

The Effect of Shame and Guilt on Air Travellers' Willingness to Pay for Carbon Offsets

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Abstract

As the polluting aviation industry continues to grow, it is important to consider ways to mitigate its harmful effect on our environment. On an individual level, this could be through letting air travellers pay an extra fee for carbon offsets, which acts as compensation for their flight's emissions. This study examined to what extent shame and guilt influence the willingness to pay for carbon offsets. In doing so, an online survey was conducted among 144 participants. After executing the simple linear regression analysis, both shame and guilt appeared to show a significant positive relationship with willingness to pay for carbon offsets. When including shame and guilt together in one model via multiple regression analysis, shame no longer appeared to have a significant relationship with willingness to pay, but guilt did. This non-significant relationship could be explained by an inadequate activation of the participants' social norms or due to there not existing a social norm about paying for carbon offsets yet. The results implicate that the aviation industry should try to activate feelings of shame and especially guilt among air travellers, when wanting to increase their willingness to pay for carbon offsets. Future campaigns could appeal to air travellers' feelings of shame and guilt by emphasizing social pressures about paying for carbon offsets and their personal responsibility to compensate for the harmful emissions of their flight, respectively.

Keywords: aviation, carbon offsets, willingness to pay, guilt, shame

The Effect of Shame and Guilt on Air Travellers' Willingness to Pay for Carbon Offsets

The unsustainable nature of the growing aviation industry has harmful impacts on the well-being of our planet. The flight-associated emissions are proven to be a significant contributor to global warming (Sher et al., 2021; Penner et al., 1999; Prussi et al., 2021). It is estimated that commercial aviation accounts for 2.5% of the entire energy-related carbon dioxide (CO₂) emissions (IATA, 2017). Besides this, the aviation sector is characterized by one of the strongest economic growths, with an increase of 680% between 1960 and 2018 (Larsson et al., 2019). With this information in mind, it seems important that the growing aviation sector needs more attention on how to mitigate its impact on the climate. A way to approach this is to focus on the influence of emotions on the behaviour of individuals who travel by plane.

Frequently studied emotions in the context of leisure air travel are shame and guilt, which are self-conscious emotions that have been examined regarding how they affect flying behaviour (Bösehans et al., 2020; Winter et al., 2021). Shame and guilt are both negative emotions, where shame is feeling negative affect about oneself and guilt is feeling negative affect about one's specific action (Cohen et al., 2011). Varying levels of shame and guilt were noted among people discussing the negative consequences of air travel on the environment (Mkono & Hughes, 2020). The literature suggests that the frequency of flying decreases when one experiences these emotions (Bösehans et al., 2020; Winter et al., 2021). Nonetheless, individuals continue flying, as nowadays the practice of flying forms an integral part of leisure activities, such as visiting friends or family and going on holidays (Becken, 2007; Randles & Mander, 2009).

A possibility for individuals to mitigate their effects on the planet when flying is through carbon offsets. This entails paying an extra fee for your plane ticket to compensate for the emissions produced by your flight (Lu & Shon, 2012). Despite air travellers'

awareness of the damage done to the environment by the increasing aviation sector, they show limited interest in such voluntary carbon offset schemes (Gössling et al., 2009; Kerner & Brudermann, 2021; Berger et al., 2022). No literature has been found on the influence of shame and guilt on the willingness to pay for carbon offsets. Through further investigation of this matter, it might be possible to understand how these emotions influence behavioural change, particularly in favour of the environment. It is interesting to investigate whether an intrinsically triggered emotion (guilt) or extrinsically triggered emotion (shame) will be a stronger predictor of one's willingness to pay. This can be of relevance for implementing future policies or marketing campaigns concerning carbon offsets which could then focus on generating an emotional response. Therefore, the research question of this study will be: "To what extent do shame and guilt play a role in increasing the general public's willingness to pay for carbon offsets when flying?"

The Concept of Carbon Offsets in Aviation

To answer the research question, it is important to first understand the concept of carbon offsets. Carbon offsets can be seen as certified emission reductions, which individuals can purchase to neutralize¹ their net CO₂ emissions from their flights (International Civil Aviation Organization, 2018). For instance, someone taking a flight from Amsterdam to Porto could pay an extra fee for their ticket to offset their personal emissions from their flight. This money will subsequently be invested in measurements that mitigate climate change, such as reforestation or renewable energy projects (Brouwer et al., 2008). Examples of existing carbon offset schemes are the Fly Greener plan by Cathay Pacific and the CO₂ ZERO plan of the KLM Royal Dutch Airlines (Chen, 2013). Before analysing whether shame and guilt influence an individual's willingness to pay for these carbon offsets, an in-depth overview of

¹ This way, it is possible to compensate a harmful greenhouse gas (GHG) emission, with reducing another specific GHG emission. The goal is to ensure a zero net effect on the climate (Brouwer et al., 2008; Bösehans et al., 2020).

what the literature mentions about these emotions, their expression regarding the environment and how they differ from one another will be provided.

Feelings of Shame Regarding the Environment

Shame is characteristic to occur when an audience is around (imaginary or physical). It is triggered when an individual notices he or she is devalued by others (Teroni & Deonna, 2008). In extension to shame, 'flight shame' reflects the changing view on flying as a climatically harmful and socially undesirable behaviour (Gössling et al., 2020). This flight shame is, in most cases, triggered when one's concerns about the environment and their self-perception are out of balance with their climate-harming actions (Becken et al., 2021).

In the existing literature, a positive relationship was found between opinions from one's social environment and one's own opinion on air travel regarding climate change (Gössling et al., 2020). This suggests a reinforced trend to evaluate the consequences of air travel more critically on the climate due to social pressures. Winter et al. (2021) confirmed this in their study with results showing that their participants were significantly less willing to fly in instances where they experienced flight shame. Clayes (2020) and Culiberg et al. (2022) add to this, by mentioning that shame plays an integral role in the phenomenon of flight-shaming, which leads to a decrease in air travel.

Gössling et al. (2020) suggested that introducing taxes and eliminating subsidies for flying were positively evaluated among people experiencing flight shame. This shows that there is evidence that flight shame might enhance a positive attitude towards paying more for your flight, therefore possibly indicating that people are more willing to pay when experiencing shame. However, among the population of air travellers, just a minority is willing to voluntarily pay for carbon offsets (Akter et al., 2009). Motivation to pay could come from social pressures, as air travellers might only be willing to pay if they perceive others are doing it as well (Bösehans et al., 2020). Following up on the existing literature, the

first hypothesis is formulated as “A person who experiences high levels of shame about flying will be more likely to pay for carbon offsets of flight emissions”.

Feelings of Guilt Regarding the Environment

The emotion of guilt is felt when an individual feels personally responsible for the negative outcomes of their actions (Tangney & Dearing, 2002). According to the literature, experiencing guilt over discrepancies in our behaviour that negatively influence the well-being of the environment, is a commonly experienced sentiment (Adams et al., 2020; Bahja et al., 2021; Mallett, 2012; Tam, 2019). According to Greendex, a study conducted to examine consumer behaviour across 18 countries, approximately one-third of the 18,000 participants acknowledged or strongly endorsed the following statement ‘I feel guilty about the impact I have on the environment’ (National Geographic & GlobeScan, 2014). Even the mere anticipation of feelings of guilt is an indication of one’s intention to behave in a “correct” manner (Onwezen et al., 2013; Thøgersen, 2006). Baumeister et al. (2007) characterize guilt to be working as a feedback mechanism, stating that one’s response to guilt indirectly influences future behaviour. This expresses itself either in behaviour that relieves oneself of the feelings of guilt or avoids the anticipation of guilt in the future (Parkinson et al., 2004).

The concept of environmental guilt extends these expressions of guilt to a theoretical framework in which guilt is encountered because of damage inflicted upon the environment (Tam, 2019). Tam continues by stating that resulting from the experience of environmental guilt, individuals are increasingly inclined to modify their behaviour in favour of the environment. When putting this in the context of aviation, Bösehans et al. (2020) found that the anticipation of guilt acts as a flying barrier to people who highly value protecting the environment. They mention that when there is an increase in feelings of guilt about flying, individuals are less inclined to choose to travel by plane. In addition to this, Gans and Groves (2012) found when guilt is caused by the consumption of polluting electricity, there will be a

demand for carbon offsetting. Whether this is also applicable to carbon offsets in aviation, remains uncovered in the literature. Therefore, the second hypothesis is the following “A person who experiences high levels of guilt about flying will be more likely to pay for carbon offsets of flight emissions”.

Differentiating between shame and guilt

Shame and guilt can be distinguished from each other in their origin. Where shame arises due to a violation of social norms causing negative perceptions about the self by others, guilt is caused by a breach in one’s personal norms evoking a negative perception of the self by oneself (Kaiser & Shimoda, 1999; Robertson et al., 2018). Social norms highlight the external pressure of social sanctions that are acted upon an individual’s conviction, about whether a particular behaviour is right or wrong (Chen, 2013). Personal norms refer to an individual’s internal conviction about the rightness or wrongness of specific behaviour (Bamberg et al., 2003, 2007). To explain with an example; you feel guilty for not paying extra for carbon offsets because now your behaviour has a more harmful impact on the environment than in the case where you would have paid for it. You feel guilty about your own actions. You feel ashamed for not paying for carbon offsets because your peers might find you less good of a person. You feel ashamed of yourself, but guilty about the action.

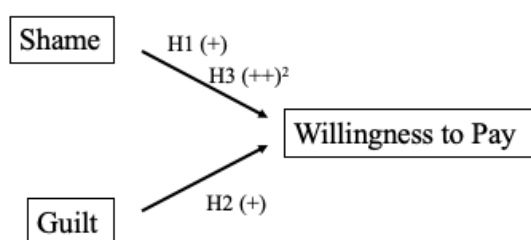
Shame is often evaluated as more intense and harder to process than guilt, as a breach in social norms is said to have a bigger impact than a breach in personal norms (Kaiser & Shimoda, 1999; Scheff, 2000). This bigger impact can be explained by the elicited negative self-evaluation in the case of shame that does not occur with guilt, as guilt is more linked to a specific action or behaviour (Grey et al., 2018; Griffin et al., 2016; Mkono & Hughes, 2020).

Regarding behaviour in favour of the environment, passengers who endorse values that support the environment but continue flying, have a harder time processing this in terms of their social norms than their personal norms (McDonald et al., 2015). This suggests that

shame might be harder to process than guilt when there is a dissonance about environmentally friendly behaviour. Taking the existing literature into consideration, where shame is seen as a more intense emotion and harder to process than guilt, the third hypothesis is: “Compared to guilt, shame acts as a stronger predictor of one’s willingness to pay for a carbon offset”. All three hypotheses (H1, H2 and H3) are displayed in the conceptual model (Figure 1) below.

Figure 1

Conceptual Model



Method

Participants

The following sections will provide an elaboration on the executed procedures used to conduct the study and collect the data. In total, 144 participants filled out the survey. The average time needed to finish the survey was 27.4 minutes ($SD = 87.9$). There were 15 participants excluded from the data analysis because they did not finish the survey. In addition, three participants were removed as outliers due to the extensive duration of time (e.g., several days) over which they completed the survey. It was assumed that those participants took long breaks in between, so they might have lost track of what the survey was about, or how certain concepts were defined beforehand. Thus, the final sample used in the data analysis consisted of 126 participants. Of the participants, 44.44 % were male, 55.56 % of the participants were female, and no participant indicated a different gender than male or

² H3: “Compared to guilt, shame acts as a stronger predictor of one’s willingness to pay for a carbon offset” references to a relation between shame and willingness to pay that is stronger than the relation between guilt and willingness to pay. Therefore, in the conceptual model H3 has been assigned two plus signs (++)

female. The average age across the sample was 39.4 ($SD = 18.3$, $min = 16$, $max = 90$).

Concerning nationality, 51.59% of the participants were Dutch, 30.16% were German, and 18.25% indicated another nationality. Thus, at least over 80% of the participants stemmed from a WEIRD (Western, Educated, Industrialized, Rich and Developed) country. We can therefore speak of a WEIRD sample.

Procedure

The data collection was done by the researchers themselves, which are five students from the University of Groningen, the Netherlands who are writing their bachelor thesis on the topic “Promoting sustainable behaviour and policy support in net-zero transition”. Before collecting the data, a power analysis was practised for the research model, aiming for a linear multiple regression with a medium effect size ($f^2 = .063$), $\alpha = .05$, and $power = .80$. This analysis resulted in a recommended sample size of 128 participants. Each student of the bachelor thesis group aimed to collect data from approximately 26 participants. Therefore, a convenience sample was conducted. This sample was acquired through sharing a link with acquaintances of the researchers of this study, via social chat platforms, such as Whatsapp, or asking in person. Participation was voluntary and no financial compensation or any other kind of rewards were offered afterwards. As a condition of participation, the participants had to be older than 16 years and understand one of the three languages (i.e., English, Dutch, and German). This study is registered to the Ethics Committee of the Faculty of Behavioural and Social Sciences at the University of Groningen, The Netherlands, and exempt from review. Data collection took place between the 27th of April 2023 and the 3rd of May 2023. The survey was accomplished in one session and there was no time restriction for taking the survey.

The researchers were not present when the participants completed the survey, which was taken individually and online via Qualtrics (Qualtrics, 2005). First, the participants

received general information about the survey, including the study's relevance, goal, a summary of what was asked from them, and that participation was voluntary. In addition, the participants were informed about how their responses would be utilized and how their data would be treated. Then, the participants had to give consent to take part in the study to continue the survey. In the main part of the survey, participants answered questions of seven different blocks: personal values, sustainable clothing, sustainable diet, sustainable consumption, corporate environmental responsibility, carbon offsets, and environmental policies. A complete version of the survey can be found in Appendix A.

Design

The section containing the specific questions that concern my part of the study can be found in Appendix A under the subheading “Carbon offsets”. The aim was to discover to what extent shame and guilt are predictors for an increase in one’s willingness to pay for carbon offsets. Participants were given the following description to inform them about what the concept of carbon offsets entails: “Recently, a new policy called ‘carbon offsets’ was offered to airlines to compensate for their negative effects on the climate by reducing their emissions through another way. For example, when you take a flight from Amsterdam to Barcelona, you can choose to offset the carbon emissions from your flight by paying the money (around €10-€20 per person) so that the airline will invest in a non-profit organization for renewable energy”. A fee indication of €10-€20 was given, as this is the closest reflection of the average amount of carbon offset prices in real life (Brouwer et al., 2008).

In the survey, the participants started by answering two questions about social norms and personal norms separately, both on an 11-point Likert scale with values ranging from 0 to 10. To discover how much the participants endorse personal norms in favour of the environment, the degree to which the participants feel personally obligated to protect our environment was asked, with possible responses ranging from 0 = *not obligated at all* to 10

= *strongly obligated*. To see how much social norms influence the participants' decision-making in favour of the environment, I asked how much the participants care for other people's opinions about whether they are perceived as acting pro-environmentally, with values ranging from 0 = *Not at all* to 10 = *A great deal*. Both items had a midpoint in the Likert scale of 5 = *moderately* and were adopted from a study by Bösehans et al. (2020). After that, the participants answered two questions about their rates of shame and guilt. The extent to which they felt shame and guilt when thinking about going on a holiday by plane, was separately measured on an 11-point Likert scale from 0 to 10 (0 = *Never*, 10 = *Massively*). Again, both items had a midpoint of 5 = *moderately*. Last, the participants were asked how likely they were to pay for a carbon offset (estimated costs of 10 to 20 euros) to compensate for the emissions of their flight. The participants had to indicate the likelihood of them paying for a carbon offset on an 11-point Likert scale from 0 to 10 (0 = *Extremely unlikely*, 10 = *Extremely likely*) with a midpoint of 5 = *Neither likely nor unlikely*.

Data Analysis

To start off, descriptive analyses of the participants, including age, gender and nationality were executed. Then, the variables' central tendency measures (mean, mode, median) and distribution measures (variance, standard deviation, range) were conducted. To confirm that the concepts of shame and guilt differ from each other, the correlation between shame and social norm and guilt and personal norm was calculated. For the first and second hypothesis, a simple linear regression analysis was executed and for the third hypothesis a multiple regression analysis. Before conducting these analyses, the concerning assumptions checks were executed. The assumptions for both models were met.

Instruments

For constructing the survey, the software *Equaltrics* was used. The participants were able to access the survey via a web link that was sent to them. The power analysis prior to the

data collection was run in the software *GPower 3.1* (Faul et al., 2009). For the regression analyses, the statistical program IBM SPSS Statistics (Version 28) and JASP (Version 0.17.2) was used.

Results

Descriptives

When looking at feelings of shame ($M = 2.69$, $SD = 2.82$), the mean shows that on average the participants chose “sometimes” experiencing shame when flying. When comparing this to feelings of guilt ($M = 4.12$, $SD = 2.88$), it shows higher values were assigned to experiencing guilt than shame. With a mean of 4.12 being equal to reporting “moderately” experiencing guilt when flying. The average willingness to pay was 4.92 ($SD = 3.26$), indicating our participants were often neither likely nor unlikely to pay extra for carbon offsets. This suggests some discrepancy concerning the question whether our participants are willing to pay for carbon offsets. The distributions of the data can be found in Appendix B.

Confirming Difference Between Shame and Guilt

Firstly, social norms and personal norms were analysed in their relationship with shame and guilt, respectively. This was done to investigate whether shame and guilt are indeed perceived as different concepts among the participants. Shame and social norms were significantly correlated ($r = .34$, 95% CI [0.18, 0.49], $p < .001$), and so were guilt and personal norms ($r = .40$, 95% CI [0.24, 0.53], $p < .001$). Therefore, it was confirmed that shame and guilt were seen as different from one another.

Testing the Hypotheses

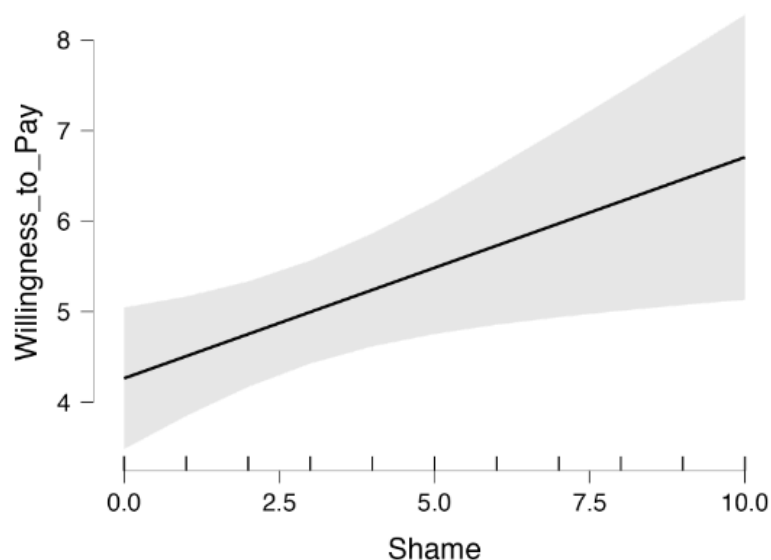
The first hypothesis expected that a person who experiences high levels of shame about flying will be more likely to pay for carbon offsets of flight emissions. Analysing the data revealed a significant correlation between shame and willingness to pay for carbon offsets ($r = .21$, (95% CI [0.04, 0.37], $p = .009$, $R^2 = 0.05$). After conducting a simple

regression analysis, the results revealed a significant positive relationship between shame and willingness to pay ($b = -.24$, $t(124) = 2.40$, $p = .018$). Figure 2 visualises this relationship.

The results show that shame is significantly related to an individual's willingness to pay for carbon offsets. The above-named results support the first hypothesis.

Figure 2

The Marginal Effect of Shame on Willingness to Pay

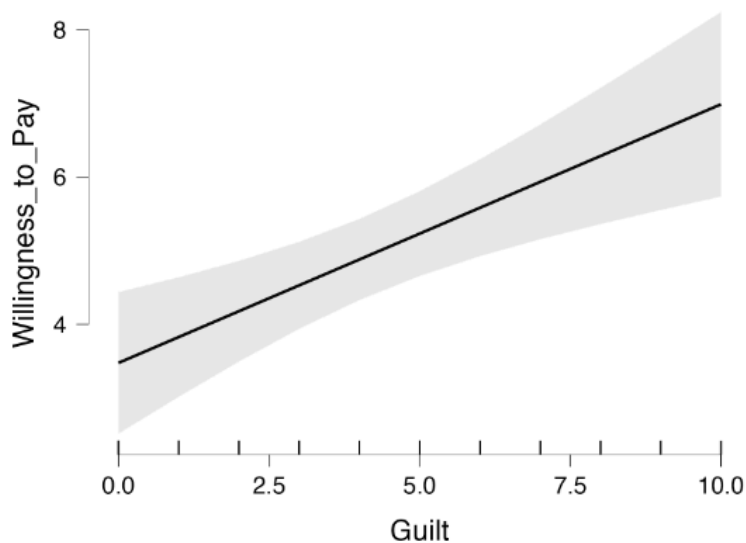


Note. The grey-coloured area within the graph shows the accompanying 95% confidence interval.

For the second hypothesis it was expected that a person who experiences high levels of guilt about flying will be more likely to pay for carbon offsets of flight emissions. Analysis showed a significant correlation between guilt and willingness to pay for a carbon offset ($r = 0.31$ (95% CI [0.14, 0.46], $p < .001$, $R^2 = 0.10$). Through assessing a simple regression analysis, a significant positive relationship was observed between guilt and willingness to pay for carbon offsets ($b = .35$, $t(124) = 3.63$, $p < .001$). Figure 3 shows the visual elaboration of this relationship. Based on the results, it can be concluded that the second hypothesis is supported.

Figure 3

The Marginal Effect of Guilt on Willingness to Pay

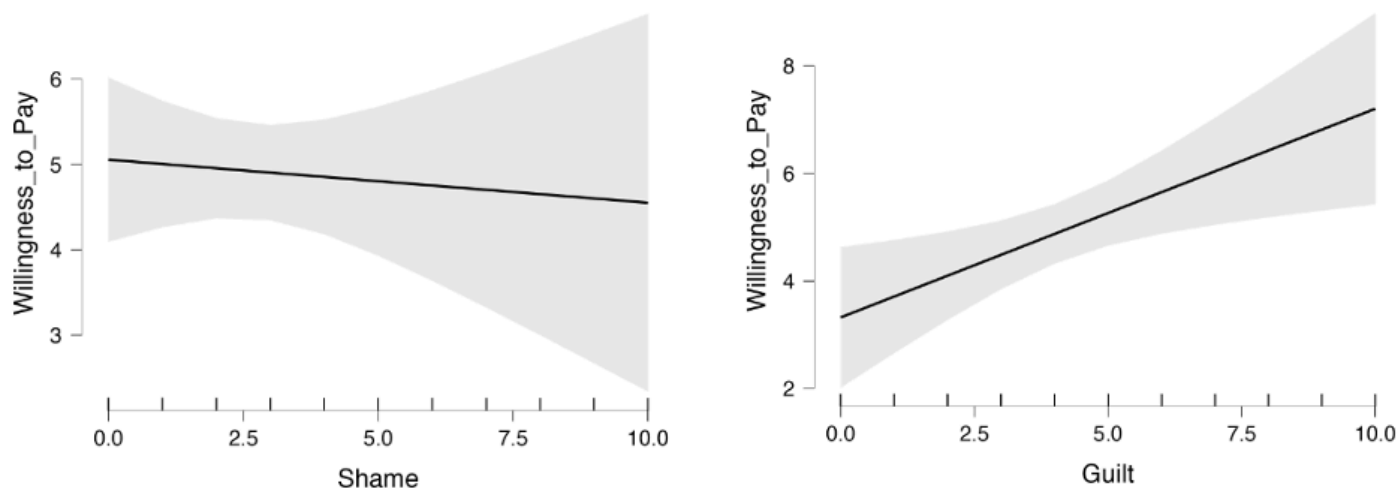


Note. The grey-coloured area within the graph shows the accompanying 95% confidence interval.

For the third hypothesis “Compared to guilt, shame acts as a stronger predictor of one’s willingness to pay for a carbon offset”, a multiple regression was conducted, with the model including both independent variables (shame and guilt) and the dependent variable (willingness to pay) (see Figure 4). When looking for multicollinearity between the independent variables, a high correlation between shame and guilt was found ($r = .74$, 95% CI [0.65, 0.81], $p < .001$) and a Variance Inflation Factor (VIF) of 2.24. Since the correlation is lower than .80 and the VIF is lower than 5, the assumption of no multicollinearity was met. Nonetheless, the following results should be interpreted with caution. The overall model appeared to be statistically significant ($F(2, 123) = 6.61$, $p = .002$, $R^2 = 0.10$). However, in this model shame reported a non-significant relationship with willingness to pay ($b = -.05$, $t(124) = -0.34$, $p = .734$). On the contrary, guilt appeared to demonstrate a significant positive relationship ($b = .39$, $t(124) = 2.67$, $p = .009$). Therefore, the third hypothesis is rejected.

Figure 4

The Effect of Shame and Guilt on the Willingness to Pay for Carbon Offsets



Note. On the left side, the marginal effect of shame on willingness to pay in the presence of guilt is displayed. On the right side, the marginal effect of shame on willingness to pay in the presence of shame is shown. The grey-coloured area within the graph shows the accompanying 95% confidence interval.

Discussion

This study aimed to see whether the emotions of shame and guilt would show an effect on the willingness to pay for carbon offsets when flying and see which emotion would show a stronger effect. It was hypothesized that people who experience feelings of shame or guilt, are more likely to pay for carbon offsets and that shame would be a stronger predictor. The results from the survey showed that shame and guilt had a significant effect on the willingness to pay for carbon offsets, supporting the first two hypotheses. However, guilt appeared to have a stronger relationship with willingness to pay than shame, which contradicts the third hypothesis.

Reflection on the Relationship Between Shame and Willingness to Pay

The first hypothesis is supported, indicating that shame is of relevance in increasing air traveller's willingness to pay for carbon offsets. Finding a significant positive relationship

between shame and willingness to pay for carbon offsets indicates that feelings of shame not only influence an individual's intention to travel by plane (Clayes, 2020; Culiberg et al., 2022; Winter et al., 2021), but shame also influences whether air travellers are willing to pay for carbon offsets. These results are also an extension of the knowledge that flight shame enhances the openness to introducing taxes and eliminating subsidies for flying (Gössling et al., 2020). As this study discovered, that when individuals experience shame they are more likely to pay for carbon offsets. Additionally, the significant correlation between social norms and shame shows the impact of social influences on feeling ashamed. This perception aligns with the perception of Bösehans et al. 2020, that air travellers are increasingly willing to pay when they perceive others are paying extra as well. Therefore, the current study shows that shame is an emotion to take into account when looking at how to increase participation in carbon offsetting.

Reflection on the Relationship Between Guilt and Willingness to Pay

The data supports the second hypothesis by showing a positive significant relationship between guilt and willingness to pay. This aligns with the existing literature stating that experiencing environmental guilt causes individuals to modify their behaviour in favour of the environment (Tam, 2019). The current study shows that this modification in behaviour can be expanded to becoming more willing to pay for carbon offsets when experiencing guilt. Furthermore, Bösehans et al. (2020) stated that people who value taking care of the planet are less likely to travel by plane when experiencing guilt. The significant correlation between personal norms and guilt and the significant positive relationship between guilt and willingness to pay add to this, by showing that when you feel guilty about your flight's emissions, you are more likely to pay for carbon offsets. The results also indicate that not only there will be a demand for carbon offsets when feeling guilty about using polluting electricity (Gans and Groves, 2012), but also when feeling guilty about flying. These findings implicate

that guilt is an emotion that should be considered when looking at what influences behaviour in favour of the environment concerning aviation and carbon offsets.

Reflection on Shame not being a Stronger Predictor for Willingness to Pay than Guilt

The third hypothesis was rejected, as guilt was found to be a stronger predictor of one's willingness to pay for carbon offsets than shame. This was reflected in the higher correlation and the significant relationship between guilt and willingness to pay. Besides this, shame appeared to no longer have a significant relationship with the willingness to pay for carbon offsets in the presence of guilt. This is in contrast with the expectations stemming from existing literature, as shame was said to have a bigger impact on individuals than guilt, due to a breach in social norms being harder to process than violating personal norms (Kaiser & Shimoda, 1999; Scheff, 2000). Additionally, the literature mentioned that a dissonance about environmentally friendly behaviour is harder to process in terms of shame than guilt. Because of these contradicting results, it is questioned whether the social norm on paying for carbon offsets was activated enough in our study, as people therefore may rely more on feelings of guilt than shame when thinking about their willingness to pay. Further elaboration on this methodological limitation will be discussed in the next paragraphs.

Activation of Social Norms

To feel shame resulting from violating a social norm, an adequate activation of the social norms needs to take place first. Social norms often need to be activated, which is an unconscious process (Biel & Thøgersen, 2007). These norms become activated when an individual perceives that crucial values are under threat (Stern et al., 1999). In the survey, the question about one's social norm was stated as the following "How much do you care about other people's (e.g., family, friends) opinions about whether you act pro-environmentally?". This question might have been too general to activate a social norm and trigger shame about not paying for carbon offsets. According to the model of social norm activation (Bicchieri,

2005), questions about one's social norms should focus on encouraging a participant to think about the behaviours and beliefs of their peers and how one's behaviour aligns or differs from this. Therefore, the question in the survey could be phrased more specifically, such as "How much do you care that your friends will dislike you for not paying a carbon offset when flying?" This way, there is more attention to negatively loaded information and the consequences of not adhering to the social norm of paying for a carbon offset.

Another feasible explanation as to why the participants' social norms were not activated enough, might be because social norms change over time due to shifts in what is seen as appropriate (Gelfand et al., 2011). For example, smoking indoors is nowadays no longer socially acceptable due to the awareness of the health risks. However, it is difficult to anticipate when a social norm will come into existence (Andreoni et al., 2021). Often this is estimated through the concept of tipping points (Granovetter, 1978; Nyborg et al., 2016; Bicchieri & Funcke, 2018). Tipping points occur when a large enough proportion of individuals deviate from the existing norm causing the majority's expectations about what is seen as socially acceptable to change (Andrighetto & Vriens, 2022). As paying for carbon offsets is a relatively new concept for aviation, it might not be a social norm just yet to be willing to pay for this. Future studies might therefore find differentiating results, depending on the status of social norm activation on paying for carbon offsets. It might be interesting to explore the relationship between shame and willingness to pay for carbon offsets with an experimental design. Through an experimental design, emotional triggers can be manipulated and causal claims can be made. For example, expose participants in the experimental group to different visual stimuli that evoke shame (such as emphasizing the negative reactions from peers when participants don't pay for carbon offsets) and guilt (for instance, highlighting the personal responsibility for the carbon emissions of their flight). Additionally, a control group should be included in the experimental design. This group is devoid of the emotional trigger

manipulation and serves as a baseline for evaluating the impact of shame and guilt on the willingness to pay for carbon offsets.

Methodological Limitations

Besides above-named theoretical limitations of the study, now three methodological limitations will be evaluated. The first limitation concerns the generalization of our results. Our participants mainly have a Dutch or German nationality, due to using a convenience sample in collecting our data. As both nationalities are from Western countries with similar cultures, the results of our study could be different when including a broader range of nationalities among the participants. Future studies could include participants with more various nationalities to be able to generalize the results to a broader audience.

Secondly, the survey did not consider the possibility of participants who have never been on a plane before. This could have influenced the results, in a way that people who have never been on a plane before might be more likely to rate 0 on the Likert scale about shame and guilt because they can't adequately answer this question. This will cause lower reported values of shame and guilt, and therefore downplay the results. Therefore, it is advisable to incorporate a question in the survey that asks participants about whether they have travelled by plane before.

Last, the lack of significance of shame on willingness to pay for carbon offsets when guilt and shame are concurrently in a single model, suggests that the presence of guilt might influence the relationship between shame and willingness to pay. This possible interaction may be of importance in the process of understanding the dynamic between shame and guilt and their influence on the willingness to pay for carbon offsets. The importance of looking into this interaction effect is enhanced by the results being close to the allowed ranges within the criterium of no multicollinearity. Therefore, the results should be handled with care. An interaction between shame and guilt is not investigated nor ruled out in this study and could

be a possible explanation for the disappearance of shame from the multiple regression model. Future research should consider looking into possible moderator effects, to see whether the relationship between shame and willingness to pay is dependent on the presence or absence of guilt. This could be achieved through conducting the study via an (previous explained) experimental design.

Practical implications

Discovering that shame and guilt are significantly positively related to one's willingness to pay for carbon offsets could be used in promoting air travellers' engagement with carbon offsets when flying. Carbon offsetting initiatives in aviation rely on individuals' willingness to engage in those extra financial contributions. The knowledge that shame and guilt are possible motives behind this engagement can be useful in promoting carbon offsets to air travellers. Marketing strategies for carbon offsets, such as advertisements or targeted campaigns, could therefore focus on these affective states when trying to encourage participation. These advertisements should mainly focus on emphasizing the negative consequences of flying on the environment. Evoking a sense of personal responsibility among air travellers in this matter could increase feelings of guilt. Furthermore, campaigns about carbon offsets could investigate possible ways for their target group to exchange opinions on the campaign within their social circle. This social interaction among peers could consequently evoke feelings of shame and increase their willingness to pay.

Conclusion

This study aimed to provide an answer to the question whether shame and guilt are predictors of one's willingness to pay for carbon offsets and which affective component would be a stronger predictor. Independently of each other, both shame and guilt appear to have a significant relationship with one's willingness to pay for carbon offsets. However, in the presence of guilt, shame is no longer deemed to be significant. Therefore, guilt and not

shame is a stronger predictor for willingness to pay. In conclusion, shame and especially guilt should be taken into consideration when looking at ways to increase the willingness of air travellers to pay for carbon offsets. Campaigns for promoting carbon offsets should appeal to feelings of shame and guilt among air traveller's by emphasizing the negative social consequences when not paying for carbon offsets and their personal responsibility about compensating for their emissions. Future studies may use an experimental design when looking at how shame and guilt are related to the willingness to pay, to be able to make causal claims and control more proficient for the activation of these emotions. Given the result that guilt seems to be a stronger predictor of one's willingness to pay for carbon offsets than shame, we should not only speak of flying shame, but it becomes time to start talking about flying guilt as well.

References

- Adams, I. R., Hurst, K., & Sintov, N. D. (2020). Experienced guilt, but not pride, mediates the effect of feedback on pro-environmental behavior. *Journal of Environmental Psychology, 71*, 101476. <https://doi.org/10.1016/j.jenvp.2020.101476>
- Akter, S., Brouwer, R., Brander, L., & Van Beukering, P. (2009). Respondent uncertainty in a contingent market for carbon offsets. *Ecological Economics, 68*(6), 1858–1863. <https://doi.org/10.1016/j.ecolecon.2008.12.013>
- Andreoni, J., Nikiforakis, N., & Siegenthaler, S. (2021). Predicting social tipping and norm change in controlled experiments. *Proceedings of the National Academy of Sciences, 118*(16). <https://doi.org/10.1073/pnas.2014893118>
- Andrighetto, G., & Vriens, E. (2022). A research agenda for the study of social norm change. *Philosophical Transactions of the Royal Society A, 380*(2227). <https://doi.org/10.1098/rsta.2020.0411>
- Bahja, F., Alvarez, S., & Fyall, A. (2021). A critique of (ECO)guilt research in tourism. *Annals of Tourism Research, 92*, 103268. <https://doi.org/10.1016/j.annals.2021.103268>
- Bamberg, S., Ajzen, I., & Schmidt, P. (2003). Choice of Travel Mode in the Theory of Planned Behavior: The Roles of Past Behavior, Habit, and Reasoned Action. *Basic and Applied Social Psychology, 25*(3), 175–187. https://doi.org/10.1207/s15324834basp2503_01
- Bamberg, S., Hunecke, M., & Blöbaum, A. (2007). Social context, personal norms and the use of public transportation: Two field studies. *Journal of Environmental Psychology, 27*(3), 190–203. <https://doi.org/10.1016/j.jenvp.2007.04.001>
- Baumeister, R. F., Vohs, K. D., Nathan DeWall, C., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation.

- Personality and Social Psychology Review, 11(2), 167–203.
<https://doi.org/10.1177/1088868307301033>
- Becken, S. (2007). Tourists' Perception of International Air Travel's Impact on the Global Climate and Potential Climate Change Policies. *Journal of Sustainable Tourism, 15*(4), 351–368. <https://doi.org/10.2167/jost710.0>
- Becken, S., Friedl, H. A., Stantic, B., Connolly, R. M., & Chen, J. (2021). Climate crisis and flying: social media analysis traces the rise of “flightshame”. *Journal of Sustainable Tourism, 29*(9), 1450–1469. <https://doi.org/10.1080/09669582.2020.1851699>
- Berger, S., Kilchenmann, A., Lenz, O., & Schlöder, F. (2022). Willingness-to-pay for carbon dioxide offsets: Field evidence on revealed preferences in the aviation industry. *Global Environmental Change-human and Policy Dimensions, 73*, 102470. <https://doi.org/10.1016/j.gloenvcha.2022.102470>
- Bicchieri, C. (2005). *The Grammar of Society: The Nature and Dynamics of Social Norms*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511616037
- Bicchieri, C., & Funcke, A. (2018). Norm Change: Trendsetters and Social Structure. *Social Research: An International Quarterly, 85*(1), 1–21. <https://doi.org/10.1353/sor.2018.0002>
- Biel, A., & Thøgersen, J. (2007). Activation of social norms in social dilemmas: A review of the evidence and reflections on the implications for environmental behaviour. *Journal of Economic Psychology, 28*(1), 93–112. <https://doi.org/10.1016/j.joep.2006.03.003>
- Bösehans, G., Bolderdijk, J. W., & Wan, J. (2020). Pay more, fly more? Examining the potential guilt-reducing and flight-encouraging effect of an integrated carbon offset. *Journal of Environmental Psychology, 71*, 101469. <https://doi.org/10.1016/j.jenvp.2020.101469>

- Brouwer, R., Brander, L., & Van Beukering, P. (2008). “A convenient truth”: air travel passengers’ willingness to pay to offset their CO2 emissions. *Climatic Change*, *90*(3), 299–313. <https://doi.org/10.1007/s10584-008-9414-0>
- Chen, F. (2013). The intention and determining factors for airline passengers’ participation in carbon offset schemes. *Journal of Air Transport Management*, *29*, 17–22. <https://doi.org/10.1016/j.jairtraman.2013.01.001>
- Cohen, T. R., Wolf, S. T., Panter, A. T., & Insko, C. A. (2011). Introducing the GASP scale: A new measure of guilt and shame proneness. *Journal of Personality and Social Psychology*, *100*(5), 947–966. <https://doi.org/10.1037/a0022641>
- Culiberg, B., Cho, H., Koklic, M. K., & Žabkar, V. (2022). The Role of Moral Foundations, Anticipated Guilt and Personal Responsibility in Predicting Anti-consumption for Environmental Reasons. *Journal of Business Ethics*, *182*(2), 465–481. <https://doi.org/10.1007/s10551-021-05016-7>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*(41), 1149–1160.
- Gans, J. S., & Groves, V. (2012). Carbon Offset Provision with Guilt-Ridden Consumers. *Journal of Economics and Management Strategy*, *21*(1), 243–269. <https://doi.org/10.1111/j.1530-9134.2011.00326.x>
- Gelfand, M. J., Raver, J. L., Nishii, L. H., Leslie, L. M., Lun, J., Lim, B., Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D. K., Chhokar, J. S., D’Amato, A., Ferrer, M., Fischlmayr, I. C., Yamaguchi, S. (2011). Differences Between Tight and Loose Cultures: A 33-Nation Study. *Science*, *332*(6033), 1100–1104. <https://doi.org/10.1126/science.1197754>

- Gössling, S., Haglund, L., Källgren, H., Revahl, M., & Hultman, J. (2009). Swedish air travellers and voluntary carbon offsets: towards the co-creation of environmental value? *Current Issues in Tourism*, *12*(1), 1–19. <https://doi.org/10.1080/13683500802220687>
- Gössling, S., Humpe, A., & Bausch, T. (2020). Does ‘flight shame’ affect social norms? Changing perspectives on the desirability of air travel in Germany. *Journal of Cleaner Production*, *266*, 122015. <https://doi.org/10.1016/j.jclepro.2020.122015>
- Granovetter, M. (1978). Threshold Models of Collective Behavior. *American Journal of Sociology*, *83*(6), 1420–1443. <https://doi.org/10.1086/226707>
- Grey, I. E., Daly, R. A., Thomas, J., & Marassas, W. (2018). The relationship between shame and guilt: cultural comparisons between Ireland and the United Arab Emirates. *Mental Health, Religion & Culture*, *21*(3), 221–230. <https://doi.org/10.1080/13674676.2018.1455651>
- Griffin, B. J., Moloney, J. M., Green, J., Worthington, E. L., Cork, B., Tangney, J. P., Van Tongeren, D. R., Davis, D. E., & Hook, J. N. (2016). Perpetrators’ reactions to perceived interpersonal wrongdoing: The associations of guilt and shame with forgiving, punishing, and excusing oneself. *Self and Identity*, *15*(6), 650–661. <https://doi.org/10.1080/15298868.2016.1187669>
- IATA. (2017). Fact sheet climate change & CORSIA. Retrieved from www.iata.org
- International Civil Aviation Organization. (2018). *ICAO: Volume IV - Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*. Kluwer Law International B.V. <https://www.icao.int/environmental-protection/CORSIA/Pages/SARPs-Annex-16-Volume-IV.aspx>
- JASP Team (2023). JASP (Version 0.17.2)[Computer software].

- Kaiser, F. G., & Shimoda, T. A. (1999). Responsibility as a predictor of ecological behaviour. *Journal of Environmental Psychology, 19*(3), 243–253. <https://doi.org/10.1006/jevp.1998.9123>
- Kerner, C., & Brudermann, T. (2021). I Believe I Can Fly—Conceptual Foundations for Behavioral Rebound Effects Related to Voluntary Carbon Offsetting of Air Travel. *Sustainability, 13*(9), 4774. <https://doi.org/10.3390/su13094774>
- Larsson, J., Elofsson, A. K., Sterner, T., & Akerman, J. (2019). International and national climate policies for aviation: a review. *Climate Policy, 19*(6), 787–799. <https://doi.org/10.1080/14693062.2018.1562871>
- Lu, J., & Shon, Z. Y. (2012). Exploring airline passengers' willingness to pay for carbon offsets. *Transportation Research Part D-transport and Environment, 17*(2), 124–128. <https://doi.org/10.1016/j.trd.2011.10.002>
- Mallett, R. K. (2012). Eco-Guilt Motivates Eco-Friendly Behavior. *Ecopsychology, 4*(3), 223–231. <https://doi.org/10.1089/eco.2012.0031>
- McDonald, S., Oates, C., Thyne, M., Timmis, A., & Carlile, C. (2015). Flying in the face of environmental concern: why green consumers continue to fly. *Journal of Marketing Management, 31*(13–14), 1503–1528. <https://doi.org/10.1080/0267257x.2015.1059352>
- Onwezen, M. C., Antonides, G., & Bartels, J. (2013). The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *Journal of Economic Psychology, 39*, 141–153. <https://doi.org/10.1016/j.joep.2013.07.005>
- Mkono, M., & Hughes, K. (2020). Eco-guilt and eco-shame in tourism consumption contexts: understanding the triggers and responses. *Journal of Sustainable Tourism, 28*(8), 1223–1244. <https://doi.org/10.1080/09669582.2020.1730388>

- National Geographic & GlobeScan. (2014). Greendex 2014: Consumer Choice and the Environment: A Worldwide Tracking Survey. In *www.GlobeScan.com*. GlobeScan Incorporated. Accessed on 1st of June 2023, from https://globescan.com/wp-content/uploads/2017/07/Greendex_2014_Full_Report_NationalGeographic_GlobeScan.pdf
- Nyborg, K., Anderies, J. M., Dannenberg, A., Lindahl, T., Schill, C., Schlüter, M., Adger, W. N., Arrow, K. J., Barrett, S., Carpenter, S. R., Chapin, F. S., Crépin, A., Daily, G. C., Ehrlich, P. R., Folke, C., Jager, W., Kautsky, N., Levin, S. A., Madsen, O., De Zeeuw, A. (2016). Social norms as solutions. *Science*, *354*(6308), 42–43. <https://doi.org/10.1126/science.aaf8317>
- Parkinson, B., Fischer, A. H., & Manstead, A. S. R. (2004). Emotion in social relations: Cultural, group, and interpersonal processes. Psychology Press. <https://doi.org/10.4324/9780203644966>
- Penner, J. E., Lister, D. G., Griggs, D. W., Dokken, D. J., & McFarland, M. (1999). IPCC Special Report Aviation and the Global Atmosphere: Summary for Policymakers. *Intergovernmental Panel on Climate Change eBooks*. https://digital.library.unt.edu/ark:/67531/metadc11951/m2/1/high_res_d/aven.pdf
- Prussi, M., Lee, U., Wang, M., Malina, R. M., Valin, H., Taheripour, F., Velarde, C. R. Z., Staples, M., Lonza, L., & Hileman, J. I. (2021). CORSIA: The first internationally adopted approach to calculate life-cycle GHG emissions for aviation fuels. *Renewable & Sustainable Energy Reviews*, *150*, 111398. <https://doi.org/10.1016/j.rser.2021.111398>
- Qualtrics. (2005). *Qualtrics* (Version May, 2023) [Computer software]. Provo, Utah, U.S. <https://www.qualtrics.com>

- Randles, S., & Mander, S. (2009). *Aviation, consumption and the climate change debate: 'Are you going to tell me off for flying?'* (Vol. 21). Taylor & Francis. <https://doi.org/10.1080/09537320802557350>
- Robertson, T. E., Sznycer, D., Delton, A. W., Tooby, J., & Cosmides, L. (2018). The true trigger of shame: social devaluation is sufficient, wrongdoing is unnecessary. *Evolution and Human Behavior*, *39*(5), 566–573. <https://doi.org/10.1016/j.evolhumbehav.2018.05.010>
- Scheff, T. J. (2000). Shame and the Social Bond: A Sociological Theory. *Sociological Theory*, *18*(1), 84–99. <https://doi.org/10.1111/0735-2751.00089>
- Sher, F., Raore, D., Klemeš, J. J., Rafi-Ul-Shan, P. M., Gkanas, E. I., Marintseva, K., & Razmkhah, O. (2021). Unprecedented Impacts of Aviation Emissions on Global Environmental and Climate Change Scenario. *Current pollution reports*, *7*(4), 549–564. <https://doi.org/10.1007/s40726-021-00206-3>
- Stern, P. C., Dietz, T., Abel, T. D., Guagnano, G. A., & Kalof, L. (1999). A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Human Ecology Review*, *6*(2), 81–97. <https://www.humanecologyreview.org/pastissues/her62/62sternetal.pdf>
- Tam, K. (2019). Anthropomorphism of Nature, Environmental Guilt, and Pro-Environmental Behavior. *Sustainability*, *11*(19), 5430. <https://doi.org/10.3390/su11195430>
- Tangney, J. P., & Dearing, R. L. (2002). *Shame and guilt*. New York, NY: Guilford Press.
- Teroni, F., & Deonna, J. A. (2008). Differentiating shame from guilt. *Consciousness and Cognition*, *17*(3), 725–740. <https://doi.org/10.1016/j.concog.2008.02.002>
- Thøgersen, J. (2006). Norms for environmentally responsible behaviour: An extended taxonomy. *Journal of Environmental Psychology*, *26*(4), 247–261. <https://doi.org/10.1016/j.jenvp.2006.09.004>

Winter, S. R., Lamb, T. L., Wallace, R. M., & Anderson, C., PhD. (2021). Flight shaming consumers into aviation sustainability: which factors moderate. *International journal of sustainable aviation*, 7(1), 21. <https://doi.org/10.1504/ijsa.2021.115340>

Appendix A

Section Information and consent



English ▼

INFORMATION ABOUT THE RESEARCH

“Promoting sustainable behaviour and policy support in net-zero transition”

PSY-2223-S-0346

Why do I receive this information?

You are invited to participate in this research on sustainable behaviour. We provide you with this information to inform you about the extent, purpose, and content of this survey. Based on this, you can decide whether you would like to participate in the survey, or not. This research is conducted as part of the Bachelor thesis of Roeli Huisma, Iris Groot, Jorrit van der Wal, Antonia Karp and Vincent Haller under supervision of Chieh-Yu Lee of the Faculty of Behavioural and Social Sciences at the University of Groningen. On the basis of a checklist developed by the EC-BSS at the University of Groningen, the study was exempt from full ethical review.

Do I have to participate in this research?

Participation in the research is voluntary. However, your consent is needed. Therefore, please read this information carefully. Ask all the questions you might have, for example, when you do not understand something. Only afterwards you will decide if you want to participate. If you decide not to participate, you do not need to explain why, and there will be no negative consequences for you. You have this right at all times, including after you have consented to participate in the research.

Why this research?

To reduce the global temperature increase and accelerate towards a sustainable future, multiple systems must be changed. These transitions will imply lifestyle changes for individuals and strongly depend on people's support and behaviour change. In the current research, we want to know what motivates people to adopt sustainable behavior and support climate change policies.

What do we ask of you during the research?

Firstly, you are asked for your consent to participate in this research. After your consent, you will be redirected to the questions of the survey. In the survey, we will ask about your demographic characteristics, for example, age, gender, and nationality. We then ask you a series of questions about your perception and opinions regarding a few sustainable behaviours, including diets, clothing, flying and policy support. In the survey, you will read a small text about one of the two scenarios describing the shop where you are going to buy your clothes and answer a few questions afterwards. In the final section, you will also read another small text about one of the two policies describing how to allocate the climate costs and then we will ask your opinions about it. There is no right or wrong answer for each question. Please provide the answers that fit your opinion best. The survey takes approximately 5-10 minutes to complete. No monetary compensation is provided for filling out the survey. If you are recruited from the SONA-system, you will be granted credits based on the criteria set by SONA-system.

What are the consequences of participation?

We expect no negative consequences occurred during the participation. However, if you experience any discomfort or negative effects, you can always stop participating by closing the browser. You can also reach out to one of the researchers by email.

How will we treat your data?

Your data will only be used for educational purposes in writing five Bachelor theses and will not be published. Data will be digitally processed and analysed by the research team. They will process and analyse your data confidentially on a computer or laptop with password protection. All data is collected anonymously. This data will be used until the first of August 2023 and archived for 10 years in the university server according to the protocol of Faculty of Behavioural and Social Science at the University of Groningen. If you are recruited from the SONA-system, your SONA-ID will be separated from the research data for assigning the course credit and will be deleted soon after the credit has been given, approximately around 1-2 weeks after the data collection. The research team will make sure that the research data cannot be traced back to individual students.

What else do you need to know?

You may always ask questions about the research: now, during the research, and after the end of the research. You can do so by emailing one of the researchers involved:

Roeli Huisma: r.huisma@student.rug.nl

Vincent Haller: v.m.haller@student.rug.nl

Jorrit van der Wal: j.r.van.der.wal.1@student.rug.nl

Iris Groot: i.g.groot@student.rug.nl

Antonia Karp: a.karp@student.rug.nl

Or the supervisor Chieh-yu Lee: c.y.lee@rug.nl

Do you have questions/concerns about your rights as a research participant or about the conduct of the research? You may also contact the Ethics Committee of the Faculty of Behavioural and Social Sciences of the University of Groningen: ec-bss@rug.nl.

As a research participant, you have the right to a copy of this research information.

- I have read the information about the research. I have had enough opportunities to ask questions about it.
- I understand what the research is about, what is being asked of me, which consequences participation can have, how my data will be handled, and what my rights as a participant are.
- I understand that participation in the research is voluntary. I myself choose to participate. I can stop participating at any moment. If I stop, I do not need to explain why. Stopping will have no negative consequences for me.
- Below I indicate what I am consenting to.

Consent to participate in the research:

Yes, I consent to participate

No, I do not consent to participate

Section demographics

English 

Thank you for consenting to participate.
This survey will be divided into six section. In this first section, we would like to ask your demographics.

1. Which gender do you identify with?

Man

woman

Non-binary / others

Prefer not to say

2. How old are you?

16 24 33 41 50 58 66 75 83 92 100

Age



3. What is your nationality?

Dutch

German

Other

English ▾

In this second section, we are interested in what you think about buying second-hand clothing.

How much do you feel personally obligated to buy second-hand clothing?

Not obligated at all <input type="radio"/>	Not obligated <input type="radio"/>	Slightly not obligated <input type="radio"/>	Somewhat obligated <input type="radio"/>	Obligated <input type="radio"/>	Strongly obligated <input type="radio"/>
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How much do you feel that people close to you (e.g. family, friends) think it is important to buy second-hand clothing?

Not important at all <input type="radio"/>	Not important <input type="radio"/>	Somewhat unimportant <input type="radio"/>	Somewhat important <input type="radio"/>	Important <input type="radio"/>	Very important <input type="radio"/>
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Section sustainable diet

English ▾

In the third section, we would like to ask you some questions about your diet.

What is a sustainable diet?

Sustainable diet means that we eat in the way so that the environment is protected and there would be enough healthy food for everyone on the planet.

Please answer the following questions concerning sustainable diet that fit you best.

How often do you communicate about a sustainable diet in your peer group?

Never or almost never <input type="radio"/>	Rarely <input type="radio"/>	Sometimes <input type="radio"/>	Often <input type="radio"/>	Very often <input type="radio"/>
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For different diet options, how expensive do you think they are?
Please order the diet options below. The most expensive should be at the top.

Vegan diet
Vegetarian diet
Flexitarian diet (eating generally vegetarian, but every once in a while also meat or fish)
Omnivore diet (eating everything)

How expensive do you think a sustainable diet is in comparison to an unsustainable diet?

For example: if you think a sustainable diet is **more expensive** than an unsustainable diet, then your answer would be more on the **right** side of the scale. If you think a sustainable diet is **cheaper** than an unsustainable diet, then your answer would be more on the **left** side of the scale.

Cheaper 0 1 2 3 4 5 6 7 8 9 10 More expensive

I think a sustainable diet is ... compared to an unsustainable diet.



How much do you agree to the following statement: I think that a sustainable diet is too expensive.

Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On a scale from 0 to 10, how sustainable is your diet?

Not sustainable at all 0 1 2 3 4 5 6 7 8 9 10 Very sustainable

I think my diet is...



On a scale from 0 to 10, how sustainable do you want your diet to be in the near future?

Not sustainable at all 0 1 2 3 4 5 6 7 8 9 10 Very sustainable

I want my diet to be ...



Section Sustainable Consumption and Corporate Environmental Responsibility

English ▾

In this fourth section, we are interested in what you find important concerning sustainable consumption in general.

On a scale from 0 to 100, how much do you agree with the following statement?

Strongly disagree
0

Neither agree nor disagree
50

Strongly agree
100

In the near future, I want to buy and consume more environmentally friendly



Note. the following text applies to the control group of the Corporate Environmental Responsibility section.

English ▾

Now you are going to read a text about shopping in one of the clothing stores. Please read the following text carefully and imagine you are a customer of the clothing store.

Nestled in the heart of a bustling shopping district lies Clothing Store X, which has become a favourite destination for customers who care about fashion. From the moment you step inside the store, you're greeted with a warm welcome from the staff, who are eager to help you find what you're looking for.

The store offers a wide range of styles, from casual to formal wear, with an emphasis on quality fabrics and attention to detail. You notice that the other customers are enjoying their shopping experience, chatting amongst themselves and exchanging style tips. At the checkout, you'll find that the prices are reasonable, given the high quality of the clothing.

In short, shopping at Clothing Store X is an enjoyable experience. With its wide range of styles, personalized attention, and commitment to quality, it's no wonder that so many people keep coming back for more.

Note. the following text applies to the experimental group for the Corporate Environmental Responsibility block.

English ▾

Now you are going to read a text about shopping in one of the clothing stores. Please read the following text carefully and imagine you are a customer of the clothing store.

Nestled in the heart of a bustling shopping district lies Clothing Store X, which has become a favourite destination for customers who care about the environment. From the moment you step inside the store, you're greeted with a warm welcome from the staff, who are eager to help you find what you're looking for.

The store offers a wide range of clothes, made from sustainable materials, including organic cotton, recycled polyester, and bamboo. You notice that the other customers in the store are sharing their shopping experience, chatting amongst themselves and exchanging style tips. At the checkout, you'll find that the prices are reasonable, given the high quality of the clothing and the company's commitment to sustainability.

On a scale from 0 to 100, how much do you agree with the following statement?

Strongly disagree
0

Neither agree nor disagree
50

Strongly agree
100

After this shopping experience, I will buy and consume more environmentally friendly in the near future



Section Carbon offsets

English ▼

In this next section, we are interested in your opinions about carbon offsets, especially when taking a flight.

Flying produces huge amount of greenhouse gas (GHG) emissions and causes harmful effects to our environment. Recently, a new policy called "**carbon offsets**" was offered to airlines to compensate for their negative effects on the climate by reducing their emissions through another way.

For example, when you take a flight from Amsterdam to Barcelona, you can choose to offset the carbon emissions from your flight by paying the money (around €10-€20 per person) so that the airline will invest in a non-profit organization for renewable energy.

How much do you feel personally obligated to protect our environment?

Not obligated at all 0 1 2 3 4 5 6 7 8 9 10 Strongly obligated

I feel I am ... to protect our environment



How much do you care about other people's (e.g. family, friends) opinions about whether you act pro-environmentally?

Not at all 0 1 2 A little 3 4 A moderate amount 5 6 7 A lot 8 9 A great deal 10

I care...



When thinking about going on holiday by taking a flight, I feel...

Never 0 1 2 3 4 5 6 7 8 9 10
Sometimes moderately Strongly Massively

Guilt



Shame



Now you are going on a holiday in Europe by flight.
How likely will you pay for carbon offsets (around €10-€20 per person) to compensate for the emissions?

Extremely 0 1 2 3 4 5 6 7 8 9 10
unlikely Somewhat unlikely Neither likely nor unlikely Somewhat likely Extremely likely

I will ... pay for a carbon offsets.



Section Policies

Note. the participants will randomly be assigned to one of the two following groups:

Group contribution and profit.

English ▾

In this final section, we are interested in what you think about who has to pay to help counteract climate change.

There are several ways to mitigate and adapt to climate change. However, we need to decide who has to pay for these measures. One type of the policies is to make sure **people have individual responsibility and existing rights**. For example, people whose house was damaged by flooding have to pay for the repair themselves. Another example is that everyone has to pay an equal carbon tax to the government to compensate for the damages.

Please think about the policy mentioned above. If this policy was implemented, how would it affect you?

This policy would affect me...

Very negatively	Negatively	Somewhat negatively	It would not really affect me	Somewhat positively	Positively	Very positively
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On a scale of 1 to 7, how much would you support climate policies based on this way of allocating the costs?

That is, everyone has to pay the same amount of money, regardless of their CO₂ emissions. This money could be used to prevent the floods caused by climate change.

Strongly oppose	Oppose	Somewhat oppose	Neither support nor oppose	Somewhat support	Support	Strong support
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On a scale of 1 to 7, how much responsibility do you think you have to help counteract climate change?

None at all ○	○	○	○	○	○	A great deal ○
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Group individual rights and freedoms

English ▾

In this final section, we are interested in what you think about who has to pay to help counteract climate change.

There are several ways to mitigate and adapt to climate change. However, we need to decide who has to pay for these measures. One type of the policies is to make sure those **who contribute more to climate change have to pay more**. For example, people emitting a lot of CO₂ by flying, eating meat or driving a polluting car have to pay more. On the other hand, those **who are already putting in a lot of work to adapt to climate change would pay less**. For example, people already insulating their house, not eating meat or not driving a car will pay less.

Please think about the policy mentioned above. If this policy was implemented, how would it affect you?

This policy would affect me...

Very negatively ○	Negatively ○	Somewhat negatively ○	It would not really affect me ○	Somewhat positively ○	Positively ○	Very positively ○
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Strongly oppose <input type="radio"/>	Oppose <input type="radio"/>	Somewhat oppose <input type="radio"/>	Neither support nor oppose <input type="radio"/>	Somewhat support <input type="radio"/>	Support <input type="radio"/>	Strong support <input type="radio"/>
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On a scale of 1 to 7, how much responsibility do you think you have to help counteract climate change?

None at all <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	A great deal <input type="radio"/>
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On a scale of 1 to 7, how much would you support climate policies based on this way of allocating the costs?

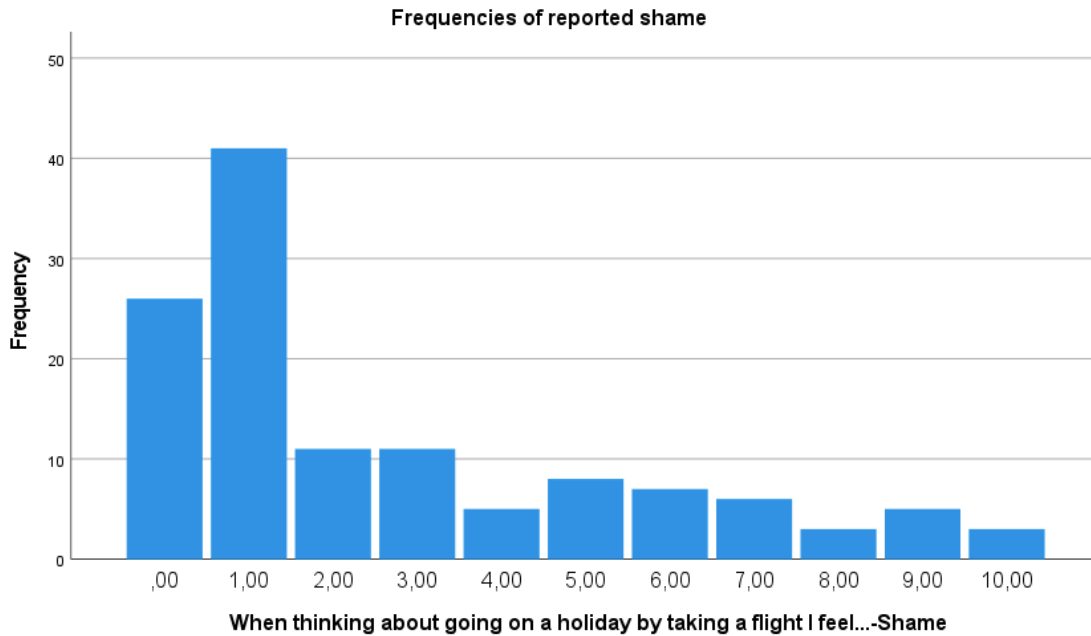
That is, those who emit more CO₂ have to pay more money than those who emit less CO₂. This money could be used to prevent the floods caused by climate change.

End of the survey

Appendix B

Figure B1

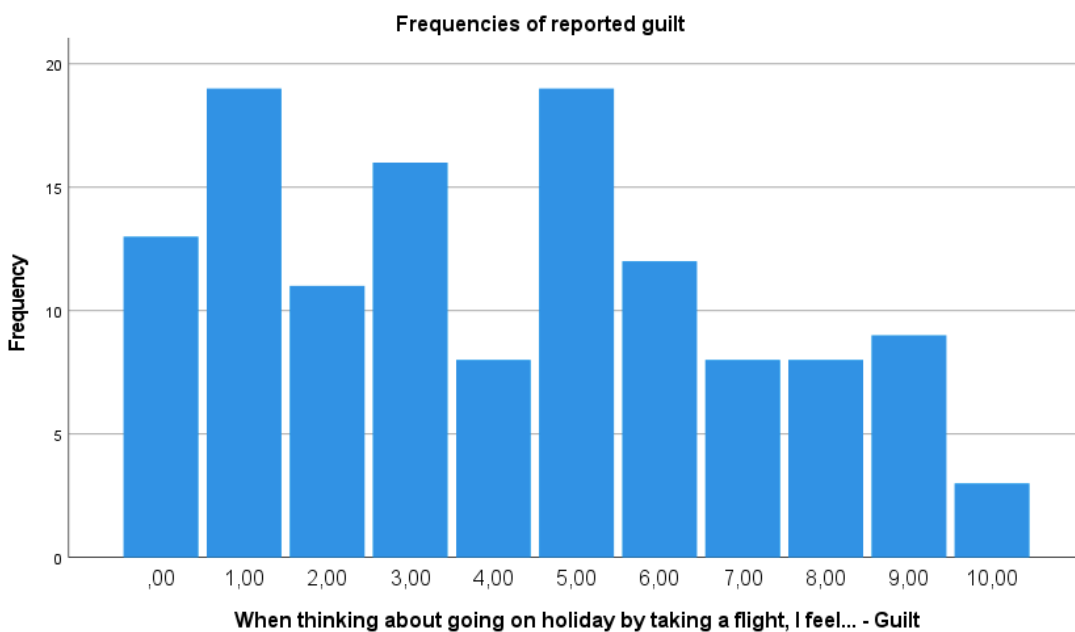
Histogram Showing the Reported Frequencies of Shame



Source: SPSS

Figure B2

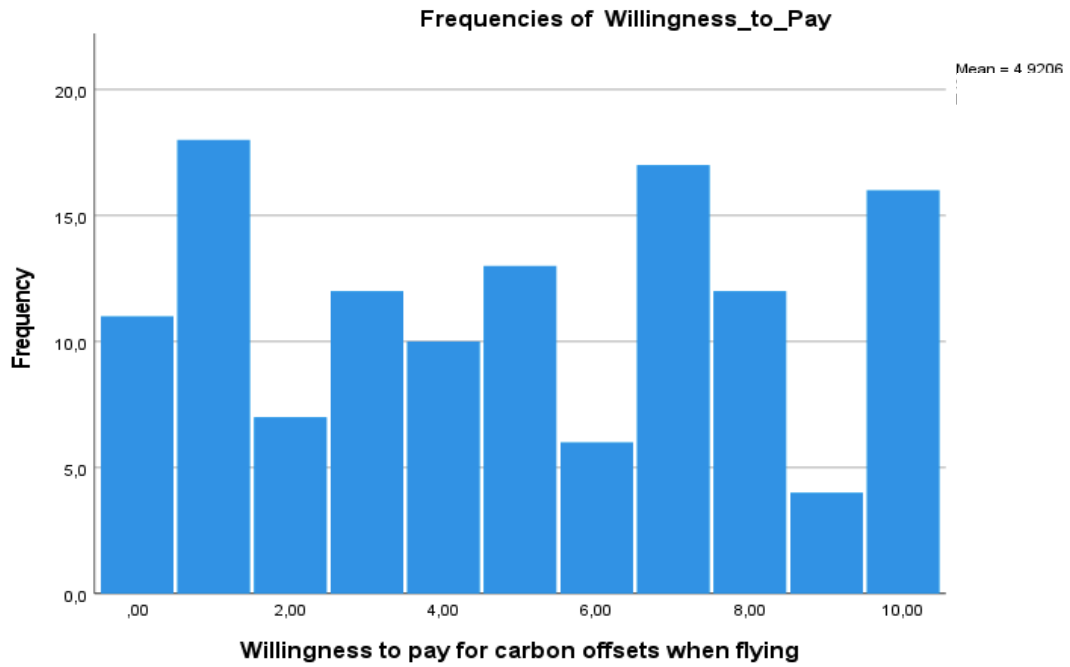
Histogram Showing the Reported Frequencies of Guilt



Source: SPSS

Figure B3

Histogram Showing the Reported Frequencies of Willingness to Pay



Source: SPSS