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FROM ECO-ANXIETY TO ACTION: UNRAVELING THE DYNAMICS OF MESSAGE
FRAMING, EMOTIONS AND ATTITUDES ON PURCHASE INTENTION

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Abstract

With the rise of the global environmental crisis, many organizations are shifting towards sustainability, focusing on impacting consumer choices through advertising messages. Two experimental studies ($n_1 = 100$; $n_2 = 110$) were conducted to test how gain versus loss advertising message frames can impact purchase intention, in the context of reusable packaging. The studies examined the role of eco-anxiety, hope, guilt, pride and attitude towards the brand as mediating and moderating factors. The results showed that message framing only impacted purchase intention via the mediation of attitude towards brand, moderated by eco-anxiety.

Keywords: Eco-Anxiety, Message Framing, Hope, Guilt, Pride, Consumer Behaviour, Intention to Act Sustainably, Attitude Towards the Brand, Purchase Intention

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1. Introduction

1.1.Problem Definition

Humanity has been facing a global environment crisis (Hogg et al. 2021). As a response, firms are turning to sustainable solutions in their product offering, including recyclable materials and refillable packages. At the same time, different advertising approaches are being put in place to get consumers to adopt sustainable consumption habits. One of these methods includes framing messages in a gain or positive light (i.e., highlighting the benefits a consumer gains from taking action), versus a loss or negative light (i.e., appealing to what one stands to lose from not acting) (Kahneman and Tversky 1979). The results of this approach depend on several factors.

One factor that has been neglected within this literature is eco-anxiety. It is defined as a multifaceted condition that has emerged quite recently, describing the “mental and emotional distress an individual may experience in response to the threat of climate change and global environmental problems” (Hogg et al. 2021, 4), and it is known to impact consumption in paradoxical ways. On the one hand, people suffering from it may actively change their behaviour towards sustainability. On the other hand, they may avoid thinking about climate action, in order to minimise dealing with uncomfortable feelings. In addition to eco-anxiety, other variables can be triggered by message framing, including emotions like guilt (in the case of negative), or hope and pride (in the case of positive messages), and attitude towards brands.

1.2.Main Objectives

The aim of the present analysis is to examine the impact of gain versus loss message framing in the purchase intention of reusable and refillable packaging, and the role of emotions and attitudes that might mediate this relationship. The analysis is based on two experimental studies that examine whether a positively or negatively framed advertising message affects the purchase intention of a sustainable product. The first study examines the role of eco-anxiety

and hope in mediating the relationship between message framing and purchase intention, while the second study examines the role of guilt, pride and attitude towards the brand in the same relation. In both studies, the impact of different mediators and moderators are analysed. The results were examined with models 4 and 15 from Hayes mediation moderation (Hayes 2012). In study One, the focus was on a sample more likely to be eco-concerned and in study Two, the sample was broadened to also account for people that were less likely to be eco-concerned.

1.3.Main Findings

The results indicate that the relation between message framing and purchase intention is mediated by attitude towards the brand with eco-anxiety playing a moderating role in this relation. In study One, it was found that the previous relation is not mediated direct nor indirectly by eco-anxiety, neither moderated by hope. Thus, there was built a new hypothesis on a broadened sample in study Two, analysing whether the relation was mediated by guilt, pride or attitude towards the brand. Message framing was found significant only when mediated by attitude towards the brand and eco-anxiety plays a moderating role in this relation. Guilt and pride were found to have a significant impact on purchase intention, but message framing did not affect guilt nor pride, indicating that the frame might not be relevant in this case.

2. Theoretical Background

2.1. Message Framing

Message framing is a persuasive communication tool that manipulates a recipient's perception of the outcomes of a specific behaviour (Oh and Ki 2019; Gier et al. 2023). Plenty of studies have delved into the relation between message framing and consumer behaviour. The results depend on multiple factors. Many theories have been applied to explain this relation: prospect theory, construal level theory and neuro-emotional frameworks (Gier et al. 2023). Message framing has been studied in the context of the prevention of risky behaviours, such as smoking

or drug addiction (Septianto et al. 2020). More recently, it has also been a topic associated with sustainability, related to pro-environmental action, which will be our main concern in this paper.

Message Framing in Prospect Theory

Message framing has its roots in prospect theory (Kahneman and Tversky 1979), which proposes that individuals evaluate potential results of decisions based on perceived gains and losses. There are two main types of frames: 1) gain or positive; and 2) loss or negative frames. Gain-framed messages focus on the benefits of taking action (e.g., “If we limit our food waste, **we save** enough food to feed 2 billion people.”), while loss frames stress the negative outcomes that result from not taking action or from engaging in harmful behaviour (e.g., “If we do not limit our food waste, **we lose** enough food to feed 2 billion people.”) (Khalil et al. 2022, 67). The framing of a message elicits various reactions from message recipients, including perceived message credibility, persuasiveness and behaviour intention (Oh and Ki 2019).

Message Framing in Construal Level-Theory

Construal level theory (Trope and Liberman 2010) proposes that, since people can only concretely live the present, they think about the past and the future by forming abstract mental constructs. Even though people cannot experience what is not present, they can think about the future and the past. The theory suggests that, when information is psychologically distant, individuals construe it in abstract terms (i.e., high construal). Conversely, when information is psychologically close, they construe it in concrete terms (i.e., low construal). Septianto et al. (2020) studied how message framing affects the relationship between gratitude and consumer behaviour. They developed four ads about food waste. According to the authors, loss (versus gain) frames are associated with lower (versus higher) construal levels, given that losses are perceived in concrete terms of what an individual is losing in the present, whereas gains are perceived in abstract terms of what an individual may gain in the future. For emotional appeals,

they tested gratitude “for having” (“be grateful you have food on your table”) and gratitude “for not having” (“be grateful you don’t go hungry”). For message framing, the gain frame was “Not wasting food means:”, followed by a set of gains from not wasting food; and loss frame was “Wasting food means:”, followed by problems arising from food waste (Septianto et al. 2020, 11). The researchers found that a message with a tagline “be grateful you have food” will raise more awareness, when followed by a loss frame of the problems that arise if food is wasted. And the opposite is also true, a message “be grateful you don’t go hungry” is more effective followed by a gain frame on the benefits of not wasting food.

Message Framing in Neuroscientific Theories

Gier et al. (2023) explained how message framing is processed from a consumer point of view in a neuroscientific perspective, focusing on a reflective-impulsive model with a neural emotion-cognition framework. They use a functional magnetic resonance imaging (fMRI) experiment to analyse four frames that are theorized to affect the processing of information by consumers in different ways (Gier et al. 2023, 3 and 4): 1) Direct approach value consistency: a message describing the “gain that is achieved if a positively valued object is executed”; 2) Indirect approach value inconsistency: a message describing the “loss that is suffered if a positively valued object is not executed”; 3) Direct avoidance value inconsistency: a message describing the “gain that is achieved if a negatively valued object is executed”; and 4) Indirect avoidance value consistency: a message describing the “loss that is suffered if a negatively valued object is not executed”. The experiment’s results showed that positive frame values are more effective for positive object values. However, for negative object values, there were no significant results, indicating that any kind of information – whether positively or negatively framed – has the same effect in behaviour (Gier et al. 2023). These are relevant outcomes to design future research stimuli.

Message Framing in Self-referencing vs. Environment-referencing contexts

When it comes to green advertising, Segev et al. (2015) studied how gain versus loss frames and self-referencing versus environment-referring messages impact customer response. Their results indicate that gain-frames were more effective in eliciting favourable responses towards ads, the brand and increasing purchase intention. These results go in line with previous findings on research, showing that, under preventive conditions, gain frames are more effective. They demonstrated that self-focused messages were more persuasive than environment-focused ones in raising favourable reactions towards the brand and purchase intentions. When it comes to the link between the gain-loss frame and the point of reference, there were no differences between gain-frame's relation to self-reference or environmental-focused messages. However, loss-frame associated with self-referencing messages led to more positive response towards the ad, brand and purchase intention. Negative appeals were found to work better by stressing the self and consequences of personal behaviours (Segev et al. 2015).

Message Framing in Pro-Environmental Behaviour

Studies found that, depending on the context, either gain or loss framed-messages can be more persuasive. In 2011, Cheng, Woon and Lynes studied gain versus loss-frames in social versus physical environmental contexts and most researchers agreed that loss-framed messages were more persuasive, given that people tend to identify negative information as more relevant (Davis 1995). However, in 2019, Oh and Ki revisited over six thousand studies finding that gain-framed messages elicited more engagement (O'Keefe and Jensen 2008), which was corroborated by results on positive attitudes toward companies or products (Maheswaran and Meyers-Levy 1990). Oh and Ki (2019) found that an organization's social presence and positive Word-of-Mouth intention is affected by gain-frames. People usually accept risks better when a decision refers to its associated costs and, inversely, they are more prone to be risk-averse if a

decision's frame highlights its benefits (Cheng et al. 2011). The most effective combination of message frame and outcome depends on many factors: 1) level of risk involved; 2) degree of self- or self-other referencing; 3) level of experience and knowledge of the target audience; 4) gender of the target audience, and individual characteristics (Hollingworth and Barker 2020).

Gain versus loss frames' effectiveness depends on the situation (see appendix A.1). Overall, loss frames are connected to negative emotions (e.g., fear and anger), and gain frames generate positive emotions (e.g., joy and contentment). Furthermore, negative emotions trigger avoidant behaviours, which supports the effectiveness of loss frames, when it comes to deterring undesirable behaviours (Dienstbier et al. 1975; Winer 1980). Gain frames may play an important role in encouraging desirable behaviour. Moreover, a new variable that may impact the relation between message framing and behaviour breaks its ground in the research.

2.2. Eco-Anxiety

Eco-Anxiety Vs. Generalized Anxiety Disorder (GAD)

Eco-anxiety is a relatively new term, encompassing anxiety about climate change and environmental calamities not directly caused by climate change (Hogg et al. 2021). Eco-anxiety is a multidimensional term (Wang et al. 2023) that describes the “mental and emotional distress an individual may experience in response to the threat of climate change and global environmental problems” (Hogg et al. 2021, 4). Hogg marked a distinctive place for eco-anxiety in science by distinguishing it from the generalized anxiety disorder (i.e., GAD) and developing a scale. Although eco-anxiety is not a mental health disorder (Wang et al. 2023), it is a singular construct, since people who do not suffer from clinical anxiety may still experience eco-anxiety.

13-item Hogg Eco-Anxiety Scale (HEAS-13)

Hogg (2021) conducted two studies to elaborate a measure model of eco-anxiety through a mixed-methods approach. For study One, Hogg conducted research with an initial 7-item

measure model based on the GAD-7 scale during a two-week time frame consisting of 334 participants. Study Two focused on building a more comprehensive eco-anxiety scale, testing 16 items with 365 participants and validating 13 of those. The results set up an established place for eco-anxiety as a construct of a four factor 13-item solution (see appendix A.2). The factors include: 1) Feelings of anxiety, highly correlated with items “feeling nervous, anxious or on edge”, “not being able to stop or control worrying”, “worrying too much”, “feeling afraid”; 2) Ruminative thoughts about negative environmental events, impacted by items “unable to stop thinking about future climate change and other global environmental problems”, “unable to stop thinking about past events related to climate change”, “unable to stop thinking about losses to the environment”; 3) Behavioural symptoms of eco-anxiety, including items “difficulty sleeping”, “difficulty enjoying social situations with family and friends”, “difficulty working and/or studying”; 4) Anxiety about one’s personal impact was negatively related to “feeling anxious about the impact of your personal behaviours on the earth”, “feeling anxious about your personal responsibility to help address environmental problems”, “feeling anxious that your personal behaviours will do little to help fix the problem” (Hogg et al. 2021, 9).

Affective and behavioural symptoms were found to be highly associated with mental health outcomes, including anxiety or depression. The authors predicted that symptoms of eco-anxiety were more related to environmental stimuli, such as extreme climate events and media representations of climate change, while rumination and personal impact concerns may persist largely over time. Rumination about the environment and concerns about personal impact were expected to drive individuals to act more in order to diminish the impact of environmental crises (Hornsey et al. 2016). Hogg’s research establishes eco-anxiety as a unique psychological experience that can be measured through the 13-item Hogg Eco-Anxiety Scale (HEAS-13), therefore enabling the possibility of measuring eco-anxiety. Hogg along with Stanley and O’Brien (2023) validated the HEAS-13 scale, while also proving that eco-anxiety leads to

paradoxical outcomes. On the one hand, people suffering from eco-anxiety may actively revert to media for data about climate change, in order to calm down their anxious feelings (Kirk et al. 2019; Rector et al. 2011). On the other hand, people with these high levels of eco-anxiety may completely avoid climate information to be able to diminish and mitigate uncomfortable feelings, like uncertainty and lack of control (Kirk et al. 2019; Rector et al. 2011).

Eco-Anxiety and Consumer Behaviour

More authors began to wonder about the role that eco-anxiety plays within consumer behaviour. Mihăilă et al. (2022) studied the mutual influences between eco-anxiety and consumer behaviour to find that young people, who have experienced eco-anxiety in the past, became more active in transitioning to a more sustainable lifestyle. Paradoxically, the authors also found that impulsive consumption behaviours, such as shopping sprees, may decrease the symptoms of eco-anxiety. What does this paradox mean? Does eco-anxiety enable or disable action?

To answer the previous question, we look at the work of Stanley et al. (2021). They focused on studying experiences of depression, anxiety and anger with regards to climate change. The authors defined depression as a deactivating emotion, not likely to trigger action; anxiety as an activating emotion leading to desire to avoid threats; and anger as an activating emotion related to approach. The authors claimed that depression would hinder climate action; eco-anxiety would trigger active avoidance and eco-anger would encourage climate action. They used structural equation modelling to distinguish the measures of eco-anxiety, eco-depression and eco-anger in respect to climate change. The results show that “climate accepters experience eco-anger and eco-anxiety at similar levels, while eco-depression is experienced less frequently” (Stanley et al. 2021, 2). Each eco-emotion individually was found to predict an increase in pro-climate behaviour, both personal and collective. However, when considering the three emotions together, and looking at each of them, while keeping the remaining constant,

they do so in different ways. Eco-anxiety and eco-depression affected wellbeing negatively, but eco-anger led to both lower levels of anxiety and depression. Eco-anger was the only variable found to significantly predict personal and collective behaviour towards the climate. Eco-anxiety and eco-depression did not affect personal behaviour and, in fact, eco-anxiety was related to lower engagement in collective action. In conclusion, eco-anger was found to be the only variable significantly able to predict pro-climate behaviour (Stanley et al. 2021).

Eco-Anxiety in Message Framing and Pro-Environmental Behaviour

Studies were conducted to analyse eco-anxiety and pro-environmental behaviour. Stern (2000) defined pro-environmental behaviour as a “behaviour that is undertaken with the intention to change (normally, to benefit) the environment” (Cheng, et al. 2011, 408). Wang (2023) suggested that research should delve into the strategic effectiveness and persuasiveness of message framing related to eco-anxiety and its impact on pro-environmental behaviour.

Shao and Yu (2023) were some of the authors diving into this topic by studying how media coverage predicts eco-anxiety and pro-environmental behaviours and the role of the resilience paradox on this relationship. The resilience paradox is a phenomenon that explains why people with high resilience usually experience less negative emotions after environmental disasters, while simultaneously exhibiting less willingness to actively mitigate these situations. Shao and Yu (2023) performed two studies and results showed that media coverage could indeed trigger eco-anxiety and pro-environmental behaviours by making people aware of a problem.

When triggered by global warming news, eco-anxiety was not found to promote donations behaviours, but paying attention to climate news in daily life was positively connected to pro-environmental behaviours by instigating eco-anxiety as a mediator. Therefore, the relationship between eco-anxiety and pro-environmental behaviour remains paradoxical and conditional. Anyhow, researchers agree that only moderate eco-anxiety is constructive in the sense of

empowering pro-environmental behaviour (Heeren et al. 2022; Verplanken et al. 2020), once again putting in light the finding that high levels of eco-anxiety reduce effective pro-environmental action. Resilience was found to moderate the relations between media coverage and eco-anxiety, as well as the alliance between eco-anxiety and pro-environmental behaviour (Shao and Yu 2023). This means that, although resilience alleviates eco-anxiety, it may not lead to positive behaviour, as it reduces the sense of threat. May an emotion, like hope, change it?

2.3. Hope in Sustainable Consumption

When it comes to message framing, emotions have a role in driving action. “Hope is described as a positive emotion focusing on the future” (Chadwick 2015; Khalil et al. 2022, 59). Prior research has shown that hope takes place when outcomes are highly significant and that it has positive effects on behaviour. Septianto et al. (2019) found that hope is a mechanism that drives consumer intentions to purchase counterfeit luxury goods. Nabi, Gustafson, and Jensen (2018) found that gain (versus loss) messages evoke positive (versus negative) emotions when it comes to climate change, with hope mediating the effect of gain-framed messages associated to climate change policy attitudes and advocacy. Khalil et al. (2022) focused their study on the role of state-based hope - more effective to elicit in this study as opposed to hope as an individual trait - in mediating the relationship between message framing and consumer behaviour relating to food waste reduction. They developed a scale of hope (see appendix A.3) and conducted three studies in which they found that gain (versus loss) messages elicit greater hope, improving intentions and sustainable consumption behaviours relating to food waste reduction.

2.4. Purchase Intention

The ability to drive consumers to make pro-environmental choices is a priority. Purchase intention (see appendix A.4) is identified as an “individual’s conscious plan to make an effort to purchase a brand” (Spears and Singh 2004, 56). The Theory of Planned Behaviour posits that

intentions are the main predictors of behaviour (Zubair et al. 2020). Chang et al. (2015) showed that gain frames increase purchase intention in abstract contexts, whereas loss frames are indicated in concrete settings. Segev et al. (2015) also demonstrated that gain-framed messages were more effective in eliciting favourable responses towards the advertisement, the brand and purchase intention. Studies show that sustainable and mindful consumption, that can impact purchase intention, have a positive correlation with life satisfaction and wellbeing (Geiger et al. 2019). Thus, measures of mindful consumption (see appendix A.5) (Gupta and Sheth 2023), sustainable consumption (see appendix A.6) (Balderjahn et al. 2013) and environmental values (see appendix A.7) (Chuah et al. 2023) were considered in the study.

3. Study One

3.1. Research Question and Hypotheses

Research Question One: Does message framing influence purchase intention via the role of eco-anxiety and hope?

Gain frames, when paired with positive emotions, such as hope, seemed to have a promising effect on future purchase and action intention (Segev et al. 2015; Oh and Ki 2019). Khalil et al. (2022) confirmed it by showing that gain messages elicit greater hope, increasing intentions to reduce food waste. Since eco-anxiety may lead to avoidant behaviour (Hogg 2021) and negative emotions were found to trigger this avoidance (Dienstbier et al. 1975; Winer 1980), it was argued that message framing affects purchase intention via the mediating role of eco-anxiety, when moderated by hope, a positive emotion towards the future (see appendix B.1).

H1: Message framing (MF) drives purchase intention (PI) via the role of eco-anxiety (EA) for people who care about the climate.

H1.1: Gain-framed messages are more effective in driving the purchase intention (PI) via the role of eco-anxiety (EA) when moderated by hope (Hope).

3.2. Methodology and Research Design

3.2.1. Study Purpose and Recruiting Process

The main purpose of this study is to understand the effect of message framing on the purchase intention of sustainable products mediated by eco-anxiety with hope as a moderator. A questionnaire was conducted, for which participants were recruited using the online participant pool platform Prolific, based in the United Kingdom. To increase the chances of finding people with eco-anxiety, the participants were pre-screened to only include those who had indicated a medium to high concern for environmental issues (4 out of 7 and above). The questionnaire was sent via e-mail with a monetary award, given by Prolific website, in return for participation.

3.2.2. Research Design

The design started by selecting a relevant stimulus. With a consumption of about 40% of plastics in Europe (Coelho et al. 2020), refillable packaging becomes a promising green tool. The stimulus chosen was a refillable bottle (see appendix B.2) portrayed in two advertisements referring to the two message frames in test: gain and loss (see figures 1 and 2). Each participant only saw one of the ads. The two ads differed only in the title and the gain frame enumerating benefits of taking action, while the loss frame enumerated the consequences of not taking action. Respondents were randomly and evenly allocated to one of the two conditions, for a between-subjects experimental design: gain versus loss message frame.

HELP INCREASE THE AVAILABLE NATURAL RESOURCES OF UPCOMING GENERATIONS.

From Single-Use To Sixty-Uses.

The aluminum bottle can be refilled over 60 times.



By using refillable packaging, you will be:

- Improving plastic recycling to more than 10% per year
- Freeing up energy that can be used for other purposes
- Safeguarding our bio-diversity, particularly marine-life

Figure 1: Study 1 Gain-frame advertisement

STOP WASTING THE AVAILABLE NATURAL RESOURCES OF UPCOMING GENERATIONS.

From Single-Use To Sixty-Uses.

The aluminum bottle can be refilled over 60 times.



By not using refillable packaging, you will be:

- Decreasing recycling rates to less than 10% per year
- Using up energy that could be used for other purposes
- Endangering our bio-diversity, particularly marine-life

Figure 2: Study 1 Loss-frame advertisement

The answers were collected via Qualtrics (see appendix B.2) and the scales in place are reported in the appendix (see appendix B.3 to B.6). After introducing the study and obtaining consent, the advertisement was shown. Participants answered questions regarding purchase intention (PI), eco-anxiety (EA), hope (Hope), mindful consumption (MC), sustainable values (SV) and environmental values (EV). In the end, participants entered their age, gender and, optionally, their understanding of the purpose of the study. A full study debrief was given as a conclusion.

3.2.3. Results Analysis

Data validation and sample composition

The data was validated through content and completeness of the study. Since all questions were mandatory, all fields were filled in. According to Qualtrics, the time to take the questionnaire was around 10 minutes. All participants completed the study within 3 to 20 minutes, which seemed feasible, taking on average 6 minutes. The dataset of 100 responses was validated and analysed using SPSS statistics. Out of the 100 participants, 67 were female (code = 1), 32 male (code = 2) and 1 non-binary (code = 3) (see appendix B.4.1). There were no significant differences in the loss and gain frame (MF: loss = 0; gain = 1) regarding gender ($M_{loss} = 1.30$; $SD_{loss} = 0.46$; $M_{gain} = 1.38$; $SD_{gain} = 0.53$; $t(98) = -0.804$; $p = 0.212$) (see appendix B.4.2). The age ranged from 20 to 74 years old with an average of 43 ($M = 42.85$) (see appendix B.4.3). There were no significant differences in each frame with regards to age ($M_{loss} = 41.64$; $SD_{loss} = 14.19$; $M_{gain} = 44.06$; $SD_{gain} = 14.60$; $t(98) = -0.840$; $p = 0.201$) (see appendix B.4.4).

Reliability of the scales

Firstly, reliability of the scales was calculated. Most scales reported good internal reliability with a standardized Cronbach's alpha value of 0.7 and above (see appendix B.5): EA: 0.93; Hope: 0.93; MC: 0.90; SV: 0.92; EV: 0.84. The EV scale was improved by removing item 4:

0.87. However, MC, SV and EV were not used in the analysis in the end, as the preliminary results were non-significant for the model. The improved scales were used for analysis.

Results

H1 and H1.1. Message framing on purchase intention via eco-anxiety and hope

Hayes mediation (see appendix B.6) model 4 was used to analyse the relationship between MF and PI via the role of EA (see appendix B.7.1). The results revealed a non-significant indirect effect of impact of MF on PI ($b = -0.05$, $BootCI = -0,123; 0.004$). The direct effect of MF on PI in presence of the mediator was not found significant ($b = 0.51$, $p = 0.160$). Hence, there is no statistical significance to state that EA mediates the relation between MF and PI. **Thus, H1 is rejected.**

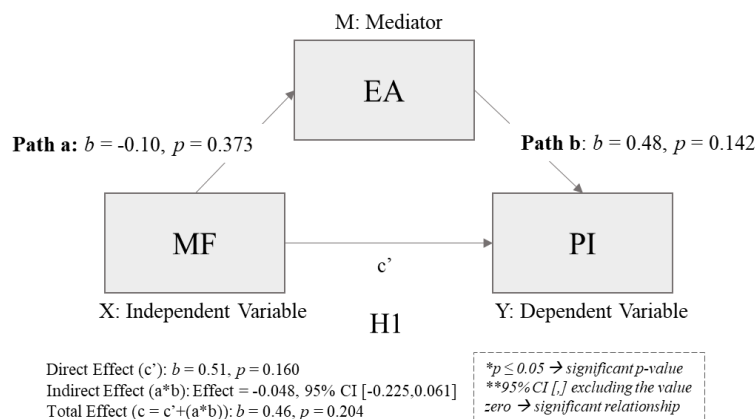


Figure 3: MF-EA-PI model (H1)

When running Hayes model 15 to test for hope as a moderator of the mediating role of EA on MF and PI (see appendix B.7.2), the results show that hope is not a moderator of this relation with Bootstrap including the value 0 in between $CI (-0,062, 0.121)$. **H1.1 is also rejected.** The t-tests also show that neither message frame had a special impact in PI ($M_{loss} = 4.1$; $SD_{loss} = 1.9$; $M_{gain} = 4.6$; $SD_{gain} = 1.7$; $t(98) = -1.279$; $p = 0.102$) (see appendix B.7.3).

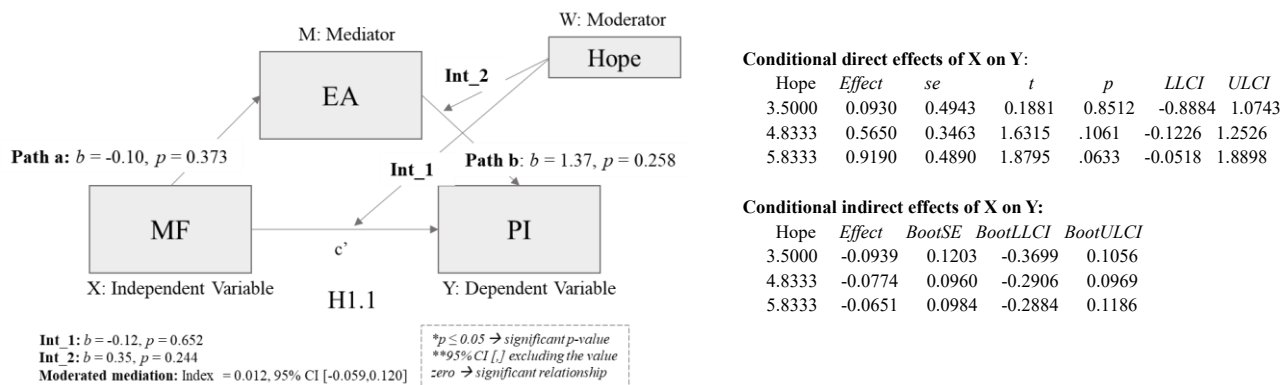


Figure 4: MF-EA-PI moderated by hope model (H1.1)

3.3. Learnings from Study One

Since H1 was not confirmed, the steps and potential issues with study One were reviewed:

- 1) The selection of the sample: on the pre-screening, the sample population selected mentioned already caring about the climate. Therefore, they are already more likely to buy the product in spite of the ad being positively or negatively framed.
- 2) The score for eco-anxiety: although it was expected that the sample was more likely to report eco-anxiety, this was not the case. The mean for eco-anxiety was 1.5 out of 4 (see appendix B.4.5). It could be that the value was not high enough to elicit significance.
- 3) The scale for eco-anxiety measured it as a “trait” rather than a state induced by the ad, which does not match the purpose of building a stimulus to test message frame. The eco-anxiety scale HEAS-13 “assesses how an individual has generally felt over the last two weeks (as per the scale instructions) and is therefore designed to measure *enduring* forms of eco-anxiety” (Hogg 2021, 7). Thus, in order to account state-based eco-anxiety, the time-period in the scale instructions must be modified to reflect a status induced by the ad.
- 4) The stimulus itself was over complex:
 - There were too many messages being displayed simultaneously on the title of the ad, the description of the product and the benefits or consequences;
 - The title focused on future generations rather than personal gains or losses.

Learning from study One, a follow up study Two was conducted.

4. Study Two

Since eco-anxiety does not seem to display a relevant mediating effect on the relation between MF and PI, the goal is to understand if other variables might play a role. According to Pelozo et al. (2013), people make instant decisions with little to no thought, when motivated by emotions that put into light the self (Lima et al. 2019). These emotional responses drive action, because of the awareness they bring to an individual of itself and include the emotions of guilt and pride. Lima et al. (2019) analysed the impact of guilt and pride in the purchase intention of green products by sustainable consumers. Guilt is a negative feeling, identified as a direct consequence of personal action. Pride is a positive psychological state, connected to a sense of wellbeing to act according to personal standards. Both guilt and pride are posed to affect consumer's intention and behaviour positively (Anttoneti and Marklan 2014). The research focused on setting consumption situations and asking questions related to guilt and pride (see appendix A.8). The results show that guilt, more than pride, was found to stimulate the purchase intention of sustainable products. This goes in line with previous findings that people tend to avoid negative feelings, which can be easily triggered by the guilt of not acting.

Besides purchase intention, another popular way to predict consumer behaviour are measures of attitude towards the brand (AtB). Spears and Singh (2004) validated AtB and PI as two different constructs (see appendix A.4). AtB is defined by Mitchell and Olson (1981, 318) as an "individual's internal evaluation of the brand" (Spears and Singh 2004, 55). The authors were able to support a model where positive versus negative feelings affect direct and indirectly attitude towards the ad and attitude towards the brand. Attitude towards the ad influences purchase intention indirectly though the role of attitude towards the brand. Therefore, there was added a measure of AtB in study Two to assess for further alternatives.

4.1. Research Question and Hypotheses

Research Question Two: What is the role of guilt and pride in the relation between message framing and purchase intention? What about attitude towards the brand?

In study Two (see appendix C.1), the goal was to validate the previous findings (H1 and H1.1), adjusted to the new sample. Since eco-anxiety was rejected as a mediator of message framing and purchase intention, there were proposed two new mediating relations, based on the revised literature. First, it was decided to account for the emotions of guilt and pride, previously found to impact this relation (Anttoneti and Marklan 2014; Lima et al. 2019).

H2: Message framing (MF) drives purchase intention (PI) via guilt and pride.

Finally, a variable previously overlooked was included: attitude towards the brand (AtB). Upon revising the literature, it was found to affect the relation between attitude towards the ad and purchase intention. Thus, the final aim was to clarify if the same would be the case for message framing and if eco-anxiety could rather play a moderating role in the relation between message framing, attitude towards the brand and purchase intention (Spears and Singh 2004).

H3: Message framing (MF) drives purchase intention (PI) via attitude towards the brand (AtB) in a conditional mediation moderated by eco-anxiety.

4.2. Methodology and Research Design

4.2.1. Study Purpose and Recruiting Process

The aim of this study was to follow-up on the previous one and understand the mediating role of guilt, pride and attitude towards the brand in the previous established relations. A follow-up questionnaire was sent to the same Prolific database, but now extending to both people who selected caring about the climate and those who did not. In the previous study, the sample population did not show high levels of eco-anxiety ($M = 1.5$ out of 4), even though the people

selected were more likely to care (see appendix B.4.5). Therefore, in this study, the goal was to understand if broadening the range of population would give different results.

4.2.2. Research Design

The stimulus for study two was a refillable pouch from a shampoo bottle, inspired by the H&S refillable shampoo bottle (Marketeer 2021) and renamed to “HairEssence”, to remove potential gender bias. It was yet again portrayed in two advertisements accounting for the two message frames (gain versus loss), evenly and randomly shown to participants (see figures 5 and 6).



Figure 5: Study 2 Gain-frame advertisement



Figure 6: Study 2 Loss-frame advertisement

The answers were again collected via Qualtrics (see appendix C.2). and the process was the same as in the previous questionnaire (scales from appendix C.3 to C.5). After the introduction, participants replied to adjusted and new questions, regarding attitude towards the brand (AtB), purchase intention (PI), eco-anxiety (EA), guilt (Guilt) and pride (Pride). The scales were modified to account emotions as states elicited by the stimulus, and not traits that people may have. In order to maintain the congruity with the previous study and account for other potentially relevant variables, there were included questions on hope (Hope), mindful consumption (MC) and intention to act sustainably (IAS), adapted to fit the stimulus. The question on sustainable values (SV) in the survey was not considered, due to a technical issue affecting the data through an extra selection space. Participants entered their age and gender.

4.2.3. Results Analysis

Data validation and sample composition

According to Qualtrics, the time to take the survey was around 8 minutes. Participants completed it in 3 to 30 minutes, taking on average 6 minutes. We validated the data set of 110 responses. Out of the 110 participants, 70 were female, 40 male (see appendix C.4.1), 64% and 36% respectively. There were no significant differences in the loss and gain-frame (MF: loss = 0; gain = 1) when it comes to gender ($M_{loss} = 1.33$; $SD_{loss} = 0.47$; $M_{gain} = 1.40$; $SD_{gain} = 0.49$; $t(108) = -0.788$; $p = 0.216$, code female = 1; code male = 2) (see appendix C.4.2). The age ranged from 19 to 83 years old with an average of 48 ($M = 47.88$) (see appendix C.4.3). There were no significant differences in each frame with regards to age ($M_{loss} = 48.24$; $SD_{loss} = 14.34$; $M_{gain} = 47.53$; $SD_{gain} = 15.90$; $t(108) = 0.246$; $p = 0.403$) (see appendix C.4.4).

Reliability of the scales

Scales reported good reliability with a Cronbach's alpha of 0.7 and above (see appendix C.5): EA: 0.944; Guilt: 0.906; Pride: 0.916; MC: 0.813; Future PI (FPI): 0.909; and Total PI (TPI): 0.799. Since FPI has a higher score than TPI, it will be used and renamed to "PI" measure. For hope, removing item 1 improved the alpha from 0.788 to 0.825. The improved scales were used.

Results

H2. Message framing on purchase intention via guilt and pride

Since H1 and H1.1 were rejected, a quick confirmation analysis using Hayes model 4 and 15 (see appendix B.6) was performed for the new sample, measuring EA as a state. Although EA seemed to affect PI, it did not mediate the relation between MF and PI (see appendix C.6.1 to C.6.3). Thus, the next step was to look at the mediating role of other emotions (guilt and pride) in the MF-PI relation (see appendix C.6.4) through Hayes model 4. The results revealed a non-significant indirect effect of impact of MF on PI via guilt (*BootCI*: -0.162; 0.182) and pride

(*BootCI*: -0.059; 0.248) and direct effects ($b = 0.23, p = 0.316$) were also insignificant. Hence, there is not statistically significant data to state that guilt and pride mediate the relationship between MF and PI. The t-tests show that neither message frame had a special impact in PI ($M_{loss} = 4.5; SD_{loss} = 1.3; M_{gain} = 4.8; SD_{gain} = 1.4; t(108) = -1.174; p = 0.122$) (A.25). **Thus, H2 is rejected.** It is important to note that guilt ($b = 0.27; p = 0.002$) and pride ($b = 0.23; p = 0.035$) seem to have a significant effect on PI.

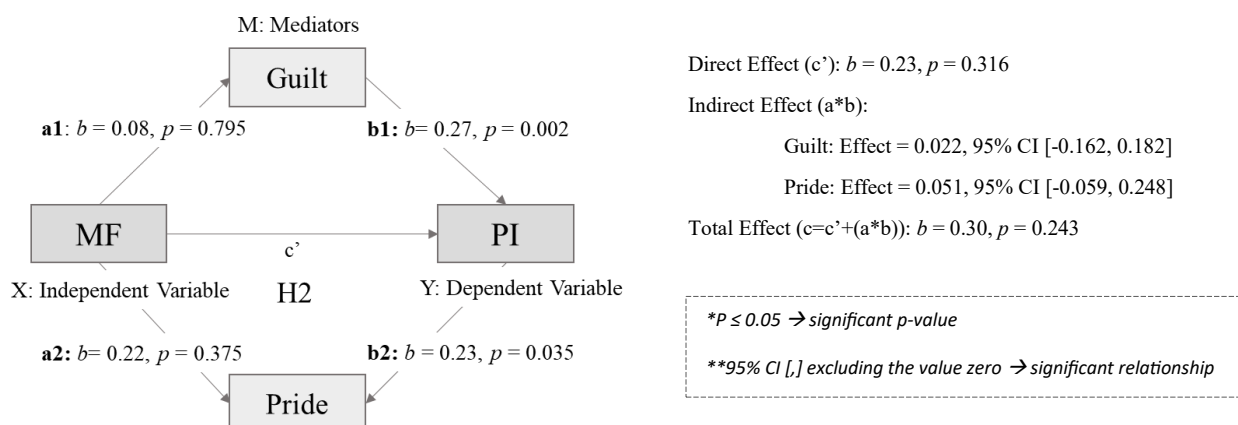


Figure 7: MF-Guilt and Pride -PI model (H2)

H3. Message framing on purchase intention via attitude towards brand and eco-anxiety

Finally, a final Hayes model 15 (see appendix B.6) was tested by looking at the mediating role of AtB moderated by EA on MF and PI (see appendix C.6.5). The results revealed a significant effect from MF to AtB ($b = 0.65; p = 0.008$), and significant effects from AtB to PI ($b = 0.76; p = 0.001$) and path Int_2 of moderation from AtB to EA to PI ($b = -0.18, p = 0.019$). The indirect effects of MF on PI via AtB, when moderated by EA were found significant for low EA of 1 ($b = -0.04; BootCI: 0.092; 0.755$) and moderate EA of 1.8 ($b = 0.09; BootCI: 0.066; 0.567$). Higher levels of EA (3.6) are not significant ($b = 0.39; BootCI: -0.114; 0.252$). The index of moderated mediation for EA is significant ($b = -0.12; BootCI: -0.282; -0.018$). No direct effects were found, meaning that AtB fully mediates the relation between MF and PI. **Thus, H3 is confirmed.** A t-test revealed that gain-frame is more likely to affect AtB (see appendix C.6.6).

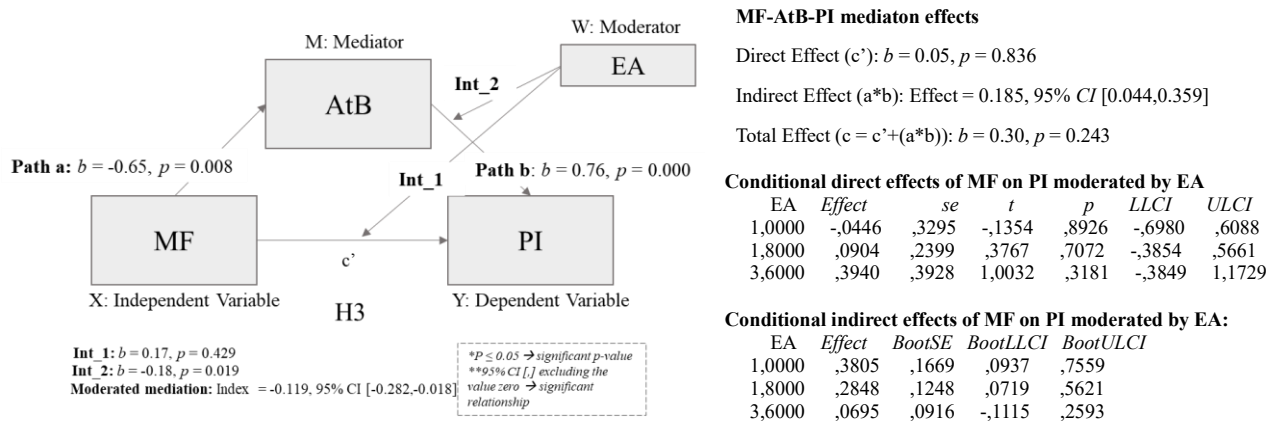


Figure 8: MF-AtB-PI moderated by EA model (H3)

5. Discussion

The findings suggest that eco-anxiety (EA), guilt and pride do not have a significant mediating impact on the relation between message framing (MF: gain versus loss) and purchase intention (PI), contrary to the initial hypotheses. However, after revising literature, the final hypothesis put in place was confirmed: attitude towards the brand (AtB) was found to indirectly mediate the relation between MF and PI and EA is a moderator in this relation. A set of reasons might explain why the initial hypotheses built based on the literature were not found significant.

In study One, the conditional mediation of EA on MF and PI moderated by hope was not found significant. Based on the literature, gain-frame was expected to influence people with EA, since it elicits positive emotions that do not trigger avoidant behaviour (Dienstbier et al. 1975; Winer 1980) and influences climate change attitudes when mediated by hope (Nabi, Gustafson, and Jensen 2018). It could be that the EA value was not high enough in this relation to elicit significance, since the mean for EA in this study was 1.5 out of 4 (see appendix B.4.5), which is a low value - although the selection of population was made in a way that expected higher values. It could also be explained by the fact that EA was measured as a trait and therefore not a state induced by the gain versus loss-framed stimuli. The stimulus itself was over complex with no self-reference nor personal impact (Segev et al. 2015; Hogg 2021), found relevant to induce eco-anxiety. Finally, these results reinforce the paradoxical outcomes of EA in research

that may explain why PI is not affected: it may lead people to avoid taking action or if they suffer from EA they might already be taking action (Hogg 2021), thus not increasing PI.

In study Two, the sample was broadened to account for people across the entire spectrum of attitudes towards environmental issues, ranging from low to high, and other variables' effect on the MF-PI relation were tested. EA was tested as a state induced by the stimulus to confirm the findings. Interestingly enough, the average mean of EA was slightly higher (2.2 out of 4) (see appendix C.4.5), as opposite to what was thought and the ads were rated 5.30 out of 6 in terms of sustainability, meaning the product was considered sustainable (see Appendix C.4.6.) However, the results remained non-significant. As to the results between MF and PI, when mediated by guilt and pride, they were also not relevant. However, EA, guilt and pride seemed to have an effect on PI (see appendix C.6.4). As a final step, the relation between MF and PI mediated by attitude towards the brand (AtB) was assessed. Once AtB is added as a mediator, the effect of MF in PI becomes significant. The gain frame was found to be more likely to improve AtB, which goes in line with literature (Segev et al. 2015). This means that attitude, more than affective or emotional states, is influenced by the frame, which, in turn, impacts PI. Furthermore, the total moderated mediation effect suggests that the conditional indirect effect of MF on PI though AtB varies depending on the level of EA. Moderate levels of EA (1.8) were found to predict higher PI, while lower levels (1) predict a decrease in PI, since anxiety is less triggered; and results for higher levels were not significant, potentially due to the inertia state they may induce (Heeren et al. 2022; Stanley et al. 2021; Verplanken et al. 2020).

6. Theoretical and Managerial Implications

Message framing is a complex academic topic, as its effects fluctuate among studies. This paper brings insights to research on message framing and sustainable consumption. It was found that attitude towards the brand is key in eliciting purchase intention, more than emotions and affective states, like eco-anxiety, hope, guilt and pride. Gain frame is usually connected with

higher levels of attitude towards the brand, which, in turn, indirectly influences the purchase intention of green products. Therefore, positive messaging influences positively how consumers perceive a brand. The path relation between attitude towards the brand and purchase intention is further moderated by eco-anxiety. This paper shows that only moderate levels of eco-anxiety are relevant for purchase intention, because lower and higher levels of eco-anxiety led to a decreasing effect in purchase intention. This goes in line with literature, putting into light the importance for firms to keep consumer's mental wellbeing as a top priority in their agendas and be careful when triggering affective or emotional states like anxiety in ads.

7. Limitations and Future Research

Firstly, since eco-anxiety has proved to have a higher impact on younger people (Hickman et al. 2021), it might have been a benefit to search for a sample composed of younger ages (16-25). Secondly, the fact that there were many messages in the advertisements, and not necessarily appealing to personal gains and losses, might have impacted the perception of participants. Thirdly, on the surveys, it would have been beneficial to cut scales of variables not theorized in the model, even though the goal was to consider other potential relations. Future research should focus on defining gain and loss frame methodologies and examples, since it may aid in building strong ads and stimulus better fit to confirm hypotheses. It would also be interesting to look for other mediators and moderators that may explain the relation between message framing and purchase intent, and to understand the impact of framing in other sustainable behaviours, like recycling. Since attitude towards the brand was found significant, future research should delve into tactics by which companies may influence customers to act, focusing particularly on gain frames to shape attitudes positively. Mindful consumption techniques might be an interesting starting point, since mindfulness practices play an important role in bringing individuals into a state of awareness, caring and temperance (Gupta and Sheth 2023), while improving overall states of anxiety and stress (Strohmaier et al. 2021; Tacón et al. 2003).

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Appendix A: Literature Review Tables and Scales

Appendix A.1: Sum of situations where loss- vs. gain-framed messages are more effective (Cheng, Woon and Lynes 2011; Hollingworth and Barker 2020)

<i>Cheng, Woon and Lynes 2011</i>	
Loss-framed messages	Gain-framed messages
More effective to persuade women to make breast self-examinations (Meyerowitz and Chainken 1987; and Banks et al. 1995; Cheng, Won and Lynes 2011, 52) » Detection behaviours	More effective to persuade women to request sunscreen (Rothman et al. 1993; Cheng, Won and Lynes 2011, 52) » Preventive behaviours
“More persuasive when losses were emphasized on the current generation as opposed to future generations” (Davis 1995; Cheng, Won and Lynes 2011, 53)	
“Nondrivers and adolescents with low engagement in environmental behaviours reported lower intentions to drive after viewing a loss-framed ad” (Cheng and Woon 2010; Cheng, Won and Lynes 2011, 53)	
More persuasive when the message is “self-referencing” (Loroz 2006; Cheng, Won and Lynes 2011, 54)	More persuasive when the message is “self-other referencing” (Loroz 2006; Cheng, Won and Lynes 2011, 54)

<p>“More effective for the low salience issue of energy conservation” (Obermiller 1995; Cheng, Won and Lynes 2011, 56)</p>	<p>“More effective for the high salience issue of recycling” (Obermiller 1995; Cheng, Won and Lynes 2011, 56)</p>
	<p>Gain framing, “especially when paired with physical threat, may be more effective for individuals who are already engaging in environmentally sustainable behaviour” (Cheng and Woon 2010; Cheng, Won and Lynes 2011, 57)</p>
<p><i>Hollingworth and Barker 2020, 3</i></p>	
<p>Loss-framed messages</p>	<p>Gain-framed messages</p>
<p>“High involvement e.g., breast cancer screening for high-risk individuals”</p>	<p>“Low involvement e.g., nutrition information for the general public“</p>
<p>“Outcome uncertain: e.g., breast self-exams”</p>	<p>“Outcome certain: e.g., belief that getting HIV vaccine through a trial would prevent contraction of HIV”</p>
<p>“Risk-seeking behaviour: e.g., prostate exams”</p>	<p>“Risk-averse behaviour: e.g., using sunscreen”</p>
<p>“Piecemeal processing: e.g., promoting healthy eating to registered dietitians“</p>	<p>“Heuristic processing: e.g., promoting exercise to the general public”</p>

Appendix A.2: Eco-Anxiety scale (HEAS-13) (Hogg, Stanley and O'Brien 2023)

The Hogg Eco-Anxiety Scale (HEAS-13) instructions:

“Over the last 2 weeks, how often have you been bothered by the following problems, when thinking about climate change and other global environmental conditions (e.g., global warming, ecological degradation, resource depletion, species extinction, ozone hole, pollution of the oceans, deforestation)?”

1. Feeling nervous, anxious or on edge
2. Not being able to stop or control worrying
3. Worrying too much
4. Feeling afraid
5. Unable to stop thinking about future climate change and other global environmental problems
6. Unable to stop thinking about past events related to climate change
7. Unable to stop thinking about losses to the environment
8. Difficulty sleeping
9. Difficulty enjoying social situations with family and friends
10. Difficulty working and/or studying
11. Feeling anxious about the impact of your personal behaviours on the earth
12. Feeling anxious about your personal responsibility to help address environmental problems
13. Feeling anxious that your personal behaviours will do little to help fix the problem

Response scale: 0 = *not at all*, 1 = *several of the days*, 2 = *over half the days*, 3 = *nearly every day*.

Appendix A.3: Perceived Hope Scale (Khalil, Northney, Septianto and Lang 2022)

Perceived Hope Scale

English Version. How do the following statements apply to you personally?

Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly agree
0	1	2	3	4	5

1. In my life hope outweighs anxiety.
2. My hopes are usually fulfilled.
3. I feel hopeful.
4. Hope improves the quality of my life.
5. I am hopeful with regard to my life.
6. Even in difficult times I am able to remain hopeful.

Appendix A.4: Attitude towards the brand and purchase intention scale (Spears and Singh 2004)

<i>Scale</i>	<i>Instruction and Items*</i>	<i>F</i>
	Please describe your overall feelings about the brand described in the ad you just read.	
Attitude toward the brand	<ol style="list-style-type: none"> 1. Unappealing/appealing 2. Bad/good 3. Unpleasant/pleasant 4. Unfavorable/favorable 5. Unlikable/likable 	
Purchase Intentions	<ol style="list-style-type: none"> 1. Never/definitely 2. Definitely do not intend to buy/definitely intend 3. Very low/high purchase interest 4. Definitely not buy it/definitely buy it 5. Probably not/probably buy it 	

Appendix A.5: Three dimensions of MC scale (Gupta and Sheth 2023)

<i>Factors</i>	<i>Item description</i>
Awareness	A1. I am concerned about the impact of my consumption on my society/community A2. I am aware that my consumption impacts society A3. Sharing my products with others means caring for society
Caring	C1. I try to live without damaging the environment C2. I satisfy my consumption needs without harming the environment C3. I buy products that are not harmful to others C4. Everyone should conserve water at home C5. Using public services (e.g., parks, schools, transportation) is good for society
Temperance	T1. I refrain from buying the latest product if the current product is working T2. I try to minimize my consumption even in the case of abundance T3. I have a habit of minimizing the wastage of clothes

Appendix A.6: Consciousness for sustainability consumption (Balderjahn et al. 2013)

Consciousness for Sustainable Consumption (CSC)

Consciousness for environmental consumption	Consciousness for social consumption	Consciousness for economic consumption
<ul style="list-style-type: none"> ▪ Recycling/disposal ▪ Packaging ▪ Use of resources/energy ▪ Local/regional production ▪ Climate impact 	<ul style="list-style-type: none"> ▪ Human rights ▪ Social minimum standards ▪ Child labor/forced labor ▪ Discrimination ▪ Disciplinary sanctions/mistreatment ▪ Fair compensation 	<ul style="list-style-type: none"> ▪ Voluntary simplicity ▪ Material simplicity ▪ Durability ▪ Frugality ▪ No debt-burdens ▪ Financial budget ▪ Safeguarding for future ▪ Price-performance ▪ Collaboration/sharing

Appendix A.7: Environmental concern (Chuah et al. 2020)

Environmental concern

- EC1 I am concerned about the environment.
- EC2 The condition of the environment affects the quality of my life.
- EC3 I am willing to make sacrifices to protect the environment.
- EC4 I am emotionally involved in environmental protection issues.

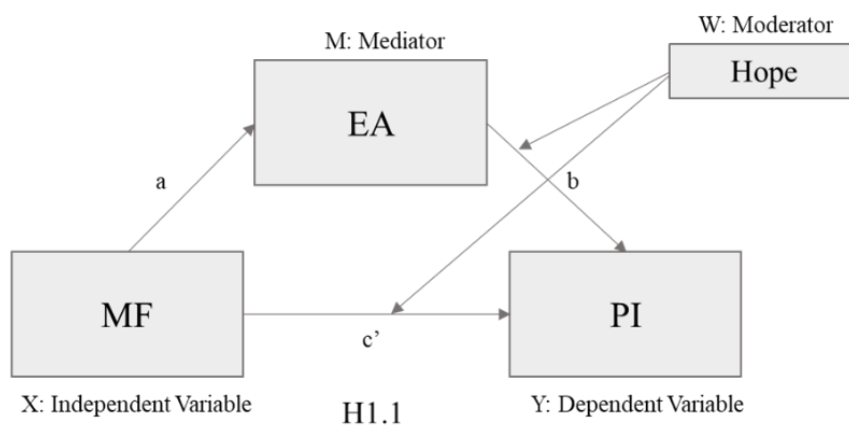
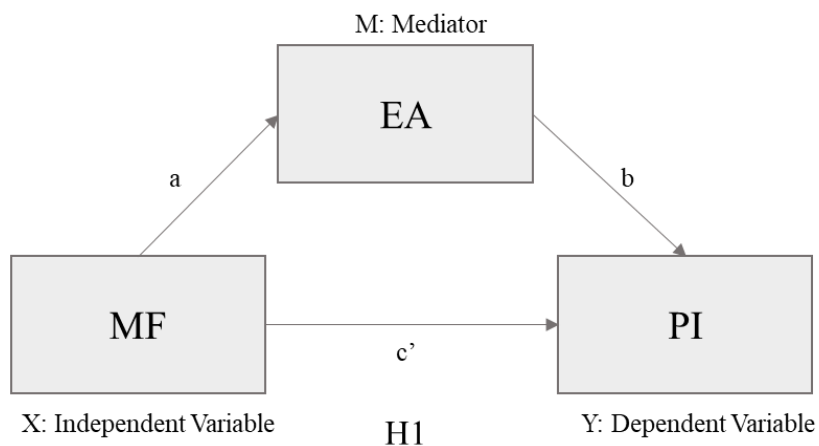
Appendix A.8: Guilt, pride and sustainable consumption scale (Lima, Costa and Félix 2019)

Author	Dimensions	Item
P. Antonetti, S. Maklan (2014)	Guilt	Q1: Through the situation described, I would feel remorse not to buy green product
		Q2: Through the situation described, I would feel bad about not purchasing green product
		Q3: Through the situation described, I would feel guilty about not purchasing green product
	Pride	Q4: Through the situation described, I would be pleased to purchase the green product
		Q5: Through the situation described, I would feel good about purchasing the green product
		Q6: Through the situation described, I would be proud to purchase the green product
	Sustainable Consumption	Q7: Through my personal choices, I can contribute to solving environmental issues.
		Q8: My personal actions are too insignificant to affect environmental issues [reverse scored]
		Q9: Environmental issues are affected by my individual choices.
		Q10: Ecological degradation is partly a consequence of my own consumption choices
		Q11 My individual consumption choices can contribute to promoting a more environmentally friendly production process
		Q12: My personal actions can influence companies' decision to adopt environmental improvements in the production process
		Q13: Inadequate working conditions (overuse of renewable and non-renewable natural resources) are partly a consequence of my own consumption choices.
	Q14: My personal choices would not be able to influence a company to change its entire production process for sustainability (reverse scored)	
	Buying Intention	Q15: Next time you make a purchase, I am likely to strive to buy products and services from companies that develop products in sustainable production processes.
		Q16: Next time you make a purchase, you are likely to avoid buying products and services from companies that do not develop products in sustainable production processes

Source: prepared by the authors (2018)

Appendix B: Study One – Design, Methodology and Results

Appendix B.1: Study One – Concept



Appendix B.2: Study One - Questionnaire

Information Sheet and Informed Consent for Participants in Research Projects

Study Description: Thank you very much for your interest to participate in this study. The study examines the attitudes and feelings towards a product advertisement. You will see an ad, and will be asked a series of questions about it. There are no right or wrong answers, just your own honest opinion. This study will take approximately 8 minutes to complete. Please find a quiet space where you can complete this study without interruption.

Risks: There are no known risks involved with filling in this questionnaire.

Benefits: You will receive financial compensation as described on the Prolific platform.

Participants' Rights: All the information you provide will remain anonymous and confidential. We do not request your name as part of the survey. We replace any identifying information with a number for the purposes of analysis and we will protect your anonymity. You may choose to not participate in this study. You are free to withdraw from this study at any time without penalty. Once you submit your answers however, they cannot be withdrawn because the data is stored anonymously and we will not be able to match your answers to you.

Participant's Responsibilities: I voluntarily agree to participate in this study. I have the following responsibilities: 1) I will notify the researcher if I experience any discomfort or would like to discontinue participation from this study, and 2) I will let the researcher know if I have any comments, questions or concerns regarding participation in this study.

Confidentiality: All information you provide is confidential and your responses will not be linked to you in any way. Your responses will be aggregated with those of all other respondents so that it will not be possible to identify your participation in this research. All data will be stored in a secure computer file accessible only to the researchers for the duration of the research period. Information gathered in this study may be presented at academic conferences and published in academic journals.

Communication about the content of this study: Please do not discuss the content of the study with anyone since this research is ongoing and the exchange of the study content could impact our findings.

If you have any questions about this research session, you may contact Mariana Carvalho (55631@novasbe.pt) or Sofia Kousi (sofia.kousi@novasbe.pt).

I have read all of the above and I declare the following (select one option):

Yes, I agree to take part in this study, I declare that I am 18 or older.

No, I do not want to take part in this study or I am ineligible.

Please enter your Prolific ID.



In the following screen you will see an ad for a product. Please take your time reading the ad. Afterwards we will ask you a few questions about your thoughts and feelings on the ad.



Gain-Frame Condition

Carefully read the ad below.

**HELP INCREASE THE AVAILABLE NATURAL RESOURCES OF
UPCOMING GENERATIONS.**

From Single-Use To Sixty-Uses.

The aluminum bottle can be refilled over 60 times.



By using refillable packaging, you will be:

- Improving plastic recycling to more than 10% per year
- Freeing up energy that can be used for other purposes
- Safeguarding our bio-diversity, particularly marine-life

Loss-Frame Condition

STOP WASTING THE AVAILABLE NATURAL RESOURCES OF UPCOMING GENERATIONS.

From Single-Use To Sixty-Uses.

The aluminum bottle can be refilled over 60 times.



By not using refillable packaging, you will be:

- Decreasing recycling rates to less than 10% per year
- Using up energy that could be used for other purposes
- Endangering our bio-diversity, particularly marine-life

How likely are you to purchase the refillable bottle presented in the previous ad?

Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
--------------------	---------------------	-------------------	-----------------------------	-----------------	-------------------	------------------



Using the scale provided below, please indicate how each statement fits you. We ask you to be open and transparent in your response.

Over the last 2 weeks, how often have you been bothered by the following problems, when thinking about climate change and other global environmental conditions (e.g., global warming, ecological degradation, resource depletion, species extinction, ozone hole, pollution of the oceans, deforestation)?

	1 - Not at all	2 - Some of the days	3 - Over half of the days	4 - Nearly every day
Difficulty enjoying social situations with family and friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling anxious that your personal behaviours will do little to help fix the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling afraid.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling anxious about your personal responsibility to help address environmental problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling anxious about the impact of your personal behaviours on the earth.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Not at all	2 - Some of the days	3 - Over half of the days	4 - Nearly every day
Difficulty working and/or studying.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unable to stop thinking about past events related to climate change.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling nervous, anxious or on edge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty sleeping.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worrying too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Not at all	2 - Some of the days	3 - Over half of the days	4 - Nearly every day

	1 - Not at all	2 - Some of the days	3 - Over half of the days	4 - Nearly every day
Unable to stop thinking about future climate change and other global environmental problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not being able to stop or control worrying.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unable to stop thinking about losses to the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Not at all	2 - Some of the days	3 - Over half of the days	4 - Nearly every day



Using the scale provided below, please indicate how each statement fits you. Once again, we ask you to be open and transparent in your response.

How do the following statements apply to you personally?

	1 - Strongly disagree	2 - Somewhat disagree	3 - Disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
I feel hopeful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even in difficult times I am able to remain hopeful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hope improves the quality of my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Strongly disagree	2 - Somewhat disagree	3 - Disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
I am hopeful with regard to my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my life hope outweighs anxiety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My hopes are usually fulfilled.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Using the scale provided below, please indicate how each statement fits you. Once again, we ask you to be open and transparent in your response.

To what extent do you agree or disagree with the statements below?

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
Sharing my products with others means caring for society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to live without damaging the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I refrain from buying the latest product if the current product is working.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to minimize my consumption even in the case of abundance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
I have a habit of minimizing the wastage of clothes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I satisfy my consumption needs without harming the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about the impact of my consumption on my society/community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Everyone should conserve water at home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
Using public services (e.g., parks, schools, transportation) is good for society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy products that are not harmful to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware that my consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



To what extent was the item in the ad sustainable?

Not at all sustainable	Moderately Unsustainable	Slightly unsustainable	Neither sustainable nor unsustainable	Slightly sustainable	Moderately sustainable	Extremely sustainable
------------------------	--------------------------	------------------------	---------------------------------------	----------------------	------------------------	-----------------------



Based on the information provided in the ad you saw at the beginning of this study, how likely are you to stop wasting plastic?

Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
--------------------	---------------------	-------------------	-----------------------------	-----------------	-------------------	------------------



To what extent do you identify yourself with the following statements?

	1 - Not at all true	2 - Usually not true	3 - Rarely true	4 - Occasionally true	5 - Often true	6 - Usually true	7 - Completely true
I am concerned about the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The condition of the environment affects the quality of my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to make sacrifices to protect the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My actions impact the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



How old are you? (in years)

Which gender do you identify with?

Female

Male

Non-binary

Prefer not to say

What do you think was the purpose of this study? (optional)



You have reached the end of the study. Thank you for taking the time today to participate in this study. If you wish to know more about the study you can read the description below. If not, please click on the 'next' arrow to complete the survey and receive your completion code.

Full Debrief (optional to read)

The aim of this research is to measure the impact of gain (vs. loss) message framing in inducing the purchase intention of mindful consumers and people suffering from eco-anxiety regarding sustainable brand options. Prior research has showed that, particularly for people suffering from high-levels of eco-anxiety, avoidant behaviour might be an escape, leading to disengagement from pro-environmental behaviour. Previous findings have also highlighted that each type of message frame proves to be efficient in different contexts. Gain-framed messages proved to have a particularly interesting role in driving purchase intention through the mediating role of hope. However, not much has been addressed with regards to the role of eco-anxiety in advertisement. We propose that the relation between message framing and purchase intention is mediated by eco-anxiety. In fact, we suggest that a gain-framed message is more likely to lead people suffering from high levels of eco-anxiety to act and increase their intentions to purchase sustainable products.

Please do not discuss the content of the study with anyone since this research is ongoing and the exchange of the study content could impact our findings.

Thank you for taking the time to take our survey.

To register your responses, please paste the following personal completion code on the

Prolific platform: **CIAXCRFE**

(The code is personalised)

Appendix B.3: Study One - Scales used (order from questionnaire)

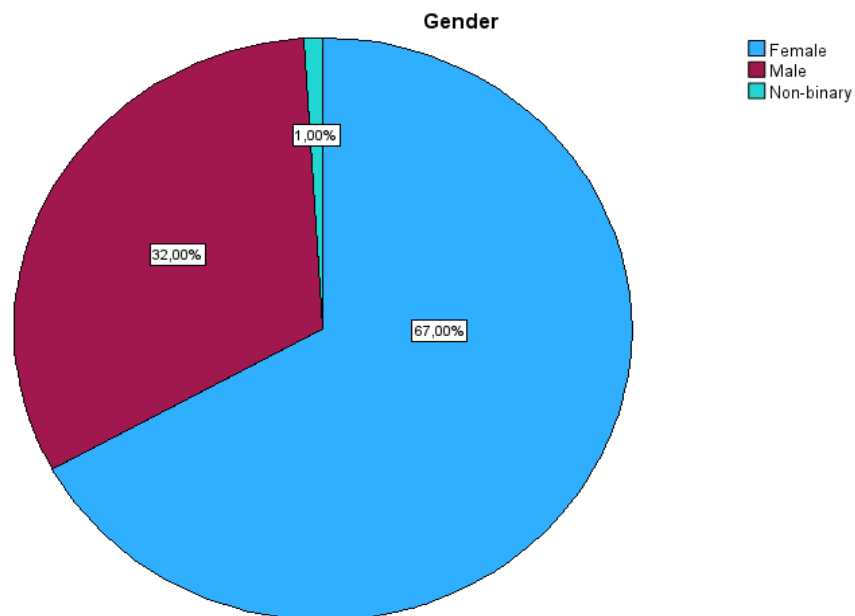
- **Measurement of Purchase Intention:** Based on the Spears and Singh (2004) scale for purchase intention, we developed a single question ranging from 1 = “Extremely unlikely” to 7 = ” Extremely likely”.
- **Measurement of Eco-Anxiety (HEAS-13):** The 13-item Eco-Anxiety Scale developed by Hogg, Stanley and O’Brien (2023) contributed to solidify eco-anxiety has a construct distinguished from generalized anxiety disorder (GAD). As explained in the literature review, the results establish eco-anxiety as a multidimensional scale resulting in four main categories, including 1) feelings of anxiety; 2) ruminative thoughts; 3) behavioural symptoms; 4) anxiety about one’s personal impact. In study 1, we used the scale as originally recommended by the authors (A.2), accounting for eco-anxiety as a trait.
- **Measurement of Hope:** As hope was found to have a powerful role in increasing purchase intention through gain-frames and reduce food waste, we focused on a measure of perceived state-based hope provided by Khalil, Northney, Septianto and Lang (2022). We extended the original 5-point Likert scale to 7-point, ranging from 1 = ”Strongly disagree” to 7 = ”Strongly agree”, in order to match the remaining measures in the study.
- **Measurement of Mindful Consumption:** The 11-item Mindful Consumption Scale developed by Gupta and Sheth (2023) was built surrounding three main blocks of MC: 1) Awareness; 2) Caring; 3) Temperance. In Study 1, we measured it as recommended by the authors and chose a 7-point Likert scale, ranging from 1 = ”Strongly disagree” to 7 = ”Strongly agree”, in order to match the remaining measures in the study. In the final report, we decided not to use this scale, as it proved to be irrelevant for the model in test. It may be interesting for future research.
- **Measurement of Sustainable Consumption and Values:** Although it was not our main focus, in order to account for other potential information, we added a scale to measure

sustainable consumption and values by Balderjahn et al. (2023). It measures sustainable consumption in three main categories: 1) environmental, social and economic on a 7-Likert scale ranging from 1 = “Strongly disagree” to 7 = ”Strongly agree”. After performing preliminary tests on this measure, we decided not to include it in the final results analysis, as it was not found to bring additional explanatory power to our study.

- **Measurement of perceived product sustainability:** To understand if the product was perceived as sustainable by the sample population, we asked them to rank perceived ad sustainability from 1 = “Not at all sustainable” to 7 = “Extremely sustainable”.
- **Measurement on Intention to Act Sustainably:** To analyse whether the participants were more likely to act in terms of contributing to stop wasting plastic, we developed a single question ranging from 1 = “Extremely unlikely” to 7 = “Extremely likely”.
- **Measurement of Environmental Values:** Although it was not our main focus, in order to account for other potential information, we added a scale to measure environmental concern and values by Chuah et al. (2020). From the measures they include in their study, we selected the four items related to environmental concern and asked participants to what extent they identified with them on a 7-Likert scale ranging from 1 = “Not at all true” to 7 = ”Completely”. After performing preliminary tests on this measure, we decided not to include it in the final results analysis, as it was not found to bring additional explanatory power to our study.
- **Demographics:** In the end, the participants were asked to enter their age and gender.

Appendix B.4: Study One - Demographics and Descriptive Analysis

Appendix B.4.1: Demographics overview I – Gender Descriptive Statistics



Appendix B.4.2: Gender in the independent sample test

T-Test

Group Statistics

MF	N	Mean	Std. Deviation	Std. Error Mean
Gender 0	50	1,30	0,463	0,065
1	50	1,38	0,530	0,075

Independent Samples Test

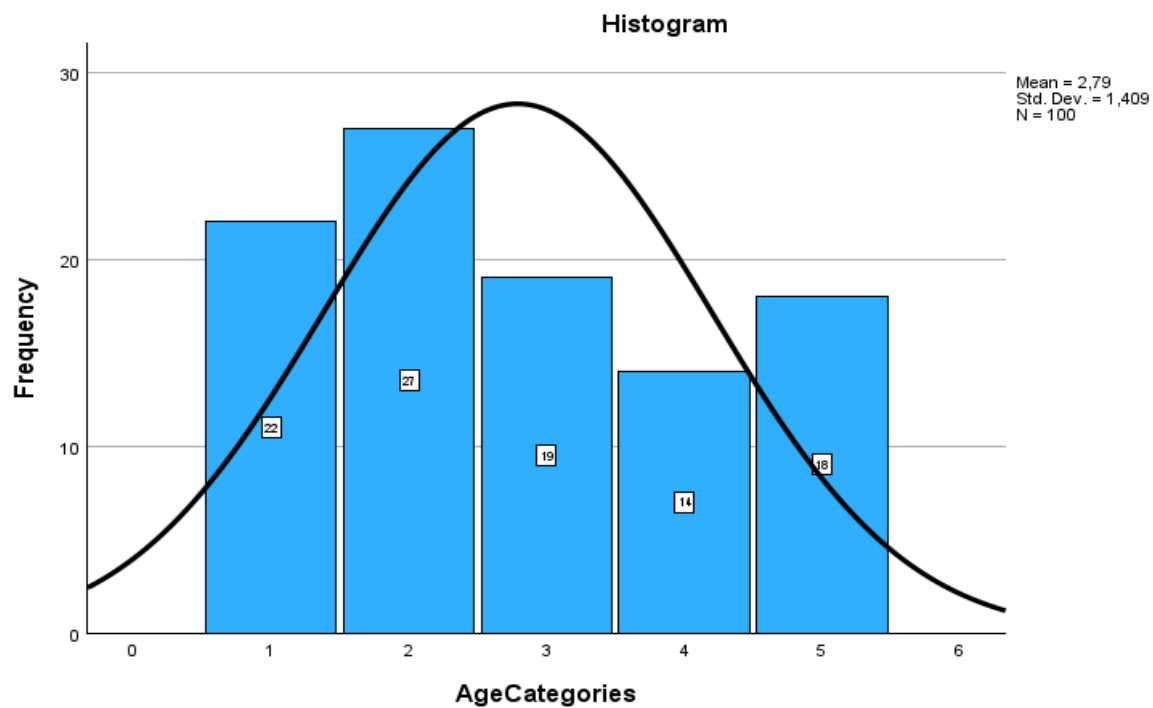
		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Significance One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Gender	Equal variance assumed	2,975	0,088	-0,804	98	0,212	0,424	-0,080	0,100	-0,278	0,118
	Equal variance not assumed			-0,804	96,244	0,212	0,424	-0,080	0,100	-0,278	0,118

Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	Interval Lower	Upper
Gender	Cohen's d	0,498	-0,161	-0,553	0,232
	Hedges' g	0,502	-0,159	-0,549	0,231
	Glass's delta	0,530	-0,151	-0,543	0,243

a. The denominator used in estimating the effect sizes. Cohen's d uses the pooled standard deviation. Hedges' correction uses the pooled standard deviation, plus a correction factor. Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Appendix B.4.3: Demographics overview II – Age Descriptive Statistics



Statistics

Age		
N	Valid	100
	Missing	0
Mean		42,85
Median		41,00
Mode		28 ^a

a. Multiple modes exist.
The smallest value is shown

Appendix B.4.4: Age in the independent sample test

T-Test

Group Statistics					
MF		N	Mean	Std. Deviation	Std. Error Mean
Age	0	50	41,64	14,198	2,008
	1	50	44,06	14,600	2,065

Independent Samples Test

Levene's Test for Equality of Variances				t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Sided p	Sided p			Lower	Upper
Age	Equal variances assumed	0,221	0,640	-0,840	98	0,201	0,403	-2,420	2,880	-8,135	3,295
	Equal variances not assumed			-0,840	97,924	0,201	0,403	-2,420	2,880	-8,135	3,295

Independent Samples Effect Sizes

Age		Standardized η^2	Point Estimate	Interval	
				Lower	Upper
Age	Cohen's d	14,400	-0,168	-0,560	0,225
	Hedges' g	14,512	-0,167	-0,556	0,223
	Glass's delta	14,600	-0,166	-0,558	0,228

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Appendix B.4.5: Mean Eco-Anxiety

Statistics

EA		
N	Valid	100
	Missing	0
Mean		1.5115
Std. Deviation		0.55828

Appendix B.4.6: Mean and Mode Perceived Sustainable Packaging:

Statistics

To what extent was the item in the ad sustainable?		
N	Valid	100
	Missing	0
Mean		5.68
Mode		6
Std. Deviation		1.127

Appendix B.5: Study One – Reliability of the scales

Appendix B.5.1: Reliability of the scales – Eco-Anxiety scale

Scale: EA

Case Processing Summary

		N	%
Cases	Valid	100	100,0
	Excluded ^a	0	,0
	Total	100	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,931	,933	13

Appendix B.5.2: Reliability of the scales – Hope

Scale: Hope

Case Processing Summary

		N	%
Cases	Valid	100	100,0
	Excluded ^a	0	,0
	Total	100	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,930	,932	6

Appendix B.5.3: Reliability of the scales – Mindful Consumption

Scale: MC

Case Processing Summary

		N	%
Cases	Valid	100	100,0
	Excluded ^a	0	,0
	Total	100	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,896	,897	11

Appendix B.5.4: Reliability of the scales – Sustainable Consumption

Scale: SC

Case Processing Summary

		N	%
Cases	Valid	100	100,0
	Excluded ^a	0	,0
	Total	100	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,914	,920	10

Appendix B.5.5: Reliability of the scales – Environmental Values

Scale: EV

Case Processing Summary

		N	%
Cases	Valid	100	100,0
	Excluded ^a	0	,0
	Total	100	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,841	,845	4

Scale: EV w/o item 4

Case Processing Summary

		N	%
Cases	Valid	100	100,0
	Excluded ^a	0	,0
	Total	100	100,0

a. Listwise deletion based on all variables in the procedure.

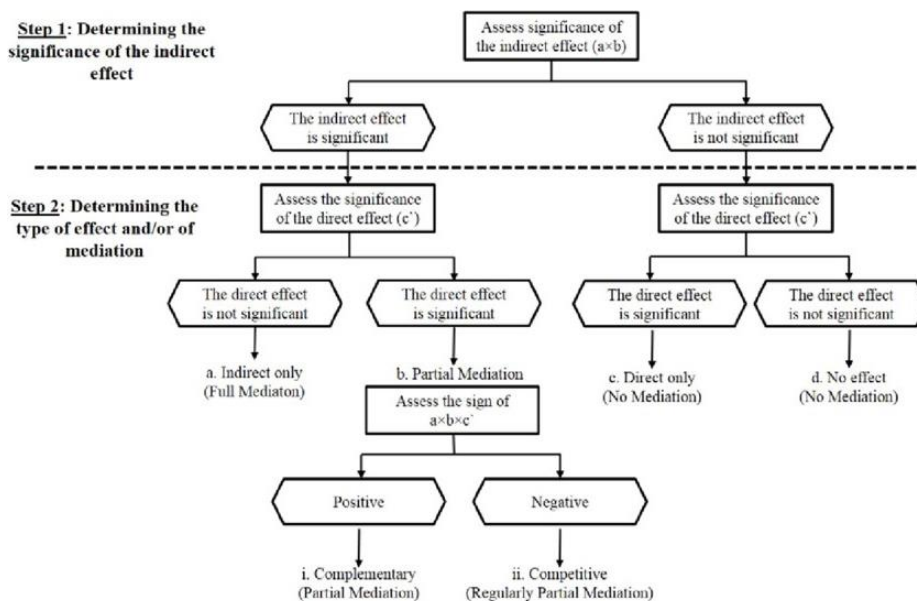
Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,867	,873	3

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Environment 1	14,85	12,573	,754	,581	,770
Environment 2	15,72	10,992	,690	,552	,798
Environment 3	15,37	11,751	,786	,634	,751
Environment 4	14,87	13,973	,507	,289	,867

Appendix B.6: Data Analysis Approach and Interpretation (Zhao et al. 2010; Nitzl et al. 2016)

Hayes model 4 was used for simple mediation (Hayes, 2012), as it analyses the indirect, direct and total effects of the variables in our study. For moderators, process model 15 was used, since it tests both b-path and c-path for moderation. The effects were measured taking into consideration the coefficient (*b*), the p-value (*p*), and the confidence intervals (*CI*) or the Bootstrap CI (*BootCI*). A p-value ≤ 0.05 , as well as confidence intervals not including the value zero, indicate that the analysed relationship is significant.



Appendix B.7: Study One - Results

Appendix B.7.1: H1 – X: Message Frame; Y: Purchase Intention; M: Eco-Anxiety

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 4

Y: PI (Purchase Intention)

X: MF (Message Framing)

M: EA (Eco-Anxiety)

Sample

Size: 100

OUTCOME VARIABLE:

EA

Model Summary (path a: from MF to EA)

R	R-sq	MSE	F	df1	df2	p
,0900	,0081	,3123	,8005	1,0000	98,0000	,3731

Model

	coeff	se	t	p	LLCI	ULCI
constant	1,5615	,0790	19,7580	,0000	1,4047	1,7184
MF	-,1000	,1118	-,8947	,3731	-,3218	,1218

Standardized coefficients

	coeff
MF	-,1791

OUTCOME VARIABLE:

PI

Model Summary (path b: from EA to PI)

R	R-sq	MSE	F	df1	df2	p
---	------	-----	---	-----	-----	---

,1955 ,0382 3,1939 1,9265 2,0000 97,0000 ,1512

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,3524	,5642	5,9417	,0000	2,2326	4,4722
MF	,5079	,3589	1,4152	,1602	-,2044	1,2202
EA	,4788	,3230	1,4821	,1415	-,1624	1,1199

Standardized coefficients

	coeff
MF	,2816
EA	,1482

***** TOTAL EFFECT MODEL

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
,1282	,0164	3,2329	1,6363	1,0000	98,0000	,2039

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,1000	,2543	16,1241	,0000	3,5954	4,6046

MF ,4600 ,3596 1,2792 ,2039 -,2536 1,1736

Standardized coefficients

coeff

MF ,2550

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y (path c)

Effect	se	t	p	LLCI	ULCI	c_ps
,4600	,3596	1,2792	,2039	-,2536	1,1736	,2550

Direct effect of X on Y (path c')

Effect	se	t	p	LLCI	ULCI	c'_ps
,5079	,3589	1,4152	,1602	-,2044	1,2202	,2816

Indirect effect(s) of X on Y (path a* path b):

Effect	BootSE	BootLLCI	BootULCI
EA -,0479	,0711	-,2245	,0610

Partially standardized indirect effect(s) of X on Y:

Effect	BootSE	BootLLCI	BootULCI
EA -,0265	,0393	-,1234	,0338

***** ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:

95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: Standardized coefficients for dichotomous or multicategorical X are in partially standardized form.

----- END MATRIX -----

Appendix B.7.2: H1.1 – X: Message Frame; Y: Purchase Intention; M: Eco-Anxiety; W: Hope

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 15

Y: PI (Purchase Intention)

X: MF (Message Framing)

M: EA (Eco-Anxiety)

W: Hope

Sample

Size: 100

OUTCOME VARIABLE:

EA

Model Summary (path a: from MF to EA)

R	R-sq	MSE	F	df1	df2	p
,0900	,0081	,3123	,8005	1,0000	98,0000	,3731

Model

	coeff	se	t	p	LLCI	ULCI
constant	1,5615	,0790	19,7580	,0000	1,4047	1,7184
MF	-1,000	,1118	-8,947	,3731	-1,3218	-,1218

OUTCOME VARIABLE:

PI

Model Summary (path b: from EA to PI; Int_1: path b moderation; Int_2: path c' moderation)

R	R-sq	MSE	F	df1	df2	p
,3958	,1567	2,8898	3,4929	5,0000	94,0000	,0061

Model

	coeff	se	t	p	LLCI	ULCI
constant	,5298	2,3803	,2226	,8243	-4,1962	5,2559
MF	-1,1461	1,4529	-,7889	,4322	-4,0308	1,7386
EA	1,3700	1,2033	1,1386	,2578	-1,0191	3,7591
Hope	,4923	,5080	,9691	,3350	-,5164	1,5010
Int_1	,3540	,3017	1,1733	,2436	-,2451	,9531
Int_2	-,1233	,2726	-,4522	,6522	-,6645	,4180

Product terms key:

Int_1 : MF x Hope

Int_2 : EA x Hope

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0124	1,3767	1,0000	94,0000	,2436
M*W	,0018	,2045	1,0000	94,0000	,6522

***** DIRECT AND INDIRECT EFFECTS OF X ON Y

Conditional direct effects of X on Y

Hope	Effect	se	t	p	LLCI	ULCI
3,5000	,0930	,4943	,1881	,8512	-,8884	1,0743
4,8333	,5650	,3463	1,6315	,1061	-,1226	1,2526
5,8333	,9190	,4890	1,8795	,0633	-,0518	1,8898

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

MF -> EA -> PI

Hope	Effect	BootSE	BootLLCI	BootULCI
3,5000	-,0939	,1203	-,3699	,1056
4,8333	-,0774	,0960	-,2906	,0969
5,8333	-,0651	,0984	-,2884	,1186

Index of moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
Hope	,0123	,0434	-,0591	,1204

***** ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:

95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

NOTE: Standardized coefficients are not available for models with moderators.

----- END MATRIX -----

Appendix B.7.3: T-Test on X: Message Frame and Y: Purchase Intention

T-Test

Group Statistics											
MF		N	Mean	Std. Deviation	Std. Error Mean						
Purchase Intention	0	50	4,10	1,698	0,268						
	1	50	4,56	1,692	0,239						

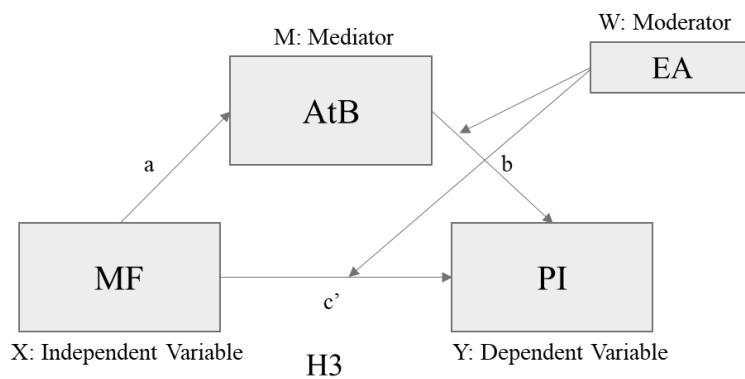
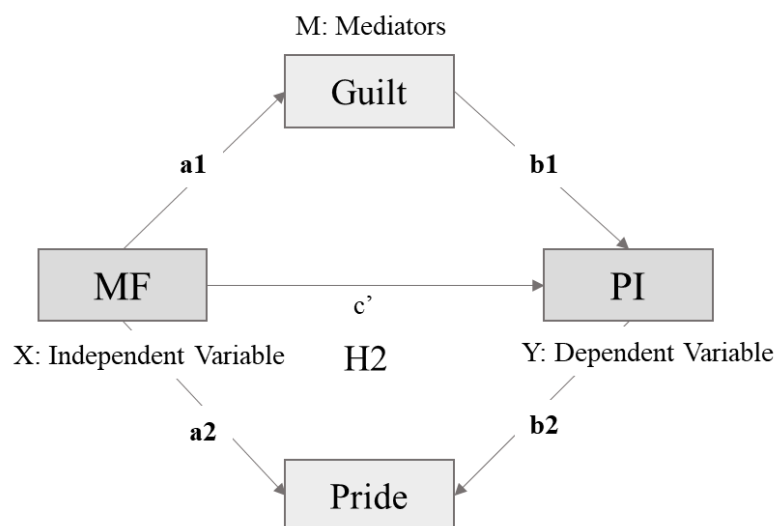
Independent Samples Test											
Levene's Test for Equality of Variances				t-test for Equality of Means							
Purchase Intention		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Purchase Intention	Equal variances assumed	1,408	0,238	-1,279	98	0,102	0,204	-0,460	0,360	-1,174	0,254
	Equal variances not assumed			-1,279	96,738	0,102	0,204	-0,460	0,360	-1,174	0,254

Independent Samples Effect Sizes					
Purchase Intention	Cohen's d	Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
Purchase Intention	Cohen's d	1,798	-0,256	-0,649	0,138
	Hedges' correction	1,812	-0,254	-0,644	0,137
	Glass's delta	1,692	-0,272	-0,666	0,125

a. The denominator used in estimating the effect sizes. Cohen's d uses the pooled standard deviation. Hedges' correction uses the pooled standard deviation, plus a correction factor. Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Appendix C: Study Two – Design, Methodology and Results

Appendix C.1: Study Two – Concept



Appendix C.2: Study Two – Questionnaire

Information Sheet and Informed Consent for Participants in Research Projects

Study Description: Thank you for your interest to participate in this study. The study examines perceptions towards a product advertisement. You will see an ad, and will be asked a series of questions about it. There are no right or wrong answers, just your own honest opinion. This study will take approximately 7-8 minutes to complete. Please find a quiet space where you can complete it without interruption.

Risks: There are no known risks involved with filling in this questionnaire.

Benefits: You will receive financial compensation as described on the Prolific platform.

Participants' Rights: All the information you provide will remain anonymous and confidential. We do not request your name as part of the survey. We replace any identifying information with a number for the purposes of analysis and we will protect your anonymity. You may choose to not participate in this study. You are free to withdraw from this study at any time without penalty. However, once you submit your answers, they cannot be withdrawn because the data is stored anonymously and we will not be able to match your answers to you.

Participant's Responsibilities: I voluntarily agree to participate in this study. I have the following responsibilities: 1) I will notify the researcher if I experience any discomfort or would like to discontinue participation from this study, and 2) I will let the researcher know if I have any comments, questions or concerns regarding participation in this study.

Confidentiality: All information you provide is confidential and your responses will not be linked to you in any way. Your responses will be aggregated with those of all other respondents so that it will not be possible to identify your participation in this research. All data will be stored in a secure computer file accessible only to the researchers for the duration of the research period. Information gathered in this study may be presented at academic conferences and published in academic journals.

Communication about the content of this study: Please do not discuss the content of the study with anyone since this research is ongoing and the exchange of the study content could impact our findings.

If you have questions about this research session, you may contact Mariana Carvalho (55631@novasbe.pt) or Sofia Kousi (sofia.kousi@novasbe.pt).

I have read all of the above and I declare the following (select one option):

Yes, I agree to take part in this study, I declare that I am 18 or older.

No, I do not want to take part in this study or I am ineligible.

Please enter your Prolific ID.



In the following screen you will see an ad for a product. Please take your time reading the ad. Afterwards we will ask you a few questions about your thoughts and feelings on the ad.



Gain-Frame Condition

Carefully read the ad below.



SAVE 60% PLASTIC PER POUCH.

Your favourite shampoo now comes in a refill pouch.

By using the refill pouch to fill up your bottle, you save on plastic from the packaging.

Loss-Frame Condition

Carefully read the ad below.



STOP WASTING 60% PLASTIC PER POUCH.

Your favourite shampoo now comes in a refill pouch.

By not using the refill pouch to fill up your bottle, you waste plastic from the packaging.

What is your impression of the HairEssence refillable pouch presented in the previous ad?

1 - Very bad	2 - Bad	3 - Somewhat bad	4 - Neutral	5 - Somewhat good	6 - Good	7 - Very good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



How likely are you to purchase the HairEssence refillable pouch presented in the previous ad?

1 - Extremely unlikely	2 - Moderately unlikely	3 - Slightly unlikely	4 - Neither likely nor unlikely	5 - Slightly likely	6 - Moderately likely	7 - Extremely likely
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



What do you think is the price of the HairEssence refillable pouch? (in pounds £)



How intensively are you experiencing the following problems right now, when thinking about climate change and other global environmental conditions? We ask you to be open and transparent in your response.

	1 - Not Intense at All	2 - Slightly Intense	3 - Mildly Intense	4 - Moderately Intense	5 - Intense	6 - Very Intense	7 - Extremely Intense
Feeling anxious that your personal behaviours will do little to help fix the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unable to stop thinking about future climate change and other global environmental problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling afraid.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling anxious about your personal responsibility to help address environmental problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unable to stop thinking about past events related to climate change.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Not Intense at All	2 - Slightly Intense	3 - Mildly Intense	4 - Moderately Intense	5 - Intense	6 - Very Intense	7 - Extremely Intense
Not being able to stop or control worrying.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unable to stop thinking about losses to the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling anxious about the impact of your personal behaviours on the earth.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling nervous, anxious or on edge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worrying too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Thinking about the refillable pouch of the HairEssence shampoo ad you saw previously, to what extent do you agree or disagree with the following statements?

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
I would feel good about purchasing the product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel bad about not purchasing the product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel remorse not to buy the product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
I would feel guilty about not purchasing the product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be proud to purchase the product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel pleased to purchase the product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



To what extent do you agree or disagree that the following statements describe you?

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
Even in difficult times I am able to remain hopeful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After seeing the ad, I feel hopeful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my life hope outweighs anxiety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



To what extent do you agree or disagree with the statements below?

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
I satisfy my consumption needs without harming the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy products that are not harmful to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I refrain from buying the latest product if the current product is working.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to minimize my consumption even in the case of abundance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
I am aware that my consumption impacts society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about the impact of my consumption on my society/community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to live without damaging the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Please indicate to what extent you agree or disagree with the following statements. Once again, we ask you to be open and transparent in your responses.

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
Through my personal choices, I can contribute to solving environmental issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ecological degradation is partly a consequence of my own consumption choices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate working conditions (overuse of renewable and non-renewable natural resources) are partly a consequence of my own consumption choices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
My personal actions are too insignificant to affect environmental issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental issues are affected by my individual choices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Please indicate to what extent you agree or disagree with the following statements.

- 1 -
Strongly disagree
- 2 -
Disagree
- 3 -
Somewhat disagree
- 4 -
Neither agree nor disagree
- 5 -
Somewhat agree
- 6 -
Agree
- 7 -
Strongly Agree

Next time I make a purchase, I am likely to strive to buy products and services with sustainable packaging.

Next time I make a purchase, I am likely to avoid buying products and services from brands that don't use sustainable packaging.



Based on the information provided in the ad you saw at the beginning of this study, how likely are you to stop wasting plastic?

1 - Extremely unlikely	2 - Moderately unlikely	3 - Slightly unlikely	4 - Neither likely nor unlikely	5 - Slightly likely	6 - Moderately likely	7 - Extremely likely
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



To what extent was the HairEssence refillable pouch package in the ad sustainable?

1 - Not at all sustainable	2 - Moderately Unsustainable	3 - Slightly Unsustainable	4 - Neither sustainable nor unsustainable	5 - Slightly sustainable	6 - Moderately sustainable	7 - Extremely sustainable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



How old are you? (in years)

Which gender do you identify with?

- Male
- Female
- Non-binary / third gender
- Prefer not to say



Thank you for taking the time to take our survey.
To register your responses, please paste the following personal completion code on the Prolific platform: **C1AXCRFE**
(The code is personalised)

Appendix C.3: Study Two - Scales used (order from questionnaire)

- **Measurement of Attitudes towards Brand and Purchase Intention:** Given that the previous scale used by the Spears and Singh (2004) to measure for purchase intention, also had a measure of Attitude towards Brand, we included it to account for other potential information. For the AtB question, we asked participant's impression of the product shown in the stimulus ranging from 1 = "Very bad" to 7 = "Very good". We kept the same PI question as in the previous study ranging from 1 = "Extremely unlikely" to 7 = "Extremely likely" to purchase. After performing preliminary tests with the data, we discarded the first question related to PI, as in the end of the study we asked a more complete measure of future purchase intent, which showed better reliability.

- Measurement of Price:** In order to better understand purchase intention, we asked a question on the price in pounds participants thought the HairEssence refillable pouch would cost. Preliminary results from a regression analysis showed that the price had no significant impact, although message framing was approaching significance in the t-test below. Therefore, as there was no further explanatory power from this question, we did not include it in further results.

T-Test

Group Statistics											
MF		N	Mean	Std. Deviation	Std. Error Mean						
Price	0	39	3.92	1.511	0.242						
	1	34	4.88	3.691	0.633						

Independent Samples Test											
Levene's Test for Equality of Variances					t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	Lower	Upper
						One-Sided p	Two-Sided p				
Price	Equal variances	2.702	0.105	-1.488	71	0.071	0.141	-0.959	0.645	-2.245	0.327
	Equal variances			-1.416	42.560	0.082	0.164	-0.959	0.678	-2.326	0.408

Independent Samples Effect Sizes					
Price		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
Price	Cohen's d	2.748	-0.349	-0.811	0.116
	Hedges' g	2.778	-0.345	-0.803	0.114
	Glass's delta	3.691	-0.260	-0.722	0.206

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

- Measurement of Eco-Anxiety (HEAS-13):** In study 2, we reduced the items in the Eco-Anxiety Scale to 10, in order to test for EA as a state induced by the stimulus. Therefore, we removed the items referring to “Difficulty sleeping”, “Difficulty working and/or studying” and “Difficulty enjoying social situations with family and friends”. We also adapted the 4-point Likert scale to a 7-point Likert scale 1= ”Not intense at all” to 2= ”Extremely intense”, in order to standardize with the remaining measures.
- Measurement of Guilt and Pride:** In study 2, we added a measure of pride and guilt by Lima, Costa and Félix (2019) with three-items each. We chose a 7-point Likert scale,

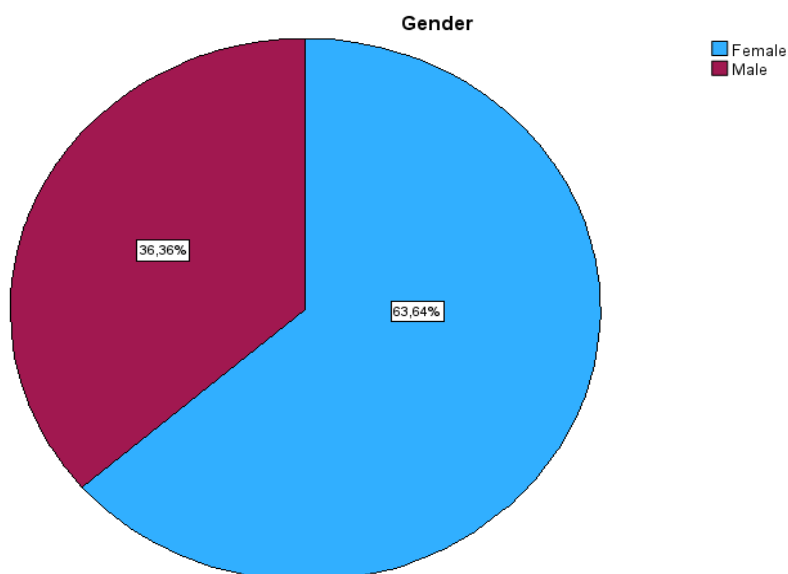
ranging from 1 = "Strongly disagree" to 7 = "Strongly agree", in order to match the remaining measures in the study.

- **Measurement of Hope:** The previous measure of hope provided by Khalil, Northney, Septianto and Lang (2022) was reduced to three items to account to hope induced by the stimulus and related to anxiety. For the final analysis, we removed item 1 as it improved the reliability of the scale. We kept the 7-point Likert scale, ranging from 1 = "Strongly disagree" to 7 = "Strongly agree". We used the scale to confirm the results of H1 and H1.1.
- **Measurement of Mindful Consumption:** The 11-item Mindful Consumption Scale developed by Gupta and Sheth (2023) was reduced to 7-items, dismissing previous items related to the production process of sustainable products, which was not related to the intent of this study. In the end, preliminary analysis showed this variable is not relevant in the relation between message frame and purchase intention. Although it might have interesting effects for future research in pro-environmental behaviour and intention to act sustainably.
- **Measurement of Sustainable Consumption and Values:** The literature for guilt and pride provided a new scale for sustainable consumption and values by Lima, Costa and Félix (2019). We added it to account for other potential information. It measures sustainable consumption on a 7-Likert scale ranging from 1= "Strongly disagree" to 7 = "Strongly agree". After performing preliminary tests, we decided not to include it in the final results analysis, as it was not found to bring additional explanatory power to our study.
- **Measurement of Future Purchase Intention:** In order to solidify our results on purchase intention, we used the scale on purchase intention from Lima, Costa and Felix (2019), which proved to have high reliability. We used it in the final results.

- **Measurement on Intention to Act Sustainably:** To analyse whether the participants were more likely to act in terms of contributing to stop wasting plastic, we developed a single question ranging from 1 = “Extremely unlikely” to 7 = “Extremely likely”.
- **Measurement of perceived product sustainability:** To understand if the product was perceived as sustainable by the sample population, we asked them to rank perceived ad sustainability from 1 = “Not at all sustainable” to 7 = “Extremely sustainable”.
- **Demographics measures:** In the end, the participants were asked to enter their age and gender.

Appendix C.4: Study Two – Demographics and Descriptive Analysis

Appendix C.4.1: Demographics overview I – Gender Descriptive Statistics



Appendix C.4.2: Gender in the independent sample test

T-Test

Group Statistics					
MF		N	Mean	Deviation	Mean
Gender	0	55	1,33	0,474	0,064
	1	55	1,40	0,494	0,067

Independent Samples Test

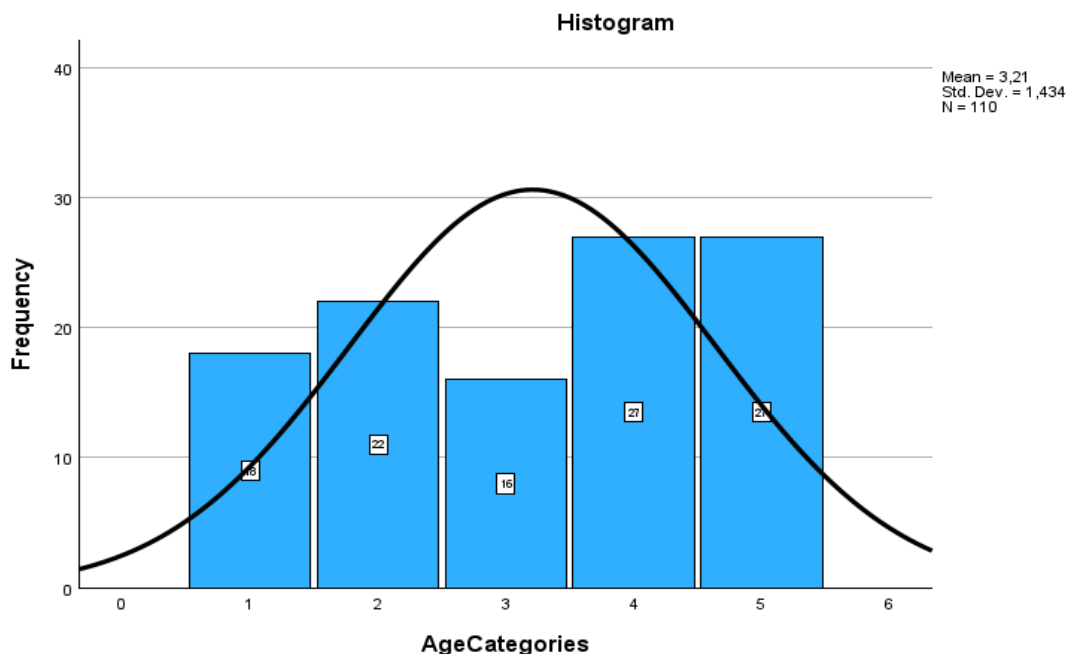
Levene's Test for Equality of Variances			t-test for Equality of Means								
Gender	Equal variances	F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Sided p	Sided p			Lower	Upper
Gender	Equal	2,369	0,127	-0,788	108	0,216	0,433	-0,073	0,092	-0,256	0,110
	Equal variances not			-0,788	107,800	0,216	0,433	-0,073	0,092	-0,256	0,110

Independent Samples Effect Sizes

Gender		Standardiz	Point	Interval	
				er ²	Estimate
Gender	Cohen's d	0,484	-0,150	-0,524	0,224
	Hedges'	0,487	-0,149	-0,521	0,223
	Glass's	0,494	-0,147	-0,521	0,228

a. The denominator used in estimating the effect sizes.
 Cohen's d uses the pooled standard deviation.
 Hedges' correction uses the pooled standard deviation, plus a correction factor.
 Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Appendix C.4.3: Demographics overview II – Age Descriptive Statistics



Statistics

Age		
N	Valid	110
	Missing	0
Mean		47,88
Median		50,00
Mode		34 ^a

a. Multiple modes exist.
The smallest value is shown

Appendix C.4.4: Age in the independent sample test

T-Test

Group Statistics					
MF		N	Mean	Deviation	Mean
Age	0	55	48,24	14,340	1,934
	1	55	47,53	15,901	2,144

Independent Samples Test											
Levene's Test for Equality of Variances				t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	Interval of the Difference	
						Sided p	Sided p			Lower	Upper
Age	Equal variances	1,672	0,199	0,246	108	0,403	0,806	0,709	2,887	-5,014	6,432
	not equal variances			0,246	106,866	0,403	0,806	0,709	2,887	-5,015	6,433

Independent Samples Effect Sizes					
		Standardized η^2	Point Estimate	Interval	
				Lower	Upper
Age	Cohen's d	15,141	0,047	-0,327	0,421
	Hedges' λ	15,247	0,047	-0,325	0,418
	Glass's δ	15,901	0,045	-0,329	0,418

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Appendix C.4.5: Mean Eco-Anxiety

Statistics

EA		
N	Valid	110
	Missing	0
Mean		2.2018
Std. Deviation		1.17754

Appendix C.4.6: Mean and Mode Perceived Sustainable Packaging:

Statistics

Package		
N	Valid	110
	Missing	0
Mean		5.30
Mode		6
Std. Deviation		1.185

Appendix C.5: Study Two – Reliability of the scales

Appendix C.5.1: Reliability of the scales – Eco-Anxiety scale

Scale: EA

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,943	,944	10

Appendix C.5.2: Reliability of the scales – Guilt

Scale: Guilt

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,905	,906	3

Appendix C.5.3: Reliability of the scales – Pride

Scale: Pride

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,912	,916	3

Appendix C.5.4: Reliability of the scales – Hope (with and without item 1)

Scale: Hope

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,785	,788	3

Scale: Hope w/o item 1

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,819	,825	2



Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Hope1	9,58	7,273	,514	,295	,819
Hope2	9,17	5,337	,641	,494	,701
Hope3	8,90	5,834	,746	,566	,581



Appendix C.5.5: Reliability of the scales – Mindful Consumption

Scale: MC

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,808	,813	7

Appendix C.5.6: Reliability of the scales – Sustainable Consumption (not validated)

There was a technical issue with the SC scale in the survey, creating an extra row of circles with no associated statement. Therefore, this scale is not validated for further use.

	1 - Strongly disagree	2 - Disagree	3 - Somewhat disagree	4 - Neither agree nor disagree	5 - Somewhat agree	6 - Agree	7 - Strongly Agree
My personal actions are too insignificant to affect environmental issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental issues are affected by my individual choices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix C.5.7: Reliability of the scales – Future Purchase Intention (used as PI)

Scale: FPI

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,906	,909	2

Appendix C.5.8: Reliability of the scales – Total Purchase Intention (not used as PI)

Scale: TPI

Case Processing Summary

		N	%
Cases	Valid	110	100,0
	Excluded ^a	0	,0
	Total	110	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,799	,821	3

Appendix C.6: Study Two - Results

Appendix C.6.1: H1 – X: Message Framing; Y: Purchase Intention; M: Eco-Anxiety (new sample)

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 4

Y: PI (Purchase Intention)

X: MF (Message Frame)

M: EA (Eco-Anxiety)

Sample

Size: 110

OUTCOME VARIABLE:

EA

Model Summary (path a: from MF to EA)

R	R-sq	MSE	F	df1	df2	p
.0310	.0010	1.3981	.1040	1.0000	108.0000	.7477

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.2382	.1594	14.0381	.0000	1.9222	2.5542
MF	-.0727	.2255	-.3225	.7477	-.5197	.3742

Standardized coefficients

	coeff
MF	-.0618

OUTCOME VARIABLE:

PI

Model Summary (path b: from EA to PI)

R	R-sq	MSE	F	df1	df2	p
.3529	.1245	1.6075	7.6085	2.0000	107.0000	.0008

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.6550	.2873	12.7206	.0000	3.0854	4.2246
MF	.3278	.2419	1.3550	.1783	-.1518	.8073
EA	.3816	.1032	3.6983	.0003	.1770	.5861

Standardized coefficients

	coeff
MF	.2441
EA	.3347

***** TOTAL EFFECT MODEL

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.1122	.0126	1.7962	1.3779	1.0000	108.0000	.2430

Model

	coeff	se	t	p	LLCI	ULCI
--	-------	----	---	---	------	------

constant	4.5091	.1807	24.9512	.0000	4.1509	4.8673
MF	.3000	.2556	1.1738	.2430	-.2066	.8066

Standardized coefficients

coeff

MF .2235

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y (path c)

Effect	se	t	p	LLCI	ULCI	c_ps
.3000	.2556	1.1738	.2430	-.2066	.8066	.2235

Direct effect of X on Y (path c')

Effect	se	t	p	LLCI	ULCI	c'_ps
.3278	.2419	1.3550	.1783	-.1518	.8073	.2441

Indirect effect(s) of X on Y (path a * b):

Effect	BootSE	BootLLCI	BootULCI
EA	-.0278	.0865	-.1888 .1574

Partially standardized indirect effect(s) of X on Y:

Effect	BootSE	BootLLCI	BootULCI
--------	--------	----------	----------

EA -.0207 .0643 -.1407 .1151

***** ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: Standardized coefficients for dichotomous or multicategorical X are in
partially standardized form.

----- END MATRIX -----

Appendix C.6.2: H1.1 – X: Message Framing; Y: Purchase Intention; M: Eco-Anxiety;

W: Hope (new sample)

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 15

Y: PI (Purchase Intention)

X: MF (Message Framing)

M: EA (Eco-Anxiety)

W: Hope

Sample

Size: 110

OUTCOME VARIABLE:

EA

Model Summary (path a: MF to EA)

R	R-sq	MSE	F	df1	df2	p
,0310	,0010	1,3981	,1040	1,0000	108,0000	,7477

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,2382	,1594	14,0381	,0000	1,9222	2,5542
MF	-,0727	,2255	-,3225	,7477	-,5197	,3742

OUTCOME VARIABLE:

PI

Model Summary (path b: from EA to PI; Int_1: path b moderation; Int_2: path c' moderation)

R	R-sq	MSE	F	df1	df2	p
,4654	,2166	1,4799	5,7511	5,0000	104,0000	,0001

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,0010	1,0867	1,8413	,0684	-,1540	4,1559
MF	-1,0264	,8839	-1,1612	,2482	-2,7793	,7265
EA	,7387	,3336	2,2143	,0290	,0772	1,4002
Hope	,3056	,2145	1,4245	,1573	-,1198	,7310
Int_1	,2808	,1781	1,5766	,1179	-,0724	,6339
Int_2	-,0584	,0678	-,8617	,3909	-,1928	,0760

Product terms key:

Int_1: MF x Hope

Int_2: EA x Hope

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,0187	2,4857	1,0000	104,0000	,1179
M*W	,0056	,7424	1,0000	104,0000	,3909

***** DIRECT AND INDIRECT EFFECTS OF X ON Y

Conditional direct effects of X on Y

Hope	Effect	se	t	p	LLCI	ULCI
3,5000	-,0437	,3265	-,1338	,8938	-,6912	,6038
5,0000	,3775	,2352	1,6051	,1115	-,0889	,8438
6,0000	,6582	,3168	2,0776	,0402	,0300	1,2865

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

MF -> EA -> PI

Hope	Effect	BootSE	BootLLCI	BootULCI
3,5000	-,0389	,1279	-,2833	,2301
5,0000	-,0325	,1045	-,2276	,1900
6,0000	-,0282	,0917	-,2023	,1614

Index of moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
Hope	,0042	,0212	-,0387	,0511

***** ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:

95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

NOTE: Standardized coefficients are not available for models with moderators.

----- END MATRIX -----

Appendix C.6.3: T-Test of X: Message Frame on Y: Purchase Intention

T-Test

Group Statistics										
		N	Mean	Std. Deviation	Std. Error Mean					
MF	0	55	4,5091	1,24904	0,16842					
	1	55	4,8091	1,42560	0,19223					

Independent Samples Test											
Levene's Test for Equality of Variances				t-test for Equality of Means					95% Confidence Interval of the Difference		
		F	Sig.	t	df	Significance One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
PI	Equal variances	1,254	0,265	-1,174	108	0,122	0,243	-0,30000	0,25557	-0,80659	0,20659
	Equal variances not assumed			-1,174	106,166	0,122	0,243	-0,30000	0,25557	-0,80669	0,20669

Independent Samples Effect Sizes					
		Standard dizer ^a	Point Estimate	Interval Lower	Upper
PI	Cohen's d	1,34023	-0,224	-0,598	0,152
	Hedges' g	1,34963	-0,222	-0,594	0,151
	Glass's delta	1,42560	-0,210	-0,585	0,166

a. The denominator used in estimating the effect sizes. Cohen's d uses the pooled standard deviation. Hedges' correction uses the pooled standard deviation, plus a correction factor. Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Appendix C.6.4: H2 – X: Message Framing; Y: Purchase Intention; M: Guilt and Pride

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 4

Y: PI (Purchase Intention)

X: MF (Message Framing)

M1: Guilt

M2: Pride

Sample

Size: 110

OUTCOME VARIABLE:

Guilt

Model Summary (path a1: from MF to Guilt)

R	R-sq	MSE	F	df1	df2	p
,0250	,0006	2,5226	,0677	1,0000	108,0000	,7953

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,1333	,2142	14,6308	,0000	2,7088	3,5578
MF	,0788	,3029	,2601	,7953	-,5216	,6791

Standardized coefficients

	coeff
MF	,0498

OUTCOME VARIABLE:

Pride

Model Summary (path a2: from MF to Pride)

R	R-sq	MSE	F	df1	df2	p
,0854	,0073	1,6480	,7944	1,0000	108,0000	,3748

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,8242	,1731	27,8700	,0000	4,4811	5,1674
MF	,2182	,2448	,8913	,3748	-,2671	,7034

Standardized coefficients

	coeff
--	-------

MF ,1701

OUTCOME VARIABLE:

PI

Model Summary (path b1: from Guilt to PI; path b2: from Pride to PI)

R	R-sq	MSE	F	df1	df2	p
,4965	,2465	1,3966	11,5567	3,0000	106,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,5356	,4569	5,5500	,0000	1,6298	3,4414
MF	,2279	,2263	1,0073	,3161	-,2207	,6766
Guilt	,2734	,0876	3,1214	,0023	,0997	,4470
Pride	,2315	,1083	2,1369	,0349	,0167	,4463

Standardized coefficients

	coeff
MF	,1698
Guilt	,3220
Pride	,2212

***** TOTAL EFFECT MODEL

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
,1122	,0126	1,7962	1,3779	1,0000	108,0000	,2430

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,5091	,1807	24,9512	,0000	4,1509	4,8673
MF	,3000	,2556	1,1738	,2430	-,2066	,8066

Standardized coefficients

	coeff
MF	,2235

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y

Total effect of X on Y (path c)

Effect	se	t	p	LLCI	ULCI	c_ps
,3000	,2556	1,1738	,2430	-,2066	,8066	,2235

Direct effect of X on Y (path c')

Effect	se	t	p	LLCI	ULCI	c'_ps
,2279	,2263	1,0073	,3161	-,2207	,6766	,1698

Indirect effect(s) of X on Y (path a*b):

Effect	BootSE	BootLLCI	BootULCI
TOTAL	,0721	,1383	-,1863 ,3611
Guilt	,0215	,0850	-,1616 ,1815
Pride	,0505	,0785	-,0589 ,2479

Partially standardized indirect effect(s) of X on Y:

Effect	BootSE	BootLLCI	BootULCI
TOTAL	,0537	,1030	-,1362 ,2678
Guilt	,0160	,0635	-,1201 ,1343
Pride	,0376	,0583	-,0444 ,1850

***** ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:

95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: Standardized coefficients for dichotomous or multicategorical X are in

partially standardized form.

----- END MATRIX -----

Appendix C.6.5: H3 – X: Message Framing; Y: Purchase Intention; M: Attitude towards the brand; W: Eco-anxiety

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 15

Y: PI (Purchase Intention)

X: MF (Message Framing)

M: AtB (Attitude towards the Brand)

W: EA (Eco-Anxiety)

Sample

Size: 110

OUTCOME VARIABLE:

AtB

Model Summary (path a: from MF to AtB)

R	R-sq	MSE	F	df1	df2	p
,2511	,0630	1,6212	7,2673	1,0000	108,0000	,0081

Model

	coeff	se	t	p	LLCI	ULCI
constant	5,0182	,1717	29,2286	,0000	4,6779	5,3585
MF	,6545	,2428	2,6958	,0081	,1733	1,1358

OUTCOME VARIABLE:

PI

Model Summary (path b: from AtB to PI; Int_1: path b moderation; Int_2: path c' moderation)

R	R-sq	MSE	F	df1	df2	p
,5304	,2813	1,3577	8,1407	5,0000	104,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	-,0819	,9764	-,0839	,9333	-2,0182	1,8544
MF	-,2133	,5036	-,4235	,6728	-1,2120	,7854
AtB	,7640	,1892	4,0385	,0001	,3888	1,1391
EA	1,2460	,3840	3,2449	,0016	,4845	2,0074

Int_1	,1687	,2126	,7936	,4292	-,2528	,5902
Int_2	-,1827	,0766	-2,3849	,0189	-,3346	-,0308

Product terms key:

Int_1:	MF	x	EA
Int_2:	AtB	x	EA

Test(s) of highest order unconditional interaction(s):

R2-chng	F	df1	df2	p	
X*W	,0044	,6299	1,0000	104,0000	,4292
M*W	,0393	5,6877	1,0000	104,0000	,0189

Focal predict: AtB (M)

Mod var: EA (W)

Conditional effects of the focal predictor at values of the moderator(s):

EA	Effect	se	t	p	LLCI	ULCI
1,0000	,5812	,1268	4,5844	,0000	,3298	,8327
1,8000	,4351	,0936	4,6486	,0000	,2495	,6207
3,6000	,1062	,1406	,7553	,4518	-,1726	,3850

***** DIRECT AND INDIRECT EFFECTS OF X ON Y

Conditional direct effects of X on Y

EA	Effect	se	t	p	LLCI	ULCI
1,0000	-,0446	,3295	-,1354	,8926	-,6980	,6088
1,8000	,0904	,2399	,3767	,7072	-,3854	,5661
3,6000	,3940	,3928	1,0032	,3181	-,3849	1,1729

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

MF -> AtB -> PI

EA	Effect	BootSE	BootLLCI	BootULCI
1,0000	,3805	,1669	,0937	,7559
1,8000	,2848	,1248	,0719	,5621
3,6000	,0695	,0916	-,1115	,2593

Index of moderated mediation:

Index	BootSE	BootLLCI	BootULCI
EA	-,1196	,0661	-,2728
			-,0171

***** ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:

95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

NOTE: Standardized coefficients are not available for models with moderators.

----- END MATRIX -----

Appendix C.6.6: T-Test of X: Message Frame on M: Attitude towards the Brand

T-Test

Group Statistics

MF	N	Mean	Std. Deviation	Std. Error
AtB 0	55	5,02	1,472	0,198
1	55	5,67	1,037	0,140

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference			
		F	Sig.	t	df	Significance One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
AtB	Equal variances assumed	7,923	0,006	-2,696	108	0,004	0,008	-0,655	0,243	-1,136	-0,173
	Equal variances not assumed			-2,696	97,030	0,004	0,008	-0,655	0,243	-1,136	-0,173

Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	Interval	
				Lower	Upper
AtB	Cohen's d	1,273	-0,514	-0,893	-0,133
	Hedges' correction	1,282	-0,510	-0,887	-0,132
	Glass's delta	1,037	-0,631	-1,020	-0,236

a. The denominator used in estimating the effect sizes.
 Cohen's d uses the pooled standard deviation.
 Hedges' correction uses the pooled standard deviation, plus a correction factor.
 Glass's delta uses the sample standard deviation of the control (i.e., the second) group.