How do **you** *feel* about your (pro-) environmental behaviour?

Investigating the interaction of moral emotions, self-efficacy expectancy, outcome expectancy and pro-environmental behaviour intention

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Abstract

The Earth's climate has dramatically changed, which can be attributed to human activity. These developments require more pro-environmental behaviour. Many humans experience a gap in the moral behaviour they want to display and their actual behaviour. Moral emotions have been shown to influence behavioural intentions, therefore the current research aimed to investigate the relationship between shame and guilt and pro-environmental behaviour intention (IPEB). An online experiment was conducted in which it was attempted to induce feelings of either shame or guilt via a narrative. Additionally, a third group was subjected to a neutral narrative to act as a control group. The participants were randomly assigned to one of the three groups and had to fill in a survey. The results revealed several interesting insights. Shame and guilt were found to not significantly differ in pro-environmental behaviour intention nor the emotions were able to act as a significant predictor for IPEB. Additionally, the study looked into the influence of self-efficacy expectancy and outcome expectancy on pro-environmental behaviour intention. Both self-efficacy expectancy and outcome expectancy were not found to act as a moderator. However, the belief one can act pro-environmentally and the belief that one's environmentally friendly actions contribute to mitigating climate change, were found to directly affect IPEB. They significantly contribute to increasing pro-environmental behaviour intention. Finally, environmental attitude was found to positively influence IPEB as well. Therefore the current study contributes to research in the field of pro-environmental behaviour by indicating the importance of environmental attitude, outcome expectancy and self-efficacy on pro-environmental behaviour intention.

Preface

In front of you lies the thesis *"How do you feel about your (pro-) environmental behaviour*?". This master thesis was written as a part of my Master's specialisation in Marketing at Radboud University Nijmegen. From November to June 2022, I investigated the interaction of moral emotions, self-efficacy expectancy, outcome expectancy and pro-environmental behaviour intention. A very interesting topic, in my opinion, that is part of an important stream of research towards a better future. Especially the process of doing an experiment was a challenging but therefore interesting learning opportunity that adds value to my journey at The Radboud University. I would like to take this opportunity to thank my supervisor dr. C. Hórvath for the guidance, challenging questions, feedback and support during this process. Additionally, I would like to thank dr. S.M. Ritter for taking the time reading my research proposal and providing the proposal of fruitful feedback. Then I would like to thank Anouk Janssen Daalen for the nice cooperation with making the survey. Furthermore, I am grateful to all participants that were part of this study. Finally, I would like to thank my family and friends for supporting me throughout the process.

I hope you enjoy reading this thesis!

Femke Kaiser
Nijmegen, June 2022

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1.Introduction

The Earth's climate has dramatically changed, several events recorded in the last centuries revealed dramatic climate changes (Hughes, 2000). Arctic sea ice is declining, sea levels are rising, wildfires are becoming more severe and animal migration patterns are shifting (NASA, 2022; European Commission, n.d.). There are detrimental effects on biological, anthropogenic and natural systems (Steffen et al., 2015; Nogués-Bravo et al., 2018). According to the United Nations Framework Convention on Climate Change (UNFCCC, 1992, p.7), climate change is defined as " a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". Importantly for the purposes of this paper, climate-warming trends are extremely likely to be attributed to human activities (E.g. Vlek & Steg, 2007; Cook et al., 2013). Given the need for global action on climate change and the responsibility we as humans have, it is crucial to understand how to encourage people to act more pro-environmentally. Pro-environmental behaviour (PEB) is defined as "behaviour that consciously seeks to minimize the negative impact of one's actions on the natural and built world" (Kollmuss & Agyeman, 2002, p.240). What shapes PEB is rather complex (Kollmuss & Agyeman, 2002). The question of how to encourage people to behave more pro-environmentally has therefore caught the attention of researchers within various disciplines (Doran et al., 2015). Consumers' moral obligations, concern for others, and desire of the welfare for one's own family and oneself were recognized as significant drivers of green purchasing (Joshi & Rahman, 2015). Whenever one acts pro-environmentally, this can be seen as moral behaviour and moral actions can arise moral emotions. Moral emotions are defined as emotions "that are linked to the interests or welfare either of society as a whole or at least of persons other than the judge or agent" (Keyes & Haidt, 2003, p. 276). Emotions are a fundamental mechanism by which consumers respond to the environment (Carrus et al., 2008). Meneses (2010) asserts that emotional reactions outweigh cognition in determining pro-environmental behaviour. Especially moral emotions provide the motivational force, the power and energy, to do good and to avoid doing bad (Kroll & Egan 2004). This reveals the potential influence of moral emotions to do good in environmental behaviour. Several moral emotions have been defined. The negatively valanced "self-conscious" emotions: shame, guilt, and embarrassment, have been expanded with several positive emotions in the past few years, these are; elevation, gratitude, and pride (Tangney et al., 2007). As imperfect human beings, however, our behaviour does not always correspond to our moral standards (Tangney et al., 2007). Pro-environmental

behaviours can be more expensive, more time-consuming, and less pleasurable than their environmental-harmful alternatives (Steg et al., 2014). Hence, sometimes acting pro-environmentally tends to oppose one's self-interest; at least in the short run (Jans, 2021). Society uses these emotions in the context of pro-environmental behaviour, for example, NGOs tend to highlight human's responsibility for climate change, and try to make them feel guilty. The media tries to fuel anger about horrendous natural disasters, trying to make the public angry. Scholars like Harth (2013) have looked into this relationship between emotions and intentions. These emotions might be due to a gap in intention and behaviour. While it has been shown that intentions likely lead to behaviour (e.g. Sheeran, 2002), intentions do not always guarantee behaviour (Fife-Schaw et al., 2007). These opposing interests between the need to act pro-environmentally and the disadvantages of PEB could lead to an intention-behaviour gap. The intention-behaviour gap in PEB is well acknowledged in the literature (e.g. Gleim and Lawson, 201; Groening et al., 2018; Park & Lin, 2018). This gap most likely reveals several negative moral emotions. Since this gap is only recognized by oneself, whenever one perceives themselves as not doing things they want to do, the self-conscious emotions are likely to be related. Shame and guilt are self-conscious emotions that have attracted the interest of various researchers in this context. For instance, Mkono & Hughes (2020) refer to this as "Eco-shame" and "Eco-guilt". Although the emotions related to the subject of environmentally friendly behaviour are interesting, action will be needed to bring about change. But how to influence one's intentions and ultimately behaviour?

Previous research suggests that interventions to change behaviour need to include attitude campaigns, a focus on de-habitualizing behaviour, strengthening social support and increasing self-efficacy for example by concrete information about how to act (Klöckner, 2013). This self-efficacy is defined as "people's beliefs about their capabilities to produce designated levels of performance that exercise their influence over events that affect their lives" (Bandura, 1994, p.1). When someone has high self-efficacy expectancy, they believe they are capable of doing something and they will be more likely to act upon it. Outcome expectancy, as seen by Bandura (1977), adds to self-efficacy expectancy. Outcome expectancies are defined as anticipated consequences, positive or negative, as a result of engaging in a behaviour (Feather, 1982). Outcome expectancy proposes that the expectation that a certain outcome will follow a given behaviour, will affect the probability of the individual engaging in the behaviour that leads to the goal. In this context, it is the perceived likelihood that performing (pro) - environmental behaviour will produce a given outcome, as a negative or positive effect on the environment. Outcome expectancy would be about for example the belief that your durable

energy use will help mitigate climate change, whereas self-efficacy means whether you think you are able to use durable energy at all. To investigate whether there is a difference between the effect of self-efficacy expectancy and outcome expectancy on the intention to behave pro-environmentally, this research will look into the moderation of these variables on the relationship between moral emotions and the intention to behave pro-environmentally. These topics have barely gotten attention in this field of pro-environmental behaviour, therefore this research aims to fill in this gap. This research aims to help understand how to motivate consumers to behave more pro-environmentally, by focussing on their emotions and the effect of self-efficacy expectancy or outcome expectancy on the pro-environmental behaviour intention.

1.1 Research Question

This research focuses on the moral emotions shame and guilt, their differences and their interaction with pro-environmental behaviour intention. Therefore the following research question is formulated:

What is the relationship between moral emotions and pro-environmental behaviour intention?

1.2 Research relevance

The relevance of the current research is twofold as it could be of both theoretical as well as managerial relevance. Various studies have looked at moral emotions in the pro-environmental behaviour context. However, shame is underexposed in the current literature compared to the concept of guilt. Additionally, this study aimed to add to the discussion of the contradictory findings on both emotions. Both positive and negative relations have been found between shame and guilt and pro-environmental intentions or behaviour. By inducing the emotions in the current experiment, the researcher tried to shed new light on this complex interplay of emotions and pro-environmental behaviour. To further deepen the understanding, adding moderating effects of self-efficacy expectancy and outcome expectancy have given interesting insights. Although self-efficacy has been investigated in the context of pro-environmental behaviour, there is little understanding of the relationship between self-efficacy and moral emotions. Additionally, the current research aimed to expand knowledge by not using general self-efficacy but instead using the two types of efficacy beliefs: self-efficacy expectancy and outcome expectancy. To the best knowledge of the researcher, outcome expectancy has received barely any attention in this field.

The practical relevance of this research can be found in the key role of human

behaviour in fighting climate change. Behaviour needs to be changed. So far, little is known about the interaction of moral emotions, self-efficacy expectancy, outcome expectancy and pro-environmental behaviour intention. Therefore there is a need to better understand the dynamics among the concepts. A better understanding of the relationship between moral emotions and self-efficacy on motivation in the pro-environmental context can help in creating strategies to increase pro-environmental behaviour. The results of this study help manager and decision-makers to put focus on for example communication strategies. This research enriches the current literature on pro-environmental behaviour with potentially important implications for policymakers and strategy formulation for promoting pro-environmental behaviour.

1.3 Outline

The following chapter of this report contains the theoretical background. In this chapter, an overview of theories regarding the moral emotions, shame and guilt, self-efficacy expectancy, outcome expectancy is described. In the following chapter, the research method is discussed, followed by the analysis and results of the research. Next, the discussion follows and finally a conclusion will be given.

2. Theoretical Background

To investigate the research question, a literature review has been executed. The theoretical background of this study will be elaborated on. First moral emotions, shame and guilt will be discussed. Then both emotions will be elaborated on in the environmental context. Next, self-efficacy expectancy will be explained, followed by outcome expectancy. Finally, some background will be given on pro-environmental behaviour intention. In the end, a visual presentation of the hypotheses will be given in a conceptual model.

2.1 Moral emotions

Behaviour that has a social impact, like pro-environmental behaviour, has shown to emerge specific emotions. Vice versa, moral emotions have shown to impact pro-social behaviour (e.g. Gausel et al., 2012). Moral emotions provide the motivational force to behave morally (Kroll & Egan, 2004). Moral emotions are defined as “emotions that are linked to the welfare or interests either of society as a whole or at least of persons other than the judge or agent” (Keyes & Haidt, 2003, p.276), non-moral emotions are more in direct relation to self (Keyes & Haidt, 2003). According to Tangney et al. (2007) the link between moral standards, moral decisions and/or moral behaviour, is influenced in important ways by moral emotions. Because of the multifaceted nature of moral emotions, theorists have created classifications and categories

(Teper et al., 2015). These include condemning emotions such as disgust and anger (Rozin et al., 1999), self-conscious emotions such as shame and guilt (Tangney et al., 2007) and positive moral emotions such as pride, love and elevation (Keyes & Haidt, 2000; Tangney, 1991). Scholars have also suggested different classifications for prescriptive (i.e. what one should not do) versus proscriptive (i.e. what one should do) emotions (Janoff-Bulman et al., 2009; Sheikh & Janoff-Bulman, 2010) and self-oriented, e.g. pride, versus other-oriented, e.g. love, emotions (Tangney et al., 2007). Moral emotions have been shown to affect pro-environmental behaviour (intention). Differences are found in the relationship between positive emotions versus negative emotions and self-directed, versus other-directed emotions and green intentions and pollution avoidance (Liang et al., 2019). The self-conscious emotions guilt and shame are related to pro-environmental intentions and behaviour (e.g. Liang et al., 2019). Rees et al. (2015) investigated the role of moral emotions in motivating environmental behaviour intentions and actual behaviour. They showed that a guilty conscience (shame and guilt together) predicted environmentally friendly behaviour intentions and, more importantly, actual behaviour (Rees et al., 2015). However, less is known about difference between shame and guilt and their influence on pro-environmental behaviour.

2.1.1 Guilt and Shame

In the early days of psychology sciences and specifically the field of emotion, no clear distinction was made between shame and guilt (Tangney, 1995). Shame and guilt were generally mentioned under the same concept of "moral emotions". Nevertheless, there is a growing understanding of the differences between the concepts. Guilt for example is a proscriptive emotion, about what one “should do”, and shame is a prescriptive emotion, about what one “should not do” (Sheikh & Janoff-Bulman, 2010). According to Tangney Stuewig and Mashek (2007) these differences between shame and guilt fall into three categories: a distinction based on types of eliciting events, based on the public versus private nature of the transgression or based on the degree to which the person construes the emotion-eliciting event as a failure of self or behaviour. Looking at similarities, both emotions do have commonalities as they are for example self-conscious moral emotions (Tangney et al., 2007). Shame and guilt do correlate with each other and both concepts often coexist, however the debate on their differences is still open (Miceli & Castelfranchi, 2018).

“Guilt-prone individuals appear better able to empathize with others and to accept responsibility for negative interpersonal events” (Tangney, 2003, p.3). In the case of guilt, one’s experience reflects a primary focus on the recognition that one did not act morally by doing the

right thing. One failed to approach a positive referent for one did not act like a caring person (Sheikh & Janoff-Bulman, 2010). Whenever one experiences guilt, this is thus a negative experience triggered by one's own behaviours that indicate a moral failure (Greenbaum et al., 2020). Guilt addresses positive or rewarding moral referents, what one should do, and pushes one forward, toward the possibility of redemption and further future moral outcomes (Sheikh & Janoff-Bulman, 2010). Guilt can therefore be seen as a driver for more moral outcomes, and it reflects on what one should do.

"Shame is an extremely painful and ugly feeling that has a negative impact on interpersonal behaviour. Shame-prone individuals appear relatively more likely to blame others (as well as themselves) for negative events" (Tangney, 2003, p.3). In the case of shame, one's predominant response reflects the recognition that one acted immorally by doing the wrong thing. Shame acknowledges ones failure to avoid a negative referent. Shame highlights negative (punishing) moral referents, what one should not do, and leaves one confronting one's own immorality (Sheikh & Janoff-Bulman, 2010). Whenever one experiences shame, this is arises due to one's negative self-evaluations of one's moral character (Greenbaum et al., 2020). "Moderately painful feelings of guilt about specific behaviours motivate people to behave in a moral, caring, socially responsible manner. In contrast, intensely painful feelings of shame do not appear to steer people in a constructive moral direction"(Tangney, 2003, p.2). "But rather than motivating reparative action, shame often motivates denial, defensive anger and aggression" (Tangney, 2003, p.2).

2.1.2 Guilt and Shame in the environmental context

Shame and guilt in an environmental context, have shown to be quite ambiguous (Rees et al., 2015). Various research on both studies show mixed results. Shame and guilt combined have shown to impact pro-environmental behaviour intentions (Rees & Bamberg, 2014). More research in the context of moral emotions and pro-environmental behaviour, has focused on guilt rather than shame (e.g. Ferguson & Branscombe 2010; Mallet, 2012; Harth et al., 2013). However, shame is increasingly investigated in relation to pro-social behaviour. Pro-environmental behaviour is considered to be a type of pro-social behaviour. Different studies showed positive relations found between shame and pro-social behaviour (e.g. de Hooge et al. 2008, Gausel et al., 2012). In the research by Amatulli et al., (2016), shame and guilt both were investigated separately. Anticipated shame and *not* guilt mediated the relationship between valanced message frames and pro-environmental behaviours. The current study aimed to look into this positive relationship between shame and pro-environmental behaviour intention, to

further investigate the ambiguities of the previous studies. Therefore the following hypothesis is formed:

H1a: *Shame positively influences pro-environmental behaviour intention*

As guilt reflects on what one should do, it can be seen as a driver for more moral outcomes, including pro-environmental behaviour. Guilt in the context of pro-environmental behaviour has been investigated before, these studies however show conflicting results. Several positive effects were found, for example by Adams et al. (2020) who suggests that feedback that evokes experienced personal guilt, is effective in encouraging pro-environmental behaviour. Additionally, researchers have found that guilt can be a key determinant for various pro-environmental behaviour intentions. For example the intention to recycle (Elgaaied, 2012). Additionally, Ferguson and Branscome (2010) found a positive relationship between collective guilt, the negative emotion that people experience when their group is seen as responsible for harm-doing, and willingness to engage in mitigating global warming. In line with this research, Harth et al. (2013) found that in-group responsibility for environmental damage, led to greater guilt and predicted intentions to show reparative behaviour. Other studies found no relations between the emotion and pro-environmental behaviour (e.g. Toner et al., 2014; Bissing-Olson et al., 2016). Adams et al (2020) suggest that these mixed results might be due to the fact that most studies elicit anticipated emotional states, whereas others have elicited experienced or reactive emotions. Anticipated emotions might have a different influence on future behaviour than experienced emotions. This research tried add to the knowledge of these emotions by inducing an emotion and eliciting experienced emotions. Because in order to experience guilt, one must reflect on one's own behaviour. This study aimed to induce this feeling of guilt and test for whether the positive relationship would be found in this particular study as well. Following the idea that guilt pushes one forward toward the possibility of redemption and further future moral outcomes (Sheikh & Janoff-Bulman, 2010), the following hypothesis is formed:

H1b: *Guilt positively influences pro-environmental behaviour intention*

Shame and guilt have thus shown conflicting results. Therefore this research adds to this discussion by again looking at the interrelations between these emotions and pro-environmental behaviour intention. "Moderately painful feelings of guilt about specific behaviours motivate people to behave in a moral, caring, socially responsible manner. In contrast, intensely painful feelings of shame do not appear to steer people in a constructive moral direction"(Tangney,

2003, p.2). “But rather than motivating reparative action, shame often motivates denial, defensive anger and aggression” (Tangney, 2003, p.2). When looking at definitions behind the emotions, shame will therefore be expected to have less influence on motivating behaviour than guilt. This leads to the following hypothesis:

H1c: *Guilt has a greater influence on pro-environmental behaviour intention than shame*

2.2 Self-efficacy

Self-efficacy can be considered as a mechanism to increase the intention to display pro-environmental behaviour, because it motivates behavioural engagement and it can influence the acquisition and retention of new types of behaviour (Bandura, 1977). “Self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave” (Bandura, 1994, p1). It influences behaviour through different processes, namely cognitive, motivational, emotional and selective processes (Bandura, 1986). This suggests that interventions that increase perceived pro-environmental self-efficacy may encourage people to change their pro-environmental behaviour. Bandura (1986) explains the difference between self-efficacy expectancy and outcome expectancy as judgments of personal competence to engage in behaviour differ from "judgments of the likely consequence that behaviour will produce" (p. 391).

2.2.1 Self-Efficacy Expectancy

As seen before, self-efficacy expectancy means the belief that one will be able to carry out the behaviour successfully (Tagkalogloua & Kasser, 2018). The self-efficacy beliefs are developed from four sources, ranging from most important to least important; mastery experience (one’s purposive performance), vicarious experience (the actions of others), social persuasion (feedback from others) and physiological feedback (e.g. feeling of stress) (Bandura, 1986). Self-efficacy has been shown to encourage pro-environmental behaviour, such as using reusable shopping bags (Lam, 2006), recycling behaviour (Tabernero & Hernandez, 2011; Tabernero et al., 2015) and willingness to pay for environmental protection when travelling (Doran et al., 2015). Additionally, it has a mediating effect between easy and more difficult pro-environmental self-reported behaviour (Lauren et al., 2015). A study by Schutte and Bullar (2017) found that greater self-efficacy for sustainability behaviour and a greater belief in their changeability of this behaviour, increased approach motivation toward sustainability behaviour and reported more such actual behaviour. As Bandura (1994) indicated, self-efficacy beliefs

influence the choices people make and the courses of action they pursue. This explains why these pro-environmental self-efficacy beliefs tend to lead to pro-environmental behaviour. However, most people engage in tasks in which they feel competent and confident and avoid those in which they do not (Bandura, 1994). Since little is known about the relationship of self-efficacy in this context, current research wants to add to the knowledge by looking at the interaction of self-efficacy expectancy and shame and guilt and the influence on IPEB. Self-efficacy expectancy differs from self-efficacy, because it refers to the perceived ability. This study will look into the idea of self-efficacy as a motivator (Bandura, 1994), and in line with previous studies, assume there is a positive relationship. Hence, the third hypothesis is as follows:

H2: *Self-efficacy expectancy positively influences pro-environmental behaviour intention.*

2.2.2 Outcome expectancy

Self-efficacy, as mentioned above, yields two main types of efficacy beliefs: outcome expectations and personal efficacy expectations (Tagkalogloua & Kasser, 2018). Compared to self-efficacy, very little is known about the relationship of outcome expectancy in the context of pro-environmental behaviour. Outcome expectancy can be defined as one's evaluation of whether an action can be effective in attaining a goal (Collado & Evans, 2019). Outcome expectancies are anticipated consequences (positive or negative) as a result of engaging in a behaviour (Feather, 1982). Bandura (1984) argued that the outcomes people expect are largely dependent on their self-efficacy expectancy. When people expect to be successful in doing something, they anticipate successful outcomes. Therefore, outcome expectations are expected to make less of an independent contribution to predictions of behaviour than self-efficacy expectancy. However, self-efficacy expectancy and outcome expectancy are not always consistent. One might expect that they can recycle, but one can the expectancy that this behaviour will not lead to saving the environment. Outcome expectancy however, has been proven to contribute to children's pro-environmental behaviours (Collado & Evans, 2019). This raises the question of whether this relationship holds for adults. Therefore the following hypotheses are formed:

H3: *Outcome expectancy positively influences pro-environmental behaviour intention*

H4: *Self-efficacy expectancy has a greater influence on pro-environmental behaviour than outcome expectancy*

2.3 Conceptual model

The conceptual model for this research is visualized below. On the left, the moral emotions are represented, these include shame and guilt. These emotions were expected to affect the pro-environmental behaviour intention. This relation was expected to be moderated by self-efficacy expectancy of pro-environmental behaviour and by outcome expectancy of pro-environmental behaviour. The other control variables like environmental attitude are not included in this conceptual model.

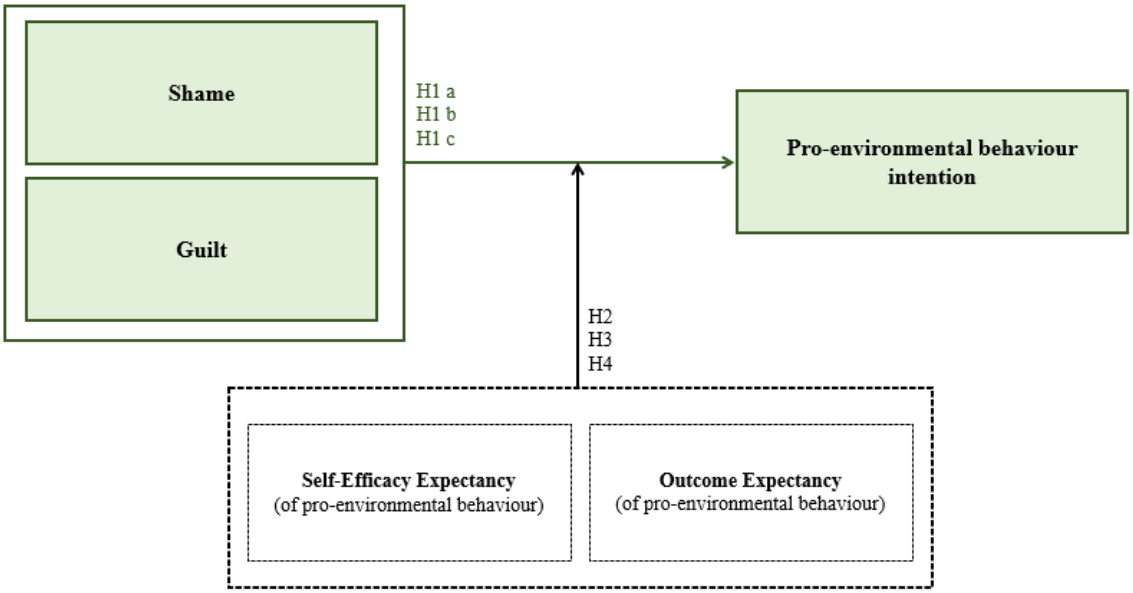

Figure 1. Conceptual model

3. Research Method

To test the hypotheses, an online experiment was conducted. This method was applied because, in order to investigate the effect of moral emotions on behaviour intention, the method required the possibility to isolate this causal variable. There was a need to look at situations in which the supposed cause, shame or guilt, is present (experimental group) and compare it against a situation in which the cause, the emotions, is absent (control group) (Field & Hole, 2002).

3.1 Research design

The experiment was executed via an online survey, with a between-subject design. The survey was executed in Dutch, because of the Dutch network of the researchers. To correctly translate the English scales, Back-Translation was used. The data was collected via Qualtrics. The participants were randomly assigned to either the guilt, the shame or the neutral condition.

Although lab experiments have several advantages, like the ability to interact with respondents when there are questions, an online survey was a more time-efficient method. Additionally, because of the ability to gather more respondents more easily, the online setting was chosen. Finally, an online experiment makes it easier to process the data and therefore analyse it at a faster pace. The full survey and the narratives can be found in Appendix 1.

The flow of the survey-based experiment was as follows: first, the respondent was shortly introduced to the survey and the researchers. Additionally, they were informed about the duration of the survey, which was set to 10 minutes after the pre-tests. They were assured of their anonymity and informed that they could withdraw at any moment. The participants were shortly informed about the give-away and provided with the contact information in case of questions regarding the experiment. Finally, they had to indicate whether they agreed with the terms and wanted to participate or whether they did not agree with participating. The participants were not aware of which experimental condition they were assigned to.

When the participant agreed, the survey started. First, there were questions to measure their shame proneness and guilt-proneness. All constructs and the origin of the scales are presented in table 1. Both constructs had three items, based on the scales by Cohen et al. (2011), Tangney et al. (2000), Dearing et al. (2005) and Muris and Meesters (2014). This is followed by 6 questions on environmental attitude, based on the NEP scale (Hawcroft & Milfont, 2010). After assessing participants' environmental attitude, respondents were randomly assigned to one of the three experimental conditions. The respondents were informed about the following narrative and instructed to imagine themselves being the person in the story. Additionally, they were asked to read the text carefully. This was followed by questions about pro-environmental behaviour intention. First, four questions were asked about the motivation to put extra effort into improving the specific behaviour as described in the narratives. Then, the respondents were asked about their intention to put extra effort into more general pro-environmental behaviour. Next, the respondent needed to answer five questions about their perceived self-efficacy expectancy in the pro-environmental behaviour context, the items are adjusted based on Bandura (2006). Self-efficacy expectancy is investigated because respondents will be asked about their perceived ability, they will need to express to what degree they think they are capable. These questions were about whether one believes they are capable of *doing* something. These questions were followed by Collective Efficacy questions, however, these are outside the scope of this study. Then the survey continued with questions about their outcome expectancy toward pro-environmental behaviour. Outcome expectancy consisted of five items, inspired by the scale of Hale (1992) and the theory by Bandura (1977). The items are constructed via a

method inspired by Churchill (1979). Then the narrative was shown again, followed by the manipulation check questions. These were constructed by the researchers and based on the theoretical background as described in chapter 2. After this, the narrative continued. The respondents were asked to rank certain behaviours after their supermarket visit, from 1 most likely to 5 least likely. Two of these behaviours were shame-related, two were guilt-related and one option was neutral. Because of the complexity of this scale, this question is further left out of this research. After this, the three realism check questions were asked, followed by the attention check. Finally, the demographic variables gender, age, education, number of children, income and living area were assessed.

After completing the survey, the respondents were informed about the experiment, explaining that the research looks into the relationship between negative emotions and pro-environmental behaviour. The specific emotions were not mentioned, because participants would possibly inform other potential participants, which would lead to biased results. They were thanked warmly and a positive picture of an animal was shown to thank the participant. They were given the opportunity to leave their e-mail address to take part in the Bol.com voucher competition.

Table 1. Overview of the constructs

Construct	Number of items	Scale origin	Type of scale
Guilt	3	1 – Cohen et al. (2011) 2 – Tangney et al. (2000) 3 – Combination of Cohen et al. (2011) and Tangney et al. (2000)	7-point Likert
Shame	3	4 – Dearing et al. (2005) 5 - Tangney et al. (2000) 6 – Muris & Meesters (2014)	7-point Likert
Environmental Attitude	6	7 till 12 - Hawcroft & Milfont (2010)	7-point Likert
Pro-environmental Behaviour Intention	7	13 till 19	7-point Likert
Self-Efficacy Expectancy	5	20 till 24 – Inspired by Bandura (2006)	7-point Likert
Outcome Expectancy	5	30 till 34 - Inspired by Hale et al. (1992)	7-point Likert
Manipulation check shame	3	35, 38, 40 – Inspired by theory, (e.g. Tangney, 2007)	7-point Likert
Manipulation check guilt	3	36, 37, 39 – Inspired by theory, (e.g. Tangney, 2007)	7-point Likert

Manipulation check ranking	1	41	5 Ranking statements
Realism check	3	42, 43, 44	1, 2 – 7-point Likert 3 – 5-poin Likert
Attention check	1	45	Multiple choice with 3 answers

3.2 Manipulation

Respondents were randomly assigned to one of the three conditions: the shame, the guilt or the neutral condition. A scenario-based narrative was made, describing an everyday situation. The character in the narrative made multiple con-environmental behavioural choices. The difference made between the three conditions was mainly in the reflective thoughts of the character. These differences were made based on the theories behind the different moral emotions. The guilt narrative is trying to address feelings of guilt by indicating that *the behaviour* of the reader is (morally) wrong. The shame narrative is trying to address feelings of shame by indicating that the reader *him or herself* is (morally) wrong. The neutral group had more of a general description of the situation, without extreme reflective thoughts. The narratives were as similar as possible, to ensure that only the treatment variable (emotions) was manipulated. All three texts encompassed the same situation, with almost identical words and all texts were 305 characters long. The narratives can be found in Appendix 1b. After the participants read the narrative, the survey continued.

3.3 Pre-test

Two pre-tests were conducted to test the manipulations, eliminate mistakes and uncertainties and assure the items in the survey were easy to understand. The pre-tests also allowed checking the realism of the scenario. The pre-tests were executed in two rounds. In the first round, two respondents per condition filled in the survey. The respondents were asked to fill in the questionnaire and afterwards give feedback on the survey. The first round of pre-testing revealed mixed results and the manipulation did not work out as planned. Additionally, relevant feedback was given. The narratives, a few questions and the structure of the survey were adjusted and the new round of pre-testing was done. 8 Respondents went through the survey and again, gave feedback. The results of the manipulation were examined and showed that the manipulation worked for the pre-tests. The survey was adapted again according to the feedback and it was ready to publish. The pre-tests helped pursue reliability and validity, especially because of the importance of wording and interpretation in this experiment.

3.4 Sample

This research focused on adults because it can be assumed that children are less able to influence environmentally friendly behaviour. This due to a lack of resources, money and opportunities, like for example the ability to choose sustainable energy sources. In terms of the sampling approach, convenience sampling was used in order to quickly and easily reach various random respondents in the population. The survey was distributed online, via the researcher's social media accounts, including Facebook, Instagram, LinkedIn and WhatsApp. The diverse social environments of the researcher helped increase the variety of respondents. To make it easier to participate, the description informed about the rather short time needed to complete the survey, assuming that this motivated people to be part of the experiment. To improve the response rate, people were informed about a give-away of a gift voucher (Bol.com). The desired sample size for this study was at least 50 respondents per group. The aim was to have some margin, in case of respondents that would be deleted for being too fast or giving a wrong answer in the attention check. In the end 294 individuals started the survey, however, only 183 useful respondents remained after data cleaning.

3.5 Analysis

To analyse the data obtained by the survey IBM SPSS Statistics 27 was used. First for factor analysis, to determine whether the items load on the right constructs. Furthermore, the reliability was checked with this program as well. Additionally, the descriptive statistics were analysed in the distribution among the three conditions was checked. Then to examine whether the manipulation worked as intended, a multivariate analysis of variance test was conducted Furthermore, to test the hypotheses, correlations test and regression analyses were used.

3.6 Research ethics

In this research, ethical guidelines for responsible conduct of research were followed. Several principles were taken into account since it is important to act correctly. Honesty and openness about the data and methods, objectivity to avoid bias, integrity towards the participants and other stakeholders, and in general respect towards everyone involved in this research and respect for intellectual property. The participants were informed that they would remain completely anonymous and were able to withdraw from the experiment at any time. The respondents were informed that the data they provided, would only be used for academic purposes. Because of the nature of this experiment, there are some strong ethical aspects the researcher should be aware of. The experiment is about inducing negative emotions like shame and guilt, therefore the researcher has the responsibility to make the respondents feel better

again after the survey. This is be done by explaining that part of this experiment was, to induce negative emotions and informing them that the purpose of this research was to investigate the relationship between emotions and pro-environmental behaviour intention. The specific emotions were not mentioned, because of the possibility that other participants would be biased when they were informed by others. An endearing picture of an animal was shown to complement the thank you message in the end. In addition, the participants were informed that they could always contact the researchers in case of questions, both at the beginning and at the end of the survey. Finally, the APA guidelines were taken into account and copyright was respected with regard to research ethics and secondary data.

4. Analysis and results

This chapter presents the results of the study. First, the dataset will be introduced and a description of the data cleaning and the samples will be given. Second, the results of the reliability and validity analysis will be presented. After that, the manipulation will be discussed. Then, the hypotheses are tested via various analyses. Finally, some additional analyses will be described.

4.1 Dataset

The complete dataset consisted of 294 participants, however, only 201 finished the survey. Therefore the 93 respondents that did not finish the survey were deleted from the dataset.

4.1.1 Data cleaning

To determine whether there were any missing values, a missing value analysis was conducted. The missing values that were found, for example in the variable: reading time of the narrative, could be explained by the experimental design of the study. The experiment had three groups with three different narratives. There was one exception, a missing age value for one respondent. However, the analysis indicated that no other relevant values were missing. This can be explained by the structure of the survey, which forced the respondents to fill in an answer. In addition, the data was checked against pre-set conditions. Namely, the participants had to be older than eighteen years and had to have given the correct answer to the attention question. Additionally, the duration of the entire survey was taken into account, where the respondents with exceptional times longer than one hour were taken out. The reading time of the narrative was also taken into account, where the minimum accepted reading time was 20 seconds to read the text. Finally, the data was checked on whether the respondents

systematically answered the questions. Through this check, another 18 respondents were removed from the data set. The cleaned data set was used in the additional analysis (N=183).

4.1.2 The sample

The sample consists of 183 respondents. The majority of the respondents identified themselves as female. In total, 125 (68.3%) females participated, 57 (31.1%) males participated and 1 (0.5%) respondent identified as non-binary. The age of the respondents ranged from 19 to 65 years old, with an average age of 35. Most respondents (85,8%) live in Gelderland. Furthermore, the majority of the respondents are studying or have finished a study at a University of Applied Sciences (32,8%) or a University (41%). additionally, the income of the respondents ranges from less than €5.000 (20,2%) to 45.000 or higher (13,7%). Lastly, 122 of the participants (66,7%) reported not having children and the biggest group of respondents with children was the group that reported having two kids (16,9%). An overview of several descriptive statistics is given in Table 6.

4.2 Validity and reliability

To make sure that the scales measure what was intended and to make sure that these scales were reliable, factor analysis and reliability analyses have been executed.

4.2.1 Factor analysis

First, a confirmatory factor analysis (CFA) was conducted. The confirmatory factor analysis was performed because of the conceptual expectations among the factors. Several requirements need to be met when conducting CFA. According to Field (2013), the required sample size of the number of observations is at least five times the number of items in the factor analysis. The number of items was 28, therefore at least 140 observations were needed. The sample consisted of 183 participants, therefore it can be concluded that the sample size met the requirement. First, the main scales were tested, these include the items for pro-environmental behaviour, self-efficacy expectancy, outcome expectancy and the manipulation checks for shame and guilt. The KMO-test and Bartlett's test of sphericity needed to be checked. The criteria for the KMO-test is met with a score of .895, which exceeds the recommended .5. Bartlett's test of Sphericity is significant, which means that all requirements were met for the factor analysis. Because the factor correlations were higher than .30, oblique rotation was justified (Hair et al., 2018). Then the communalities were explored, none of the items had communalities smaller than .20. This brings the factor analysis to the next step. In total, five factors were extracted with Eigenvalues above 1, explaining 66.6% of the variance. This was contradictory to the expectation of 6 factors. Therefore, the pattern matrix was checked for cross-loaders. When the difference

between the highest and second-highest factor loadings of one item is less than .20, it is considered a cross-loading. Shame and guilt cross-loaded, However, this is not very surprising since shame and guilt have been shown to be rather similar, and hard to distinguish for people. Q30 however, part of the outcome expectancy scale, did show a particular loading. The item had the highest loading on the pro-environmental behaviour scale (.416) and cross-loaded with the self-efficacy exectancy scale (.237). Q30 included the following statement: "With appropriate actions, I am able to contribute to reducing my ecological footprint." Since it includes pro-environmental behaviour and one's action, it can be explained why the item loads on those factors. However, because the item cross-loads and is not with its original scale, the item is not useful for the outcome expectancy scale and is therefore removed. After removing Q30 and performing the factor analysis again, all requirements were still met and there were no cross-loaders present anymore. The final factor analysis is presented in table 2.

Table 2. Final factor analysis main variables

Main variables						
Items	Factors	1	2	3	4	Communality after extraction
Q13 PEB		.649				.456
Q14 IPEB		.655				.476
Q15 PEB		.463				.457
Q16 IPEB		.769				.576
Q17 IPEB		.766				.691
Q18 IPEB		.715				.600
Q19 IPEB		.872				.769
Q20 SE					.805	.667
Q21 SE					.779	.670
Q22 SE					.813	.581
Q23 SE					.509	.372
Q24 SE					.667	.529
Q31 OUT EXP				.752		.622
Q32 OUT EXP				.886		.792
Q33 OUT EXP				.895		.808
Q34 OUT EXP				.396		.235
Q35 MAN Shame			-.740			.569
Q36 MAN Guilt			-.828			.688
Q37 MAN Guilt			-.781			.698
Q38 MAN Shame			-.754			.545
Q39 MAN Guilt			-.794			.697
Q40 MAN Shame			-.816			.692
Eigenvalue		8.624	2.528	1.885	1.618	

% Variance	39.200	11.492	8.570	7.357	
Total variance					**66.618**

** IPEB=Pro-environmental behaviour intention, SE=Self Efficacy, OUT EXP= Outcome expectancy, MAN=Manipulation check*

After that, a similar confirmatory factor analysis was conducted with the items from the control variables, shame and guilt-proneness, environmental attitude and the realism check. The analysis included 15 items and four factors were extracted as expected. The communalities were checked and multiple items had a communality after extraction below .20. Therefore, the item with the lowest communality, shame proneness (Q5), was deleted with a communality of .094. An iterative process of performing the factor analysis and deleting the lowest communality followed. The second item deleted was guilt proneness (Q3) (.155), the third item was shame proneness (Q4) (.167), and the correlation matrix with this rotation indicated correlations lower than .30. Therefore, after iteration four, Varimax was used as a rotation method. guilt proneness (Q1) (.137) was deleted fourth and the correlation matrix showed correlations above .30 again. Therefore the next rotation was Oblique again. The last item deleted with a communality below .20 was of environmental attitude (Q10) (.198). After deleting Q10 and performing the analysis again, all communalities after extraction were above .20. Then the pattern was checked to see whether there were any cross-loaders. Q8, part of the environmental attitude scale, cross-loaded on with the proneness factor. Therefore this item was deleted in the last iteration. In the final factor analysis, only three out of the four factors were extracted with an eigenvalue of above 1. The only shame proneness item left (Q6), loaded on the guilt factor with a factor loading of .422. This was similar to the shame and guilt factor in the previous factor analysis of the main variables. The KMO-test was .759, which exceeds the recommended .5. Bartlett's Test of Sphericity was significant. The three factors left were explained for 70,17% of the variance. The final structure is presented in table 3.

Table 3. Final factor analysis control variables

Control variables					
Items*	Factors	1	2	3	Communality after extraction
Q2 Guilt Proneness				.601	.370
Q6 Shame Proneness				.422	.244
Q7 Env Att		.697			.506
Q9 Env Att		.656			.454

Q11 Env Att	.789			.613
Q12 Env Att	.798			.619
Q42 Realism		.876		.771
Q44 Realism		.821		.694
Q43 Realism		.771		.611
EIgenvalue	2.716	2.410	1.189	
% Variance	30,182	26.774	13.210	
Total variance%				**70.167**

**Env Att= Environmental attitude, Realism=Realism check*

4.2.2 Reliability analysis

An additional analysis was performed to assess the reliability of the scales. The Cronbach's Alpha was calculated for the scales and their items from the factor analysis. The desired level of Cronbach's Alpha is to be above .7 (Hair et al., 2013). The reliability analysis also indicates whether deleting an item improves Cronbach's Alpha. For outcome expectancy, the Cronbach's Alpha improved by more than .05 when Q34: "My environmentally friendly behaviour has no influence on reducing the climate crisis", was deleted. The explanation might be found in the fact that this was the only reversed question in this construct. The Cronbach's Alpha improved from .83 to .89. This was the only item deleted based on the reliability analysis. Most constructs, however, have good reliability when looking at the Cronbach's Alpha (a>.70). The reliability of the proneness scales is very low since a value <.70 can be considered insufficient (Hair et al., 2018). This might be because multiple items were deleted in the factor analysis, causing the constructs to consist of only a single item. In the following table, the construct reliability is presented for all factors.

Table 4. Final factor analysis control variables

Construct	Original number of items	Items Deleted	Cronbach's Alpha
Pro-environmental behaviour intention	7	0	0.887
Self-efficacy expectancy	5	0	0.850
Outcome expectancy	5	2	0.893
Manipulation Shame	3	0	0.813
Manipualtion Guilt	3	0	0.868
Manipulation Shame + Guilt	6	0	0.913
Guilt Proneness	3	2	0.343
Shame Proneness	3	2	0.428
Environmental attitude	6	2	0.825
Realism check	3	0	0.810

4.3 The manipulation

To investigate the relationship between shame and guilt and pro-environmental behaviour intention (IPEB), the participants were divided in three groups. A shame group, a guilt group and a neutral control group. The groups were made to see whether there is a significant difference between the different moral emotions and behavioural intention. Initially, the condition was meant to classify the respondents' emotion. To be able to check whether the participants experienced the supposed emotion, all participants were exposed to three questions regarding their experienced shame and three questions to check for the participants' experienced guilt.

4.3.1 Manipulation check

To check whether the manipulation worked, these manipulation check questions were analysed. To test whether the shame group experienced more shame, the guilt group more guilt, and the neutral group the least of both emotions, the mean scores of the three groups were compared. A MANOVA test was conducted to see if there was a significant difference in the experienced shame and guilt between the groups. First, the assumptions for the MANOVA analyses were tested (Appendix 2). The variables shame and guilt were not normally distributed. Therefore, several transformations were performed. The quadratic transformation yielded a normal distribution for shame and an almost normal distribution for guilt. Since the transformation gave a significant improvement concerning the distribution, the quadratic variables were used. In table 5, the mean scores of shame and guilt of all three conditions are listed. As expected, the shame has a higher mean (M=23,17) than the other two groups (M=20,77; M=20,75). For the guilt manipulation check, the mean of the guilt group (M= 25,52) was the lowest out of the three conditions (Neutral: M=25,67; Shame: M=26,61). To see whether the differences between the groups were significant, the MANOVA test was conducted.

Table 5. Overview manipulation check per condition

	The condition	**Mean**		**The condition**	**Mean**
Shame	Neutral	20.77	**Guilt**	Neutral	25.67
	Guilt	20.75		Guilt	25.52
	Shame	23.17		Shame	26.61
	Total	21.48		*Total*	25.90

First, the equality of covariance matrices was checked. For this assumption, Box's Test of Equality of covariances was used. The value of .265 is considered non-significant since this

value is bigger than .05. Therefore the assumption was met. The assumption of the equality of error variances was only met for guilt, since Levene's test was non-significant for guilt (p = .333) and significant for shame (p = .014). The Games-Howell method was used because of the violated assumption for shame. The Wilks' lambda for the group effects was non-significant (F (2.180) = .557 p = .694). This indicates that there is no significant difference between the shame, guilt and control group on the experienced shame and guilt. The results of the Post Hoc test for both variables are not significant either (p > 0.05). This means that there is no significant difference in the reported shame and guilt between the three conditions.

There could also be a cause in the distribution of the conditions. In the following table, several statistics are given per condition. Some small differences are present, nevertheless, the descriptive seems to be quite similar across the conditions. Some descriptive statistics stand out for the total sample that could be underlying the manipulation check results. First, the majority of the participants in each group identified themselves as female. 70,8% In the Neutral group, 60,3% in the Guilt group and 74,5% in the Shame group. Second, most participants score high on shame-proneness (71%) and guilt-proneness (86%). Both could have led to higher scores on the manipulation check.

Table 6. Overview descriptive statistics per condition

	Condition	**Guilt**	**Shame**	**Neutral**	***Total***
	N	63	55	65	**183**
Gender					
	Female	60%	75%	71%	**68%**
	Male	38%	25%	29%	**31%**
	Non-Binary	2%	0%	0%	**1%**
Age					
	Mean	32	38	35	**35**
	Mode	25	23	24	**23/24**
Education					
	Secondary school	5%	9%	0%	**4%**
	MBO	17%	22%	26%	**22%**
	HBO	35%	33%	31%	**33%**
	WO	43%	36%	43%	**41%**
Children					
	No children	71%	60%	68%	**67%**
	1 or 2 children	19%	24%	24%	**22%**
	3 or more children	10%	16%	8%	**11%**
Income					
	Median	€25.000-€34.999	€25.000-€34.999	€25.000-€34.999	**€25.000-€34.999**

	Mode	<€5.000	€25.000-€34.999	<€5.000	**<€5.000**
Living area					
	Mode	Gelderland (86%%)	Gelderland (82%)	Gelderland (89%)	**Gelderland (86%)**
Environmental attitude					
	Low	8%	11%	14%	**11%**
	Exactly in between	3%	2%	3%	**3%**
	High	89%	87%	83%	**86%**
Guilt proneness					
	Low	14%	11%	12%	**12%**
	Exactly in between	0%	4%	2%	**2%**
	High	86%	85%	86%	**86%**
Shame proneness					
	Low	25%	22%	20%	**22%**
	Exactly in between	3%	4%	14%	**7%**
	High	72%	74%	66%	**71%**
Self-efficacy expectancy					
	Mean	5.6	5.6	5.6	**5.6**
	Median	5.6	5.6	5.8	**5.6**
Outcome expectancy					
	Mean	4.9	5	5	**4.9**
	Median	5	5	5.3	**5**
Realism check					
	I recognise myself in this story	29%	29%	23%	**27%**
	I feel like this story was about me and/or the people around me	35%	36%	31%	**34%**
	A comparable situation happens to me: sometimes/often/always	49%	53%	40%	**47%**

To investigate the relationship between moral emotions and environmentally friendly behaviour, shame and guilt were used in two ways in the analyses. First the three treatment groups as they were, were used. They were used to examine the relationship with the dependent variable per condition, assuming that the different narratives did induce particular emotions. Presuming people might not have been able to indicate to what extent they experienced shame or guilt. For instance, because the respondent did not know the difference between the two concepts. To be able to carry out regression analyses, dummy variables were created.

Additionally to the conditions, the manipulation check questions were used regardless of the conditions. This also made it possible to use the metric variables of shame and guilt. The manipulation check questions were merged into an average score. To overcome multicollinearity issues, the values were centred. Self-efficacy expectancy and outcome

expectancy were centred as well, because of their interaction effect with the emotions. The variables were transformed by subtracting the mean from the original variable. Therefore with this second strategy, the effects of shame and guilt were investigated regardless of the treatment condition of the participants.

4.4 Hypotheses testing

Several analyses were conducted to test the different hypotheses. Regression analyses were used to determine the effect of the explanatory variables, shame, guilt, the moderators and the control variables on the dependent variable, pro-environmental behaviour intention. The regression analysis was conducted with both the dummy variables as well as with the centred variables of shame and guilt. This is to increase the understanding of the relations. However the hypotheses are discussed based on the regression analysis with the centralized values, since there are no significant differences between the conditions (shame, guilt, neutral) and their pro-environmental behaviour intention (Appendix 3). The "manipulation check" variables of shame and guilt, regardless of the respondents' condition, did display a significant relationship with pro-environmental behaviour intention. The results of both analyses were quite similar. The regression analysis with the conditions dummies variable followed a similar procedure, and can be found in Appendix 4.

Before the regression analyses were conducted, the assumptions needed to be checked. To look if there were any issues regarding multicollinearity, Pearson's correlations were checked. The correlations between the interactions were high (above .80), this was however expected because these include the main effects. An additional correlation test was performed for shame and guilt (Appendix 9). Interestingly, shame and guilt were highly correlated ($r = .837$, $p<0.05$, $N=183$). Despite the high correlations, both variables were used to be able to investigate the direct effects. Next, the Variance Inflation Factor (VIF) needed to be below 10 (Hair et al., 2013). This was the case for all variables. Next, the Durbin-Watson statistic is checked for the assumption of independence of the residuals. This statistic needs to be between 1 and 3. This is the case, with the values of 1.893 for the centred variable analysis and 1.863 for the dummy analysis. Normality, linearity and homoscedasticity are checked via the histogram, P-P plot and scatter plot (Appendix 5). The assumptions are all met for both the analyses. The multiple regression analyses were used to test the several hypotheses. Hierarchical linear regression was used, which means the variables were added in several steps. This is to be able to control for the control variables and to investigate the moderating effect.

In both the analyses, the first model included the control variables, and the second model contained the main independent variables and the moderators. This means that the second model controls for the control variables. The control variables included were: environmental attitude, gender, age, education level, the number of children the respondent has, income and the area the respondent lives in. The original variables of age and environmental attitude were used, because the variables were metrics already. Since this is a requirement for the analysis as well, the other control variables were made into dummy variables. The reference categories for the dummy variables were the same in each analysis. These were “neutral, “women”, “WO”, “no children”, “<5000”, and “middle of the Netherlands”. These categories were chosen because they included the most respondents or because of their expected effect. Self-efficacy expectancy and outcome expectancy were centred and to avoid multicollinearity issues, these centred variables were also used for the interaction terms. The final regression models were constructed by an iterative process. First, all variables were included, and then the independent variables with the highest significance value were removed one by one. After every iteration, the statistical significance was checked again. The items in the main model with centred variables, were removed in the following order: “4 children” (p= .965), “€35.000 – 44.999” (p= .888), “North of The Netherlands” (p= .854), “1 child” (p= .755), “MBO” (p= .751), “South of the Netherlands” (p= .651), “5 or more children”(p= .621), “€5.000 – 14.999” (p= .556), “non-binary” (p= .449), “€45.000 or more” (p= .326), “2 children” (p= .290), “man” (p= .203), “€15.000 – 24.999” (p= 228), “secondary school” (p= .129), “age” (p= .102), “HBO” (p= .110). After the removal, the variables out of the first model were significant, however in the second model “I’d rather not say” from the income question was non-significant (p = .151), followed by the final iteration. “3 Children” from the first model was the last insignificant variable that could be removed (p = .056). To be able to test the hypotheses, the main independent variables were not removed despite an insignificant value. Almost all control variables resulted to be non-significant, “environmental attitude” and the income group of “€25.000 - 34.999” did give a significant value. However, “€25.000 - 34.999” has a low correlation (-.193) with IPEB. This resulted in the following final model.

Table 7. Regression analyses final model

	Model 1: Control variables				Model 2: Full model			
Variable	b	SE	β	p	b	SE	β	p
Environmental Attitude	.576	.066	.538	.000	.234	.070	.218	.001
25.000 - 34.999	-.489	.183	-.164	.000	-.561	.154	-.188	.000
Shame					.099	0.80	.126	.220
Guilt					.083	.095	.105	.385
Outcome Expectancy					.150	.062	.146	.016
Self-Efficacy					.399	.093	.268	.000
Shame x self-efficacy					-.012	.112	-.014	.912
Shame x outcome expectancy					.047	.072	.071	.515
Guilt x s self-efficacy					-.017	.106	-.019	.874
Guilt x outcome expectancy					-.095	.066	-.153	.151
Shame x guilt					-.057	.030	-.137	.061

When looking at the explained variance of the two models (Appendix 6) it becomes evident that both the first model with the control variables "environmental attitude" and income "€25.000-34.999" show a significant relationship between the independent variables and the dependent variable ($F(2.180) = 43.531$, $p<0.001$). 31,9% Of the variance in IPEB can be explained by these independent variables. The second model, shows the relationship between the main independent variables and the dependent variables, controlling for the control variables. This model is significant as well ($F(11.171) = 19.329$, $p<0.001$). By adding the variables from the main relationships, the adjusted R square increases to 52,6%. This means that the additional variables explain an extra 20,7% of the variance.

4.4.1 Guilt and shame

As stated in the first hypothesis, it is expected that guilt positively influences the intention to display pro-environmental behaviour. In the correlation test (table 8), the relationship of guilt and IPEB was shown to be positive and quite strong ($r=.572$, $p=.000$, $N=183$). However, the regression analysis shows that guilt is a non-significant predictor of pro-environmental behaviour intention when controlling for the other variables. The regression coefficient of guilt is positive again as expected, however it is rather small and non-significant ($b=.083$; $t(171) = .871 (>.05)$). Therefore hypothesis 1a *"Guilt positively influences the intention to display pro-environmental behaviour",* cannot be accepted.

Table 8. Correlation tests final model

Variable	r	p-value
Environmental Attitude	.547	.000
25.000 - 34.999	-.193	.004
Shame	.512	.000
Guilt	.572	.000
Outcome expectancy	.404	.000
Self-efficacy	.500	.000
Shame x Self-efficacy	-.189	.005
Shame x Outcome Expectancy	-.181	.007
Guilt x Self-efficacy	-.222	.001
Guilt x Outcome Expectancy	-.214	.002
Shame x Guilt	-.388	.000

As stated in the second part of hypothesis 1, it is expected that shame positively influences the intention to display pro-environmental behaviour as well. Table 8 confirms this hypothesis when looking at the correlation between the variable and IPEB. The effect of shame on IPEB was shown to be positive and moderate to strong (r=.512, p=.000, N=183). However, it does not show a significant influence on pro-environmental behaviour intention when controlling for the other variables (b = .099; t (171) = .220 (>.05)). Therefore hypothesis 1b: "*Shame positively influences the intention to display pro-environmental behaviour",* cannot be accepted either.

The third part of hypothesis 1 considered the difference between shame and guilt and the effect on pro-environmental behaviour intention. As seen before, shame and guilt did not provide significant effects in the regression analyses. Shame and guilt together as an interaction term did not result in a significant result either (p=.061). When looking at the correlations, the effect of guilt (r= .572, p=.000, N=183) is a little bigger than that of shame (r= .512, p=.000, N=183), which indicates that the relationship between guilt and IPEB is slightly stronger than the relationship between shame and IPEB. However, the regression coefficient for shame (b= .099) is bigger than Guilt (b= .083), this would indicate that shame has a bigger contribution in the difference of pro-environmental behaviour intention than guilt. These results are thus contrary. Since the regression analysis was not significant for both variables, H1c: "*Guilt has a greater influence on pro-environmental behaviour intention than shame"*, cannot be accepted either.

4.4.2 Self-efficacy expectancy

The second hypothesis suggests that self-efficacy expectancy positively influences pro-environmental behaviour intention. In the correlation test (Table 8), the direct effect of self-efficacy on IPEB was shown to be positive and moderate (r=.500, p=.000, N=183). To test for the moderating effect, interaction terms were used. The interaction terms of self-efficacy expectancy and shame (r=-.189, p=.005, N=183) and self-efficacy expectancy and guilt (r=-.222, p=.001, N=183) showed negative but significant correlations. This would mean that whenever the interaction of self-efficacy expectancy and the moral emotions would decrease, the pro-environmental behaviour intention would increase and vice versa. To investigate whether there is a significant influence on IPEB when controlling for the other variables, the regression analysis was executed. The interaction terms between self-efficacy and shame (p=.912) and guilt (p=.874) on IPEB were not found to be significant. The direct effects of self-efficacy expectancy on pro-environmental behaviour intention did show a significant result (b=.399, t (171) = 4.274, p<0.05). Self-efficacy expectancy is therefore a significant predictor of pro-environmental behaviour intention. However, because of the insignificance of the interaction terms, it does not act as a moderator as expected. Therefore H2: "*Self-efficacy expectancy positively influences pro-environmental behaviour intention*", cannot be accepted.

4.4.3 Outcome expectancy

The third hypothesis suggests that outcome expectancy positively influences pro-environmental behaviour intention. In the correlation test (Table 8) the direct effect of outcome expectancy on IPEB was shown to be positive and moderate (r=.404, p=.000, N=183). To test for the moderating effect, interaction terms were used. The interaction terms of outcome expectancy and shame (r=-.181, p=.007, N=183) and guilt (r=-.214, p=.002, N=183) showed negative but significant correlations. This would mean that whenever the interaction of outcome expectancy and shame and or guilt would decrease, the pro-environmental behaviour intention would increase and the other way around. To investigate whether there is a significant influence on IPEB when controlling for the other variables, the regression analysis was executed. The interaction terms between outcome expectancy and shame (p=.515) and guilt (p=.151) showed no significant results. The direct effects of outcome expectancy on pro-environmental behaviour intention did show a significant result (b=.150 t(171) = 2.436, p<0.05). Outcome expectancy has therefore a significant and positive direct influence on pro-environmental behaviour intention. However, because of the insignificance of the interaction terms, outcome

expectancy does not act as a moderator as expected. Therefore hypothesis 3: "*Outcome expectancy positively influences pro-environmental behaviour intention*", cannot be accepted.

4.4.4 Self-efficacy and outcome expectancy

The final hypothesis: "*Self-efficacy expectancy has a greater influence on pro-environmental behaviour than outcome expectancy"* is separately investigated. In order to see the different contributions of self-efficacy expectancy and outcome expectancy, a separate regression analysis is conducted. In the first model, self-efficacy functioned as control variable, in the second model, outcome expectancy was added and in the third model, the interaction term was included. All assumptions were met, with the Variance Inflation Factors below 10, Durbin-Watson statistic was 1.793 and the assumptions for normality, linearity and homoscedasticity were met by interpreting several figures and a plot (Appendix 7).

Table 9. Regression analysis self-efficacy expectancy and outcome expectancy

	Model 1				**Model 2**				**Model 3**			
Variable	**b**	**SE**	**β**	**p**	**b**	**SE**	**β**	**p**	**b**	**SE**	**β**	**p**
Self-efficacy Expectancy	.745	.096	.500	.000	.601	.101	.403	.000	.568	.104	.381	.000
Outcome Expectancy					.249	.070	.242	.000	.268	.071	.260	.000
Self-efficacy x outcome expectancy									-.101	.073	-.0.89	.169

As presented in Table 10 below, the regression coefficient of self-efficacy expectancy is positive and significant (b=..568; t(179) =.5.457(p<.05). The regression coefficient of outcome expectancy is positive and significant as well (b=..268; t(179) =.3.760(p<.05). Self-efficacy and outcome expectancy appear to have a positive influence on pro-environmental behaviour intention. Self-efficacy expectancy has the highest change in pro-environmental behaviour intention b=.568 against b= .268). The interaction term of both variables, (b=..-101; t(179) =.-1.382 (p>.05), show have a negative relationship. This is contradictory to the expectations. However, this is a non-significant relationship. When looking at the contributions of the variables, as can be seen in table 10 below, it can be stated that 24.6 % of the variance in IPEB is explained by self-efficacy expectancy. When adding outcome expectancy, the variance explained increases to 29.6%. The R-square change of self-efficacy expectancy of .250 is

additionally bigger than the R-square change of outcome expectancy of .049. The interaction has the least contribution, making the explained variance 29.5%, with an R-square change of .007. Therefore hypothesis 4: "*Self-efficacy expectancy has a greater influence on pro-environmental behaviour than outcome expectancy "* is accepted.

Table 10. Model summary - outcome expectancy and self-efficacy expectancy

	R Square	Ajdusted R Square	R Square Change	Sig.
Model 1 Self-efficacy Expectancy	.250	.246	.250	.000
Model 2 *Self-efficacy Expectancy* Outcome Expectancy	.299	.292	.049	.000
Model 3 *Self-efficacy Expectancy* *Outcome Expectancy* Self-efficacy x outcome expectancy	.307	.295	.007	.000

4.5 Additional analyses

Additionally, a regression analysis was conducted to see whether the contributions of shame and guilt and their interaction would differ when not controlling for the other variables. The assumptions for regression analysis were met (Appendix 8a). Guilt seemed to significantly effect IPEB in the first model, (b=.307; t(179) =.3.099 (p<.05). However, when controlling for the moderators, the interaction terms and environmental attitude, it becomes non-significant (b=.060; t(179) =.609 (p>.05).

To further look into self-efficacy expectancy and outcome expectancy, a Pearson correlation test was executed. Few significant relations were found, these are represented in table 11. Self-efficacy expectancy was correlated to age (r= .164), environmental attitude (r= .394) and outcome expectancy (r= .401). Additionally, outcome expectancy significantly correlated with gender (r= .242), age (r=.175), and environmental attitude (r= .221). Lastly, the environmental attitude was significantly related to age (r= -.213) and education (r= .275). Although most variables show a weak correlation (<.30), some interesting results are shown, for example, the fact that age seems to significantly influence all three variables. While age has a positive relationship with self-efficacy expectancy and outcome expectancy, there is a negative relationship between age and environmental attitude. Environmental attitude shows to be moderately and positively related to self-efficacy expectancy and outcome expectancy.

Gender positively correlates with outcome expectancy, this indicates that women have higher outcome expectancies. However, this is a quite weak relationship. Finally, education is positively correlated to environmental attitude. Although it is a weak relation, it indicates that the higher the educational level, the higher the environmental attitude.

Table 11. Additional correlation test

Variables	r	p-value
Age and self-efficacy expectancy	.164	.027
Environmental attitude and self-efficacy expectancy	.394	.000
Outcome expectancy and self-efficacy expectancy	.401	.000
Gender and outcome expectancy	.242	.001
Age and outcome expectancy	.175	.018
Environmental attitude and outcome expectancy	.221	.003
Age and environmental attitude	-.213	.004
Education and environmental attitude	.275	.000

5. Discussion

This research aimed to investigate the relationship between the moral emotions of shame and guilt, the moderating effects of self-efficacy expectancy and outcome expectancy and pro-environmental behaviour intention. The current study contributes to the existing knowledge on the effect of these emotions on pro-environmental behaviour intention, or even the absence of them. It adds knowledge about the ambiguity of both emotions since no significant differences were found between shame and guilt and pro-environmental behaviour intention. Guilt and shame were strongly and positively related to pro-environmental behaviour intention, which supported the theorised effects and is in line with many previous studies (e.g. Rees et al., 2015; Amatulli et al., 2016; Liang et al., 2019). The emotions could however not be identified as significant predictors for IPEB. No significant contribution of shame and guilt, neither directly nor as an interaction term, could be found when multiple explanatory variables were inserted. For shame, a possible explanation could be that intensely painful feelings of shame motivated denial (Tangney, 2003) instead of a motivation to behave pro-environmentally. Further research would be needed to explain the exact lack of influence of both emotions. In this research, it means that there is a significant relationship between the variables, nevertheless, there is no causal effect between shame and guilt and pro-environmental behaviour intention. An additional explanation would be the ambiguity of shame and guilt.

One goal of the current research was to gain insight into the difference between shame

and guilt. The results of this study showed that both emotions were highly correlated. This supports other studies that show the mutual correlation between shame and guilt. Rees and Bamberg (2014) did show a combined effect of shame and guilt and were not able to fully explain the differential effects of both either. The combined effect of this study did not show a significant contribution. Previous studies that were able to find a significant relationship between moral emotions on PEB are therefore questioned. Guilt seemed to have a significant effect on the intention to behave in an environmentally friendly way. But as soon as more explanatory variables were added to the relationship, the significant effect disappeared. This raises the question of what causes these differences in the literature. Unfortunately, it went beyond the goal of the current study to particularly look into the causes of the ambiguity of shame and guilt.

The ambiguity of moral emotions was found in the results as well. The idea of this research was to randomly divide the respondents over three conditions. This would make it possible to compare a shame group, a guilt group and a neutral group. The groups however did not seem to differ significantly on the manipulation checks as well as on pro-environmental behaviour intention. There are several possible explanations for these results. According to Field and Hole (2013), within each group, differences can act as noise and add variance. The majority of the participants in each group identified themselves as female. 70,8% In the Neutral group, 60,3% in the Guilt group and 74,5% in the Shame group. The relationship between shame and guilt-proneness and gender has been investigated before (e.g. Lutwak & Ferrari, 1996). Shame-prone individuals for example appeared relatively more likely to blame others for negative events (Tangney, 2003). Women are more shame and guilt-prone. However, in this study, most participants scored high on shame-proneness (71%) and guilt-proneness (86%). The differences in the sample could have led to the rather surprising scores on the manipulation check. Other possible reasons would be that people find shame and guilt very difficult to distinguish if they are even aware of the distinction between both concepts. This would make it harder to express these emotions. As even psychologists were not formerly able to identify a difference between both emotions (Tangney, 1995), it can be presumed that this was the same case for the laymen who constituted the sample of the current research. In line with this, it is possible that people have experienced shame or guilt unconsciously, but are not able to indicate this. Because of the uncertainty, the current study has looked at the results twofold. Both the results of the condition groups as well as the manipulation checks were taken into account. Thus the degree of shame and guilt regardless of the condition. Since both analyses have shown a non-significant contribution of shame and guilt to pro-environmental behaviour intention, it can

be concluded that in this study, moral emotions did not predict behaviour intention.

Furthermore, this study looked into the dynamics of self-efficacy expectancy and outcome expectancy in the environmental context. The results provided new insights into this rather new field of research. Outcome expectancy is shown to contribute to a higher intention to show environmentally friendly behaviour and self-efficacy appealed to have an even bigger influence. Environmental attitude, self-efficacy and outcome expectancy showed a considerable and significant influence on the pro-environmental behaviour intention. As expected, the control variable environmental attitude has a large explanatory role in the pro-environmental behaviour intention. Environmental attitude in this research meant the environmental concern, the environmental worldview or paradigm of the respondents. The positive significant relationship means that whenever one is more aware of climate change and thus more concerned about the environment, one will have higher intentions to display pro-environmental behaviour. This supports the previous studies that found this relationship (e.g. Fielding & Head, 2012; Tian et al., 2020; Baierl et al., 2022). In addition, there was a positive correlation between environmental attitude and age. It seems that the older one is, the lower one's environmental attitude is. This phenomenon could be explained by the idea that the older one gets, the less one cares about the earth since one would experience fewer effects of climate change oneself. The educational level also correlates with environmental attitude. It seems that the higher one is educated, the higher the environmental attitude.

It was hypothesised beforehand that outcome expectancy had a positive influence on environmental behavioural intentions. In the present study, outcome expectancy did not appear to be a moderator of the relationship between shame and guilt, but the variable did appear to have a direct influence on IPEB. Outcome expectancy is fairly underexposed in this context. Previous research by Collado and Evans (2019) has shown that for children, high outcome expectancy leads to higher PEB intention. The present study supports the positive relationship between outcome expectancy and pro-environmental behaviour. This study confirms the same effect found by Collado and Evans, holds for adults. The more one believes what one does for the environment has an impact, the higher is the intention to do something about it. A correlation was also found between age, gender and outcome expectancy. Small effects were found that indicate that women have higher outcome expectancy and that whenever age increases, one believes that outcome expectancy increases as well. Since outcome expectancy has been little to unexplored in this context, there is a gap in the literature that would potentially provide additional interesting insights. Outcome expectancy thus is a significant predictor of pro-environmental behaviour intention, nevertheless, it is not as influential as self-efficacy.

In advance, the assumption was that self-efficacy expectancy leads to higher intentions to engage in environmentally friendly behaviour. This research seems to confirm the results of previous studies (e.g. Tabernero & Hernandez, 2011; Doran et al., 2015). This contributes to the existing theories on this subject in the environmental context. Self-efficacy was found to have a strong correlation with IPEB and a reasonably strong positive effect. This means that the more one thinks one is capable of carrying out environmentally friendly behaviour, the greater the motivation is to engage in environmentally friendly behaviour. In addition, age and self-efficacy were found to be correlated. The results indicated that the older people are, the more they think they can do in the field of environmentally friendly behaviour. Quite interesting is the idea that a higher age leads to more belief in the capability of acting pro-environmentally and the belief it would contribute to climate change, however, the overall attitude and thus concern is lower. Additionally, the current study showed that self-efficacy expectancy is a stronger predictor of pro-environmental behaviour intention. This is in line with the theory by Bandura (1984), who argued that the outcomes people expect are mainly dependent on their self-efficacy expectancy. Finally, environmental attitude is reasonably correlated with both self-efficacy expectancy and outcome expectancy. High concerns about the environment, the belief that one is capable of carrying out pro-environmental behaviour and the idea that this behaviour contributes to climate change, lead to higher behavioural intention.

5.1 Theoretical contributions

Several results of this research deviate from previous studies. This research adds to the literature by further looking into shame and guilt in the environmental context. Although both moral emotions show a positive correlation with IPEB in the present study, it questions previous studies that have shown significant effects of shame and guilt on pro-environmental behaviour or intentions, (Mallet, 2012; Amatulli et al., 2016). It supports studies that show no significant relationship between the emotions and PEB (e.g. Toner et al., 2014; Bissing-Olson et al., 2016). Furthermore, it supports the studies that highlight the overlap and similarities of both moral emotions, like the study by Rees & Bamberg (2014). It adds to the discussion on the ambiguity of the emotions (Miceli & Castelfranchi, 2018) by revealing the presence of a strong correlation between shame and guilt in this context. Furthermore, it adds to the literature by combining moral emotions and self-efficacy expectancy and outcome expectancy. Although no significant relationships were found for the moderating effects, it opens up a rather new research area that needs to be subjected to revised studies and experiments. Since Bandura's (1984) concepts have been proven to positively influence pro-environmental behaviour intention. By taking self-

efficacy expectancy and outcome expectancy apart from each other, new light was shed on the concepts in the pro-environmental context as well. It supported the results by Collado and Evans (2019), as it showed that outcome expectancy positively influences IPEB. Self-efficacy expectancy has been shown to be a significant predictor of IPEB as well, which supports the results of several studies (e.g. Lam, 2006; Tabernero & Hernandez, 2011; Doran et al., 2015). The study adds to the literature by comparing self-efficacy expectancy and outcome expectancy and revealing that self-efficacy expectancy in this context has a bigger influence on IPEB. Finally, it supports the current literature on the importance of environmental attitude in explaining pro-environmental behaviour intention. As far as concerned, it was the first study to combine moral emotions, self-efficacy expectancy and outcome expectancy.

5.2 Practical implications

The findings of this research provide various practical implications as well. The importance of self-efficacy, outcome expectancy and the influence of environmental attitude on pro-environmental behaviour intention is shown. The need for actions toward climate change becomes more relevant day by day. Since we humans have a significant share in this development, action is needed. A behaviour change is needed since change starts with intention, a strategy is needed to influence this intention. Environmental attitude has proven to be a significant predictor of pro-environmental behaviour intention. Therefore managers and policymakers should use this dynamic, by informing people about climate change and making them aware of the problems. Their environmental attitude is presumed to become higher and therefore their intention to behave pro-environmentally as well. As self-efficacy expectancy motivates behavioural engagement and it can influence the acquisition and retention of new types of behaviour (Bandura, 1977), this study supported the idea that self-efficacy expectancy is a mechanism to increase the intention to display pro-environmental behaviour. Because self-efficacy expectancy and outcome expectancy have both proven to be positively related to pro-environmental behaviour intention, there should be more clarity about how people can contribute to mitigating climate change. It should be evident what, easier, things people could do, so their self-efficacy about pro-environmental behaviour increases, and additionally, it should be clear what these actions would contribute. This could, for example, result in a campaign about easy environmental friendly behaviour. Informing about what people could do extra in everyday life and additionally what that particular behaviour would exactly contribute. This could be something like informing about eating vegetarian once a week, which is

equivalent to using one entire month of shower water (Oxfam Novib, 2018). When these practical implications would be taken into account, and people would be more motivated to display such easy environmentally friendly behaviour, their intention for even more difficult pro-environmental behaviour will most likely increase as well. Since self-efficacy has shown to have a mediating effect between easy and more difficult pro-environmental self-reported behaviour (Lauren et al., 2015). Policymakers and decision-makers however, should be aware of the specific target group they are trying to influence. As discussed before, age, gender and education seem to influence environmental attitude, outcome expectancy and self-efficacy. Take for example the idea that a higher age leads to higher self-efficacy expectancy and outcome expectancy. However, interestingly, the overall environmental attitude seems to become lower when people become older. Therefore, with for example an older target group, it could be interesting to see how to change that environmental attitude. For example by focussing on the terrific consequences for the future of their (grand)children. Because this target group already has a higher outcome expectancy and self-efficacy, it is believed this target group could make big steps in pro-environmental behaviour intention once their attitude would change. This is just one example of how a certain target group requires different information to have an effect. The current study supports the knowledge on how to use interventions to change behaviour via attitude campaigns, a focus on de-habitualizing behaviour, strengthening social support and increasing self-efficacy (Klöckner, 2013). Businesses could use these insights for better marketing, to influence consumers towards better behaviour and a better future.

5.3 Limitations and directions for further research

The empirical results reported in this study should be considered in light of some limitations. As with the majority of experimental studies, the design of the research is subject to limitations. Although several pre-tests were conducted these, unfortunately, did not guarantee the manipulations to work as expected. Since the actual survey did not give the expected manipulation check results. This gives reason to think that the three different groups did not experience the induced emotion as intended, which has a bad influence on the validity of the study. This leaves the question open of whether a significant difference was not found because the emotions were so interrelated, whether other questions or stimuli influenced the respondents, whether the manipulation itself was unable to induce the emotions or whether the manipulation check questions were not made in a way the respondents could express themselves.

There are several possible explanations and in addition, the realism check showed that

the majority of the respondents could not recognize themselves in the story nor had the feeling that the narrative was about them or the people around them. Furthermore, most of the respondents rarely ever or never experienced a situation like this. Since the narrative thus was not as realistic for most respondents, it might have been more difficult for them to empathise with the story as requested. This may have had a negative influence on the validity of the results. Unfortunately, it is outside of this study and practically impossible to make a perfectly relatable narrative that would be realistic for every participant. However, for future experiments, it would be recommended to further look into ways to better induce the emotions and more thoroughly discuss how to check for the manipulation. Additionally, experiments with narratives in this context would need to encompass more extensive testing, with a bigger sample to increase the chance that the actual experiment reveals similar results, with a manipulation that certainly works and to ensure that the narrative is relatable for most participants.

Although no real statements could be made about the difference between the shame, the guilt and the neutral group, the best possible attempt was made with the addition of the manipulation checks information, to provide insights into the hypotheses. Because of the mixed results, with strong positive relations between shame guilt and IPEB but no significant contributions of both emotions, future research could help add understanding into how these emotions interact with pro-environmental behaviour intention. Furthermore, it would be interesting to further look into the ambiguous relations of both emotions. If more experimental research were conducted in this context, it would be valuable to look more closely at the interrelationship between shame and guilt. Unfortunately, it was beyond the scope of this study to identify explanations for these ambiguous results. Future research, in a similar yet improved experiment, would be needed to verify if the relationship remains insignificant between emotions and environmentally friendly behaviour intention. This experiment could differ in focusing on for example anticipated shame and guilt instead of experienced shame and guilt. It would be interesting to compare the results and see whether the effects would differ. Furthermore, future studies could examine other emotions in this field of research, to see for example how pride relates to self-efficacy expectancy and outcome expectancy in the PEB context.

The next limitation concerns the sample of the current study. First of all, the sample was retrieved via convenience sampling in the network of the researcher. This could have led to less generalizable results. Additionally, the distribution of some characteristics might have led to a less representative sample. For example, the majority of the sample was female, higher-educated and relatively young. Almost everyone in the sample was living in Gelderland, which

causes the data to be less ungeneralizable for other parts of The Netherlands. Future research should attempt to have a more equally spread sample regarding gender, educational level, age and living area. This could lead to new insights and better generalizable results for the Dutch population.

The final limitation concerns the time constraints of the researchers. Due to the time pressure of the timeline of the study, this research could only be executed to a certain degree. For example, the pre-testing could have been more thorough with more time, or there would be more time to gather respondents which could increase the reliability of the study. Additionally, the time constraints have left the researcher to be obliged to focus on the main relations, which leaves other potentially interesting analyses out of the capabilities. Nonetheless, the results of this study are valid for answering the research question: "What is the relationship between moral emotions and pro-environmental behaviour intention?' It is beyond the scope of this research to look into the exact dynamics between for example shame and guilt.

Finally, future research could deepen the understanding of the difference between outcome expectancy and self-efficacy expectancy and pro-environmental. The current study revealed a significant contribution of the two, however, these concepts separately in this context have had little to no attention in the literature. It would especially interesting to see how both can be influenced, to increase pro-environmental behaviour intention.

6. Conclusion

This study was set to gain knowledge about moral emotions, their effect on pro-environmental behaviour intention and the influence of self-efficacy expectancy and outcome expectancy on this relationship. The experiment was executed to gain knowledge to answer the following research question: What is the relationship between moral emotions and pro-environmental behaviour intention? Based on the results of this study, it can be concluded that there is no significant causal relationship between shame, guilt and pro-environmental behaviour. The emotions are as expected both positively related to IPEB, indicating that there is a significant cohesion between the moral emotions and behaviour intention. The emotions however are not able to predict pro-environmental behaviour intention. Both moral emotions do not have a significant influence on IPEB when controlling for the other explanatory variables. When looking at shame, guilt, the interaction between them and the effect on PEB, guilt seemed to have a significant influence. Once controlled for the other variables, contrary to expectations, the effect did not hold.

Self-efficacy expectancy and outcome expectancy were hypothesised to have a

moderating effect and positively influence pro-environmental behaviour intention. The non-significant results for the emotions are most likely also underlying the lack of significant effects of the interaction terms of shame, guilt and self-efficacy expectancy and outcome expectancy. Therefore, the moderating effects cannot be statistically supported. The direct relations of self-efficacy expectancy and outcome expectancy both individually did show a significant predictor for pro-environmental behaviour intention. Whenever one believes he or she can act pro-environmentally or one believes his or her actions contribute to mitigating climate change, one will be to a greater extent motivated to behave pro-environmentally. The two together explained 29,2% of the variance in pro-environmental behaviour intention. As hypothesized, when comparing the two, self-efficacy expectancy has the highest influence on pro-environmental behaviour intention. As expected, environmental attitude has a strong positive relationship with and impact on IPEB. Indicating that when people have a higher environmental attitude, there are more motivated to display pro-environmental behaviour. In conclusion, high environmental concern, a high belief in the capability to act environmentally friendly and high expectancy of the outcomes of environmentally friendly behaviour, lead to higher pro-environmental behaviour intention.

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Appendices

Appendix 1: Survey

Appendix 1a: Questions

Beste lezer,

Hartelijk dank voor uw deelname aan dit experiment. Wij, Anouk en Femke, zijn studenten aan de Radboud Universiteit Nijmegen en voor onze masterscriptie Marketing doen wij onderzoek naar milieuvriendelijk gedrag.

Het experiment zal ongeveer 10 minuten duren, maar neem rustig de tijd om de vragen en teksten goed door te lezen. Uw gegevens blijven volledig anoniem en zullen niet worden gedeeld met derden. Wilt u kans maken op een bol.com cadeaukaart ter waarde van €20, dan kunt u uw e-mailadres achterlaten aan het einde van het experiment.

Heeft u nog vragen of opmerkingen gerelateerd aan dit experiment, neem dan gerust contact op met ons via anouk.janssendaalen@ru.nl of femke.kaiser@ru.nl.

Door hieronder "Ja, ik ga akkoord met deelname aan het onderzoek zoals hierboven beschreven" te selecteren geeft u aan dat:
• U deze informatie hebt gelezen en begrepen;
• U vrijwillig instemt met deelname;
• U beseft dat u op elk moment, zonder gevolgen, kunt stoppen met dit onderzoek;
• U 18 jaar of ouder bent.

Als u niet wilt deelnemen aan dit onderzoek, kunt u de deelname weigeren door hieronder "Nee, ik ga niet akkoord met deelname aan het onderzoek" te selecteren.

Nogmaals dank voor uw deelname!

Met vriendelijke groet,
Anouk Janssen Daalen & Femke Kaiser

Gaat u akkoord met deelname aan dit onderzoek?

- ○ Ja, ik ga akkoord met deelname aan het onderzoek zoals hierboven beschreven
- ○ Nee, ik ga niet akkoord met deelname aan het onderzoek

Q1, 2, 3 Stelt u zich de volgende situaties voor en beantwoord de bijbehorende vragen.

1) Nadat jij je realiseert dat je in een winkel te veel wisselgeld hebt gekregen, besluit je het te houden omdat de caissière het niet merkt. Hoe groot is de kans dat je je oncomfortabel voelt bij het houden van het geld?

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk.niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

2) Jij en een groep collega's/medestudenten hebben heel hard gewerkt aan een groepsproject. Jullie supervisor kiest alleen jou uit voor een bonus omdat het project zo'n succes was. Hoe groot is de kans dat je vindt dat je de bonus niet aan zou moeten nemen?

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk.niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

3) Op de housewarming van een collega mors je rode wijn op zijn nieuwe crèmekleurige tapijt. Je bedekt de vlek met een stoel, zodat niemand je geknoei opmerkt. Hoe groot is de kans dat je tot laat op het feest zou blijven om te helpen de vlek op te ruimen?

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk.niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

Q4, 5, 6 Stelt u zich de volgende situaties voor en beantwoord de bijbehorende vragen.

4) Na een nacht stevig drinken kom je voor de tweede keer op rij te laat op een vergadering. Hoe groot is de kans dat je je incapabel zou voelen?

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk.niet onwaarschijnlijk
- Enigszins waarschijnlijk

- Waarschijnlijk
- Zeer waarschijnlijk

5) Je maakt een fout op het werk en ontdekt dat een collega de schuld van de fout krijgt. Hoe groot is de kans dat je niks zou zeggen en je jouw collega zou ontlopen?

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk.niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

6) Je spreekt af met een goede vriendin die je al een tijdje niet meer hebt gezien. Wanneer je thuiskomt, realiseer je je dat je vergeten was dat ze jarig is. Hoe groot is de kans dat je je achteloos en egoïstisch voelt?

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk.niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

Q7, 8, 9, 10, 11, 12 Nu volgen vragen met betrekking tot het milieu. Geef aan in hoeverre u het eens bent met de volgende stellingen.

7) "De mens maakt ernstig misbruik van het milieu."
    - Zeer mee oneens
    - Oneens
    - Enigszins mee oneens
    - Niet mee eens, niet mee oneens
    - Enigszins mee eens
    - Mee eens
    - Zeer mee eens

8) "Wanneer de mens zich met de natuur bemoeit heeft dat vaak rampzalige gevolgen."

    - Zeer mee oneens
    - Oneens
    - Enigszins mee oneens
    - Niet mee eens, niet mee oneens
    - Enigszins mee eens
    - Mee eens
    - Zeer mee eens

9) "De balans van de natuur is sterk genoeg om de acties van de moderne industriële landen aan te kunnen."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

10) "De mens was bedoeld om over de staat van de natuur te heersen."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

11) "De zogenaamde "ecologische crisis" waarmee de mensheid geconfronteerd wordt, is zeer overdreven."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

12) "Als dingen op hun huidige koers blijven doorgaan, zullen we snel een grote ecologische catastrofe meemaken."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

<u>Lees de volgende tekst aandachtig door en probeer u voor te stellen dat u zich in deze situatie bevindt.</u>

Narrative

Ik heb de tekst gelezen:

- Ja

Q13,14,15,16,17,1819 Als u thuiskomt van de supermarkt, denkt u na over uw dag en over de vraag of u bij uw beslissingen rekening hebt gehouden met het milieu. Kunt u aangeven in welke mate u extra moeite zou doen voor het volgende milieuvriendelijke gedrag?

13) Ik zal in de toekomst extra moeite doen om afval te scheiden in vergelijking met mijn huidige recycling gedrag.

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk, niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

14) Ik streef ernaar in de toekomst duurzamere vervoerskeuzes te maken in vergelijking met mijn huidige vervoerskeuzes (bv. fietsen, lopen, openbaar vervoer of carpoolen).

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk, niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

15) Ik zal in de toekomst minder vlees en/of meer biologische producten eten vergeleken met nu.

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk, niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

16) Ik zal in de toekomst minder plastic gebruiken in vergelijking tot mijn huidige plastic gebruik.

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk, niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

17) Ik zal in de toekomst extra mijn best doen om milieuvriendelijk gedrag te vertonen.

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk, niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

18) Ik zal extra moeite doen om nieuwe manieren te vinden om in het dagelijks leven beter met klimaatverandering om te gaan.

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk, niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

19) Ik zal me in de toekomst extra inzetten om mijn milieuschadelijke activiteiten/handelingen te beperken, vergeleken met mijn huidige inzet.

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Enigszins onwaarschijnlijk
- Niet waarschijnlijk, niet onwaarschijnlijk
- Enigszins waarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

Q20, 21, 22, 23, 24 Geef aan in hoeverre u het eens bent met de volgende stellingen.

20) "Ik heb de mogelijkheid en capaciteit om milieuvriendelijk gedrag te vertonen."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

21) "Ik ben in staat om in het dagelijks leven milieuvriendelijk gedrag te vertonen."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens

- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

22) "Ik kan heel makkelijk milieuvriendelijke handelingen/activiteiten uitvoeren."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

23) "Ik weet welk gedrag ik moet vertonen om op een milieuvriendelijke manier te leven."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

24) "Ik ben in staat op een milieuvriendelijke manier te leven, zelfs als het me wat ongemak bezorgt."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

Q25,26,27,28,29 Geef aan in hoeverre u het eens bent met de volgende stellingen. Met "allen" en "allemaal" wordt er in de stelling verwezen naar iedereen op Aarde.

25) "Hoewel het ongemak kan veroorzaken, hebben wij allemaal de mogelijkheid om een milieuvriendelijk leven te leiden."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

26) "In het dagelijks leven kunnen wij allemaal actie ondernemen om milieuvriendelijker te leven."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

27) "Ik geloof dat wij allen samen meer mensen tot milieuvriendelijk gedrag kunnen aansporen."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

28) "Als we ons er allemaal voor inzetten, kunnen we samen klimaatverandering tegengaan en onze ecologische voetafdruk verkleinen."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

29) "Als we allemaal onze milieuschadelijke activiteiten beperken, kunnen we samen bijdragen aan een vermindering van de opwarming van de aarde."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

Q30, 31, 32. 33. 34. Geef aan in hoeverre u het eens bent met de volgende stellingen.

30) "Met passende acties ben ik in staat bij te dragen aan het verkleinen van mijn ecologische voetafdruk."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

31) "Mijn milieuvriendelijke acties/handelingen dragen bij aan het verminderen van klimaatverandering."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

32) "Als ik elke dag iets voor het milieu doe, help ik de opwarming van de aarde tegen te gaan."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

33) "Mijn maatregelen om mijn milieuschadelijke activiteiten te beperken, dragen bij tot de vermindering van de klimaatverandering."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

34) "Mijn milieuvriendelijke gedrag heeft geen invloed op het verminderen van de klimaatcrisis."

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

U heeft onderstaand verhaal gelezen waarbij u zich moest inbeelden in de situatie. Hierna volgen vragen over uw gevoel bij het lezen van deze tekst.

Narrative

Q35, 36,37,38,39, 40 Geef aan in hoeverre u het volgende heeft ervaren bij het lezen van het verhaal:

35) Deze situatie liet me slecht voelen om wie ik ben.

- Helemaal niet
- Niet
- Enigszins niet
- Enigszin niet, enigszins wel
- Enigszins wel
- Wel
- Helemaal wel

36) Deze situatie liet me slecht voelen om wat ik deed.

- Helemaal niet
- Niet
- Enigszins niet
- Enigszin niet, enigszins wel
- Enigszins wel
- Wel
- Helemaal wel

37) In deze situatie voelde ik me ongemakkelijk omdat ik geen milieuvriendelijk gedrag heb vertoond.

- Helemaal niet
- Niet
- Enigszins niet
- Enigszin niet, enigszins wel
- Enigszins wel
- Wel
- Helemaal wel

38) In deze situatie voelde ik me ongemakkelijk omdat ik geen milieuvriendelijk mens ben.

- Helemaal niet
- Niet
- Enigszins niet
- Enigszin niet, enigszins wel
- Enigszins wel
- Wel
- Helemaal wel

39) In deze situatie vroeg ik mij af waarom ik ***dit*** gedrag heb vertoond.

- Helemaal niet
- Niet
- Enigszins niet
- Enigszin niet, enigszins wel
- Enigszins wel
- Wel
- Helemaal wel

40) In deze situatie vroeg ik mij af waarom ***ik*** dit gedrag heb vertoond.

- Helemaal niet
- Niet
- Enigszins niet
- Enigszin niet, enigszins wel
- Enigszins wel
- Wel
- Helemaal wel

Stelt u zich het moment weer voor dat u in de supermarkt bent. U heeft afgerekend en loopt naar buiten. Nu staan er mensen van “The Ocean Cleanup” voor de deur, ze verspreiden informatie over het opruimen van plastic afval in de oceanen.

Geef aan welke van uitspraken voor u van toepassing zijn na uw bezoek door de supermarkt.

41) Zet op volgorde van meest (1) tot minst (5) van toepassing.

_____ Je probeert onopgemerkt erlangs te lopen (1)
_____ Je realiseert je dat je spijt hebt van je gedrag (2)
_____ Je zegt ze gedag (3)
_____ Je gaat met ze in gesprek over hoe jij iets kan bijdragen (4)
_____ Je voelt je stom over jezelf (5)

Q42, Q43 Deze vragen gaan over het verhaal dat u heeft gelezen. Geef aan in hoeverre u het eens bent met de volgende stellingen.

42) Ik herken mijzelf in dit verhaal.

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

43) Ik heb het gevoel dat dit verhaal over mij en/of de mensen om mij heen ging.

- Zeer mee oneens
- Oneens
- Enigszins mee oneens
- Niet mee eens, niet mee oneens
- Enigszins mee eens
- Mee eens
- Zeer mee eens

44) Een soortgelijke situatie overkomt mij:

- Nooit

- Zelden
- Soms
- Vaak
- Altijd

45) Wat was er in de aanbieding in de tekst?

- Vis
- Kip
- Biefstuk

46) Wat is uw geslacht?

- Man
- Vrouw
- Non-binair
- Anders

47) Wat is uw leeftijd?

48) Wat is de hoogste opleiding die u nog volgt of heeft afgerond?

- Middelbare school
- MBO
- HBO
- WO

49) Hoeveel kinderen heeft u?

- Geen
- 1
- 2
- 3
- 4
- 5 of meer

50) Wat is uw huidige gemiddelde inkomen (per jaar)?

- Minder dan €5.000
- €5.000 - €14.999
- €15.000 - €24.999
- €25.000 -€34.999
- €35.000-€44.999
- €45.000 of hoger
- Dit zeg ik liever niet

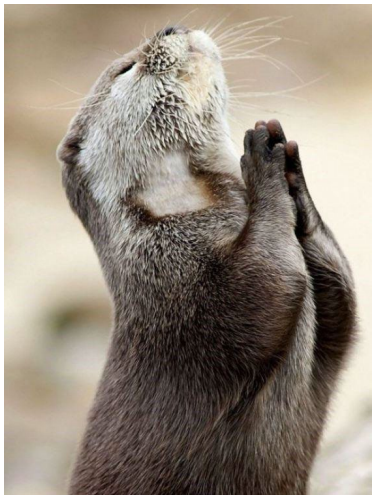
51) Waar woont u?

- Noord-Holland
- Zuid-Holland

- Zeeland
- Noord-Brabant
- Utrecht
- Flevoland
- Friesland
- Groningen
- Drenthe
- Overijssel
- Gelderland
- Limburg
- Anders

Dank Bedankt voor uw deelname aan dit experiment. Onderdeel van het experiment was om negatieve emoties op te wekken. In dit onderzoek kijken wij namelijk naar de relatie tussen deze negatieve emoties en milieuvriendelijk gedrag. Uw bijdrage aan dit onderzoek helpt ons een stapje verder in de groenere richting. Mocht u mee willen doen met de bol.com cadeaubon winactie, laat dan hieronder uw e-mailadres achter. Zodra wij een winnaar hebben geloot, wordt deze per e-mail benaderd.

Heeft u nog vragen of opmerkingen naar aanleiding van dit experiment? Neem dan contact met ons op via anouk.janssendaalen@ru.nl of femke.kaiser@ru.nl.



Nogmaals hartelijk bedankt!

Klik alstublieft op de onderstaande pijl rechts om uw antwoorden op te slaan.

E-mail E-mailadres

Appendix 1b: Narratives

Guilt narrative

Stel, het is vrijdagmiddag en je wilt een lekkere maaltijd bereiden om het weekend mee te beginnen. Je kijkt in de koelkast en ziet verschillende producten die over de houdbaarheidsdatum zijn. *"Stom, ik zal echt beter moeten opletten wat ik in mijn koelkast heb. Wat slordig eigenlijk. Ik moet mijn koelkast beter opgeruimd houden om minder eten te verspillen,"* denk je. Omdat je geen zin hebt om het plastic, GFT- en restafval te scheiden, gooi je de volle verpakkingen in één keer in de prullenbak. Nadat je het in de vuilnisbak hebt gegooid, voel je je slecht: *"Wat was dít laks van me. Ik moet meer aandacht besteden aan het scheiden van mijn afval. Belachelijk, het is eigenlijk zo makkelijk om te doen."* Nadat je een aantal producten hebt weggegooid, heb je niet veel meer in de koelkast om je maaltijd te bereiden, dus ga je naar de supermarkt. Het is mooi weer, maar je hebt geen zin om te lopen of te fietsen. Dus neem je de auto, ook al is de supermarkt om de hoek. Als je wegrijdt heb je spijt dat je de auto hebt genomen. Je voelt je ongemakkelijk en denkt: *"Wat idioot en lui eigenlijk. Ik zal de volgende keer echt met de fiets moeten gaan. Het is maar 5 minuten fietsen."* Je komt aan bij de supermarkt en hoewel je vindt dat je niet altijd vlees hoeft te eten, kies je de biefstuk die in de aanbieding is. Je verzamelt nog wat andere ingrediënten en gaat naar de kassa. Je bent je canvas tas vergeten, dus je pakt een plastic tasje van de supermarkt. *"Wat een onverantwoorde en domme actie om 'm thuis te vergeten. De volgende keer zorg ik dat ik geen nieuwe meer hoef te kopen,"* denk je. Nu snel afrekenen en dan naar huis.

Shame narrative

Stel, het is vrijdagmiddag en je wilt een lekkere maaltijd bereiden om het weekend mee te beginnen. Je kijkt in de koelkast en ziet verschillende producten die over de houdbaarheidsdatum zijn. *"Wat ben ik stom. Ik let ook nooit op wat ik in m'n koelkast heb. Slordig van me, ik moet echt niet zoveel eten verspillen en moet mijn koelkast eens gaan opruimen,"* denk je. Omdat je geen zin hebt om plastic, GFT- en restafval te scheiden, gooi je de volle verpakkingen in één keer in de prullenbak. Nadat je het in de vuilnisbak hebt gegooid, voel je je slecht: *"Het is zo typisch en laks van me dat ik mijn afval niet scheid, terwijl ik dat makkelijk had kunnen doen. Echt belachelijk, waarom ben ik zo?"* Nadat je een aantal producten hebt weggegooid, heb je niet veel meer in de koelkast om je maaltijd te bereiden, dus ga je naar de supermarkt. Het is mooi weer, maar je hebt geen zin om te lopen of te fietsen. Dus neem je de auto, ook al is de supermarkt om de hoek. Als je wegrijdt, heb je spijt dat je de auto hebt genomen. Je voelt je ongemakkelijk en denkt: *"Ik ben echt een luie idioot. Andere mensen fietsen dit makkelijk in 5 minuten."* Je komt aan bij de supermarkt en hoewel je vindt dat je niet altijd vlees hoeft te eten, kies je toch de biefstuk die in de aanbieding is. Je verzamelt wat andere ingrediënten en gaat naar de kassa. Je bent je canvas tas vergeten, dus je pakt een plastic tasje van de supermarkt. *"Wat ben ik onverantwoord. Als ik niet zo dom was geweest om mijn tas thuis te vergeten hoefde ik niet voor de zoveelste keer een nieuwe te kopen,"* denk je. Nu snel afrekenen en dan naar huis.

Neutral narrative

Stel, het is vrijdagmiddag en je wilt een lekkere maaltijd bereiden om het weekend mee te beginnen. Je kijkt in de koelkast en ziet verschillende producten die over de houdbaarheidsdatum zijn. Je hebt hebt niet goed hebt opgelet wat er in de koelkast ligt. Wat slordig eigenlijk. Met een opgeruimde koelkast wordt er veel minder eten verspild. Omdat je geen zin hebt om het plastic, GFT- en restafval te scheiden, gooi je de volle verpakkingen in één keer in de prullenbak. Nadat je het in de vuilnisbak hebt

gegooid vind je het toch een lakse actie van jezelf. Meer aandacht besteden aan het scheiden van afval zou beter zijn. Het is eigenlijk ook erg makkelijk om te doen. Je denkt aan een recept dat je wilt maken, een frisse salade klinkt wel goed. Nadat je een aantal producten hebt weggegooid, heb je alleen niet zo veel meer in de koelkast liggen om je maaltijd te bereiden, dus ga je naar de supermarkt. Het is mooi weer, maar je hebt geen zin om te lopen of te fietsen. Dus neem je de auto, ook al is de supermarkt om de hoek. Als je wegrijdt vind je het een spijtige situatie dat je de auto hebt genomen. Je voelt je eigenlijk een beetje lui en ongemakkelijk bij je keuze. De volgende keer ga je lekker met de fiets, het is ook maar 5 minuten fietsen. Je komt aan bij de supermarkt en hoewel je vindt dat je niet altijd vlees hoeft te eten, kies je de biefstuk die in de aanbieding is. Je verzamelt nog wat andere ingrediënten en loopt dan naar de kassa. Dom, je bent je canvas tas thuis vergeten, nu moet je weer een nieuwe kopen. Dus pak je een plastic tasje van de supermarkt. Nu snel afrekenen en dan naar huis.

Appendix 2: Assumptions MANOVA

Table appendix 2a. Transformations shame and guilt for normality

Statistics

		ShameXShame	GuiltXGuilt	Guilt_Inverse	Shame_Inverse	Guilt_Lg10	Shame_Lg10	Shame_SQRT	Guilt_SQRT
N	Valid	183	183	183	183	183	183	183	183
	Missing	0	0	0	0	0	0	0	0
Skewness		,216	-,219	3,216	2,840	-1,771	-1,407	-,878	-1,261
Std. Error of Skewness		,180	,180	,180	,180	,180	,180	,180	,180
Kurtosis		-,634	-,764	12,196	9,233	3,094	1,881	,255	1,122
Std. Error of Kurtosis		,357	,357	,357	,357	,357	,357	,357	,357

Table appendix 2b. Box's Test of Equality of covariances

Box's Test of Equality of Covariance Matrices[a]

Box's M	7,773
F	1,275
df1	6
df2	[illegible]
Sig.	,265

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Conditions

Table appendix 2c. Equality of error variances

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
ShameXShame	Based on Mean	4,398	2	180	,014
	Based on Median	4,198	2	180	,017
	Based on Median and with adjusted df	4,198	2	173,432	,017
	Based on trimmed mean	4,367	2	180	,014
GuiltXGuilt	Based on Mean	1,107	2	180	,333
	Based on Median	1,086	2	180	,340
	Based on Median and with adjusted df	1,086	2	178,149	,340
	Based on trimmed mean	1,104	2	180	,334

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Conditions

Appendix 3 : ANOVA

Table appendix 3. ANOVA: conditions x IPEB

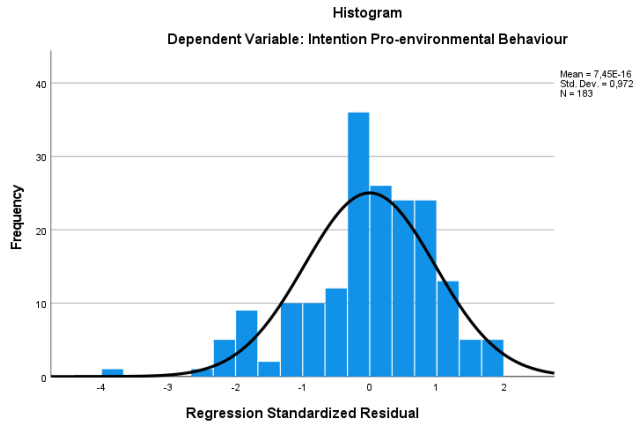
ANOVA

Intention Pro-environmental Behaviour

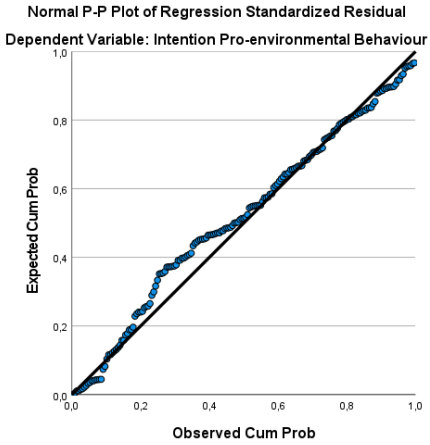
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,802	2	,401	,301	,740
Within Groups	239,641	180	1,331		
Total	240,443	182			

Appendix 4: Regression with dummy variables

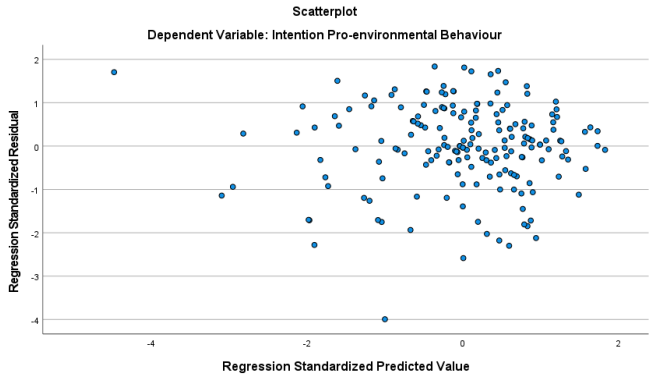
Assumptions: Normality



Assumption: linearity



Assumption: homoscedasticity



Overview regression analysis with dummy variables

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	,571[a]	,326	,319	,94885	,326	43,531	2	180	,000	
2	,701[b]	,492	,462	,84290	,166	7,012	8	172	,000	1,863

a. Predictors: (Constant), 25.000 - 34.999, Environmental Attitude Mean

b. Predictors: (Constant), 25.000 - 34.999, Environmental Attitude Mean, Shame Condition Dummy, Interaction Guilt X Self Efficacy (Centralized), Outcome Expectancy Centralized, Interaction Shame X Outcome Expectancy (Centralized), Guilt Condition Dummy, Self Efficacy Centralized, Interaction Guilt X Outcome Expectancy (Centralized), Interaction Shame X Self Efficacy (Centralized)

c. Dependent Variable: Intention Pro-environmental Behaviour

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78,384	2	39,192	43,531	,000[b]
	Residual	162,058	180	,900		
	Total	240,443	182			
2	Regression	118,240	10	11,824	16,642	,000[c]
	Residual	122,202	172	,710		
	Total	240,443	182			

a. Dependent Variable: Intention Pro-environmental Behaviour

b. Predictors: (Constant), 25.000 - 34.999, Environmental Attitude Mean

c. Predictors: (Constant), 25.000 - 34.999, Environmental Attitude Mean, Shame Condition Dummy, Interaction Guilt X Self Efficacy (Centralized), Outcome Expectancy Centralized, Interaction Shame X Outcome Expectancy (Centralized), Guilt Condition Dummy, Self Efficacy Centralized, Interaction Guilt X Outcome Expectancy (Centralized), Interaction Shame X Self Efficacy (Centralized)

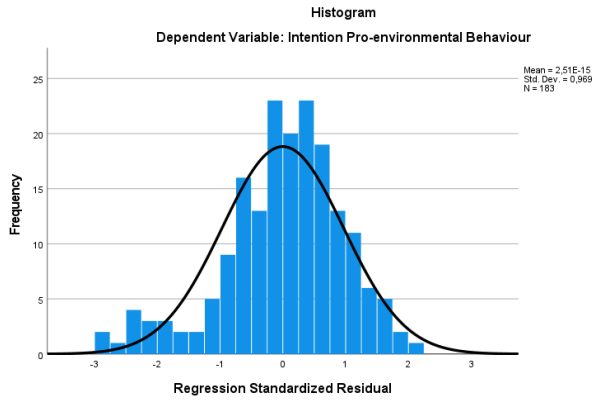
Coefficients[a]

Model		Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	Correlations: Zero-order	Correlations: Partial	Correlations: Part	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1	(Constant)	2,119	,368		5,766	,000					
	Environmental Attitude Mean	,576	,066	,538	8,780	,000	,547	,548	,537	,997	1,003
	25.000 - 34.999	-,489	,183	-,164	-2,679	,008	-,193	-,196	-,164	,997	1,003
2	(Constant)	3,227	,369		8,740	,000					
	Environmental Attitude Mean	,395	,065	,369	6,039	,000	,547	,418	,328	,792	1,263
	25.000 - 34.999	-,560	,164	-,188	-3,420	,001	-,193	-,252	-,186	,980	1,020
	Shame Condition Dummy	-,081	,157	-,032	-,516	,606	-,057	-,039	-,028	,748	1,337
	Guilt Condition Dummy	-,087	,151	-,036	-,577	,565	,018	-,044	-,031	,753	1,327
	Outcome Expectancy Centralized	,196	,064	,191	3,090	,002	,404	,229	,168	,776	1,288
	Self Efficacy Centralized	,409	,097	,275	4,225	,000	,500	,307	,230	,698	1,432
	Interaction Shame X Self Efficacy (Centralized)	-,081	,109	-,090	-,742	,459	-,189	-,056	-,040	,201	4,973
	Interaction Shame X Outcome Expectancy (Centralized)	,088	,074	,133	1,181	,239	-,181	,090	,064	,233	4,289
	Interaction Guilt X Outcome Expectancy (Centralized)	-,151	,068	-,244	-2,208	,029	-,222	-,166	-,120	,242	4,126
	Interaction Guilt X Self Efficacy (Centralized)	,036	,104	,042	,348	,728	-,214	,027	,019	,203	4,924

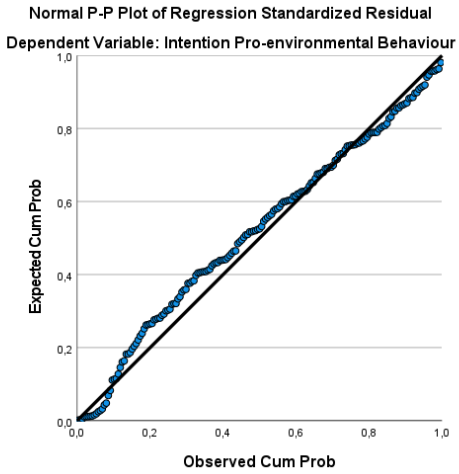
a. Dependent Variable: Intention Pro-environmental Behaviour

Appendix 5: Assumptions regression analysis centered variables

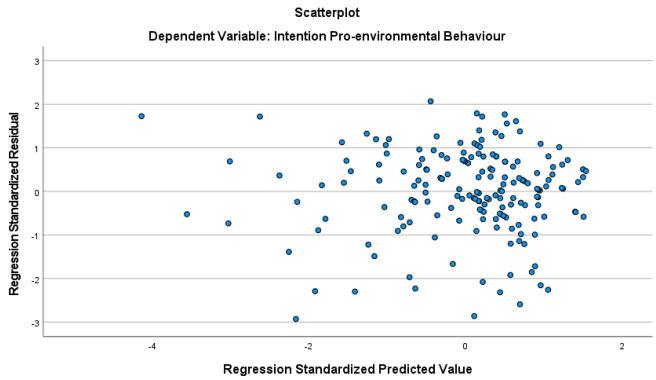
Assumptions: Normality



Assumption: linearity



Assumption: homoscedasticity



Appendix 6: Regression analysis model summary centered variables

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,571[a]	,326	,319	,94885	,326	43,531	2	180	,000	
2	,744[b]	,554	,526	,79169	,228	9,729	9	171	,000	1,893

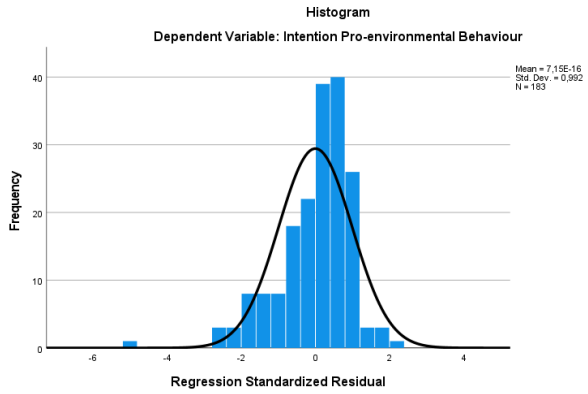
a. Predictors: (Constant), 25.000 - 34.999, Environmental Attitude Mean

b. Predictors: (Constant), 25.000 - 34.999, Environmental Attitude Mean, Interaction Shame X Outcome Expectancy (Centralized), Outcome Expectancy Centralized, Interaction Guilt X Self Efficacy (Centralized), Interaction Shame X Guilt, Self Efficacy Centralized, Shame Centralized, Interaction Guilt X Outcome Expectancy (Centralized), Guilt Centralized, Interaction Shame X Self Efficacy (Centralized)

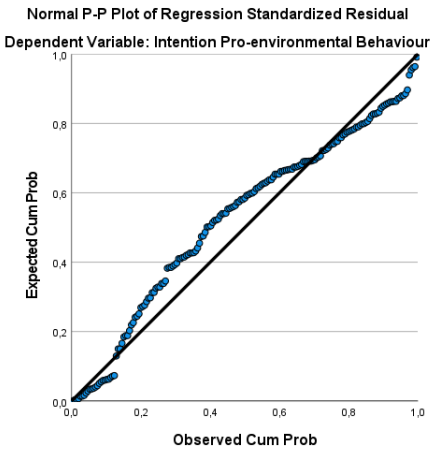
c. Dependent Variable: Intention Pro-environmental Behaviour

Appendix 7: Assumptions regression self-efficacy expectancy and outcome expectancy

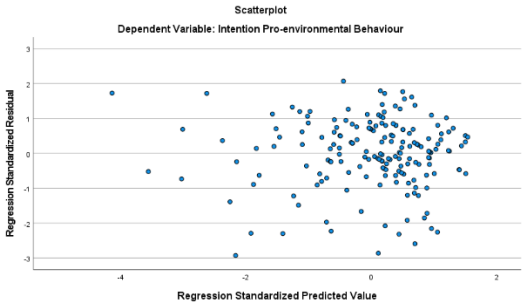
Assumptions: Normality



Assumption: linearity



Assumption: homoscedasticity


Scatterplot
Dependent Variable: Intention Pro-environmental Behaviour
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-4
-2
0
2

Appendix 8: Additional regression shame and guilt

Appendix 8a: Assumptions regression shame and guilt

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Correlations Zero-order	Correlations Partial	Correlations Part	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	2,964	,245		12,093	,000					
	Guilt Manipulation Check	,452	,048	,572	9,386	,000	,572	,572	,572	1,000	1,000
2	(Constant)	2,939	,246		11,926	,000					
	Guilt Manipulation Check	,379	,088	,479	4,299	,000	,572	,305	,262	,299	3,341
	Shame Manipulation Check	,087	,087	,111	,998	,320	,512	,074	,061	,299	3,341

a. Dependent Variable: Intention_Pro_Environmental_Behaviour Intention Pro-environmental Behaviour

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	Change Statistics F Change	Change Statistics df1	Change Statistics df2	Change Statistics Sig. F Change	Durbin-Watson
1	,583[a]	,340	,329	,94151	,340	30,748	3	179	,000	1,928

a. Predictors: (Constant), Interaction Shame X Guilt, Shame Centralized, Guilt Centralized

b. Dependent Variable: Intention Pro-environmental Behaviour

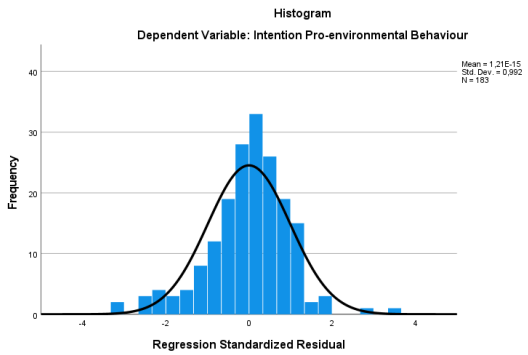
ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	81,769	3	27,256	30,748	,000[b]
	Residual	158,673	179	,886		
	Total	240,443	182			

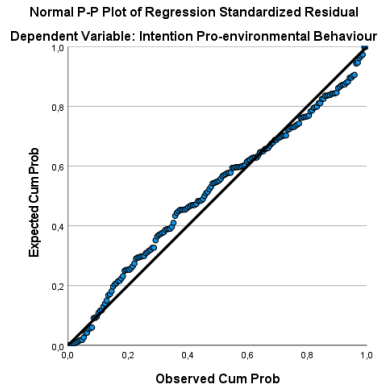
a. Dependent Variable: Intention Pro-environmental Behaviour

b. Predictors: (Constant), Interaction Shame X Guilt, Shame Centralized, Guilt Centralized

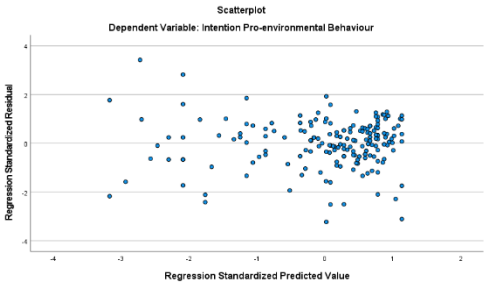
Assumptions: Normality



Assumption: linearity



Assumption: homoscedasticity



Appendix 8b: Regression coefficients shame and guilt

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5,256	,089		59,146	,000					
	Shame Centralized	,112	,088	,142	1,260		,512	,094	,077	,290	3,446
	Guilt Centralized	,307	,099	,388	3,099	,002	,572	,226	,188	,235	4,256
	Interaction Shame X Guilt	-,049	,031	-,116	-1,564		-,388	-,116	-,095	,667	1,500
2	(Constant)	5,334	,082		65,008	,000					
	Shame Centralized	,126	,086	,161	1,472		,512	,111	,080	,250	4,004
	Guilt Centralized	,134	,099	,169	1,352	,178	,572	,102	,074	,190	5,266
	Interaction Shame X Guilt	-,068	,032	-,162	-2,089		-,388	-,157	-,114	,497	2,012
	Self Efficacy Centralized	,461	,097	,309	4,750	,000	,500	,340	,259	,702	1,425
	Outcome Expectancy Centralized	,151	,066	,147	2,297	,023	,404	,172	,125	,727	1,375
	Interaction Shame X Self Efficacy (Centralized)	-,016	,119	-,017	-,130	,896	-,189	-,010	-,007	,168	5,942
	Interaction Shame X Outcome Expectancy (Centralized)	,025	,076	,038	,328	,743	-,181	,025	,018	,224	4,462
	Interaction Guilt X Outcome Expectancy (Centralized)	-,063	,070	-,102	-,904	,367	-,222	-,069	-,049	,235	4,257
	Interaction Guilt X Self Efficacy (Centralized)	-,039	,113	-,045	-,348	,729	-,214	-,026	-,019	,174	5,755
3	(Constant)	3,940	,403		9,766	,000					
	Shame Centralized	,110	,083	,140	1,326		,512	,101	,070	,249	4,016
	Guilt Centralized	,060	,098	,076	,609	,543	,572	,046	,032	,181	5,519
	Interaction Shame X Guilt	-,064	,031	-,153	-2,038		-,388	-,154	-,108	,497	2,014
	Self Efficacy Centralized	,383	,097	,257	3,962	,000	,500	,289	,209	,664	1,505
	Outcome Expectancy Centralized	,162	,064	,157	2,538	,012	,404	,190	,134	,726	1,378
	Interaction Shame X Self Efficacy (Centralized)	-,005	,116	-,006	-,047	,962	-,189	-,004	-,002	,168	5,946
	Interaction Shame X Outcome Expectancy (Centralized)	,047	,074	,071	,633	,527	-,181	,048	,033	,223	4,494
	Interaction Guilt X Outcome Expectancy (Centralized)	-,083	,068	-,134	-1,226	,222	-,222	-,093	-,065	,233	4,287
	Interaction Guilt X Self Efficacy (Centralized)	-,023	,110	-,026	-,208	,835	-,214	-,016	-,011	,173	5,765
	Environmental Attitude Mean	,253	,072	,236	3,523	,001	,547	,259	,186	,622	1,609

a. Dependent Variable: Intention Pro-environmental Behaviour

Appendix 9: Correlation Shame and Guilt

Correlations

		Shame	Guilt	ShameXShame	GuiltXGuilt	Shame_Condition_Dummy	Guilt_Condition_Dummy
Shame	Pearson Correlation	1	,837**	,980**	,819**	,052	-,035
	Sig. (2-tailed)		,000	,000	,000	,483	,636
	N	183	183	183	183	183	183
Guilt	Pearson Correlation	,837**	1	,798**	,982**	,022	-,021
	Sig. (2-tailed)	,000		,000	,000	,765	,778
	N	183	183	183	183	183	183
ShameXShame	Pearson Correlation	,980**	,798**	1	,809**	,091	-,044
	Sig. (2-tailed)	,000	,000		,000	,219	,555
	N	183	183	183	183	183	183
GuiltXGuilt	Pearson Correlation	,819**	,982**	,809	1	,037	-,022
	Sig. (2-tailed)	,000	,000	,000		,620	,768
	N	183	183	183	183	183	183
Shame_Condition_Dummy	Pearson Correlation	,052	,022	,091	,037	1	-,475**
	Sig. (2-tailed)	,483	,765	,219	,620		,000
	N	183	183	183	183	183	183
Guilt_Condition_Dummy	Pearson Correlation	-,035	-,021	-,044	-,022	-,475**	1
	Sig. (2-tailed)	,636	,778	,555	,768	,000	
	N	183	183	183	183	183	183

**. Correlation is significant at the 0.01 level (2-tailed).