

**THE EFFECT OF (NEGATIVE) EMOTION ON PRO-
ENVIRONMENTAL BEHAVIOR: AN APPLICATION
OF THE THEORY OF PLANNED BEHAVIOR**

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ABSTRACT

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Abstract <p>With climate change becoming ever-present as a huge environmental issue for the modern era to address, pro-environmental behavior (PEB) is becoming an increasingly relevant area. There seems to be a divergence between how different actors try and encourage PEB when using emotion as the motivational tool. Therefore, the current study aimed to explore this effect of (negative) emotion on decision making. The Theory of Planned Behavior (TPB) was used as the theoretical framework, with the primary research aim testing whether emotion affects the theory, and if this is a direct effect on intentions. Within the existing research, environmental values are also found to be potentially linked with the TPB variables, and as such the secondary research aim was based around this, determining if emotion has an indirect effect through values. The analysis found that the TPB holds for the control and sadness group in this setting, even with emotion as a 4th predictor. However, invoked fear adversely impacted intentions and subsequently the theory. Implications for this are discussed, with sadness being suggested as a more rational emotion than fear. For the secondary research aim the analysis found no link between values and the TPB, but the effect of emotion on values provided additional contradictory insight to existing value theories. Invoked fear was found to adversely affect biospheric values, leading to a discussion around coping mechanisms. Future areas of research were highlighted, specifically based on individual emotions and values.</p>	
Keywords <i>Theory of Planned Behavior (TPB), Environmental Values, Emotion, Pro-environmental Behavior (PEB) and Household Energy Efficiency</i>	
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1 INTRODUCTION

Climate change is one of the major challenges facing the world in current times, and also one that affects the future (Roeser, 2012). One of the primary drivers for the promotion and undertaking of energy efficient behavior stems from these climate change related issues. The latest synthesis report from the IPCC (2014), details the potential impacts of climate change including global temperature increase (0-4.8°C), sea level temperature and acidity increase, and an increase in heat waves and extreme precipitation. The ranges given in these impacts are quite broad as they involve many complexities and future projections, but they all point towards the climate changing in an adverse way, with potential impacts being devastating unless there is a change in our behavior. There are still a number of people who are “climate deniers”, with the view that the change is just part of a natural cycle, or that we as humans are not responsible for the documented changes. However, there is an acceptance amongst the scientific researchers that climate change is real and a significant problem.

With climate change being accepted as a huge global issue, the logical response is to react to this threat. Energy supply contributes to 25.9% of greenhouse gas (GHG) emissions, which represents the largest proportion of the GHG emission pie chart (IPCC, 2007). Therefore, a key step to addressing climate change is to reduce the emissions from energy. Technological improvements and a change to renewable energy source is one approach to this, however this involves high investment costs and large scale change. Furthermore, reducing emissions through technology could be subject to the “rebound effect”, which states that lower energy costs through technological improvement could actually result in increased consumption (Greening et al., 2000). Whilst it is still important to focus on emissions from energy production, there is also an alternative approach to increase the efficiency of energy use. Consequently, this places an emphasis on individual behavior towards energy efficiency which leads to the topic of this research; pro-environmental decision making.

Encouraging pro-environmental behavior is fraught with difficulty and complications. It can be argued that there is no perfect approach, which is evident in the numerous ways in which actors try and achieve this. Whether it be government, marketing, or charities, there is an array of methods to promote the desired behavior. Traditional decision making theories tend to be based around the rational behavior approach, although it is now becoming more evident that there is a place for factors such as emotion to be considered, especially in environmental issues. It is the fundamental aim of this research to determine whether emotion does have a role to play in pro-environmental decision making, and if so how it integrates into the traditional decision making theories, such as the Theory of Planned Behavior.

2 LITERATURE REVIEW

This chapter will systematically review the literature according to the thesis topic explained in the previous section. Starting with Pro-Environmental Behavior (PEB), it will provide some context for the study of household energy efficiency (as is the behavior chosen for the study). Next, the theoretical side will be discussed focusing on the Theory of Planned Behavior (TPB) with the potential link to environmental values being mentioned. Finally, the literature on emotion will be covered to tie together the research approach. Based on these sections a theoretical framework will be drawn up and hypotheses developed from the key points arising from the review.

2.1 Pro-Environmental Behavior

In this section first PEB will be defined and explained, then the section will move to a discussion of values, with their applicability within the framework being touched upon.

2.1.1 Overview and Definition

The definition of PEB differs slightly between authors but seems to focus around the idea of behavior harming the environment as little as possible or having a positive effect (Groot & Steg, 2009; Steg & Vlek 2009). The definition which aligns itself best for this research comes from Kollmuss & Agyeman (2002), "behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world". The way this is termed is important as it incorporates the viewpoint that PEB can be a reduction of current detrimental behavior, even if the resultant behavior is not beneficial to the environment. For example, if someone who consumes a significant amount of energy reduces their consumption actively this could be seen as PEB, yet their consumption habits are still not beneficial to the environment. Jensen (2002) adds further clarity to this definition, by explaining that "behavior" refers only to actions that are directly related to environmental improvement (at current standards), thus referring only to direct environmental action. To sum up briefly, PEB in this case refers to behavior that seeks to reduce one's current level of environmental impact or even positively affect the environment, through direct action.

When looking at the theoretical perspectives used in the existing research there are two main perspectives, psychological and economical. The economical approach examines how external factors such as income, price, and socio-economic characteristics influence PEB. Whereas, the psychological approach is based

around linking internal variables to behavior (Clark et al., 2003). In essence the economical perspective is based around a view that decisions are reliant on a specific definition of rational self-interest, where the psychological perspective includes factors such as beliefs and attitudes which could be argued are sometimes in conflict with rationality. Research generally suggests that there is a trade-off between rationality and emotion, with cognition being described as the intelligent, rational part of our mind, and emotion being described as involuntary and illogical (Kringelbach and Phillips, 2014). This idea of rationality and emotion being competing faculties will be discussed in more detail in a subsequent section of the literature review. Back to the perspectives discussion, the problem with the economical perspective is that it only relies on a value of self-interest, there are of course many other values which can drive behavior, which will be discussed in the following section. Due to the underpinnings of this research being the potential extension of the TPB to include emotional factors, the economical perspective of PEB will not be considered much further. It was just explained to provide a bit of context and background information to the different perspectives available across the research.

The previous paragraph provided a brief overview of the theoretical perspectives of the factors that drive PEB. The TPB, whilst considered a rational model, aligns itself with this psychological approach. Within this model, beliefs are the foundation that link to subsequent variables and eventually intentions. However, it has also been suggested in the literature that these beliefs, especially relating to environmental concern, can be affected through values. Groot & Steg (2007b), wrote that general determinants, such as values, can have an important indirect effect on behavior via their effect on the perception and evaluation of situation-specific behavioral, normative, and control beliefs. They found that environmental concerns were directly related to attitudes, in this case towards using a transferium, but were not directly related to intentions. Despite this, studies on the TPB scarcely consider this role of values (The link between values and TPB will be discussed in much more detail in a subsequent section).

2.1.2 Why Values Matter for PEB

Values can be defined as “a (1) belief (2) pertaining to desirable end states or modes of conduct, that (3) transcends specific situations, (4) guides selection or evaluation of behavior, people, and events, and (5) is ordered by importance relative to other values to form a system of value priorities” (Schwartz, 1994). These are the principles that help distinguish values from other variables mentioned in this research, such as beliefs and attitudes. Although, as mentioned earlier values can play an important indirect role in decision making, so ought to be considered alongside the other variables. One problem that can arise from merely taking a rational viewpoint, rather than considering other values, is social dilemmas. These are when conflicts are apparent between individual and collective interest. For example, an individual might wish to consume high levels of energy to lead

a comfortable life, but this may not be in the collective interest of society. This is where values can help influence behavior for the collective good of society, as Karp (1996) explains, "values influence behavior when they are activated by situational concerns". Thus, highlighting both the link between values and behavior, but also the impact of invoked or natural situational concerns.

The value orientations that are most relevant to environmental behavior are termed egoistic, altruistic, and biospheric. Egoistic refers to values focusing on maximizing individual outcomes, altruistic are values reflecting concern for the welfare of others, and biospheric are values emphasizing the environment and the biosphere (Groot & Steg, 2007a). In the study aforementioned, these three value orientations are found to be valid and useful for examining environmental behavior, such as the energy-efficient behavior under question in this research. Egoistical orientations can be referred to as self-enhancement values, where biospheric and altruistic are self-transcendent values. Usually there is a trade-off between the two, where individualistic needs conflict with the collective needs. Sometimes individual and collective motivations align, for example reducing household energy consumption may be driven by a desire to reduce one's own expenditures. Yet, this still results in the collective interest of limiting the environmental damage stemming from consumption. When these needs do not align is where the trade-off issues are present, for example during the summer months an individual may wish to have air conditioning running to keep house temperatures comfortable. This is a good example of the trade-off, should the individual restrict his personal comfort or standard of living, or is the collective need for reduced consumption more prevalent. This dilemma depends upon the values on the individual, a self-interest perspective might deem personal benefits more important, whereas self-transcendent values would place the collective needs as more important. The research tends to agree with this finding that people with a dominant self-transcendent value orientation are more likely to have strong pro-environmental beliefs and engage in PEB, than those with a self-interest orientation (Groot & Steg, 2007a).

This trade-off mentioned stems from the fact that climate change is seen as a social dilemma. The definition of this being a dilemma where acting based on individual needs provides a greater payoff than acting for the collective good, but if all individuals acted collectively then they would be better off individually (Dawes, 1980). So, if we are to categorise climate change as a social dilemma, then within the social dilemma research the trade-off is termed slightly differently as prosocial or co-operators against proselves or noncooperators. Similar to self-transcendent vs self-interest, it is found that people who prioritise prosocial values have strong pro-environmental beliefs and are more willing to engage in PEB (Groot & Steg, 2008). There seems to be a common theme appearing in the literature of a conflict between individual needs and the collective, but can these needs be somehow artificially aligned. By this, it means will invoked feelings of fear or sadness about a dilemma alter the perceived outcome of action? It is worth noting that fear is an individual emotion, whereas sadness is more collective in the sense

it is based on compassion or feelings for others. Therefore, perhaps fear will affect self-interest (individual), and sadness will have a greater impact on self-transcendent (collective) values and goals. It is also worth emphasising, that whilst these views mentioned on emotion and values tend to suggest there could be a change in values, this is not expected to happen. If we refer back to Schwartz's (1994) definition, values are said to transcend specific situations, meaning they are fixed over time. Thus, emotion is not expected to actually change these values, but perhaps appeal to an individual's value orientation in a different manner, and then alter the outcome. In summary, values are assumed to be fixed, emotions can appeal to different value orientations, and specific value orientations tend to align themselves better with environmental behavior. It is the interaction of these factors that is of interest to the research, the hypothesis will be set to assume values do not change, but hopefully draw insight in to how emotional influence can alter the way values affect decision making.

This section first set out a definition of PEB and expanded this slightly so it was accurate for this research application. The research backgrounds of PEB were then considered, with both economical and psychological perspectives discussed. These two perspectives lead into the rationality vs emotion debate which are at the heart of this research topic, as such they will be considered in much more detail in the following section. Values were then considered and their role within decision making. These (values) are examples of the types of factors that are not considered within the tradition TPB framework, and perhaps should be given more merit within the theory. As we will see in the following section, the TPB has already been examined for potential extensions, highlighting a common view of researchers that it is not currently capturing all variables. By looking at previous examples of attempts to extend the TPB it gives the researcher a better idea of the potential barriers to extending the model.

To sum up the key areas of interest from this section, values are arguably directly linked with attitudes and indirectly to intentions within the TPB model (Groot & Steg, 2007b), and these values have the power to influence behaviour when activated by situational constraints (Karp, 1996). This link was also argued by Groot & Steg to be an area that is under represented in the research, and as such represents a gap for the current research to attempt to fill. Further, the suggestion that self-interest values and self-transcendent ones can be seen as individual vs collective, leads to the theory that fear and sadness may appeal to each category of value differently. These factors have led to the development of hypotheses 2 through 4, which are detailed at the end of this chapter, and are summed up in the secondary research aim.

2.2 Theory of Planned Behavior

The fundamental theory used in this research will be the Theory of Planned Behavior. Therefore, this section will first explain its features and benefits, before moving on to discussing some potential issues that the researcher needs to be aware of.

2.2.1 Overview

The Theory of Planned Behavior (TPB) is a widely used and acknowledged framework based around the prediction/understanding of behavior. It is an extension of the Theory of Reasoned Action (TRA), which states that behavior is predicted by intentions, which in turn are affected by attitudes towards the behavior and subjective norms (Ajzen, 1991). The difference between the TRA and TPB is the inclusion of perceived behavioral control as an antecedent of intentions, which at the time was receiving a lot of attention in the development of social cognition models designed to predict health behavior, such as Protective Motivation Theory and the Health-Belief Model (discussed later). From a general viewpoint, the TPB can be used in order to gain greater understanding of the behavior under question, or to implement interventions that will be effective in changing said behavior (Ajzen, 1991).

The TPB postulates three determinants of behavior, the first of which is attitudes. This refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior in question (Ajzen, 1991). When looking at the existing research using the TPB there seems to be two types of measurements styles used for attitudes. The first is using statements regarding a specific behavior framed in a specific manner. For example, "Turning my pc off whenever leaving my desk is worthwhile", then the respondent rates the statement by agreeing or disagreeing (Greaves et al., 2013). This captures the attitude towards the specific behavior. The second way is to phrase the type of behavior and then ask the respondent how they feel about it, using different pairs of adjectives. An example would be "my performing differentiated collection and refuse disposal within the next two months would be...", then scales such as extremely unenjoyable to extremely enjoyable (Mannetti et al., 2004). Rather than one specific attitude such as "worthwhile", this gathers a collection of attitudes using adjectives in order to gain perhaps a more intricate understanding. Also, the choice of adjectives can provide a differing of strength within the attitudes, a participant may not view the behavior as "desirable" yet may see it as "important", therefore using multiple adjectives allows the researcher to avoid overlooking or misinterpreting attitudes.

The second is termed subjective norms, which refers to perceptions of how well important others would endorse a given behavior and individual motivations to comply with the social pressure. Within existing research this category is usually

measured in two ways. First, by using statements such as “most people who are important to me...” followed by context specific information, such as “would want me to have solar panels” (Scott et al., 2014). The second way of measuring is through more specific focus on these important others. For example, in Groot et al., (2007a), they framed the question as my family or my friends, rather than the broader term “most people”. As we will discuss in the issues sub-section following this, subjective norms are often found to be the weakest predictor in the model. This slight difference of measuring may be in response to this problem. As Heath & Gifford (2002) explain, there are two approaches to addressing this issue. The first is to pay more attention to the moderating influence of individual differences and specific situations on the subjective norm/intentions relationship. This is paying attention to social identity and self-categorization. The individual under question needs to identify strongly with the behaviourally relevant reference group. For example, framing the statement towards what colleagues would think, if the behavior is not at work, such as household energy efficiency, might result in low normative pressure. This is due to a gap between the reference group (work life) and the behavior under question (home life). The two do not necessarily link, and as such normative pressures from one may not spill over to the other. On the other hand, being too broad in the framing of the question, such as “most important people”, may result in the normative measure becoming less focused and relevant. What is meant by Heath and Gifford (2002), is that when designing the subjective norms measure, the link between the reference group and behavior under question needs to be considered. The second approach to addressing the issue is to include a broader notion of norm. As seen in the examples given, most studies revolve around the aspect of injunctive norms, which means what ought to be done. Whereas, descriptive norms refer to what most individuals actually do in a given situation. Therefore, changing the statement from “most important people would want...” to “most people do...”, can motivate individuals to do the same behavior. This is due to the conscious recognition of what others do stimulating potential decisions. These two approaches to the issue have served to create a better understanding of the inner workings of subjective norms as a measure, the actual issue itself will be considered in a following section.

Finally, the third determinant of behavior in this model is perceived behavioral control (PBC), which put simply is the perceived ease or difficulty in engaging in the behavior. As the explanation suggests, when measuring this variable, the existing research frames the question from the perceived ease point of view, or the difficulty one, sometimes both are considered. Mannetti et al., (2004), use the perceived ease perspective, framing the statement as “how easy would it be...”, which encourages participants to evaluate the level of ease in which they could do the behavior under question. Alternatively, to measure the perceived difficulty, the statements can be framed in both a positive or negative manner. For example, Kim et al., (2013) use the statement “I am confident that if I want to I can...”, which is from a positive perspective. Yet, Greaves et al., (2013), use a

slightly negative framing, “I have no choice...”. Either way these are both statements that measure PBC by encouraging an evaluation of control over the outcome/decision.

Within this model, intentions lead to the behavior under question, and due to measurement approaches, intentions are often studied rather than actual behavior. Whilst studying intentions over actual behavior could be open to numerous discrepancies, Ajzen (1991), argues in his original theory that these intentions, together with PBC account for considerable variance in actual behavior. In order to measure intentions most studies utilise an adaption of three basic statements, “I am willing to...”, “I intend to...”, and “I will” (Kaiser & Gutscher, 2003; Kim et al., 2013). These three statements in order represent the strength of the intentions, moving from willingness to a more certain “I will”. This takes into account people who are willing or intend to do the behavior under question, but fail to for one reason or another. By measuring intentions in this way it reduces the variation between intentions and actual behavior, as it recognises strength of intention.

Just to summarise the theory, at the most basic level of explanation, the theory postulates that behavior is a function of salient information, or beliefs, relevant to the behavior, as shown in figure 1 (Ajzen, 1991). This also means that behavior or intentions can be predicted through the variables of attitudes, subjective norms and PBC.

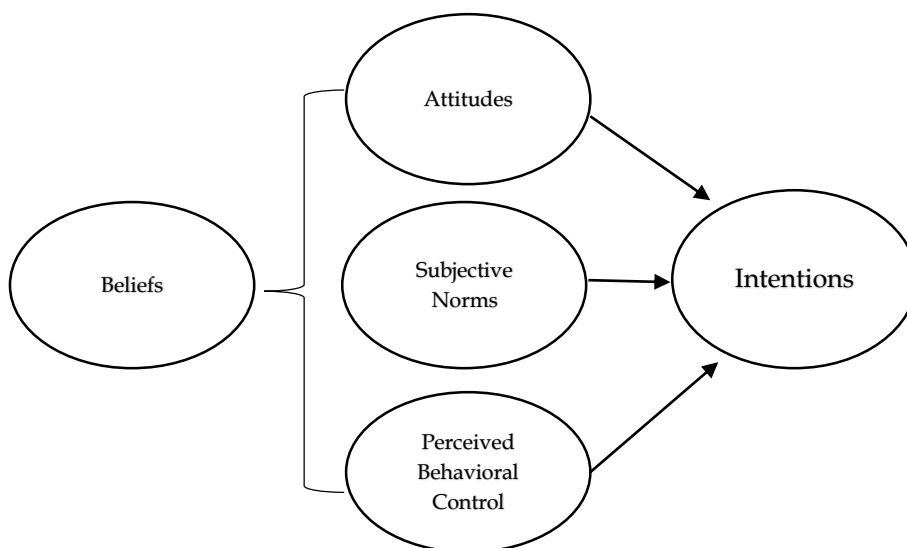


Figure 1: The Theory of Planned Behavior Adapted from Ajzen, (1991)

The TPB has been well supported empirically as a core framework, and also as a starting point to extend in order to recognize new variables. The reason it is so popular in the existing research is due to its applicability in a wide range of fields and also its explanatory power. It has been applied to fields such as health, drink driving and travel choices (Greaves et al., 2013), highlighting its usability in psychology fields, social sciences and economics. Attempting to stitch together emotion with pro-environmental behavior requires a framework that has this broad applicability, due to the subject under question lying somewhere in between psychology and more general behavioural studies. Furthermore, the TPB has been successful when applied to environmental studies such as transport, park & ride, activism, recycling and energy use (Carrus et al., 2008; Groot et al., 2007; Harland et al., 1999; Heath & Gifford, 2002; Mannetti et al., 2004; Scott et al., 2014;), in some cases being more successful at predicting behavior than other variables such as demographics (Greaves et al., 2013). So, as a starting point for the theoretical framework, the strengths of the TPB are self-evident, especially due to the popularity of this theory within the existing research, although there are some minor issues to be aware of.

2.2.2 TPB Applicability

The applicability of the TPB with PEB has been touched on slightly in previous sections already. Examples of specific applications in environmental studies were mentioned in the previous paragraph. It seems the explanatory power of the TPB is not really under question in this field (although the relative strength of some variables are questioned). The way in which this area of research could be explored further then lies within potential extensions to the original theory.

There have already been numerous attempts to extend the original theory, the main areas with which this research has sought to extend the TPB is habits, moral norms, information (relevant to the decision), and environmental concerns. Many of these studies have failed to find a strong link between the suggested extension and behavioral intentions. However, that is not to say these are invalid studies, as key links were found between the variables. Bamberg (2003) found that environmental concerns had a strong relationship with situation-specific beliefs, but failed to establish a direct correlation with intentions. Manstead (2000), also suggested that moral norms be included within the TPB variables, however Kaiser and Kaiser & Scheuthle (2003), argued that when considered in ecological behavior, moral norms do not increase the explanatory power of the TPB. Bamberg & Schmidt (2003) and Verplanken et al., (1997), both published papers on the significance of habits in car-use choice. These are all examples of the complexities involved in developing a unified theory of decision making. Whilst it is clear that these issues have some impact on decisions, mainly through an effect on the beliefs preceding the other variables, these factors are found to have no significant

direct relationship with behavioral intentions, never the less they still need to be considered.

Contrary to the somewhat failed attempts at extending the TPB, there are also studies that suggest the TPB is improved when nature along with affective and emotional factors associated with the environment are taken into account (Hinds & Sparks, 2008). This may be down to the part emotion has to play in information processing, and subsequently decision making. One example of this is that of Roeser (2012), who states that emotional engagement towards climate change creates a thorough understanding through moral impacts, which leads to a more reliable source of motivation. Further, communication about climate change “should” trigger moral emotions to entice motivation for a more sustainable lifestyle. This opinion on the reliability of emotional motivation is confirmed by Kals et al., (1999), who claimed that emotional motivation is best predictor of environmental behavior. These are both examples of how environmental behavior cannot be fully explained by a purely rational approach. Perhaps one problem with the emotional attachment perspective of climate change and behavior is how strongly the link is perceived. Slovic et al., (2005) explains that when the outcome of a decision carries sharp and strong affective meaning people become insensitive to probability estimates, so decisions become driven by significance of outcome not probability. Therefore, this suggests that emotion is playing a critical role within the process, even if it is just forcing the rationalization of an issue that is perceived as too large. Which subsequently raises the question, can emotional influence be used to force or enhance emotional motivation towards the behavior, or does it run the risk of the intended recipient of the influence distancing themselves from the issue through a process of emotional rationalization? This is a question which is tested through the main research hypotheses – whether emotion affects the TPB, and also hypothesis one which is based on whether this emotional impact has a direct relationship with intentions.

2.2.3 General Issues

The TPB is not without its issues, for a more comprehensive review see Armitage & Conner (2001). The key issues that stand out from their research that are relevant for this study are self-reporting bias, control, and subjective norms. These will be discussed in more detail now, and their importance/applicability to the current study considered.

The first potential flaw of the theory is that often the methods it requires involve self-reporting of behavioral intentions. That is to say that participants state their intended behavior, which could potentially be different to their actual behavior. This is known as self-presentational bias when participants present themselves in a way that they believe is expected (Armitage & Conner, 2001). Hessing et al (1988), found that self-reported behavior significantly correlated with attitudes

and subjective norms. Social desirability bias provides some explanation to this, in the sense that respondents often answer in a way that they feel is socially desirable, rather than choosing responses that reflect their true feelings (Grimm, 2010). Continuing with the theme of social desirability, it is a fair assumption that if subjective norms are not found to be significant predictors of behavior, then the issue of bias might not be present. If a participant of the study does not let subjective norms affect their intentions, then it is possible that they do not see the action as socially desirable, or simply do not care. In summary, this issue is something to be aware of throughout the research process, but is also something that can only properly be discussed after the data is collected and processed.

The second general issue with the TPB is to do with control. There seems to be a differing of opinions between authors, with some using perceived behavioral control (PBC) and self-efficacy as synonyms, and others claiming they are different things. The original author of the theory, Ajzen (1991), uses the two as a synonym, thus not providing a separate category for self-efficacy. However, it has been argued that there is in fact a difference. Manstead & Eekelen (1998), examined whether PBC and self-efficacy could be distinguished empirically. An academic setting was used for the experiment with attitudes, subjective norms, PBC, self-efficacy and intentions measured prior to the examination. It was found that behavior was better predicted by self-efficacy, therefore providing some fuel to the debate of if PBC and self-efficacy should be considered as the same construct within the TPB. In response to these views, Ajzen (2002) published a later paper attempting to clear up the issue. He argued that whilst PBC is comprised of separable components that reflect beliefs about self-efficacy and controllability, they can nevertheless be considered as a unitary latent variable in a hierarchical factor model.

The third general issue is that of subjective norms and their predictive power within the model. Numerous authors have placed doubt on the usefulness of this variable (Ajzen, 1991; Armitage & Conner, 2001), and further studies have actually found the subjective norm to be an insignificant predictor (Trafimow & Finlay, 1996). Also, specific studies relating to this topic area (environmental behavior), have found subjective norms to be insignificant. Examples include Scott et al., (2014) and their study on household energy use, Mannetti et al., (2004) whose study was based around recycling behavior, and finally Harland et al., (1991). It is worth noting that in the last article mentioned a wide range of pro-environmental behaviors were examined, from which subjective norms were not found to be very significant except in the case of energy saving light bulbs. On the other hand, there are also numerous studies on the TPB within environmental behavior that find subjective norms to be a strong predictor of intentions. Three separate studies on different public transport schemes all found subjective norms to be significant in the analysis (Carrus et al., 2008; Groot et al., 2007; Heath & Gifford, 2002). Interesting to both this debate on subjective norms and also this research is an article by Arvola et al., (2008), who explored the TPB in relation to organic food purchasing across the UK, Finland and Italy. The result that stood out was

that subjective norms were found to be more significant from the Finnish data. Due to the data collection of this current research taking place in Finland but also including many internationals, this result is worth keeping in mind when analyzing the data. In summary, whilst the picture is still unclear surrounding the issue of subjective norms, there seems to be a common theme of energy efficient transportation in the supporting arguments segment. It will be intriguing to see if this current research can provide additional fuel to the subjective norm debate, whether confirmatory or dissenting.

In this section first the TPB has been explained from a general viewpoint, with each of the variables described and the usefulness of the model mentioned, with links to environmental values also considered. Then issues surrounding the theory were discussed, which included self-reporting, control and subjective norms. The key points from these discussions were that the subjective norm section of the data will be interesting with both its positioning within the existing research and also its implications with the self-reporting bias problem. Also, the PBC vs self-efficacy disagreement needs to be thought about during data collection. Ajzen did confirm that the two can be used as a synonym within the model, but even so, the statements within that section of the questionnaire need to be worded carefully to include elements of both PBC and self-efficacy to avoid any potential issues.

2.3 Emotion

The chapter has so far reviewed the TPB and PEB in general, with various issues and discussion points brought to the foreground. Of these issues, perhaps the most prevalent is that of emotion and rationality and their respective roles within decision making. The term emotion can invoke a plethora of understandings and definitions, highlighted by Fehr & Russell (1984), who phrase it “everyone knows what an emotion is, until asked to give a definition”. But, in this case the meaning of emotion includes both incidental and integral emotional states. Incidental are emotional states whose source is unrelated to the object of judgement or decision, such as general feelings or moods not attributable to the specific moment of a decision. Integral emotions on the other hand are responses experienced in relation to the object or decision (Pham, 2007). Therefore, when referring to emotions in this study, it means emotional responses felt during a judgement or decision, whether directly or indirectly attributable to the object. This section will now go on to reviewing the existing research around the phenomena of emotion and rationality within the confines of decision making, and specifically decisions relating to environmental issues such as climate change.

2.3.1 Role in Decision Making

“Emotions powerfully, predictably, and pervasively influence decision making.” (Lerner et al., 2015). Statements like this highlight the fact that there seems to be a considerable gap in the existing research between theories of behavior and the psychology of emotion, and as such there ought to be reconsideration in theories such as the TPB. With regards to theories focusing on emotion and decision making, one particular paper stands out, that of Baumeister et al., (2007). They start by questioning the Direct Causation Theory, which states that the primary function of emotion is to directly influence behavior. They argue that this view is untenable and inadequate, backing up this by stating that many emotions do not cause any behavior, evidence for direct causation is misleading, and usually the consequences of emotion are maladaptive or counterproductive, therefore unlikely to be their main function. Arguing against the Direct Causation Theory leads to a more succinct view of emotion, one that is based around a feedback system. Such a system inherently involves learning as a core process, which links back to rationality, and therefore will be considered in more detail in a following section.

If emotion is recognized in psychology as such a powerful factor in decision making, it seems reasonable to suggest that it ought to be considered as a key variable in environmental intentions. However, this is not the case, especially in pro environmental studies. The role of emotion is in fact largely absent from these types of studies (Searles, 2010). There are studies available, such as Hipolito (2011), which call for the use of emotions when designing new environmental interventions for shaping pro-environmental behavior (PEB). Yet, as mentioned in the previous section, most studies on PEB concentrate on factors such as habits, moral norms, and information. When we consider decision making specific to environmental issues, it is found that environmental behavior is closely related to emotion (Carrus et al., 2008). Similarly, from a purely psychological viewpoint, emotions influence cognition, and cognition guides our emotions (Kringelbach & Phillips, 2014). There seems to be some consensus that emotion is linked with decision making, interventions and environmental behavior, but the theories to enforce this are lacking. This creates a problem as the knowledge being found in the different disciplines is not being applied to any concrete, agreeable theories. Which means that going forward the research is still having to use traditional rational choice theories or theories based on emotion, therefore continuing this process of them being competing faculties not complementary.

2.3.2 Rationality vs Emotion

One problem behind the inclusion of emotion in many traditional theories seems to be the rationality vs emotion debate. This is based on the Dual Process Theory which states that reason and emotion are two competing faculties when it comes to moral reasoning (Roeser, 2012), which is more commonly referred to as the

head vs the heart, when making a decision. Rationality is most commonly defined as intentional, reasoned, goal directed behavior, where pure rationality entails prospective choice aimed at maximizing gain (Mumby & Putnam, 1992). Whilst many decision making theories are based on rationality, potentially due to their need to be generalizable, there are suggestions in the research that rationality does not always hold true. This is explained succinctly by Lerner et al., (2015), who say that bounded rationality is the idea that decision making deviates from rationality due to such inherently human factors...limitations in cognitive capacity, willpower and situational constraints. To put it simply, rational decisions do not always happen due to various human factors. This idea of bounded rationality is a commonly accepted criticism of pure rationality, yet still provides an incomplete picture of behavior. Under this theory intuition and judgement are seen as non-rational and emotion as irrational (Simon, 1987), which leads to the next discussion point based on the perspective of emotionally charged decisions being suboptimal.

It is a common theme throughout the literature on emotion and rationality that emotionally influenced decisions usually result in counterproductive results (Baumeister et al., 2007). However, there is research suggesting the contrary, specifically issues of a moral nature. Environmental issues, such as climate change, can be argued to represent a serious moral dilemma. With actions potentially causing serious ramifications for future generations. One paper that highlights the importance of emotion in ethical decision making is Gaudine & Thorne (2001), who demonstrate that emotion is intrinsic to a rational, ethical decision process and they should not be ignored as irrational biases. This also links back to a paper mentioned earlier in the literature review, Roeser (2012), who explained that emotions engagement with issues such as climate change can create a higher degree of motivation, that a detached rational view. Therefore, it is clear that when it comes to issues that can drive powerful emotional responses like climate change, there is, or should be, an integrated view of decision making that includes both rationality and emotion. Whilst this may sound somewhat contradictory, this trade-off or cooperation between the two is already evident in moral issues. Moral justification is a mechanism used to rationalize an emotional choice (Haidt, 2001), therefore showing the propensity for humans to rationalize emotions.

Similar to the prior point, the feedback system of emotional decision making also has elements of rationality within it. It is based on a learning system where previous emotions can contribute to the current decision, which in essence is converting emotional influence into a more rational system of decision making (Baumeister et al., 2007). Traditionally emotional decisions are viewed as sporadic and momentary choices, but this introduction of a learning system somehow changes emotion into a continual improvement process. Furthermore, this suggests that emotional involvement in issues could improve decision making over time as we learn from past decisions.

One contradictory example of the emotion vs rationality debate which puts the integrative view under question is the research of Small et al., (2007). They found that donations for starving children increase with a picture of a child, but decreases when accompanied with information on the scale of the problem. This then suggests that emotion initially drives the decision making process, however there is some cut-off point. This is potentially due to triggering a coping mechanism or a lack of perceived control. If the individual sees the action as not having any impact on the scale of the problem, they are forced to either perceive the problem as insignificant, or just believe that anything they will do will not actually make a difference. So, in this case emotion can drive the decision, or rationality, but there does not seem to be an overlap.

2.3.3 Fear and Sadness

Fear and sadness have been chosen as the emotional variables for this research due to their slightly contrasting nature and also their relative power (as a feeling). Figure 2 is a multidimensional model of emotions and shows the types of emotion in slices, with the emotions of a similar nature being placed closer to one another. The vertical of each slice represents the intensity of emotion, therefore fear has a higher intensity state of terror and a lower one of apprehension.

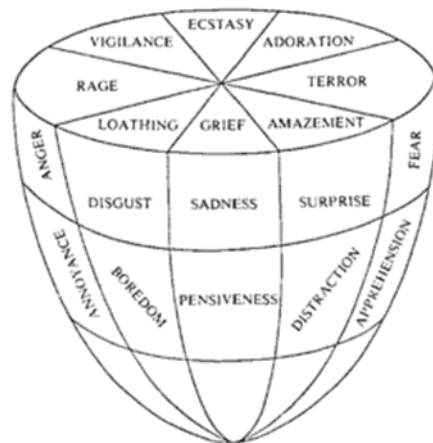


Figure 2: Multidimensional Model of Emotions (Ekman, 1994)

Throughout the literature, sadness is usually defined as the emotion that results from loss, as evident from figure 2, where the maximal feeling of this type is grief, with hopelessness and helplessness often fuelling our sense of sadness (Kringelbach & Phillips, 2014). Fear on the other hand, is generally defined as a rapid and fairly brief response to an external stimulus, which motivates readiness for action to avoid some form of expected punishment or pain, consequently triggering what is often termed as the fight or flight response (Kringelbach & Phillips, 2014).

This avoidance of pain can be both physical or psychological, which leads us to internal coping mechanisms.

In the previous section coping mechanisms were touched on very briefly in the context of emotion vs rationality, and said mechanisms have relevance here as a response to invoked fear or sadness. The Health Belief Model provides additional insight into this phenomenon (as well as the perceived behavioral control variable of the TPB). There are four key factors in this model: the individual must feel vulnerable to the threat, view consequences as severe, have little barriers to effective action, and possess self-efficacy beliefs (Lindsay & Stratham, 1997). This model, which is rooted in studies of human health, also provides interesting applications in the pro-environmental behavior research, specifically actions in response to climate change. One of the main threats of climate change is to human health, so naturally the health aspect ought to be considered. However, similar to the coping mechanisms mentioned earlier, it is found that people exhibit unrealistic optimism for both health and environmental risks that have not yet occurred, and in their minds, considered unlikely (Hatfield & Soames, 2001). This is termed optimistic bias, and it has been suggested that self-regulation like this exists in most individuals due to an inconsistency between short and long term consequences (Soman et al., 2005). The point here being that there is a correlation between how inevitable a threat is (in a time sense) and whether we register this as a serious risk. Understanding how fear and sadness affects these evaluations of risk could be crucial in encouraging individuals to account for long-term risk in the same manner which they do short-term risks. Classic research has shown that fear arousal can be a potent aid to achieving behavior change regarding a risk, yet some research suggests that fear actually appears to be stimulating adaptive self-protection, which is dampening efforts at risk minimization (Breakwell, 2007). Furthermore, fearful people seem to make more pessimistic judgments about a risk, creating perceptions of helplessness (Lerner & Keltner, 2000). This feeling of helplessness is similar to the potential responses from sadness and can lead to in-action or an overwhelming of emotion which could further issues.

Another problem here is the fact that environmental behaviors do not always benefit the individual directly and in the short term, meaning rewards may be difficult as motivation (Nisbet & Gick, 2008). Again, emotional involvement could have an effect here by changing individuals' evaluations of the benefits. The key problems arising from viewing climate change as a health threat predominantly lie with the way in which humans are programmed to perceive threats, short-term vs long-term, and with this, emotion may have a large role to play in re-shaping these evaluations, for better or worse.

In this section emotion has been discussed with potential impacts, both theoretical and practical, considered. It is an area of research riddled with complexities, and one which has uncountable possibilities in theory. Only when the situation-specific data is collected and analyzed can we provide some kind of solid suggestions that can back up or contradict these current studies. Understanding

emotion in this context not only benefits the advancement of research, it has also been suggested that successful decision making in a social setting depends on our ability to understand the intentions, emotion, and beliefs of others (Frith & Singer, 2008). The key point from this section was the age old debate of rationality vs emotion. Within the existing research there is an interesting angle developing calling for a more integrative view. By integrative it means incorporating both rationality and emotion in the same model rather than arguing one or the other. It will be interesting to see if the current research can provide an input to this debate, one way or the other, and how the results can be applied in a practical sense.

As mentioned the three main areas of this research are the TPB, PEB and emotion. Now that the literature has been reviewed and the topic explained more clearly, the application of these topics can be explained. This will be done in the theoretical framework and development of hypotheses sections that proceed this.

2.4 Theoretical Framework

The previous section went over the background of the research and the existing research that has already done. This looked at the various theoretical viewpoints of the topic individually, whereas this section aims to bring it all together to provide clarity to the actual theoretical framework of the research project.

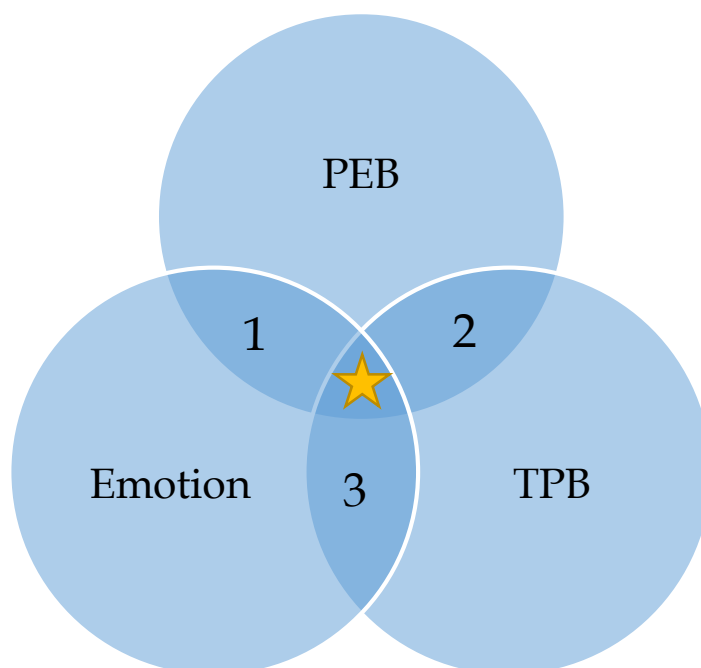


Figure 3: Theoretical Framework

Figure 3 represents the connecting nature of the three topic areas mentioned during the literature review. It is also worth noting, that as discussed in various previous sections, values are found to have a potential link with the TPB, and as such as considered in this research as an extension. To sum up figure 3 simply, areas 1 and 2 of the diagram represent areas of research that have already been covered in one way or another. The centre (represented by the star) and area number 3 of the diagram, are the specific areas that this research topic aims to address. Whilst it could be argued that this research topic is only suitable for the centre of the diagram, it is hoped that the results will have broader implications and suggestions for the more general field of research on emotion and TPB.

Area 1 – The intersection of PEB and emotion has been touched on briefly throughout the review. It is not a new perspective to suggest that emotion somewhat affects environmental decision making.

Area 2 – Perhaps the most thoroughly researched area of the diagram, including studies utilising the TPB but focusing on PEB, such as green hotel choices, transport and recycling to name a few examples.

Area 3 – This area represents the debate of rationality vs emotion. In the previous section it was argued that there is a need for a more integrative view of this debate, rather than the 2 areas being viewed as competing faculties. In the current research topic, the TPB will be utilised using a similar format to a relevant existing research articles, and the emotion section will be added in a similar style to the TPB variables. The impact of emotion on environmental values will also be considered alongside the TPB – as a potential extension to the theory. Whilst the questions in the current research are termed in an environmental context, it is hoped that the results will provide lines of reasoning to add to the integrative view of rationality and emotion.

Centre section – This is the heart of the research topic, where PEB, TPB and Emotion intersect, and thus represent the research aims and objectives. The research aims and objectives are formed from lines of research that arose within the three areas under question. Furthermore, the methodology and theoretical perspective behind the discussion is based upon the existing research to keep the research relevant to its intended field.

In summary, the TPB was chosen for its empirical rigour and level of previous use in empirical studies. This is then applied alongside environmental values within the field of pro-environmental behaviour to relate it with decision making relevant to the researchers aims. The final area of emotion, was chosen as the exploratory area of the research, to attempt to provide evidence within the rationality vs emotion debate.

2.5 Research Aims and Objectives

Following on from the literature review and theoretical framework, the research aims and objectives were then devised. These are based upon the gaps or questions that arose during the literature review and also on the specific interests of the researcher. Research aims can be described as the overall intentions of the project, whereas the objectives are the steps needed to achieve these aims.

The following are the primary and secondary research aims:

- To determine if emotion affects pro-environmental decision making
- To determine if value orientations provide an indirect link with intentions, and if emotion affect these

So, in order to achieve these, the objectives are:

- Utilise the TPB and a questionnaire design that isolates emotional influence to test if emotion is having an impact. Multiple regression can be used to compare control group responses to test groups (fear and sadness).
- Develop hypotheses based upon existing research in order to statistically test for certain changes in value-orientations and a relationship between the TPB variables and values.

2.6 Developing Hypotheses

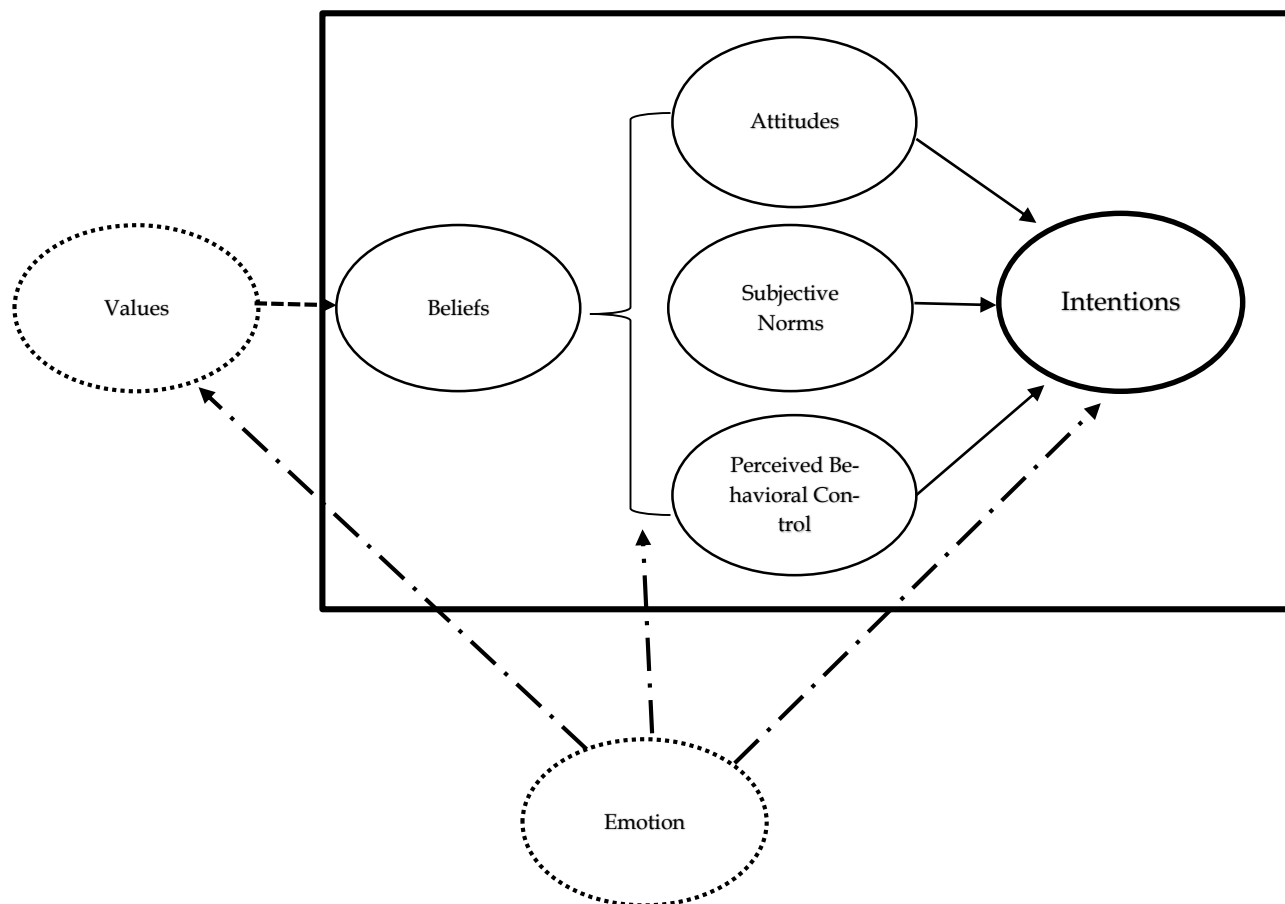


Figure 4: Research Diagram

The primary aim of the research to explore the effect of emotion on PEB through the perspective of the TPB will be explored using multiple regression analysis. Other research questions stemming from this topic will use hypothesis testing, and as such will be developed from the areas highlighted in the literature review. Based on the literature review and theoretical framework discussed in the prior sections figure 4 has been developed. This is an adapted version of the TPB, which is shown in the figure inside the box. The variables outside of the box, values and emotion, are the areas the research hopes to explore through hypotheses. Firstly, it was suggested by Groot and Steg (2007b) that beliefs are actually preceded by environmental values, specifically biospheric, altruistic and egoistic. However, it was also discussed in the literature review that typical studies utilising the TPB rarely explore this connection with the core TPB variables. Whilst direct emotional impact will be determined in a further hypothesis and multiple regression, the (potential) indirect effect is examined through the impact on values and their link with beliefs. Based on the gap in the existing research concerning values and the TPB, and the importance of values in PEB, the current study

finds this an area that should be explored further. Therefore, the first hypothesis is:

- H2: Values have an indirect impact on the TPB through an effect on beliefs (in particular attitudes)

Moving on from this, the emotional influence also has to be considered. It was discussed that there is a difference between self-transcendent (biospheric and altruistic) value orientations and self-interest ones. The way in which these appeal to the emotions of fear and sadness has also been mentioned. However, the literature still suggests that values are long-term feelings that do not change in the short term. Subsequently, the hypotheses are set as:

- H3: Fear does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)
- H4: Sadness does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)

From the hypotheses determined so far the research will be able to conclude whether emotion has an indirect effect on PEB intentions, and if there is an effect, how the separate emotions of fear and sadness are affecting the value orientations of self-transcendent and self-interest.

Finally, having explored the effect of emotion on values and the (potential) subsequent link with the TPB, the research needs to consider the TPB itself. In order to examine if emotion is having any impact at all a null hypothesis needs to be set (which will be tested through multiple regression analysis). Also, if there is found to be an impact, positioning emotion within the model needs to be explored. This is depicted in figure 2 as three arrows leading to either values (indirect, tested in H1), the independent variables (attitudes, subjective norms and PBC) and the dependent variable (intentions). Therefore, a hypothesis needs to be set that determines if emotion has a direct impact on the independent or dependent variables. So, the final hypotheses are:

- H0 (Null): Emotion has no effect on the TPB
- H1: Emotional influence affects intentions directly, not through an interaction with the other TPB variables (attitudes, subjective norms, PBC)

2.7 Conclusion

This chapter set out to review the existing research relevant to the chosen topic area, and use this to develop a theoretical framework, research aims and objectives and hypotheses. The three key areas being the TPB (including values as an extension), PEB and emotion in decision making. To start with the chapter discussed PEB. In this section it was first defined and slightly expanded to keep it in context of the research topic. The various research perspectives were then explored, with economic and psychological being discussed, which also leads in to the key debate of rationality vs emotion in a later section. The secondary variables of values were then explored, and its potential link with the TPB considered. The section finished by suggesting areas for the hypotheses. After this, the chapter moved on to the TPB, first explaining its features and justifying the choice before moving on to discussing some of its potential issues such as self-reporting, control (PBC vs self-efficacy) and the relative strength of the subjective norms variable. Some key issues were raised in this section that the researcher has to be aware of moving forward, and also some areas of interest to keep in mind during the analysis and results sections. Finally, the chapter moved on to the emotion section, where first emotion was defined within decision making before moving on to perhaps the key part of the literature review, the rationality vs emotion debate. In this section both sides were considered, before concluding that there is an opportunity for future research to explore the gap of an integrative view. That is, not taking either side, but a model that incorporates both instead. This is in line with the research aims, as the fundamental question is how emotion fits within the traditional rational decision making frameworks, with the TPB being used as the test. To conclude the literature review, fear and sadness were considered briefly and their role within decision making. These are the two invoked emotional states to be used in the data collection, so their relevance is self-evident.

3 METHODOLOGY

In this chapter the methodology of the research will be explained in detail. This includes research approach and philosophy, data collection, data analysis and research ethics. The choices made within all these sections will be justified and explained in terms of their relevance to the type of study.

3.1 Research Approach and Philosophy

The research method chosen was quantitative in nature. Which Bryman & Bell (2007) describe as “entailing the collection of numerical data and as exhibiting a view of the relationship between theory and research as deductive, a predilection for a natural science approach...”. The main point of quantitative research, that differs from qualitative, is that it uses measurable data to formulate facts and uncover patterns in research, rather than meaning-making. As mentioned in the definition, it usually involves a deductive approach, which means deducing a hypothesis from existing research to then test. In this case, the theory under question is the TPB, and will be tested to see if its applicable to the research and also if it still holds under emotional influence. The other hypotheses developed were based around explaining this emotional influence further, through a direct impact on intentions, or indirect via the suggested link between environmental values and beliefs. So, in summary, the research is entirely quantitative in nature, taking a deductive approach to test the TPB and how emotion and values fit within this model.

3.2 Data Collection

Data collection is a crucial stage of any research project, it is the stage where all the effort and hard work deciding and designing a study comes to fruition. However, there are some important factors to be aware of during this stage of the project. This section has been split into three subsections of method, design, and collection. The reason for this is to go through the process in chronological order explaining the exact steps taken during each phase.

3.2.1 Method

Having decided on a quantitative approach to data collection, the next step was to choose the method of collection. Alternative methods may have had some use here, but the questionnaire method provided a better fit for the research aims.

Furthermore, previous studies based on the TPB also commonly use questionnaires as a data collection tool, showing that for this type of study it is usually the optimal choice.

Besides the existing research using this method there are numerous other advantages it offers to the researcher (Bryman & Cramer, 2012). Firstly, it is a relatively cheap and easy method to utilise, with just the cost of printing to be considered. Secondly, due to it being a self-completion questionnaire, it eliminates the potential for interview variability. This is a type of variation that is evident in some other methods such as interviewing, it happens when the interviewer inadvertently acts slightly different with participants. Due to the instructions for filling the questionnaire coming from text contained on the questionnaire, this type of variance is eliminated in this case. Finally, and similarly to the previous point, the interviewer is unable to affect the answers to the questionnaire. Consciously or not, in some cases as a researcher it can be tempting to try and influence a participant to give answers that fit your hypothesis. However, this is impossible during the collection stage of the questionnaire. It may be an issue during the design stage, but this will be mentioned in the next sub section.

There are also some disadvantages for the chosen method, these include issues based around the quantity or quality of data, and the delivery method. Whilst mentioned as an advantage (interviewer influence), this can also be a disadvantage. In some cases, it may be necessary to prompt and probe the participant to get the level of detail required in an answer. In the case of the TPB the researcher does not see this as an issue, the required responses are simple ratings and nearly all questions are closed-format, not requiring any additional information. The other main disadvantage here is the delivery method, and the fact the participant can see all the questions at the same time. This can create potential issues of them looking through to try and gain a clearer picture of the research. Or even in some cases a later question might prompt them to go back and change an answer to a previous question. If the questionnaire had been delivered online this issues could have been avoided through the use of multiple pages with no back button. In this case the questionnaire had to be delivered in paper format so this issue could not be avoided, but the researcher was aware of the possibility so tried other methods to minimise this risk (discussed later).

3.2.2 Design

When it comes to designing the questionnaire a few key points need to be thought about in advance such as, presentation, instructions, and type of questions/content (Bryman & Cramer, 2012).

The presentation and instructions were thought about carefully when creating the questionnaire. Due to it being administered as a paper copy, it was created using Microsoft Word. Formatting a questionnaire is not easy using this soft-

ware, but it was manageable and it allowed the questions to be positioned in a way that avoided them becoming cluttered together. The instructions were kept clear and precise throughout in order to avoid confusion and the risk of the participants not reading them clearly.

As mentioned, the other point to be aware of during the design phase is the type of questions and content. For the type of study open questions are not really suitable, therefore closed questions were used throughout (apart from demographic and 1 emotion response question). The reason for using closed questions was predominantly comparability between participants and existing research results, also during analysis it minimises subjectivity of the researcher, thus protecting validity. The one open emotional response question was used as a verification for the attempted invoked emotion. If the participant had been given a choice of emotion to circle it would have potentially influenced the response. So, by having this question open it minimised the risk of influence the result, and this question is not included in the main analysis anyway, only used for verification purposes. It is also worth mentioning that all closed questions utilised a 7 point Likert scale. By using this method, it allows the process of coding and data input to be as simple as possible, just assigning numbers to each response. In order to make sure this scale was effective, the researcher also included some questions where the scale was reversed. This makes sure the participant does not go in to autopilot and just choose a similar response to each question.

The actual content for the questions was based around the concepts explained in the Theoretical Framework chapter (TPB and values, PEB, and emotion). For the TPB section there were questions from the categories of attitudes, subjective norms, perceived behavioral control and intentions. This section of the questionnaire was based on Han et al., (2010) who applied the TPB to environmental behavior – green hotel choice. Questions were re-worded according to the context of energy conservation, rather than hotel choice, but the main structure kept identical to help with validity of analysis. A category based on emotion was added in a similar structure to these other variables (3 questions, each with a 7-point Likert scale) in order to test the research hypotheses. The value survey was based on the work of Groot & Steg (2007b), and includes 4 questions based on egoistic, altruistic, and biospheric values, so 12 total. As was highlighted by Groot and Steg (2007b) there is a potential link between values and TPB, so the hope is they will provide useful explanatory insight into the emotion/TPB results.

The final crucial element to the questionnaire worth mentioning is the use of images. There were three different questionnaires designed in order to test the emotional element. One was the control group with no image, one was a group that tried to invoke fear through an image of a forest fire, and one that tried to invoke sadness through a picture of a thin polar bear. This approach was based on the idea of affective images, which is where positive or negative feeling states have become attached to an image through learning or experience (Leiserowitz, 2006).

By using three types of questionnaires it allows the analysis to specifically isolate the emotional effect, aside from natural variations in the data.

3.2.3 Collection

Prior to the actual collection 2 small pilot studies were run. The first had around 10 respondents, with the aim of pre-testing the images used and the format of the questionnaire. This helped decide on the specific images and also get rid of any formatting errors before the actual data collection. The second pilot test was used to test for language, technical terms and climate knowledge. 2 Finnish participants were used for this who did not have a background in environmental studies. Again, this helped improve the quality of the questionnaire through slight amendments, but no major issues were discovered.

It has been mentioned a couple of times already in this chapter that the collection method of the questionnaire is paper based. Also, the actual collection took place during a lecture in the course "Introduction to management and leadership". Originally it was hoped that there would be around 200 people present in this lecture, however due to unforeseen circumstances the actual data collection was around 90 respondents. In order to run a multiple regression analysis, the minimum per response group is 30. Having gathered just enough responses the analysis will be run as scheduled. This administration method of the questionnaire was not without its issues, for example it restricted the demographics of respondents. The results of the study can now only be generalised to students; as other demographics may have responded differently. The positives of this method were that response rate could be controlled (although there were issues still) and the course included students from many educational and cultural backgrounds, which provided some diversity to the data pool.

3.3 Data Analysis

Once the data has been collected the research moves to the analysis stage, this section will detail how the data was handled and the methods used during analysis.

3.3.1 Software and Input

The software used for the analysis was IBM SPSS Statistics 22, or SPSS in short. This software allows the researcher to run statistical tests on the data with relative ease. During the input stage of the analysis, all questions are input numerically

according to the code assigned to each answer on the Likert-scale. One slight issue to be aware of during input is the questions that have been reverse coded. These could have been input as a normal variable and then transformed after, but it was decided that it would be easier to input them as the correct value in the first place. Therefore, such as the scale of the input stage, it was important to concentrate specifically on the questions that had been reverse coded.

3.3.2 Analysis Techniques

The analysis part of the research focused predominantly on two techniques, with additional methods being utilised to explain the data a bit more clearly. The two core analysis methods used were hypothesis testing through correlations and multiple regression. Hypothesis testing is a simple method with which the researcher uses suitable statistics to test hypothesis set before the data collection stage, based upon the literature review. In this case correlations and t-test statistics were mainly used. On the other hand, multiple regression is a bit more complex. It is a statistical technique that can be used to analyse the relationship between a single dependent variable, and several independent (predictor) variables. With this the research can state with a single statistic, how much of the variation in the TPB dependent variable (intentions) is explained by the independent (attitudes, subjective norms, PBC) variables (Hair et al., 2010).

In order to test the primary research question, multiple regression was run on the separate groups with a null hypothesis set that stated there would be no significant difference between them. This multiple regression was used on the original TPB variables, and then additionally with emotion as a variable. For the other, alternate, research questions hypothesis testing was used. In order to test the 6 hypotheses that were developed based on the literature review section, Levene's test and the t-test were utilised. This meant that the data was tested for equal variance (Levene's test) and then the means were compared between groups for the variables of interest using the t-test. If the Levene's test did not provide an adequate value, the Mann-Whitney U-test was used to confirm the validity of the results. In the case of the t-test, a confidence level of 95% was used throughout. This meant that any values of less than 0.05 were found to have a significant difference. Other descriptive methods, such as Pearson correlation and general demographic information, were used throughout in order to explain the data and results more clearly, where suitable.

3.4 Research Ethics

“Research ethics concerns the responsibility of researchers to be honest and respectful to all individuals who are affected by their research studies or their reports of studies’ results.” (Gravetter & Forzano, 2012). Often this is an area of research that can be taken for granted in non-invasive or harmful studies, nevertheless it ought to be given serious consideration prior, and during research. From the book written by Gravetter & Forzano, there are 3 ethical issues that stand out as relevant for this research topic and method. They are confidentiality, deception, and rewards.

3.4.1 Confidentiality

Confidentiality refers to the treatment of information gathered during the project and how it is used. Particularly information pertaining to demographics, attitudes and opinions that the participant may want to be kept secret (Gravetter & Forzano, 2012). In this case, all participants were included voluntarily, and the questionnaire was filled and returned in a way that retained confidentiality, in other words the researcher had no way of knowing which participant filled in which questionnaire. Furthermore, the results of the study are kept confidential and only shared through the channels with which the University sees fit.

3.4.2 Deception

Deception occurs when a researcher purposefully withholds information or misleads participants with regard to information about a study. Passive deception is the withholding or omitting of information; the researcher intentionally does not tell participants some information about the study (Gravetter & Forzano, 2012). The nature of this study required a certain level of deception in order to avoid influencing the responses. If participants had known the intention of the research was to study the effect of emotion through image, this could have altered the results significantly, thus justifying the use of deception. Furthermore, the deception did not create any physical or severe emotional distress. Therefore, deception, in this case, was necessary but not harmful to the participants.

3.4.3 Rewards

The final relevant issue is the use of rewards; this is offering inducements for research participation. The protocol states that researchers should avoid offering excessive or inappropriate financial or other inducements for research participants when such inducements are likely to coerce participants. With this in mind, the participants were not required to take part if they did not want to, however

it was explained that it would be helpful if they did. At the end small prizes were distributed at random to the participants, this was not mentioned beforehand as to avoid any kind of influence on the participants.

4 RESEARCH FINDINGS AND DISCUSSION

This chapter will categorically set out the research findings based on the analysis techniques stated in the methodology section, before moving on to the discussion around these findings. As was detailed in a previous section, a list of hypotheses was developed based on the existing literature and the research aims. The hypotheses are:

- H0 (Null): Emotion has no effect on the TPB
- H1: Emotional influence affects intentions directly, not through an interaction with the other TPB variables (attitudes, subjective norms, PBC)
- H2: Values have an indirect impact on the TPB through an effect on beliefs (in particular attitudes)
- H3: Fear does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)
- H4: Sadness does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)

4.1 Findings

This section will first go through the basic descriptive statistics from the data, including demographics (Age, gender and nationality), emotion and TPB variables. The aim of this is to get a feel for the data and identify any issues that have been mentioned in previous sections, or any new issues arising. After this the results from hypothesis 2 through 4 will be discussed. These hypotheses are all relating to the values aspect of the research, with the focus being on determining if there is an indirect link between emotion, values and beliefs, and how emotion is affecting the value types. The second section of the results will be the null hypothesis and hypothesis 1. These were set in line with the primary research aim to determine whether emotion has an impact on the TPB and if this is a direct impact, in contrast to the indirect impact explored in the previous hypotheses.

4.1.1 Demographic Descriptives

Demographic information was included in the questionnaire, predominantly to check for any bias in the data and to understand the limitations to the conclusions. Before moving in to the general descriptives for these factors, it is worth mentioning about the overall response. There were 94 total respondents, with 30 being the control group, 33 the fear group and 31 the sadness group. As was mentioned in the methodology chapter, this response was lower than anticipated, but still enough to do the analysis as planned. The distribution of participants across the groups is satisfactory with only a minor difference in participants between control and the subsequent emotionally influenced groups.

Group	Male		Female	
	Number of Participants	%	Number of Participants	%
Control	13	43	17	57
Fear	19	58	14	42
Sadness	9	29	22	71
	41	44	53	56

Table 1: Gender Distribution

Table 1 details the gender distribution, split into the separate questionnaire groups. In total there is a slight bias towards female participants ($n=53$) compared with the male participants ($n=41$). As was discussed in the methodology section, this was not controllable due to the collection method, and is not seen as a huge issue to the bias not being too large in favour of either group. However, when looking at the separate groups there is a slight issue. Sadness has a significant bias, with 9 males compared with 22 females. Also, the fear group is biased in the opposite direction with 19 males compared with 14 females. When looking at existing research on the differences of gender and PEB, there seems to be no common consensus (Chekima et al., 2016). Zelezny et al., (2000) suggest women report stronger environmental attitudes and behaviors than men. Whereas, Diamantopoulos et al., (2003), concluded that men have more knowledge about environmental issues than women and act accordingly. Further complicating the issue, Chen and Chai (2010) found no significant difference between male and female attitudes of green products when studying undergraduate students in universities in Malaysia. Therefore, although there seems to be contradictory results within existing research, this issue of gender bias ought to be considered within the results of hypotheses testing, and when discussing limitations.

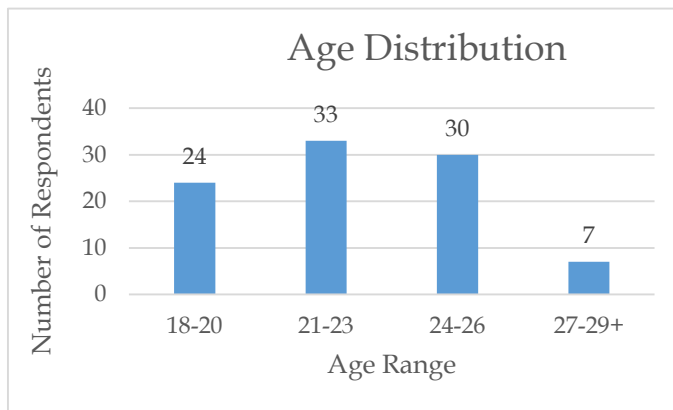


Figure 5: Age Distribution

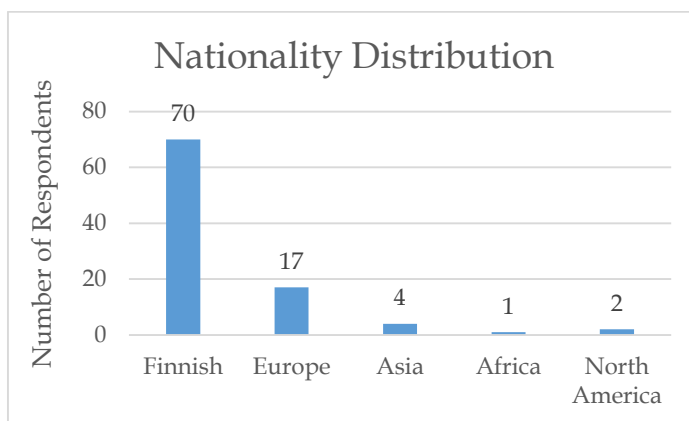


Figure 6: Nationality Distribution

Figure 5 and 6, show the distribution of age and nationality. These factors are not considered as relevant to the study and are merely provided to explain the limitations of the research in terms of generalisability. As expected, the age is within the confines of 18-30, again due to the collection method being students. The one key point to note from these two figures is the significant proportion of the participants that were Finnish. Again, this was expected due to the collection method being in a Finnish University. When discussing the conclusions of the study it needs to be noted that due to this dominance of Finnish participants, perhaps the results can only be generalizable to this demographic.

4.1.2 Emotion Descriptives

In order to capture the emotional response felt by the participants in the emotional influence groups there was first a statement next to the image saying "Please look at the image and imagine you are witnessing this situation with your own eyes", this was followed by the question "Which emotion do/would you

feel (State only one)?". After this there was a statement "The strength of this emotion is". Table 2 details the responses to these questions, with the emotion intended to be provoked representing 76 and 87 percent, in the fear and sadness groups, respectively. Due to the subjectivity of imagery this was a concern during the planning stage of the research. Pilot tests were used to decide the optimal images for both cases and the results provide satisfactory levels of success. Also, the average strength of emotion felt in both cases were quite high on the scale, suggesting the images were not only representative of the emotion intended, but also powerful. The issue of self-reporting is still prevalent here, yet in this setting there is no way of determining a participants actual experienced emotional response, so this is something that cannot be controlled. In any case, this issue is consistent across the groups so should not affect the results significantly.

	Fear		Sadness	
	Number of Respondents	%	Number of Respondents	%
Stating Intended Emotion	25	76	27	87
Stating Other Emotion	8	24	4	13
Average Strength of Emotion (Scale used 1-7: Very Little - Very Strong)	5.5		5.3	

Table 2: Emotion Responses

4.1.3 TPB Descriptives

The variables of the TPB include attitudes, subjective norms, PBC and intentions. The descriptive statistics of these are shown in table 3 which provides a better understanding of the variables and their significance in the current research. Subjective norms were found to have little or no correlation with any of the variables in all cases, highlighting their apparent non-conformity to the model in this context. The other variables of interest were attitudes and PBC, and how these related to intentions. Firstly, in both the emotionally influenced groups the mean intentions were lower (tested later in an alternate hypothesis), control 5.2333, fear 4.5051 and sadness 5.0215. This is an interesting result in itself as it suggests that invoked emotion is directly affecting intention to act. However, as mentioned later, only fear intentions were found to be statistically lower. Also, another interesting point from table 3 is the means of the attitudes. Sadness (5.0108) is slightly higher than the control (4.8667), meaning that feelings of sadness is improving attitude towards energy efficient behavior. This was not found to be a statistically significant difference though, and this change may be due to normal

variations in the data. Other than this, the rest of the results are quite similar across groups. The differences in the correlation results seem to typically stem from the lower intentions, as most of the other variables stayed similar, apart from attitudes as mentioned.

Correlations (TPB)							
			Intention	Attitude	Sub. Norms	PBC	
Control Group	Pearson Correlation	Intention	1.000	.508	.059	.621	
		Attitude	.508	1.000	-.021	.271	
		Sub. Norms	.059	-.021	1.000	-.087	
		PBC	.621	.271	-.087	1.000	
	Means		5.2333	4.8667	3.4556	5.8556	
	Sig. (1-tailed)	Intention	.	.002	.378	.000	
		Attitude	.002	.	.457	.074	
		Sub. Norms	.378	.457	.	.324	
		PBC	.000	.074	.324	.	
	Invoked Fear	Pearson Correlation	Intention	1.000	.279	.043	.379
			Attitude	.279	1.000	.048	.149
			Sub. Norms	.043	.048	1.000	.177
PBC			.379	.149	.177	1.000	
Means			4.5051	4.8384	3.2222	5.7576	
Sig. (1-tailed)		Intention	.	.058	.407	.015	
		Attitude	.058	.	.395	.204	
		Sub. Norms	.407	.395	.	.162	
		PBC	.015	.204	.162	.	
Table continued over page.							

Invoked Sadness	Pearson Correlation	Intention	1.000	.535	.189	.305
		Attitude	.535	1.000	-.025	.324
		Sub. Norms	.189	-.025	1.000	-.187
		PBC	.305	.324	-.187	1.000
	Means		5.0215	5.0108	3.6022	5.8710
	Sig. (1-tailed)	Intention	.	.001	.154	.048
		Attitude	.001	.	.447	.038
		Sub. Norms	.154	.447	.	.157
		PBC	.048	.038	.157	.

Table 3: TPB Variables Descriptives

4.1.4 Values Descriptives

	Mean of Data		
	Control (n=30)	Fear (n=33)	Sadness (n=31)
Altruistic	6.0833	5.7903	5.9355
Biospheric	5.6917	5.0323	5.5081
Egoistic	4.1000	4.3468	3.8871

Table 4: Altruistic, Biospheric and Egoistic Means

Values were captured in the questionnaire using a short value survey based on the work of Groot & Steg (2007), and includes 4 questions based on egoistic, altruistic, and biospheric values, so 12 total. Participants were asked to rate the importance of the following values as a life-guiding principle for them, on the scale of 1 (against my principles) to 7 (very important). Egoistic values were social power, wealth, authority and influential. Altruistic values were equality, a world at peace, social justice and helpful. Finally, biospheric values were preventing pollution, respecting the Earth, unity with nature and protecting the environment. Table 4 shows the average response (mean) in each of the groups for each of the types of values. Aside from egoistic values in the fear group, all values are lower than their counterpart in the control group, suggesting, as expected, that emotion is having some impact on these responses. There are no unexpected results in the table, and these will be expanded on in the following section that tests the hypotheses set based on emotion and values.

4.1.5 Hypotheses Results – Values

This subsection aims at answering if the environmental values (Altruistic, Biospheric and Egoistic) are indirectly linked with intentions through beliefs and if emotion has an impact on said values.

- **H2: Values have an indirect impact on the TPB through an effect on beliefs (in particular attitudes)**

	Pearson Correlation	Significance
	Values	
Attitudes	.194	.032
Subjective Norms	.073	.246
PBC	.355	.000

Table 5: Values - TPB Variables Correlations

In order to test this hypothesis Pearson Correlation was run on the data between values and the three variables including within beliefs. There was found to be no high positive relationship between any of the variables (Table 5). Meaning that a change in values would not be reflected in a change in any of the TPB variables. Based on this finding alone there was no need to explore this hypothesis further and it was subsequently rejected with no evidence in this case that values were linked to the TPB independent variables.

In order to test hypothesis 3 and 4, Levene's test was first used to determine that the variances were normally distributed in each sample, and then t-test was used to compare the means of the variables under question. Descriptive statistics were also used in coordination with the t-test statistic to explain the results more clearly.

Correlations (Values)							
			Intention	Egoistic	Altruistic	Bio-spheric	
Control Group	Pearson Correlation	Intention	1.000	-.134	.408	.521	
		Egoistic	-.134	1.000	-.192	-.037	
		Altruistic	.408	-.192	1.000	.668	
		Biospheric	.521	-.037	.668	1.000	
	Means		5.2333	4.1000	6.0833	5.6917	
	Sig. (1-tailed)	Intention	.	.240	.013	.002	
		Egoistic	.240	.	.154	.423	
		Altruistic	.013	.154	.	.000	
		Biospheric	.002	.423	.000	.	
	Invoked Fear	Pearson Correlation	Intention	1.000	.372	.221	.453
			Egoistic	.372	1.000	-.170	-.125
			Altruistic	.221	-.170	1.000	.529
Biospheric			.453	-.125	.529	1.000	
Means			4.5699	4.3468	5.7903	5.0323	
Sig. (1-tailed)		Intention	.	.020	.116	.005	
		Egoistic	.020	.	.181	.251	
		Altruistic	.116	.181	.	.001	
		Biospheric	.005	.251	.001	.	
Invoked Sadness		Pearson Correlation	Intention	1.000	-.229	.727	.584
			Egoistic	-.229	1.000	-.254	-.035
			Altruistic	.727	-.254	1.000	.461
	Biospheric		.584	-.035	.461	1.000	
	Means		5.0215	3.8871	5.9355	5.5081	
	Sig. (1-tailed)	Intention	.	.108	.000	.000	
		Egoistic	.108	.	.084	.425	
		Altruistic	.000	.084	.	.005	
		Biospheric	.000	.425	.005	.	

Table 6: Correlations (Values)

Control Group Compared with Invoked Fear (Means)		
	Levene's Test Sig.	t-test Sig.
Egoistic	.167	.348
Biospheric	.665	.017
Altruistic	.290	.245

Table 7: Control Group Compared with Invoked Fear (Values)

- **H3: Fear does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)**

Table 6 and 7 were used to test this hypothesis, comparing the means and correlations of Egoistic values from the control group and fear groups. When looking at the correlations table for the control group there are significant correlations between Altruistic/Intentions (0.408, sig. 0.013), Biospheric/Intentions (0.521, sig. 0.002), and Altruistic/Biospheric (0.668, sig. 0.000). This means there is a relationship between the altruistic and biospheric values and their subsequent link with intentions. When looking at the fear group the Altruistic/Biospheric relationship still holds (0.529, sig. 0.001), but the relationships between the value orientations and intentions alters slightly. There is still a link between Biospheric/Intentions (0.452, sig. 0.005), but the Altruistic/Intentions link is no longer valid and seems to have been replaced with a link between Egoistic/Intentions (0.372, sig. 0.020). So, judging from these results alone, fear seems to be altering the value orientations of altruistic and egoistic, in respect to the intentions relationship.

When we look at the means, first it is worth mentioning that the Levene's test data is satisfactory for all these values as they are all well above the 0.05 threshold. The Egoistic values did increase in the fear group (4.3468 compared with 4.1000), yet the t-test significance value was 0.348 so was not found to be statistically significant. On the other hand, both the means of the altruistic and biospheric values dropped when compared with the control group, however only the biospheric value was found to be a significant reduction (sig. 0.017). These findings show some inconsistencies between the correlations and means. Biospheric values were found to have a significantly lower mean in the fear group, yet the relationship with intentions was unaffected. Similarly, altruistic values were not found to have a significantly lower mean, but their relationship with intentions were affected. On the basis of this evidence, the hypothesis is rejected. There seems to be some level of change between the control group and the fear group, whether

this be through the value/intentions relationship, or through a more apparent effect on biospheric values in general.

Control Group Compared with Invoked Sadness (Means)		
	Levene's Test Sig.	t-test Sig.
Egoistic	.730	.358
Biospheric	.096	.537
Altruistic	.348	.544

Table 8: Control Group Compared with Invoked Sadness (Values)

- **H4: Sadness does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)**

As with the previous hypothesis, first the correlations are compared (Table 6), with the control group there are significant correlations between Altruistic/Intentions (0.408, sig 0.013), Biospheric/Intentions (0.521, sig. 0.002), and Altruistic/Biospheric (0.668, sig. 0.000). There were no changes found in the sadness group with the significant relationships in that case being found to be the same as the control group, Altruistic/Intentions (0.727, sig. 0.000), Biospheric/Intentions (0.584, sig. 0.000), and Altruistic/Biospheric (0.461, sig. 0.005). Furthermore, from Table 8 it is clear that there was no significant change between the mean values. Values of 0.358 (Egoistic), 0.537 (Biospheric), and 0.544 (Altruistic) are all well above the 0.05 threshold, meaning there was no statistically significant change. Also, the Levene's test results were again all acceptable. Hypothesis 4 is then accepted, with no evidence at all that contradicts the view that sadness affects values.

4.1.6 Hypothesis Results - TPB

The primary research aim was to determine whether emotional influence affects decision making within the TPB framework. As explained in the methodology section this analysis method follows that of Han et al., (2010) using multiple regression to test the research hypotheses. Just to re-iterate, the theory states that behavioral intentions can be predicted through a combination of attitudes, subjective norms and PBC. In order to measure these variables, the questionnaire had 3 questions for each variable. Attitudes were gathered through the statement "for me reducing energy consumption is...? With the following 7-point response scales:

- Extremely bad – Extremely good
- Extremely unenjoyable – Extremely enjoyable
- Extremely unpleasant – Extremely pleasant

Subjective norms were captured by stating the following with a 7-point scale of strongly disagree to strongly agree:

- Most people *think I should* lower my energy consumption
- Most people *would want me to* lower my energy consumption
- Most people *would prefer* I lower my energy consumption

PBC was covered by stating the following with a 7-point scale of strongly disagree to strongly agree:

- Lowering personal energy consumption is up to me
- I am confident that if I want to, I can lower my energy consumption
- I have the resources, time and opportunities available to lower my energy consumption

Finally, intentions were covered by stating the following with a 7-point scale of strongly disagree to strongly agree:

- I am willing to lower my energy consumption
- I plan to lower my energy consumption
- I am going to make an active effort to lower my energy consumption

H0 (Null): Emotion has no effect on the TPB

In order to test the primary research aim, the null hypothesis was set:

- H0: $R^2_{\text{Cont}} = R^2_{\text{Fear}} = R^2_{\text{Sadness}}$

This basically states that if the R^2 result from the Fear and Sadness questionnaires is statistically the same as that of the control group, then the intended emotional influence is having no effect. The R^2 value represents the percentage of variation in intentions (dependent variable) that is explained by attitudes, subjective norms and PBC (independent variables).

Firstly, it is clear to see from table 9 that the null hypothesis is rejected, with the control, fear and sadness groups having R^2 values of 0.523, 0.195 and 0.360, respectively. Having established that invoked emotion does have some influence on the TPB results, next the analysis looked deeper to see which variables are affected in the fear and sadness groups. Subjective norms in all three groups were found to be statistically insignificant with both low B values and also a significance level of above 0.05 in all cases, making the results unreliable. With regards to the B values for attitudes and PBC, there was not any significant

changes between groups, suggesting that the overall R^2 value is being affected by another variable, potentially the invoked emotion. Therefore, from this evidence alone all that can be concluded is that the null hypothesis is rejected (emotion is having some effect), and that this is influencing something other than the original TPB variables.

Multiple Regression						
		R	R ²	B	t	Sig.
Control	Attitude			.455	2.605	0.015
	Sub. Norms			.071	.829	.415
	PBC			.599	3.764	0.001
	Model	0.723	0.523			.000
Invoked Fear	Attitude			.365	1.356	.186
	Sub. Norms			-.031	-.179	.859
	PBC			.625	2.048	.05
	Model	.422	.195			0.094
Invoked Sadness	Attitude			.653	2.939	.007
	Sub. Norms			.259	1.515	.141
	PBC			.424	1.173	.251
	Model	.600	.360			0.006
Invoked Fear II	Attitude			.370	1.356	.186
	Sub. Norms			-.007	-.041	.967
	PBC			.310	2.059	.049
	Emotion			.219	-.514	.611
	Model	.450	.203			.161
Invoked Sadness	Attitude			.750	3.510	.002
	Sub. Norms			.103	.585	.564
	PBC			.555	1.606	.120
	Emotion			.388	2.138	.042
	Model	.675	.456			0.003

Table 9: Multiple Regression

The actual applicability of the TPB in this context was also tested using the multiple regression output. Armitage and Conner's (2001) research detailed the R^2 results of papers using the TPB, and found that on average those that were self-reported intentions tended to be around 0.400. Therefore, the results here show that the control group provides an above average value (0.523, sig. 0.000), and a borderline average result for the sadness group (0.360, sig. 0.006). But, the fear group failed to find suitable explanatory power (0.195, sig. 0.094). It is worth reiterating that the level of acceptable significance is anything less than 0.05, so 95% confidence interval. The TPB then can be seen to be applicable for this research with the control group, but the emotionally influenced groups are providing a lower level of explanation (sadness), or even no statistical explanation at all (fear).

In order to explain the difference between the control group results and the emotionally influenced ones, it seemed a logical starting point to examine the questions relating to emotion. As with the TPB variables, data relating to emotion was gathered through the following 3 statements with a 7-point response scale from strongly disagree to strongly agree:

- Emotions are **not** important in my decision making
- I base my decision making mainly on rational thinking (rather than emotion)
- I consider myself subjective to emotional influence

The resulting data was then input into a new multiple regression model for each of the invoked emotion groups, as shown in table 9. Similar to the original models, the fear group failed to provide a statistically significant fit (0.203, sig. 0.161), with emotion as a variable providing a negative coefficient. On the other hand, in the invoked sadness group, emotion seems to provide a significant predictive power with a coefficient of 0.388, sig. 0.042. Furthermore, the model is improved slightly (0.456, sig. 0.003), compared to the previous regression model that excluded emotion as a variable. In summary, from all the regression models, invoked sadness provides a suitable fit with the TPB and the emotion-extended version, but fear fails to provide a statistical fit in both cases. Also, even with emotion considered, the sadness group is still providing less explanatory/predictive power than the control group, suggesting emotion is impacting the decision making in other ways that the TPB does not consider.

H1: Emotional influence affects intentions directly, not through an interaction with the other TPB variables (attitudes, subjective norms, PBC)

Having hypothesised and found in the null hypothesis that emotion is having an impact on the TPB, this hypothesis aims at exploring in what way emotion is impacting the model. In order to test the hypothesis, t-test was used to compare the means of the variables between the control group and the emotionally influ-

enced ones, this is detailed in Table 10 and 11. Firstly, when comparing the control group to the fear group (Table 10) the first problem was that intentions had a Levene's test significance value of 0.26. This meant that a non-parametric test had to be run to confirm the findings from this result. The chosen method was the Mann-Whitney U test, which provided a value of 0.039. Incidentally, intentions were found to be the only variable with a significant change between the two groups (0.015). As mentioned, the U-test result confirmed the validity of this finding with a value of 0.039, which is still below the 0.05 threshold. Therefore, in the case of fear, emotion is found to influence intentions directly, with none of the other variables showing a significant change between groups.

Control Group Compared with Invoked Fear		
	Levene's Test Sig.	t-test Sig.
Attitude	.069	.886
Sub. Norms	.457	.492
PBC	.854	.609
Intentions	.026	.015
Mann-Whitney U Test (Sig.)		
Intentions	0.039	

Table 10: Control Group Compared with Invoked Fear (TPB)

When comparing the control group with the invoked sadness group again there was a slight issue with the normal distribution of the data. The Levene's test for PBC gave a value of 0.049, which whilst very much on the borderline of acceptability, required a non-parametric test. The Mann-Whitney U-test was used again, and gave a value of 0.721, confirming the t-test result that there was no significant change in the means. In fact, in the case of sadness, there was found to be no significant change in any of the variables. Therefore, there was no evidence to suggest emotion was impacting intentions directly, or any of the other variables. Hypothesis 1 then has to be rejected, although there is evidence that fear affects intentions directly, there was no evidence of this in the sadness group.

Control Group Compared with Invoked Sadness		
	Levene's Test Sig.	t-test Sig.
Attitude	.065	.498
Sub. Norms	.405	.648
PBC	.049	.928

Intentions	.071	.451
Mann-Whitney U Test (Sig.)		
PBC	0.721	

Table 11: Control Group Compared with Invoked Sadness (TPB)

The key findings are listed in table 12 below, in the following chapter these will be discussed in detail. The significance of the findings in relation to existing research will be analysed, and suggestions for future research avenues suggested.

	Description	Result
Null	Emotion has no effect on the TPB	Rejected – evidence that emotion is impacting multiple regression output of TPB
H1	Emotional influence affects intentions directly, not through an interaction with the other TPB variables (attitudes, subjective norms, PBC)	Accepted for fear, but rejected for negative emotion in general
H2	Values have an indirect impact on the TPB through an effect on beliefs (in particular attitudes)	Rejected - no evidence to support a strong relationship between values and beliefs
H3	Fear does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)	Rejected – evidence to suggest fear affects biospheric values and relationships between values/intentions
H4	Sadness does not affect self-interest values (Egoistic) or self-transcendent values (Altruistic and Biospheric)	Accepted – no evidence to suggest values are affected

Table 12: Hypotheses Summary

4.2 Discussion

The previous chapter detailed the results of the analysis without going into too much detail of their implications within the existing research or their connotations in relation to the research aims. This chapter will discuss the findings in more detail and seek further explanation of the results, before moving on to suggestions for future research, and some limitations of the findings.

4.2.1 TPB

The primary research aim was to determine if emotion affects pro-environmental decision making, and to do this the TPB was used as a tool to compare the different groups. It was found that emotion did impact decision making through an adverse effect on the TPB explanation of variance. Similar to the previous studies on environmental behavior, the theory was confirmed in both the control and sadness groups. However, in the fear group only 20% of variation in intentions was explained by the independent variables. This is significantly below the average explanation of the theory stated in Armitage & Conner's (2001) paper, which was 40%. Therefore, the applicability of the TPB to invoked emotion groups is somewhat debateable. There seems to be a significant distinction between fear and sadness when it comes to the effectiveness of the framework, why this might be will be covered throughout this discussion.

The theme that stood out throughout the majority of this research was how it could contribute towards the rationality vs emotion debate, with a more integrative view being suggested. With the results of the analysis differing between the sadness and emotion groups it is hard to suggest any concrete suggestions for the debate. However, in the case of invoked sadness, emotion fit well within the rational confines of the TPB, providing a significant value when considered as a separate variable, and also the fact that the invoked emotion still kept the theory valid with 45% explanation of variance. Fear did not have successful results as mentioned, and also when emotion was considered as a separate variable the model did not improve, nor did fear provide a significant value. This then suggests that emotion in general cannot be considered as a cooperating factor with rationality, but perhaps provides evidence that sadness is more rational than fear. This may be down to the strength of the emotion or the way in which it impacts decision making. Fear tends to lead to perceiving the risks as greater (Han et al., 2007), which as will be discussed later, can lead to defensive psychological mechanisms, which could provide one explanation to the difference between the two emotions. In any case, it seems that the debate surrounding rationality and emotion is ever-complex, with emotions of the same valence even impacting differently on decision making. With that in mind, it is suggested that emotion be broken down into its separate components in further research before trying to generalise its applicability within decision making.

Another key point that was raised in the literature review was the power of subjective norms in previous research. The analysis confirmed the views of Trafimow & Finlay (1996), Scott et al., (2014), Harland et al., (1991) and Mannetti et al., (2004) who also found subjective norms to be an insignificant predictor of intentions. It was mentioned in the literature review that subjective norms from studies on public transport schemes were found to be significant (Carrus et al., 2008; Groot et al., 2007; Heath & Gifford, 2002). This provides a potential explanation to the results as transportation use is more visible than other behaviors such as energy use or recycling. Subjective norms are about how significant others perceive individual behavior, so it is not a stretch to suggest that when behavior is not visible in the public domain, the importance of subjective norms dwindles somewhat. This links to the “going green to be seen” mantra and recent research that suggests PEB can be utilised as a status symbol or to gain reputation (Griskevicius et al., 2010). For some a driver of environmental behavior is this increased reputation, so acts that are not so easily projected to significant others, such as household energy use, may be seen as not providing benefits. Furthermore, if we are to consider the demographics of the study (students), a high majority of them live in student accommodation away from their family. This means that statements such as “my family think I should lower my energy consumption”, could be seen as insignificant if there is not any pressure on a daily basis to live up to family’s expectations. Also, there is a slight problem in the questionnaire framework used to measure this variable. People who already act pro-environmentally are likely to answer that significant others do not expect them to lower their energy consumption (as it is already low in comparison), yet they themselves are likely to make an effort to reduce this consumption further. Thus, it provides an imbalance in the measuring system, where low subjective norms may actually still have high intentions. Overall, it is still unclear whether the relative insignificance of subjective norms as a predictor in the TPB lies within the context of research, measurement methods, or if in fact it is just a weak predictor of intentions in general. Another point that this insignificance of subjective norms clears up is the potential issue of social desirability bias in the answers. As was mentioned in the literature review, if subjective norms are found to be insignificant, participants’ PEB is not explicitly linked to the views of significant others, and therefore this should mean that social desirability bias is minimised.

The next area of interest from the literature review was the impact of potential extensions to the TPB on intentions. It was mentioned that previous research has often attempted to extend the TPB but only found that the variable used only had impacts on the predictor variables and not directly on intentions (Bamberg, 2003; Manstead, 2000; Scheuthle, 2003; Bamberg & Schmidt 2003 and Verplanken et al., 1997). As the aim of this research was inadvertently to explore the possible extension of the TPB to include emotion and/or values, the links directly with intentions or indirectly with other valuables was explored. It was found that there was no indirect link between values and the TPB variables so this possible extension was rejected, emotions implications will be considered in the following suv

section. On the other hand, it was found that there was a significant difference between intentions of the control group and the fear group. The only difference between the groups was the invoked emotion, and as there was no difference in any of the other variables it leads to the conclusion fear is having a direct (adverse) impact on PEB intentions. This confirms the view of O'Neill & Nicholson-Cole (2009), who argued that fear is generally an ineffective tool for motivating personal engagement. This is partly what sparked the research interest in the first place, with the use of fear becoming ever prominent as a motivator, it arose questions as to if it was actually the best method. Conversely, sadness was found to have no significant impact with intention. This is in contradiction to the findings of Small et al., (2006) who actually found that the use of images (sadness invoking) increased intentions to act. The difference here could be due to the image used in this case being of an animal rather than a human. Species extinction is somewhat overlooked as a direct effect of climate change, when compared with the desire to preserve the environment for one's descendants (Kempton, 1991). This suggests that appealing to human feeling, rather than animal, is more effective due to the more recognizable connection between action and impact. Recognising that a feeling what is described as the same emotion (sadness) can differ depending on the context could be an interesting area for future research. This research proposes that invoking an emotional state in general is not enough to encourage engagement with action, there may also need to be a personal attachment to the perceived emotion or outcome.

In summary, when discussing the use of the TPB in general and its results in the analysis the key points that stood out were based around subjective norms and the direct link with intentions. The use of the TPB in situations where there is invoked emotion provides questionable usefulness, but it did highlight that fear has a direct impact on intentions, whereas sadness did not.

4.2.2 Self-Interest and Self-Transcendent Values

Aside from the primary aim based around the TPB, the research also looked to develop insight into how emotion affects values and if this has an indirect link with intentions. In particular, the three values of egoistic, biospheric and altruistic were studied. As seen in the previous section a number of hypotheses tests were run based on the literature review in order to test the various areas of interest.

Firstly, in contradiction with the Groot and Steg (2007b) study which the secondary aim was based on, there was no relationship found between values and the TPB variables. Therefore, whilst emotions may affect values (as will be covered in the following paragraphs), in this case there was no evidence to suggest an indirect link to the TPB.

With regards to fear, it was hypothesised that they would not affect values. However, it was found that biospheric values had a significantly lower result in the fear group compared with the control group. As was discussed in the literature review, values are seen as fixed so should not be subject to any kind of influence. This result of fear altering biospheric values is then in contradiction with the theories on values and therefore an interesting finding. Fear is inherently an individual emotion, whilst one can be fearful of consequences that affect others, it is an individual response that often results in a fight or flight response. Based on this, it would be a reasonable argument that if for any reason values are to change due to fear, it ought to be self-interest ones that are subject to influence. The result that fear does not change self-interest values is therefore an intriguing one, as it advocates that although fear effects intentions, it does not change the self-interest value orientations. On the contrary, it seems that fear is reducing the level of biospheric views. One explanation for this could be that fear is triggering a coping mechanism which is reducing the perceived importance of biospheric concerns as a form of distancing. This links back to the barriers mentioned by Lorenzoni et al., (2007); viewing climate change as a distant threat, or a too little too late mentality. This is termed psychological distancing where wanting to avoid feeling guilty, or avoid performing inconvenient behaviors to combat a threat can lead to directionally motivated reasoning (Leviston et al., 2014). Reducing the importance of biospheric values/concerns, allows the justification for reduced intentions to act, as one does not view the environmental damage linked with climate change as severe. Leviston et al., (2014) go on to say that whilst we lack a positive narrative about climate change, we can expect people to exhibit defensive functions to protect from these negative, de-motivating associations. This can also encourage climate change scepticism, as people search for prior knowledge for associations that are less troubling, or threatening to the self. This has important ramifications for the current research explanations, and could be attributed to why intentions are significantly lower in the fear group than with the sadness or control group.

When looking at the results from the sadness group in terms of values, the hypothesis was accepted. This meant that there was no significant change in values from the control group to the sadness group, which was more in line with the current research on values being fixed than the results from the fear group. If we are to assume from the fear results that emotion actually does have the power to change values, then this result is somewhat contradictory to this current research. If we compare the results between fear and sadness then there is a significant difference between the level of self-transcendent values, with sadness either increasing them, or fear decreasing them. The problem is once an image is used to invoke emotion, regardless of the type, it may lead to a new baseline being set making it hard to compare with the control group which used no image. Also, the fact that the questionnaire was framed in a way which minimised direct self-interest motivations could have led to the baseline values being influenced. Within the instructions it was made explicit that energy efficient behavior in this context was that of little cost or effort, such as using energy-saving lightbulbs.

This was to minimise external barriers such as resource and time limitations on the behavior, and as such meant the perceived rewards for action were not as prevalent. If the questionnaire had been framed in a manner that highlighted cost savings for example, then the resultant value orientations might have differed. As it stands, the behavior under question lent itself more to emotional rewards rather than financial, which tends to link better with self-transcendent value orientations. Therefore, the control group used as the baseline might have answered highly on these values in the control group due to a subconscious response to the instructions.

Just to sum up the arguments and findings from the value hypotheses, values should not be subject to emotional influence, yet in the case of fear biospheric values were found to be. This could be argued either way, that the use of images creates a new baseline and in fact both groups could be the ones that are changed, or simply that fear is impacting values when compared to the control group. To refer back to the literature review, Karp (1996) explained that values are activated by situational concerns. This could suggest that fear/sadness are not actually changing values, but just activating the ones most prevalent when influenced by a particular emotion. In any case, this is an interesting finding and suggests further research should not assume that values are not subject to situational influence.

To further clear up the results from the values and emotion angle, correlations were also looked at, although not used explicitly in the hypotheses. In the control and sadness group both self-transcendent values were found to have a significant correlation with intentions, whereas in the fear group it was egoistic and biospheric that had the correlation with intentions. Again, this similarity between sadness and control, yet difference with fear, suggests that there is a significant difference in the way in which these emotions impact decision making. This provides further evidence that sadness fits more with the rational process, where fear steps outside these expected norms. The correlation between egoistic and intentions in the fear group, somewhat confirms the view of fear lending itself more to self-interest values than sadness, although the hypothesis testing this was rejected. The correlation values overall provide support for the emerging theme that fear affects decision making much more distinctly than sadness, which tends to align itself closely with the control group values in all cases of the analysis.

4.2.3 Suggestions for Future Research

Throughout the analysis and discussion sections various avenues for suggested further research have arisen, specifically based around types of emotion, values and risk evaluation. The results of the current study found discrepancies between sadness and fear, suggesting that negative emotion in this context should not be considered as having the same influence. Therefore, future research ought to

identify that emotions of the same valence can provide different results and study the effects of specific emotions before attempting to group them together as negative, or even emotion in general. There was evidence within the analysis that emotion could play a part within rational decision models (sadness group), so this is another area that future research could explore more. The TPB is still found to be applicable to household energy efficiency, but when fear is used as an invoked emotion the framework no longer holds. With fear being used increasingly in climate change media, there needs to be a clarification within the research on the actual impacts this has on the decision making process, and if emotionally charged issues such as climate change actually alter traditional models of behavior.

Aside from the emotion aspect of the research, other areas that created questions were those value orientations. The analysis somewhat contradicted most of the hypotheses set from existing research which suggests the research picture is still unclear. In order to understand the links between invoked emotion and values, future research should concentrate more thoroughly on these factors. There was a difference found between the two self-transcendent value categories of biospheric and altruistic, suggesting similarly to emotion, that values of the same type could be studied separately to gain clarity. Also, as mentioned in the previous section, the findings place a question over the assumption that values are fixed, so research should seek to find further contradictions to this assumption.

Overall the current research raised questions contradicting traditional rational theories of emotion and also the effect of value orientations. Future research narrowing the focus in both these areas could provide clarity, and be the stepping stones to more generalizable research in the future.

4.2.4 Limitations

As with any research project this was not without its limitations. These can be split into two general categories of limitations that stem from data collection and those from the actual content of the research.

Firstly, the limitations that stem from data collection revolve around demographics and sample size. Due to the data collection being during a lecture on 1 specific day, the demographics were quite limited. It was made up of students between the ages of 20-30, studying in Finland. This meant that whilst there was a degree of variation within the demographic, the results can still only be generalised to a student demographic. Issues with education background and nationality were addressed in part by the choice of course which the questionnaire was administered to. However, still the majority of the responding population were studying in the business school and a large percentage were Finnish. Especially with issues such as climate change, education background and nationality has the potential to impact the results slightly, so when drawing conclusions this has

to be considered. Furthermore, due to the collection taking place on 1 day, the sample size was relatively small (95). This number was just on the border of being able to run a multiple regression analysis, so again when drawing conclusions this ought to be a consideration. Ideally the sample size would have been much larger to capture a wider range of respondents and minimise the natural variation in the data as much as possible. Overall the researcher was satisfied with the data collection, although there is always room for improvement to be able to generalise the results broadly or lower the risk of variation influencing results.

The second area of limitations arises from the actual content, and by this it means the type of environmental behavior under study and the types of emotion used in the influenced groups. The behavior chosen to be studied was household energy efficiency, with the view that this represents a behavior that is easy to change in terms of resources (money and time). This in itself limits the research to household energy efficient behavior and also to PEB that is not dependent on high investment, both money and timewise. Therefore, the results and discussion can be only applied, with certainty, to these specific areas, thus limiting the results somewhat. Also, choosing to study the effect of negative emotion means it cannot be said that emotion, in general, effects PEB without further studies exploring the impacts of emotion with a different valence. The use of images could also create issues with the strength of invoked emotion, though emotion can be subjective, so controlling for this may be a futile endeavour.

In summary, whilst there are limitations due to the demographics, sample size and research choices (type of behavior and emotion), this research is of exploratory nature and lays the ground work for further studies to address these limitations and build a more comprehensive picture of emotion and PEB.

5 CONCLUSIONS

Climate change is becoming an ever present concern in the modern day, with the need for action to address it becoming more urgent. How this is portrayed in the various outlets such as media, government and charities can be vastly different, with a common theme of playing on emotions to instigate behavioural change or action. The link between household energy use and climate change is clear, and as such this represents one area that can be relatively easily addressed to lower our environmental impact. Using emotions to affect PEB is what sparked the research interest in to how they actual do impact on decision making.

In order to pursue this line of reasoning a number of research aims and objectives were developed based on existing literature in the area of TPB, emotion and PEB. The main aims were to determine if emotion affects pro-environmental decision making and if this has a direct impact on intentions or indirect through the other variables in the TPB. In order to achieve these aims the research utilised the TPB as a framework with additional questions added to include emotions and values.

During the analysis the research used numerous techniques such as multiple regression, hypotheses testing and descriptive statistics in order to search for clarity within the research questions. The key findings were that emotion does impact decision making (negatively), and in the case of fear this is through a direct impact on intentions. Also, values were found to change significantly in the case of fear, where biospheric values were adversely affected. In the case of the sadness group, there were slightly lower values for the TPB variables and values, but these were found to be insignificant. Emotion when tested as a separate independent variable in the TPB framework was found to be insignificant in the fear group, but a significant predictor in the sadness group. This led to the potential suggestion that sadness as an emotion is seen as more rational, compared with fear which is irrational. This is due to the fact that the sadness group seems to comply with the tradition rational model (TPB), whereas fear does not.

Potential for future research was discussed and generally focuses on the narrowing down of emotional types and environmental values. This means that in order to gain more clarity on the topic emotions should be studied separately, as should self-transcendent values. Limitations from the current research were also mentioned with key points being demographics, sample size, type of behavior and emotion. This is also something that could be addressed in future research, where the time and money involved in the project are not as restricted.

In conclusion, the research primarily aimed to address the issue of rationality vs emotion within PEB, and achieved this with varying results. Sadness provided support for an integrated view of emotion and rationality, whereas fear seemed to comply with traditional research that emotion is irrational and should be

viewed as a separate faculty to rational decision making. This provides the building blocks for future research to explore further and determine how best to influence PEB, if emotion is to be used as a medium for motivation.

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APPENDICES

Appendix 1 – Control Group Questionnaire

General Information

Gender: Male Female

Age:

Nationality:

Major subject of study programme:
.....

Previous degree (if applicable):
.....

Instructions

The questionnaire will have a series of statements, tick only one response to each question. All responses will be kept anonymous so please answer honestly.

Throughout the questionnaire the term **energy consumption** will be used several times. In this context it refers to personal energy consumption with little or no cost required to reduce. For example, turning electric devices off when not using them, using energy-saving lightbulbs, considering energy-efficient ratings when purchasing a new appliance, and just generally being more efficient towards energy use.

Reducing my energy consumption would allow me to

• **Protect our environment**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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• **Be more socially responsible (acting in a way that benefits the society at large)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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• **Have reduced expenses**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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My family think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
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My friends think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
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My colleagues (peers) think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
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Energy conservation is...

• **Inconvenient (cause trouble, difficulties, or discomfort)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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• **Expensive**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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• **Irrelevant (it won't help the problem)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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For me reducing energy consumption is....

Extremely Bad <input type="radio"/>	Bad <input type="radio"/>	Slightly Bad <input type="radio"/>	Neutral <input type="radio"/>	Slightly Good <input type="radio"/>	Good <input type="radio"/>	Extremely Good <input type="radio"/>
Extremely Unenjoyable <input type="radio"/>	Un-enjoyable <input type="radio"/>	Slightly Unenjoyable <input type="radio"/>	Neutral <input type="radio"/>	Slightly Enjoyable <input type="radio"/>	Enjoyable <input type="radio"/>	Extremely Enjoyable <input type="radio"/>
Extremely Unpleasant <input type="radio"/>	Un-pleasant <input type="radio"/>	Slightly Unpleasant <input type="radio"/>	Neutral <input type="radio"/>	Slightly Pleasant <input type="radio"/>	Pleasant <input type="radio"/>	Extremely Pleasant <input type="radio"/>

Most people think I should lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Most people would want me to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Most people would prefer I lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Lowering personal energy consumption is up to me

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I am confident that if I want to, I can lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I have the resources, time and opportunities available to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I am willing to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I plan to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I am going to make an active effort to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Emotions are not important in my decision making

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I base my decision making mainly on rational thinking (rather than emotion)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I consider myself subjective to emotional influence

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I have a comprehensive understanding of climate change

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Climate change is a problem that needs immediate action

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Climate change is a problem that only applies to future generations (not immediate action)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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When thinking about climate change I feel a strong sense of empathy (sharing the feelings of others)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I think that in terms of climate change, paying attention to one's food consumption is more important than thinking about energy issues

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Consuming organic food helps address climate change

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Please rate the importance of the following issues created by climate change...with 1 being not important at all, and 7 being very important.

Social Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Environmental Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Economic Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Please rate the importance of the following values as a life-guiding principle for you. Choose on the scale of

(1 Against my principles ... 7 very important)

Social Power - (Control over others, dominance)

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Wealth - (Material possessions, money)

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Authority - (The right to lead or command)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Influential - (Having an impact on people and events)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Equality - (Equal opportunity for all)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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A world at peace - (Free of war and conflict)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Social justice - (Correcting injustice, care for the weak)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Helpful - (Working for the welfare of others)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Preventing pollution - (Protecting natural resources)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Respecting the Earth - (Harmony with other species)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Unity with nature - (Fitting in to nature)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Protecting the environment - (Preserving nature)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Appendix 2 – Fear group questionnaire

General Information

Gender: Male Female

Age:

Nationality:

Major subject of study programme:
.....

Previous degree (if applicable):
.....

Instructions

The questionnaire will have a series of statements, tick only one response to each question. All responses will be kept anonymous so please answer honestly.

Throughout the questionnaire the term **energy consumption** will be used several times. In this context it refers to personal energy consumption with little or no cost required to reduce. For example, turning electric devices off when not using them, using energy-saving lightbulbs, considering energy-efficient ratings when purchasing a new appliance, and just generally being more efficient towards energy use.



Please look at the image and imagine you are witnessing this situation with your own eyes.

Which emotion do/would you feel (State only one)?

The strength of this emotion is

Very Little <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Moderate <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Strong <input type="radio"/>
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Reducing my energy consumption would allow me to

• **Protect our environment**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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• **Be more socially responsible (acting in a way that benefits the society)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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• **Have reduced expenses**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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My family think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
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My friends think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
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My colleagues (peers) think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
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- **Inconvenient (cause trouble, difficulties, or discomfort)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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- **Expensive**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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- **Irrelevant (it won't help the problem)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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For me reducing energy consumption is....

Extremely Bad <input type="radio"/>	Bad <input type="radio"/>	Slightly Bad <input type="radio"/>	Neutral <input type="radio"/>	Slightly Good <input type="radio"/>	Good <input type="radio"/>	Extremely Good <input type="radio"/>
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Extremely Unenjoyable <input type="radio"/>	Un-enjoyable <input type="radio"/>	Slightly Unenjoyable <input type="radio"/>	Neutral <input type="radio"/>	Slightly Enjoyable <input type="radio"/>	Enjoyable <input type="radio"/>	Extremely Enjoyable <input type="radio"/>
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Extremely Unpleasant <input type="radio"/>	Un-pleasant <input type="radio"/>	Slightly Unpleasant <input type="radio"/>	Neutral <input type="radio"/>	Slightly Pleasant <input type="radio"/>	Pleasant <input type="radio"/>	Extremely Pleasant <input type="radio"/>
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Most people think I should lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Most people would want me to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Most people would prefer I lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Lowering personal energy consumption is up to me

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I am confident that if I want to, I can lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I have the resources, time and opportunities available to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I am willing to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I plan to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I am going to make an active effort to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Emotions are not important in my decision making

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I base my decision making mainly on rational thinking (rather than emotion)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I consider myself subjective to emotional influence

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I have a comprehensive understanding of climate change

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Climate change is a problem that needs immediate action

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Climate change is a problem that only applies to future generations (not immediate action)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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When thinking about climate change I feel a strong sense of empathy (sharing the feelings of others)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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I think that in terms of climate change, paying attention to one's food consumption is more important than thinking about energy issues

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Consuming organic food helps address climate change

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Please rate the importance of the following issues created by climate change...with 1 being not important at all, and 7 being very important.

Social Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Environmental Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Economic Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------

Please rate the importance of the following values as a life-guiding principle for you.
Choose on the scale of

(1 Against my principles ... 7 very important)

Social Power - (Control over others, dominance)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Wealth - (Material possessions, money)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Authority - (The right to lead or command)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Influential - (Having an impact on people and events)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Equality - (Equal opportunity for all)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

A world at peace - (Free of war and conflict)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Social justice - (Correcting injustice, care for the weak)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Helpful - (Working for the welfare of others)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Preventing pollution - (Protecting natural resources)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Respecting the Earth - (Harmony with other species)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Unity with nature - (Fitting in to nature)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Protecting the environment - (Preserving nature)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Appendix 3 – Sadness group questionnaire

General Information

Gender: Male Female

Age:

Nationality:

Major subject of study programme:
.....

Previous degree (if applicable):
.....

Instructions

The questionnaire will have a series of statements, tick only one response to each question. All responses will be kept anonymous so please answer honestly.

Throughout the questionnaire the term **energy consumption** will be used several times. In this context it refers to personal energy consumption with little or no cost required to reduce. For example, turning electric devices off when not using them, using energy-saving lightbulbs, considering energy-efficient ratings when purchasing a new appliance, and just generally being more efficient towards energy use.



Please look at the image and imagine you are witnessing this situation with your own eyes.

Which emotion do/would you feel (State only one)?.....

The strength of this emotion is

Very Little <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Moderate <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Strong <input type="radio"/>
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Reducing my energy consumption would allow me to

• **Protect our environment**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

• **Be more socially responsible (acting in a way that benefits the society)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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• **Have reduced expenses**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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My family think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
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My friends think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
----------------------------------	-----------------------------	--------------------------------------	-------------------------------	-------------------------------------	----------------------------	---------------------------------

My colleagues (peers) think I should lower my energy consumption

Very False <input type="radio"/>	False <input type="radio"/>	Slightly False <input type="radio"/>	Neither <input type="radio"/>	Slightly True <input type="radio"/>	True <input type="radio"/>	Very True <input type="radio"/>
----------------------------------	-----------------------------	--------------------------------------	-------------------------------	-------------------------------------	----------------------------	---------------------------------

Energy conservation is...

- **Inconvenient (cause trouble, difficulties, or discomfort)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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- **Expensive**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

- **Irrelevant (it won't help the problem)**

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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For me reducing energy consumption is....

Extremely Bad <input type="radio"/>	Bad <input type="radio"/>	Slightly Bad <input type="radio"/>	Neutral <input type="radio"/>	Slightly Good <input type="radio"/>	Good <input type="radio"/>	Extremely Good <input type="radio"/>
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Extremely Unenjoyable <input type="radio"/>	Un-enjoyable <input type="radio"/>	Slightly Unenjoyable <input type="radio"/>	Neutral <input type="radio"/>	Slightly Enjoyable <input type="radio"/>	Enjoyable <input type="radio"/>	Extremely Enjoyable <input type="radio"/>
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Extremely Unpleasant <input type="radio"/>	Un-pleasant <input type="radio"/>	Slightly Unpleasant <input type="radio"/>	Neutral <input type="radio"/>	Slightly Pleasant <input type="radio"/>	Pleasant <input type="radio"/>	Extremely Pleasant <input type="radio"/>
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Most people think I should lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Most people would want me to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Most people would prefer I lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
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Lowering personal energy consumption is up to me

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I am confident that if I want to, I can lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I have the resources, time and opportunities available to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I am willing to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I plan to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I am going to make an active effort to lower my energy consumption

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Emotions are not important in my decision making

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I base my decision making mainly on rational thinking (rather than emotion)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I consider myself subjective to emotional influence

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I have a comprehensive understanding of climate change

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Climate change is a problem that needs immediate action

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Climate change is a problem that only applies to future generations (not immediate action)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

When thinking about climate change I feel a strong sense of empathy (sharing the feelings of others)

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

I think that in terms of climate change, paying attention to one's food consumption is more important than thinking about energy issues

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Consuming organic food helps address climate change

Strongly Disagree <input type="radio"/>	Disagree <input type="radio"/>	Slightly Disagree <input type="radio"/>	Neither <input type="radio"/>	Slightly Agree <input type="radio"/>	Agree <input type="radio"/>	Strongly Agree <input type="radio"/>
---	--------------------------------	---	-------------------------------	--------------------------------------	-----------------------------	--------------------------------------

Please rate the importance of the following issues created by climate change...with 1 being not important at all, and 7 being very important.

Social Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------

Environmental Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------

Economic Issues

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
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Please rate the importance of the following values as a life-guiding principle for you.
Choose on the scale of

(1 Against my principles ... 7 very important)

Social Power - (Control over others, dominance)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
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Wealth - (Material possessions, money)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Authority - (The right to lead or command)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Influential - (Having an impact on people and events)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Equality - (Equal opportunity for all)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

A world at peace - (Free of war and conflict)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Social justice - (Correcting injustice, care for the weak)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Helpful - (Working for the welfare of others)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Preventing pollution - (Protecting natural resources)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Respecting the Earth - (Harmony with other species)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Unity with nature - (Fitting in to nature)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------

Protecting the environment - (Preserving nature)

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>
---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------	---	-----------------------