Sadness	Gain	Proximal	0,592 0,052	1,677	7,029 ,008
		Distant	0,941 0,118	0,239	
	Loss	Proximal	0,541 0,057	0,443	1,859 ,173
		Distant	0,333 0,141	0,239	
Control	Gain	Proximal	0,459 0,049	0,020	0,086 ,770
	Loss	Distant	0,500 0,131	0,239	
		Proximal	0,449 0,049	0,391	1,638 ,201
		Distant	0,667 0,163	0,239	

As illustrated in Fig. 6, the effectiveness of the sadness–gain frame combination varied significantly across levels of psychological distance. Participants with a distant psychological distance exhibited a substantially greater likelihood of choosing glass-bottled water ($M = 0.94$) than those with a proximate psychological distance ($M = 0.59$), $F(1, 582) = 7.02, p < .05$. These findings provide support for H3(f).

4. Discussion

Consistent with prior research, the findings demonstrated that loss-framed messages were more effective than gain-framed and control messages in increasing intentions to reduce single-use plastic consumption. This finding can be explained by negativity bias, which suggests that negative information exerts a stronger influence on individuals' evaluation processes than objectively equivalent positive information, as well as by loss aversion, which proposes that people are more strongly motivated to avoid losses than to pursue comparable gains (Meyerowitz & Chaiken, 1987; Peeters & Czapinski, 1990; Zubair et al., 2020). The finding that gain-framed messages also produced higher intentions than the control condition further highlights the importance of message presentation in shaping pro-environmental behavioural intentions. In addition, psychological distance strengthened the effectiveness of gain-framed messages among participants who perceived plastic waste pollution as psychologically proximate. Because psychologically proximate environmental problems are typically construed in more concrete and personally relevant terms (Chen, 2020), proximity may have enhanced the persuasive impact of gain-framed appeals encouraging the reduction of single-use plastic consumption.

The findings of Study 2 demonstrated that emotional framing significantly influenced participants' willingness to donate to a research initiative promoting sustainable alternatives to single-use plastics. As hypothesised, sadness generated a greater willingness to donate than disgust, despite the fact that disgust is generally associated with an immediate impulse toward behavioural change. This finding is consistent with Nabi's (1999) Cognitive Functional Model, which suggests that emotions associated with avoidance tendencies create a greater need for directional cues. Dillard and Nabi (2006) similarly argue that emotional appeals are most effective when accompanied by information that reinforces the behavioural tendency elicited by the emotion. In the present study, participants exposed to an image depicting an ocean polluted by plastic waste received no accompanying message directing their avoidance response toward a specific behavioural outcome. Consequently, disgust may not have provided sufficient motivation to sustain engagement with the donation task. This rationale also provided the basis for Study 3, which examined whether pairing disgust with a congruent loss-framed message would enhance its persuasive effectiveness.

By contrast, sadness is known to evoke empathy and altruistic concern, both of which are associated with helping behaviour. The greater willingness to donate observed in the sadness condition may therefore reflect the activation of empathic and altruistic motivations. Furthermore, research on eco-depression suggests that emotional responses to environmental degradation can increase engagement in environmental action (Stanley et al., 2021; Wardell, 2020). It is therefore plausible that the image depicting an animal harmed by plastic waste simultaneously evoked sadness and eco-depression, thereby increasing participants' willingness to contribute financially to environmental initiatives.

It should also be noted that, although the disgust stimulus elicited relatively high levels of sadness, the manipulation checks confirmed that the intended emotion remained significantly more salient within each experimental condition. This pattern is consistent with previous research suggesting that

environmental harm can simultaneously evoke multiple negative emotions while allowing one discrete emotion to remain dominant in shaping behavioural responses. Therefore, the observed differences in donation behaviour are unlikely to reflect a failure of emotional differentiation and instead support the distinct effects of disgust and sadness proposed by discrete-emotion theories.

Psychological distance also moderated the relationship between emotional framing and donation amount. Specifically, participants in the sadness condition donated significantly more when they perceived the environmental consequences of plastic waste as psychologically distant. This finding may be explained by the tendency of sadness to promote altruistic concern for others (Lu, 2016). Because psychologically distant environmental problems are typically perceived as affecting other people, places, or future generations, sadness may have activated stronger altruistic motivations, resulting in larger donations.

Study 3 revealed a significant interaction between emotional framing and message framing in predicting the choice of glass-bottled water. As hypothesised, disgust was most effective when paired with a loss-framed message, whereas sadness was most effective when paired with a gain-framed message. These findings support the proposition that persuasive appeals become more effective when emotions and message frames reinforce the same behavioural tendency. Specifically, the avoidance orientation associated with disgust appears to align naturally with the avoidance focus of loss framing, whereas the approach-oriented nature of sadness is more compatible with gain-framed appeals emphasising positive outcomes.

Importantly, the disgust–loss frame combination produced the highest likelihood of choosing glass-bottled water among all experimental conditions. This finding is particularly noteworthy because disgust alone was less effective in promoting behavioural engagement in Study 2. When paired with a congruent loss-framed message, however, disgust became the most persuasive emotional appeal. This result provides strong support for Nabi's (1999) Cognitive Functional Model and suggests that avoidance-oriented emotions require corresponding behavioural guidance to achieve their full persuasive potential. Furthermore, the absence of differences between gain- and loss-framed messages in the emotional control condition indicates that the observed effects were driven by the congruence between emotional and message framing rather than by message framing alone.

The findings further revealed a significant three-way interaction among emotional framing, message framing, and psychological distance. Consistent with expectations, participants with a distant psychological distance were significantly more likely to choose glass-bottled water when sadness was paired with a gain-framed message. This finding suggests that sadness may facilitate pro-environmental behaviour by activating empathy and altruistic concern for distant others who are affected by environmental degradation. Notably, this pattern is consistent with the results of Study 2, where sadness became increasingly effective in promoting donations as psychological distance increased. Across both studies, sadness appears to be particularly persuasive when environmental consequences are perceived

as affecting distant others or future outcomes, highlighting the importance of psychological distance in shaping the effectiveness of emotion-based sustainability appeals.

In contrast, no significant differences emerged between psychological distance groups in either the disgust–gain or disgust–loss conditions. Although disgust is generally associated with avoidance-oriented responses (Rozin & Fallon, 1987), the absence of a moderating effect of psychological distance may be explained by the abstract construal processes triggered by disgust. Chowdhry et al. (2015) demonstrated that disgust can increase individuals' tendency to construe events more abstractly and perceive otherwise unrelated objects or situations as similar. In the present context, disgust may therefore have reduced the behavioural relevance of perceived psychological distance, thereby weakening its influence on product choice.

Taken together, the findings suggest that psychological distance plays different roles depending on whether environmental decisions are driven primarily by cognitive evaluations or emotional responses. Whereas psychologically proximate environmental problems strengthened the effectiveness of gain-framed messages in Study 1, psychologically distant environmental problems enhanced the persuasive impact of sadness-based appeals in Studies 2 and 3. These results indicate that proximity may be more influential when individuals rely on cognitive processing, whereas distance may become more important when pro-environmental behaviour is driven by empathy, altruism, and concern for others.

4.1. Theoretical Implications

This research makes several important contributions to the literature on sustainable consumption, message framing, and emotion-based persuasion. First, it extends Goal Framing Theory and Nabi's Cognitive Functional Model by demonstrating the conditions under which message framing and discrete emotions can operate synergistically to influence environmentally responsible behaviour. While prior research has largely examined message framing and emotions independently, the present study shows that the effectiveness of persuasive appeals depends not only on the message itself but also on the congruence between the behavioural tendency elicited by the emotion and the behavioural orientation embedded in the message frame.

Second, the findings contribute to the growing literature on discrete emotions in sustainable consumption. Previous studies have focused predominantly on emotions such as fear, guilt, and shame, whereas disgust and sadness have received comparatively limited attention. By demonstrating that disgust and sadness influence sustainable consumption through different psychological mechanisms, the present research highlights the importance of moving beyond valence-based approaches and examining the distinct behavioural consequences of discrete emotions.

Third, the study advances understanding of psychological distance as a boundary condition in environmental persuasion. The findings indicate that psychological distance does not merely influence perceptions of environmental problems but also shapes the effectiveness of emotional and message-based appeals. In particular, sadness became increasingly persuasive as psychological distance

increased, whereas psychological proximity strengthened the effectiveness of gain-framed messages. These findings provide a more nuanced understanding of how psychological distance interacts with both cognitive and emotional persuasion mechanisms.

More broadly, the research contributes to efforts aimed at addressing the well-documented attitude-behaviour gap in sustainable consumption. The findings demonstrate that environmentally responsible behaviour can be encouraged not only through information provision but also through the strategic alignment of discrete emotions, message framing, and perceptions of psychological distance. In doing so, the study identifies a persuasive mechanism that has received limited attention in the sustainable consumption literature.

4.2. Managerial Implications

The findings offer several practical implications for policymakers, environmental organizations, non-governmental organizations, and companies promoting environmentally responsible products and behaviours.

First, the results suggest that environmental communication campaigns should carefully consider not only what information is communicated but also how that information is framed. Messages emphasizing the negative consequences of environmentally harmful behaviour were generally more effective than messages emphasizing the benefits of environmentally responsible behaviour. Consequently, organizations seeking to reduce single-use plastic consumption may benefit from highlighting the environmental costs associated with continued plastic use.

Second, the findings demonstrate that emotional appeals are most effective when they are aligned with the behavioural orientation of the message. In particular, the combination of disgust and loss framing generated the strongest behavioural response in Study 3. This suggests that environmental campaigns may increase their effectiveness by matching avoidance-oriented emotions with loss-framed messages and approach-oriented emotions with gain-framed messages.

Third, the results indicate that psychological distance should be considered when designing sustainability communications. Environmental messages directed toward individuals who perceive environmental problems as psychologically distant may benefit from appeals that evoke sadness and empathy for affected people, animals, or future generations. In contrast, communications targeting psychologically proximate environmental concerns may benefit from emphasizing concrete and personally relevant outcomes.

Taken together, these findings provide practical guidance for designing more effective environmental communication strategies and green marketing campaigns. Rather than relying exclusively on information-based approaches, practitioners should consider the combined effects of emotions, message framing, and psychological distance when attempting to promote sustainable behaviour.

4.3. Conclusion

This research examined the independent and interactive effects of message framing, emotional framing, and psychological distance on intentions to avoid single-use plastics, donation behaviour, donation amount, and environmentally responsible product choice.

Across three studies, the findings consistently demonstrated that persuasive effectiveness depends not only on the content of the message but also on the interaction between emotions, message frames, and individuals' perceptions of environmental problems. Loss-framed messages were more effective than gain-framed messages in promoting intentions to reduce single-use plastic consumption, sadness generated stronger donation responses than disgust, and congruent emotion–message frame combinations produced stronger behavioural effects than incongruent combinations. In particular, the combination of disgust and loss framing emerged as the most effective strategy for encouraging the selection of environmentally friendly alternatives, whereas sadness became increasingly persuasive as psychological distance increased.

The study also highlights the importance of considering psychological distance in environmental persuasion. The results suggest that the effectiveness of both emotional and message-based appeals varies according to how individuals perceive the environmental problem in relation to themselves and others. Consequently, psychological distance should be considered alongside emotional and cognitive factors when developing interventions aimed at promoting sustainable consumption.

Several opportunities for future research remain. Field experiments involving real purchasing behaviour could provide stronger evidence regarding the external validity of the findings. In addition, the conceptual models tested in this research could be extended to other sustainability-related behaviours, such as recycling participation, energy conservation, water saving, or sustainable transportation choices. Future studies may also investigate other potential moderators, including perceived self-efficacy, environmental identity, and personal responsibility. Finally, examining additional approach-oriented and avoidance-oriented emotions may further enhance understanding of how emotions interact with message framing to influence sustainable behaviour.

Overall, the findings suggest that strategically aligning discrete emotions with appropriate message frames represents a promising approach for encouraging sustainable consumption and reducing reliance on single-use plastics. By identifying the conditions under which emotional and cognitive persuasion mechanisms reinforce one another, this research contributes to the development of more effective interventions aimed at addressing plastic waste pollution at its source.

Declarations

Ethical Approval

All procedures involving human participants were conducted in accordance with the ethical standards of the responsible institutional research committee and the principles of the 1964 Declaration of Helsinki

and its subsequent amendments or comparable ethical standards. Ethical approval for the study was obtained from the Social and Human Sciences Scientific Research and Publication Ethics Committee of Akdeniz University (Approval No. 06/94; Approval Date: 06 March 2023). The ethical approval covered all phases and procedures of the research.

Informed Consent

Data collection was conducted in collaboration with Twentify, a professional market research company specializing in online consumer research. Participants were recruited through Twentify's online research panel and were invited to participate in the study based on predefined eligibility criteria relevant to the research objectives.

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Author Contribution

D.A.K. contributed to the conceptualization of the study, developed the methodology, performed the formal analysis, interpreted the data, and prepared the original draft of the manuscript. I.T.D. conceived and supervised the overall research project, secured the study resources, contributed to the study design and methodology, critically revised the manuscript for important intellectual content, and oversaw the entire research process. Both authors contributed to manuscript editing, reviewed and approved the final version of the manuscript, and agree to be accountable for all aspects of the work.

Data Availability

****Data Availability****The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request. Access to the data is restricted because they contain information collected from human participants and are subject to institutional ethical and data protection requirements. Requests for access will be considered on a case-by-case basis in accordance with applicable ethical and legal regulations.

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Figures

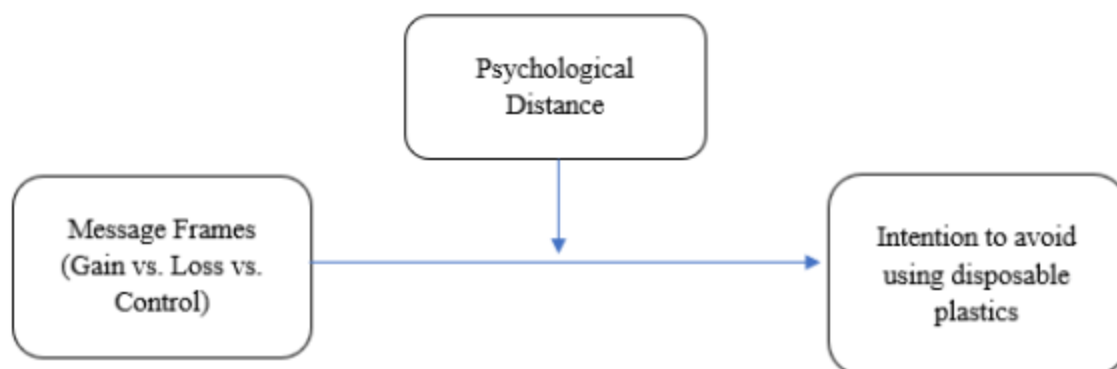


Figure 1

Conceptual Model of Study

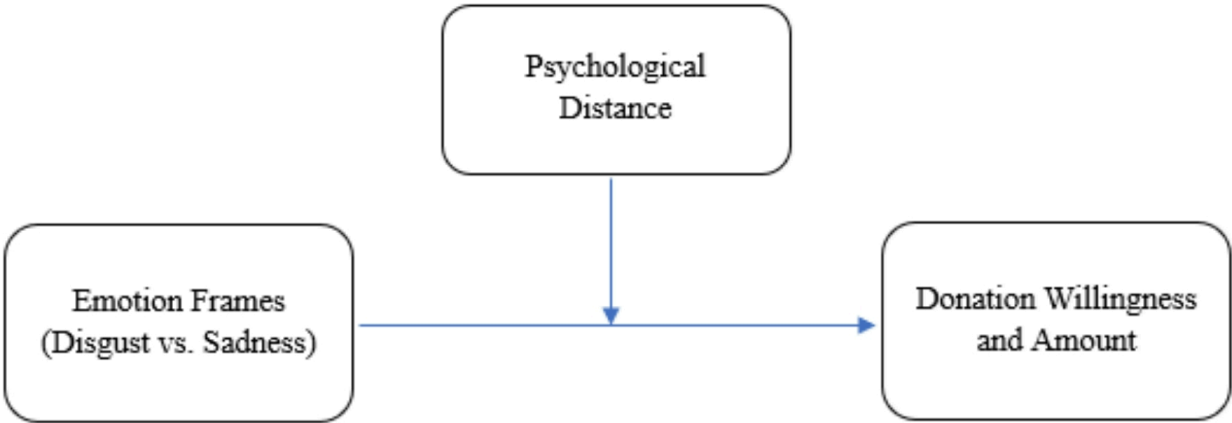


Figure 2

Conceptual Model of Study 2

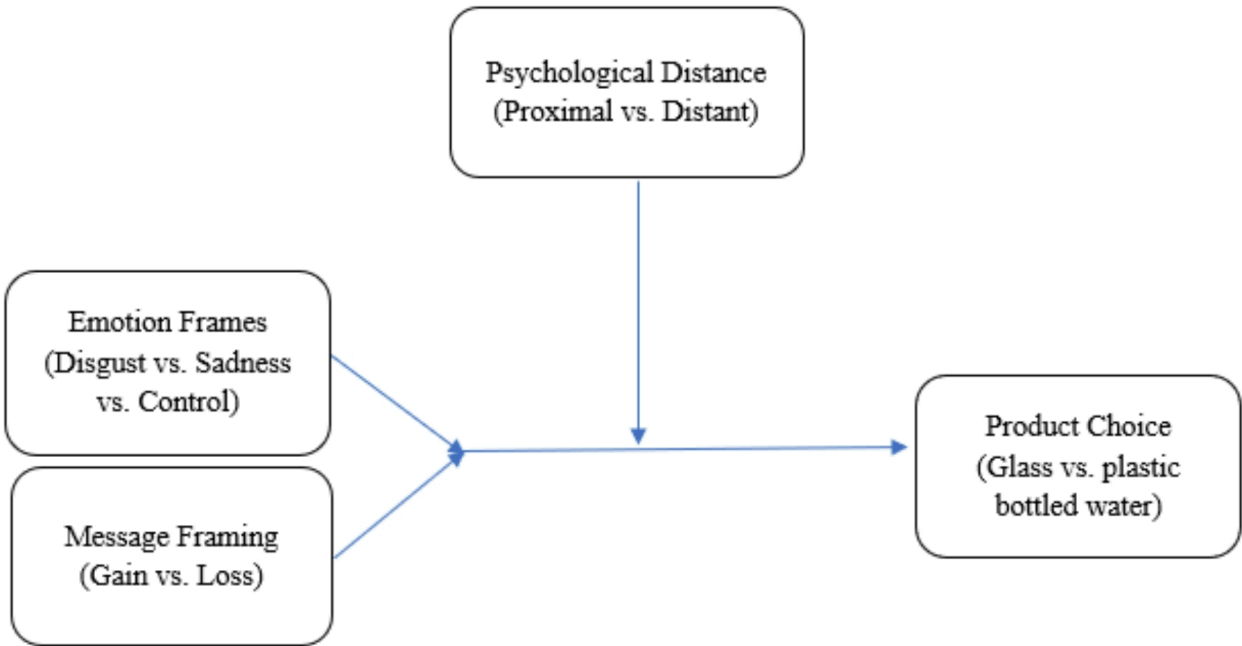


Figure 3

Conceptual Model of Study 3

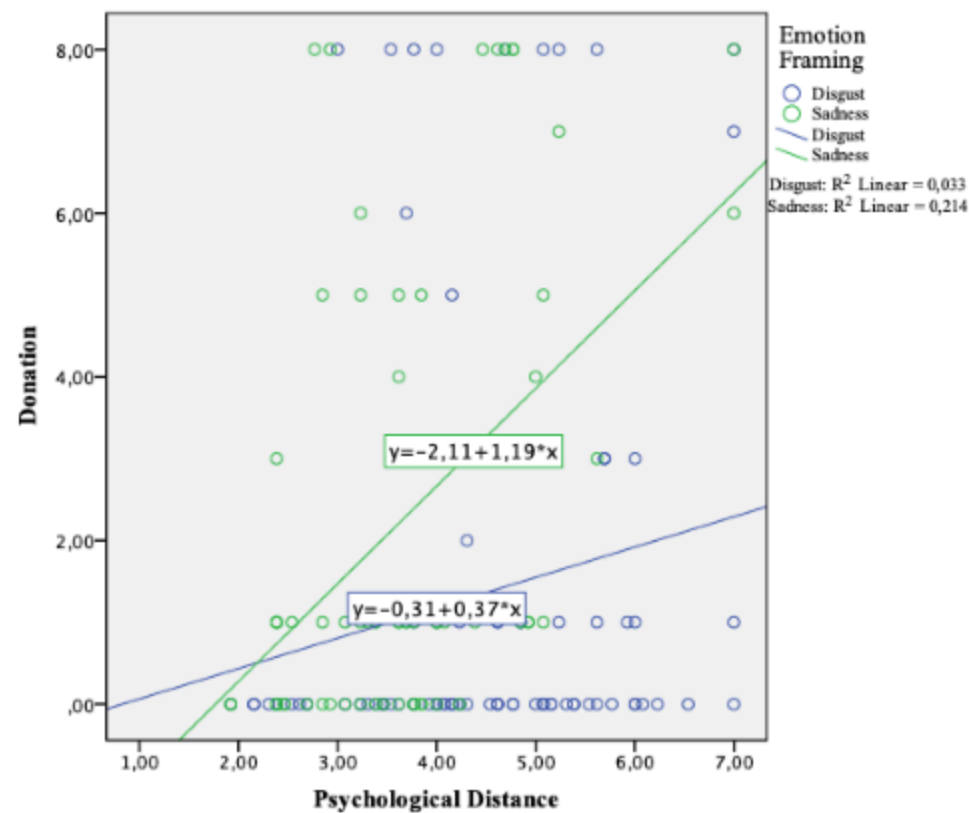


Figure 4

The Moderator Effect of Psychological Distance on the Effect of Emotion Framing on Donation

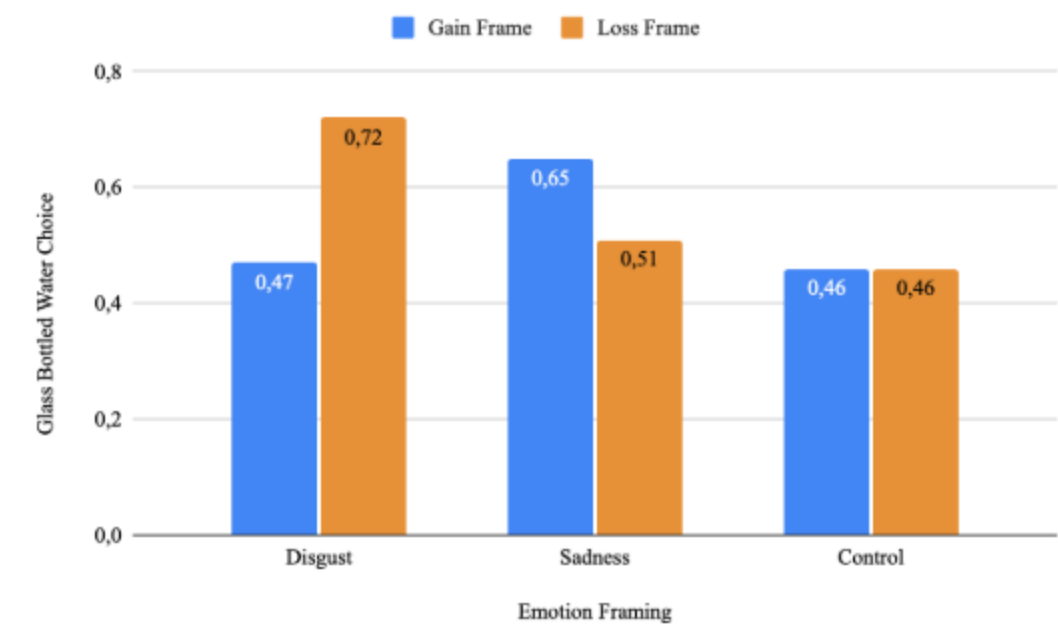


Figure 5

Means of Interaction Effects of Emotion and Message Frames on Product Choice

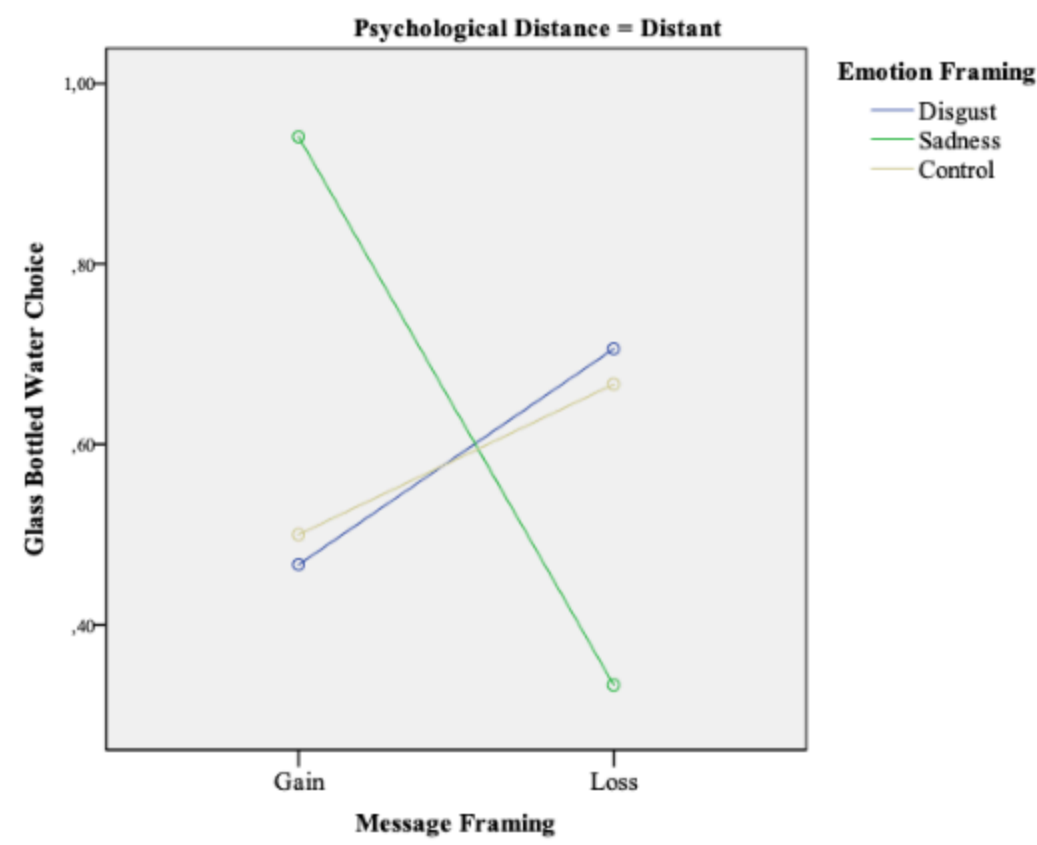


Figure 6

Moderating Effect of Distant Group on the Interaction Effect of Emotion and Message Framing on Product Choice

Supplementary Files

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- [APPENDIX.docx](#)