It's Not Easy Being Green: Investigating '*Radical*' Pro-Environmental Living and High-Impact Pro-Environmental Behaviour (PEB): A Mixed Methods Study

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Thesis Summary

Current lifestyles are significantly harming the environment, and radically reducing individuals' emissions is crucial. This thesis explored the drivers and barriers associated with adopting 'radical' pro-environmental lifestyles, which are those that consist of multiple high-impact Pro-Environmental Behaviours (PEBs). The focus is on climate-concerned individuals who have adopted such lifestyles ('radicals') and those who have not ('non-radicals'), as well as on the high-impact PEBs themselves. The thesis consists of three studies: *Study 1* qualitatively identified key drivers among radicals, while *Study 2* explored perceived barriers among non-radicals, and a comparative analysis between radicals and non-radicals revealed some potential determining factors to radical living. *Study 3* then examined these potential determinants empirically in a UK representative sample, in addition to some factors suggested in previous literature to be important in understanding PEB. The goal was to determine how much they contributed to predicting some specific high-impact PEBs and how they differed between radicals and non-radicals. The thesis found that while climate change concern is of foundational importance to adopting radical lifestyles and high-impact PEBs, concern *alone* was not enough to spark action. However, when concern about climate change was paired with numerous other determining factors, this seemed to encourage 'tipping points' by which people adopted high-impact PEBs that cumulated into radical lifestyles. These potential determinants included: perceived *convenience* of radical living and high-impact PEBs, in addition to the perceived cost (*finance*) of these behaviours, experiencing *feelings of environmental guilt*, and having a *willingness* to adopt high-impact PEBs and radical lifestyles, being influenced by *descriptive social norms*, and having a stronger *environmental identity*. Additionally, those who were *younger* and had a *higher income* tended to adopt more high-impact PEBs. *Perceived Behavioural Control* (PBC) was also found to be relevant but less useful in predicting high-impact PEBs and radical living within this thesis, as were *injunctive social norms*. The findings also underscore the need for systemic changes to support individual actions and address barriers to adopting high-impact PEBs and radical lifestyles. Overall, this research contributes to a deeper understanding of the complexities surrounding radical pro-environmental living and understanding the potential determinants of some specific high-impact PEBs.

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1.1 – Introduction

This thesis is about 'radical' pro-environmental living and high-impact Pro-Environmental Behaviour (PEB). Broadly, it is focused on what drives people to adopt 'radical' lifestyles that consist of multiple high-impact PEBs within a UK context. This research builds on previous literature on PEB and addresses the need to consider *lifestyles* rather than individual behaviours alone, and more specifically focuses on lifestyles that consist of *higher-impact* behaviours, in the greater interest of climate change mitigation. The unique contribution of this thesis is to ask *why,* among those highly concerned about climate change, some live radical lifestyles and adopt high-impact PEBs while others do not; what is unique about this group of '*radicals'*?

The thesis begins with a background overview in section 1.2, where the concept and context of PEB is broadly introduced. Section 1.3 focuses on high-impact PEBs and emphasizes the need to prioritize actions that have a greater impact in reducing one's environmental harm. Following this, section 1.4 delves into the concept of 'radical' pro-environmental living and provides an overview of how this thesis is focused and what will be studied. Section 1.5 then provides a brief thesis plan. In section 1.6, 'radical living' is more clearly defined, and section 1.7 discusses the methodological approach adopted in this thesis, including the epistemology and ontology of the research. Finally, section 1.8 presents the structure of the thesis.

1.2 Background

The Intergovernmental Panel on Climate Change (IPCC) (2023) highlights that addressing climate change is crucial to prevent catastrophic impacts on ecosystems, human health, and economies. The impacts of climate change affect both the biosphere and anthroposphere, and forty nations have now declared a climate emergency (CEDAMIA, 2024). The IPCC stress the need to limit global warming to 1.5°C and suggested that global greenhouse gas emissions need to be halved by 2030 to meet this goal (IPCC, 2023). Deep, rapid and sustained emission reductions reaching net zero CO^2 emissions are necessary to limit warming to 1.5°C or less than 2°C by the end of the century (IPCC, 2023, p. 33),

which will involve "*rapid and far-reaching transitions across all sectors and systems*" (p. 28). Current lifestyles are harming the environment, and reducing emissions on an individual level would have a positive effect for climate change mitigation (Wynes & Nicholas, 2017; Gardner & Stern, 2008). The need for changes to the way we live as individuals is clear, and some say that only rapid and *radical* transitions will allow humanity to operate within planetary boundaries (Johnstone & Newell, 2018; Rockström et al., 2013).

In attempting to uncover *how* we can encourage widespread change to a lower-carbon way of living, a large body of research exists which focuses on individual 'Pro-Environmental Behaviours' (PEBs), which are considered behaviours that *'consciously seek to minimize the negative impact of one's actions on the natural and built world'* (Kollmuss & Agyeman, 2002, p. 240). PEB has typically been examined through the lens of behavioural theories, such as the Theory of Planned Behaviour (TPB) or the Value-Belief-Norm (VBN) Theory, for example, which aim to explain individuals' motivations and actions regarding environmental sustainability (Grilli & Curtis (2021) offer a review of PEB literature, and Chapter 2 of this thesis provides an overview of PEB in section 2.3, and reviews some of the behaviour models that have been most adopted to study PEB in section 2.4). In addition to theory, one's environmental identity, social norms, and socio-demographic factors (including age, gender, income, education, and cultural background) have been shown to significantly influence PEB, indicating that a person's social and economic context plays a crucial role in shaping their environmental actions and attitudes, which will also each be expanded upon in Chapter 2 (section 2.5).

While research over the years has greatly aided our understanding of PEB, some have criticized much of the literature for several reasons. For example, Stern's (2000) concept coined the 'impact-intent gap' highlights a crucial discrepancy within PEB research, where the environmental impact of an individual's actions does not always align with their concern about climate change or their intention to reduce harm to the environment. This gap occurs when people engage in behaviours that they *believe* are environmentally beneficial yet have a relatively minor impact in reducing their environmental harm. Stern underscores that while many may be motivated by environmental concern, the behaviours they adopt often have a *low impact* in terms of reducing one's environmental harm, and effectively their impact upon the climate crisis. For example, while recycling is

mostly considered to be environmentally beneficial, it often has a low impact in reducing one's carbon emissions, as compared to higher-impact actions such as adopting a plant-based diet or avoiding air travel, for example (i.e., Poore & Nemecek, 2018). Another example might be adapting one's home to include only energy efficient lightbulbs, which *could* be considered a PEB, but again would be relatively *low-impact*, and may be motivated by other factors, such as saving money rather than out of genuine concern for the environment. Again, these lower-impact PEBs can also distract from making more *impactful* changes within the same domain, such as insulating one's home or switching to only renewable energy sources (e.g., Dietz et al., 2009), so this becomes problematic.

These examples illustrate that well intentioned actions, while positive, may not always significantly contribute to mitigating environmental issues like climate change. Stern (2000) emphasizes the importance of *closing* the impact-intent gap, by better aligning pro-environmental intentions with behaviours that have the most substantial environmental impact. Many also call for a focus on individuals who adopt *multiple* behaviours, rather than considering only isolated PEBs, again in the interest of understanding how to encourage individuals to change their *lifestyles* to have the biggest impact in mitigating climate change (e.g., Whitmarsh et al., 2021). To address these gaps, Stern, Whitmarsh, and others collectively advocate for a greater focus on *high-impact* PEBs and *lifestyles*. By understanding the uptake of these high-impact PEBs - and the adoption of *multiple* behaviours, for that matter - we may be better equipped to encourage widespread reform to a way of life that is more *impactful* when it comes to mitigating climate change. This thesis aims to directly address these research gaps by considering radical lifestyles and high-impact PEBs.

Further to Stern's (2000) impact-intent gap, another concept within the area of research on PEB is the *concern-action gap* (i.e., Kollmuss and Agyeman, 2002). Although similar to Stern's impact-intent gap, the concern-action gap more specifically addresses the disparity between expressed concern for environmental issues and the *failure* to adopt corresponding behaviours. The concern-action gap was coined because despite increased awareness of climate change within the public, and despite increased concern about climate issues, many individuals still fail to take meaningful action. The issue therefore remains that concern about climate change *alone* does not seem to be sufficient for individuals to adopt more impactful PEBs or pro-environmental lifestyles, and so the need

remains to identify what has led to radical lifestyles – what is special about this group of individuals, and what drove them to adopt multiple high-impact PEBs? This thesis aims to answer these questions.

The concern-action gap is thought to be due to various psychological, social, and economic factors (Kollmuss & Agyeman, 2002). For example, structural barriers like convenience, cost, and perceived impact of PEBs often prevent individuals from translating their environmental concerns into action. Chapman et al. (2017) found that while habitual behaviour may be partially the cause of this, this unwillingness to make pro-environmental changes is often due to a perception that many PEBs (particularly those of higher impact) are *inconvenient* (such as using public transportation instead of driving, for example). In addition, 'psychological distance' (i.e., the perception that climate change is a *distant* problem) further diminishes motivation to take individual action. This was shown by Spence et al. (2012), who found that individuals were less likely to take action when they perceive climate change as a far-off issue, often leading to inaction *despite* concern. Thus, both the impact-intent and concern-action gaps play important roles in preventing individuals from adopting impactful PEBs, and it is clear that concern about climate change *alone* is not enough to encourage radical or impactful pro-environmental lifestyle changes.

1.3 Shifting Focus to *High-Impact* PEB

While contributions in this area have greatly aided our understanding of PEB, research has mostly focused on individual actions with relatively *low* environmental impacts (Whitmarsh et al., 2021). In fact, research shows that while most people are prepared to undertake small-scale individual actions, few take action beyond this (Whitmarsh, 2009). Thus, little is known about how to promote taking multiple actions at the same time, that is, to change one's way of living to be significantly more pro-environmental by adopting multiple high-impact PEBs (van der Linden, 2016). While small-scale individual actions may cumulatively help to mitigate climate change, more substantial changes are needed to keep the world within globally agreed targets (IPCC, 2023). That is, people must adopt more *impactful* pro-environmental lifestyles to make substantial contributions to reaching a sustainable low-carbon society (IPCC, 2023). Unfortunately, little research

exists at present on higher impact, more transformative changes that people can make (Nielsen et al., 2021; Whitmarsh et al., 2021), and those that *do* exist tend to be on individual behaviours, rather than on the uptake of *multiple* behaviours at the same time – that is, the adoption of high-impact (or 'radical') pro-environmental *lifestyles* (Wynes & Nicholas, 2017), which again, is the focus of this thesis. Findings from low-impact behavioural research cannot always be generalized to higher impact behaviours, as high-impact behaviours may be determined by different factors (e.g., van der Linden, 2018), so research is needed that specifically considers high-impact behaviours and *behavers* (for further reading on this discrepancy, Galvin (2013) outlines the differences between 'behaviours' and 'behavers'). This is particularly important to consider if we are to attempt to encourage large-scale reformation of behaviour in order to hit our global targets for emission reduction, as changes are more likely to aid climate change mitigation if they are not only *impactful*, but are also *widespread*; if we have large numbers of people not only making small individual changes, but adopting multiple, high-impact PEBs and effectively transforming the way that they live. This leads us to specifically consider 'radical' pro-environmental living, which the next section explores.

1.4 'Radical' Pro-Environmental Living

It is clear that more far-reaching behaviour and lifestyle changes will be needed as part of efforts to tackle the climate crisis, and a case is therefore made to focus on high-impact behaviours and lifestyles – to focus on more 'radical' ways of living, and more importantly, to learn from the individuals who are already living radical lifestyles – 'radicals', i.e., the *behavers*. While systemic changes may be required to enable much radical behaviour, the engagement of the wider public - particularly high-emitters and those in the rich world - is also an essential element in accomplishing emissions reduction (Whitmarsh et al., 2021). However, it has to-date been unclear what personal engagement with more 'radical' lifestyles might look like, especially since research that considers higher impact PEBs is limited.

Some say that in order to identify the determinants of more 'radical' lifestyle transitions, researchers may need to incorporate into their research an *inductive* approach (e.g., Nielsen et al., 2021; Whitmarsh et al., 2021; Clayton et al., 2016). This means that research

should take as its starting point a focus on changes that produce substantial emission reductions (such as having meat-free diets and living car-free), rather than be driven by theoretical considerations that are tested with less impactful behaviours (Dietz et al., 2009; Wynes & Nicholas, 2017; Ivanova et al., 2020). Clayton et al. (2016) make this argument in their agenda for establishing the role of psychology in environmental challenges, recognizing the value of what they coin 'problem-based approaches' (p. 210), and Nielsen et al. (2021) say that a relied focus on theory-driven research which is often exclusively *deductive* may result in overlooking higher-impact lifestyles and those living them, and that adopting an *inductive* approach might realign the focus of research on PEB to the behaviours that are going to have a bigger impact on climate change mitigation, and again on the *behavers* themselves. More recently, Whitmarsh et al. (2021) argue that a focus on high-impact behaviours and high-emitting groups is a vital component in tackling the climate crisis, not least given how skewed emissions distributions are to higher-earners and richer countries (e.g., Oswald et al., 2020; UNEP, 2020). Furthermore, theory-driven approaches often consider isolated behaviours (or PEBs), but are less applicable to exploring *lifestyles,* or in learning about the behavers. What is echoed is the need to focus on more high-impact, or 'radical', pro-environmental lifestyles and high-impact PEBs that can be made on a collective scale, and to learn about what differentiates those already living this lifestyle, i.e., 'radicals', and this is the focus of this thesis.

1.5 Brief Thesis Plan

To address the need for rapid and unprecedented changes in society, high-impact behaviours and behavers need to be more closely studied. This thesis will focus on *radical pro-environmental lifestyles and high-impact pro-environmental behaviours*. A mixed methods approach will be adopted involving three studies that seek to uncover: (i) the nuances of radical living, including what drives 'radicals' and how this lifestyle is experienced, and (ii) what barriers exist to making radical changes among those who are highly concerned about climate change but *have not* adopted radical lifestyles, 'non-radicals', in addition to (iii) empirically considering the potential determinants of individual high-impact PEBs and what factors differentiate climate-concerned groups who *have* adopted multiple high-impact PEBs from those who *have not.*

Broadly, the theoretical aim of this PhD is '*to explore what drives 'radical' living and high-impact pro-environmental behaviour'.* The question however is what 'radical living' is, and how it can be defined. To be clear about what constitutes a 'radical' lifestyle, the next section outlines the definitions of radical living and provides an overview of how this definition was constructed.

1.6 Defining 'Radical Living'

As this thesis focuses on 'radical living', this section will outline how definitions are drawn. Although there is no specifically applicable definition for 'radical living' in the context of PEB research, there are a number of sources that allow a working definition to be built and clarify what is meant throughout this thesis when referring to 'radical' living or 'radical' lifestyles:

1. *"Radical Change":* As arguably the most fitting term within the context of climate change, 'radical change' refers to "*change that occurs relatively fast and modifies the essence of social structures or organizational practices. Specifically, this type of change affects the resources, norms, and interpretive schemes of groups and individuals*" (IGI Global, 2021). This definition focuses on the time span of change, but also speaks to the modification of social structures. It constructs radical change as something that happens quickly and alters societal norms or behaviours in some way.
2. *'Radical' and 'Radicalism':* The word 'radical' comes from the Latin root 'radix', meaning "root," signifying something fundamental or foundational (Oxford English Dictionary, n.d.-a). The terms 'radical' and 'radicalism' are often terms embedded within research focused on environmental activism (e.g., Neumayer & Svensson, 2016; Portwood-Stacer, 2013), particularly when it comes to groups like Extinction Rebellion (see: extinctionrebellion.uk), for example. Gunningham (2020) declares in his work on activism and transformative change "*the need for radical carbon reduction*" and "*need for radical pro-environmental policy changes*" (p. 10). Literature within activism, as evidenced here, often places 'radical' *as a consequence* rather than an action, i.e., the need for radical reform or radical carbon reduction. Capstick et al. (2014), for example, define 'radical' in terms of

major environmental *impacts*, quantified as a reduction of "6-9% of emissions per year" (p. 430).

3. 'Radical' is also defined politically as "*favouring drastic political, economic, or social reforms*" and as "*thoroughgoing or extreme, especially in regards to change from accepted or traditional forms*" (Dictionary.com, 2021), and "*advocating thorough or far-reaching political or social reform*" (Oxford English Dictionary, n.d.-b), and individually as "*a person who holds or follows strong convictions or extreme principles; (an) extremist*" (Farlex, inc., 2021). These definitions posit 'radical' as something that goes *to the extreme*, noting again social reform; thus, 'radical' could be considered as 'extreme', or as the nature of being significantly *atypical*.

Drawing from these definitions and addressing the need for a focus on high-impact PEBs, 'radical living' is herein defined as "*intentional, high-impact pro-environmental living that consists of multiple high-impact pro-environmental behaviours*". Furthermore, those living a radical lifestyle will be referred to throughout this thesis as 'radicals'. The aspect of 'timeliness' alluded to in some definitions of radicalism will not be included in this definition, as some individuals may have made gradual changes that are nonetheless highly impactful. Moreover, high-impact PEBs such as veganism may have at first started with an individual reducing their meat consumption, then gradually becoming vegetarian and ultimately vegan, thus it would not be 'immediate', but would be impactful. Radical living can be considered within both the public and private sphere, and fundamentally entails a conscious decision made by an individual to reduce their carbon footprint and be pro-environmental at an 'extreme' level that meets our definition, characterised by going against social norms and adopting multiple high-impact PEBs. Behaviours that constitute 'high-impact' PEBs might include making dietary changes which fit this definition (such as having a meat-free diet), living car-free, avoiding air travel, or having very low material consumption, and these behaviours must have been intentionally adopted out of a concern for the environment and for climate change.

1.7 Methodological Approach

In endeavouring to provide a holistic approach to exploring radical living and high-impact PEB, this thesis adopts a mixed methods approach, by integrating *inductive*, qualitative

works which then lead to *deductive*, quantitative research. Nielsen et al. (2021) argue that the sole reliance on theory-driven approaches can result in overlooking higher impact behaviours. Some also argue that, while helpful in guiding research on PEB, theory-driven research has its limitations and can distract from a need to take an inductive, impact-first approach and keep the focus on large scale changes that will have a meaningful cumulative effect on climate change mitigation (e.g., Nielsen et al., 2021; Stern, 2011; Whitmarsh et al., 2011; Gifford, 2011; Shove, 2010). Thus, what is learned from the early, inductive stages of the research shapes the later, deductive phases of the thesis, in attempting to 'funnel' into an understanding of radical living and some high-impact PEBs and their determinants.

Three distinct research studies shape this thesis:

i. Study 1: An exploratory, inductive, qualitative study interviewing those who are highly concerned about climate change and live radical lifestyles, i.e., 'radicals', is presented in Chapter 3.
ii. Study 2: Led by the results of Study 1, a deductive, qualitative study interviewing those who are highly concerned about climate change but *do not* live radical lifestyles, i.e., 'non-radicals', is presented in Chapter 4.

    The results from Studies 1 and 2 are then compared at the end of Chapter 4, with the goal of identifying potential factors that differentiate 'radicals' from 'non-radicals'. These potential determinants in addition to some factors suggested in previous literature to be relevant in understanding PEB are then examined in:
iii. Study 3: A deductive, quantitative study which examines how various factors relate to individual high-impact PEBs, in addition to how groups of climate concerned individuals who adopt *multiple* high-impact PEBs differ from those who do not. Figure 1 illustrates this 'funnelled' approach.

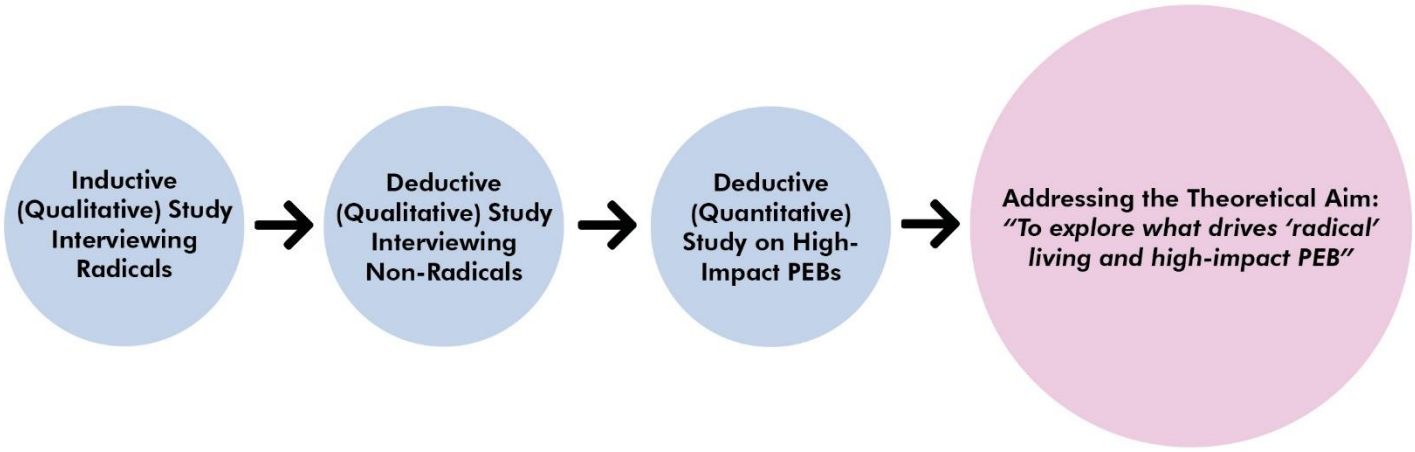

Figure 1 - The approach taken in the PhD, whereby the research starts inductively and progresses into more of a deductive approach.

Mixed methods research typically involves a marrying of qualitative and quantitative approaches to develop more well-rounded insights to a research topic. Although it is less typical within environmental psychology, which has historically favoured *quantitative* research methods, many have coined mixed methods work as particularly important in understanding high-impact PEBs (i.e., Moran & Kunz, 2014; Whitmarsh, et al., 2013; Hargreaves & Burgess, 2010). For example, while Nielsen et al. (2021) note the value of and need for empirical 'impact-first' research, their message promotes an 'inductive' research approach, which is highly compatible with many qualitative methods (i.e., thematic analysis (Braun & Clarke, 2006); discourse analysis (Potter & Wetherell, 1994); grounded theory (Mills et al., 2006)). Furthermore, qualitative work may be well-suited to impact-first research as it is predominantly *idiographic*, which means that it places the *behaver* (and behaviour or lifestyle) at the centre of the research and seeks a deeper understanding than nomothetic research (Smith, 2003).

An array of qualitative methodologies, such as Thematic Analysis (TA), involve interviewing individuals or groups and analysing transcripts to identify 'themes' within a dataset (Clarke & Braun, 2014). Since qualitative methods like TA have a flexible nature, researchers are encouraged to make a number of decisions at the beginning of the research, helping to guide objectives and aims and presenting transparency to the reader in terms of how the research has been conducted (Braun & Clarke, 2006). One of these

considerations is whether to take a deductive (top-down) or inductive (bottom-up) approach, thus allowing flexibility and again resonating with Nielsen et al.'s call for more inductive research. While inductive research is argued by many as a strong starting point for a new or unexplored field of study (Patton, 2002), deductive research boasts the advantage of having a clearer framework for data collection and analysis (Babbie, 2016), so the coupling of these approaches to explore a research topic is complimentary.

Many studies have successfully integrated a paired approach of inductive and deductive work in order to facilitate a holistic exploration. Johnson and Onwuegbuzie (2004) believe that combing inductive and deductive approaches can result in a more comprehensive understanding of psychological phenomena, and Tashakkori and Teddlie (2010) echo this, referring to the outcome of 'triangulation' resulting from this marriage of approaches, whereby the validity and reliability of a body of research is consequently enhanced. The successful pattern of conducting inductive *followed by* deductive work has been implemented in multiple research studies. For example, Morgan (2007) describes adopting an inductive approach at the beginning of their research to identify new themes that they later examine empirically, and Plano Clark and Ivankova (2016) used a combined approach to simultaneously collect inductive and deductive data to facilitate cross-validation of their findings. Therefore, while both approaches have their distinct advantages, many say that a combined (or mixed) approach of deductive and inductive operations can lead to more well-rounded insights and can oftentimes result in more reliability within research.

The argument to delve for more research which is 'mixed' in both *method* and *approach* is therefore multidimensional. Again, some argue that mixed methods research can enhance validity, offering a form of methodological triangulation that enhances a study's validity and reliability (Fielding & Schreier, 2001), while others point out that while quantitative work alone can provide insights into the behaviours of larger groups, qualitative work can provide *context and nuance* (Bryman, 2006), thus the pairing may strengthen research overall. Furthermore, the adoption of quantitative and qualitative approaches can offer a more well-rounded insight to the complexity of human behaviour (Creswell, 2014), providing a nuanced account that only mixed methods may be able to attain (Johnson & Onwuegbuzie, 2004). What can result from using mixed methods and approaches is a more *expansive view* of a research question (Greene et al., 1989), often

resulting in more comprehensive detail of the research subject (Onwuegbuzie & Leech, 2006). Tashakkori and Teddlie (1998) argue that initial qualitative works can also help shape research aims for quantitative research that follows, and Creswell (2009) suggest that this can help identify key variables to examine quantitatively, further strengthening a mixed methods approach to research.

It is for the above reasons that this thesis adopts both an inductive and deductive (mixed approach) and quantitative and qualitative (mixed method) position. Again, a funnelled approach will be taken, where early explorative, inductive works will shape later specific, deductive works, in the hopes that more well-rounded insights are developed in conclusion. In addition to considering the approach to research, it is also important to consider its epistemology and ontology, which are reflected upon in the next section.

1.7.1 Epistemology and Ontology

While many highlight the advantages of using mixed methods approaches in research, some still argue that combining quantitative and qualitative approaches has its challenges. One of the reasons this is argued is because some say that pairing these two methods involves mixing opposing epistemological and ontological foundations (Bryman, 2008). Researchers who take this standpoint argue that quantitative methods have the underpinning of *positivism/empiricism*, while qualitative methods are based within *interpretivism/constructivism* paradigms (Teddlie & Tashakkori, 2003). While positivism takes an ontological position (typical of quantitative works) and claims that an 'objective reality' exists, constructionism suggests that 'reality' is socially constructed (Guba & Lincoln, 1994); thus, some view mixing these methodologies as mixing *philosophies*, which is not possible (Bryman, 2008). However, to address this argument around clashing paradigms, Howe (1988) suggests that the researcher should simply focus on what methods work for the research question and take a more *pragmatic* approach to the study. This shift to a focus on 'pragmatism' has led to an increased adoption of mixed methods approaches (Tashakkori & Teddlie, 1998), and today, mixed methods research is largely accepted for its dual advantages and applicability.

While it is important to acknowledge the concerns of previous philosophers who have raised issues with the potential for conflicting philosophies of mixing methodologies, the advantages of using a combination of quantitative and qualitative, and inductive and deductive approaches outweigh the concerns, and the current thesis takes this mixed methods approach. It is important, however, to consider the role that the researcher plays at each stage of the research, and it is particularly relevant for qualitative works which often require interpreting spoken word. For these reasons, the next section outlines reflexivity and positionality within this thesis, in an effort to boost transparency and address some of the aforementioned concerns around the philosophical application of mixed methods works.

1.7.2 Reflexivity/Positionality

As a researcher, I acknowledge the importance of reflexivity, particularly in qualitative research, recognizing that my background, experiences, and perspectives may inevitably influence my interpretation of the results (e.g., Berger, 2015). Reflexivity involves a continuous process of self-examination and critical reflection on the researcher's role and impact throughout the research process (Finlay, 2002). In qualitative research, it is widely accepted that complete objectivity and impartiality are unattainable (Guba & Lincoln, 1989), and I therefore do not claim that the qualitative results presented in this thesis are factual but are rather due to my interpretation of a small subset of participants. My awareness of these influences guided my efforts to remain as balanced as possible, particularly given the inductive nature of the early stages of this research.

Throughout this thesis, I have made a concerted effort to remain balanced, especially during the qualitative component. I systematically identified and analysed themes that were apparent to me within the data, ensuring that my interpretations were grounded in the participants' perspectives rather than my preconceptions. As expanded in section 3.2.5, I adopted a *semantic approach* when interpretating any qualitative data, which essentially means that the themes were identified within the explicit or 'surface meanings' of the data (Braun & Clarke, 2006). I strived to interpret all findings as unbiasedly as possible, drawing on established guidelines outlined by Braun and Clarke (2006) for conducting a thematic analysis, as reported in sections 3.2.5 and 4.2.5,

respectively. When it came to analysing the quantitative data, I adopted statistical techniques outlined by leaders in the field such as Field (2009) and again did my best to maintain a critical stance towards potential biases.

My goal was to integrate the qualitative and quantitative findings cohesively, providing a comprehensive narrative that accurately reflects the data and the research topic. By doing so, I aimed to present a balanced and credible account of the research, acknowledging my positionality whilst upholding the integrity and rigor of this thesis.

1.8 Structure of the Thesis

This thesis is divided into six chapters. While the present chapter provided an introduction to the thesis and topic area, the second chapter (CH2) will introduce previous literature around the topic (in sections 2.2 – 2.6), synthesize previous research and identify research 'gaps' (in section 2.7), provide the thesis rationale (in section 2.8), and state the research questions and objectives of the thesis (in section 2.9).

Chapter 3 (CH3) presents the findings of Study 1, an interview study with 'radicals', and provides an overview of the methodology undertaken. An inductive study, it adopts a qualitative approach to explore the drivers and experiences of fifteen individuals who live radical pro-environmental lifestyles. The aim of this research is to qualitatively explore why people who are highly concerned about climate change have adopted radical pro-environmental lifestyles.

Chapter 4 (CH4) presents the findings of Study 2. Based on the factors identified from the first study, this research adopts a deductive qualitative approach to explore the barriers to radical pro-environmental living among fifteen climate-concerned individuals who do not live radical pro-environmental lifestyles, i.e., 'non-radicals'. The aim of this research is to qualitatively explore why people who are highly concerned about climate change have not adopted radical pro-environmental lifestyles. In addition, section 4.5 compares the results from Studies 1 and 2, to determine what *factors* might differentiate 'radicals' from 'non-radicals'.

Chapter 5 (CH5) presents the findings of Study 3. Based on the combined results of the previous two studies, and on previous literature, it examines the contributions of

factors identified as potentially important in understanding high-impact PEB and radical living. This is done by performing a series of secondary data analyses on data obtained from an environmental survey conducted in March 2020 in the UK. Three sets of empirical analyses are performed on variables composed of items from the survey representing the predetermined factors. This study is the third and final component designed to address the theorical objective of the overall research, which was to explore what drives 'radical' pro-environmental lifestyles and high-impact PEBs. The study has three specific aims: (i) to assess what factors from the first two studies within diet, travel and material consumption relate to one another, identifying any potential relationships between factors; (ii) to examine what factors associated with high-impact PEBs within the domains of diet, travel and material consumption; and (iii) to assess what differentiates high/low climate-concerned individuals who have and have not adopted multiple high-impact PEBs.

Chapter 6 (CH6) provides a discussion for the thesis. It synthesizes the results of the three studies and presents the key findings and 'take away' messages. It also highlights areas for future research.

2 – Literature Review

2.1 Overview of Chapter

This chapter provides an overview of relevant literature and how the thesis aims to address gaps in previous research. The chapter is organized as follows. The next section provides an introduction of how psychology is suited to explore environmental issues, such as Pro-Environmental Behaviour (PEB) and its determinants. This is presented in order to provide a foundation for *why* this thesis is focusing on radical living and high-impact PEBs. Section 2.3 includes an overview of PEB and provides more background, and this leads onto theories of PEB in section 2.4, where more detail is provided on how PEB has been understood historically, including specific research examples. In section 2.5, other factors that help predict PEB are reviewed, which include understanding environmental identity within PEB research (section 2.5.1), social norms and PEB (section 2.5.2), and socio-demographics and PEB (section 2.5.3). Following this overview, high-impact PEB is reviewed in section 2.6. Section 2.7 synthesizes previous research and discusses gaps in the literature, and section 2.8 outlines the thesis rationale and research plan. Finally, section 2.9 lists the Research Questions (RQs) and Research Objectives (ROs).

2.2 The Role of Psychology in Environmental Study

Many argue that the field of psychology is of great value to environmental issues. Clayton et al. (2016) published an expanded agenda which aimed to illustrate how psychologists could join the fight against climate change, proposing a series of actionable approaches and directions in which research could contribute. They argue that environmental challenges such as climate change present "an important area for psychologists to apply their knowledge" (p. 199), noting that psychological theories, research methods and interventions are essential for studying human impacts, tendencies, and capacities that play a key role in responding to environmental challenges. Environmental issues, they

argue, demand the attention of psychologists, given not only their pressing nature, but also their relevance to human capabilities and wellbeing.

Clayton et al. (2016) argue *three reasons* why human capacities examined through a psychological lens are fundamental to environmental issues: (i) Firstly, they note that humankind and human behaviour is *responsible* for climate change, due to a rapidly growing population and increasing consumption. More natural land is being used for habitation and food production, the Earth's natural resources are being depleted at an unsustainable rate, and biproducts of human consumption are damaging and depleting ecosystems the world over (Oskamp, 2000; Swim et al., 2011). Thus, they allude to a *responsibility* for humans to understand and tackle the issue they have collectively introduced. (ii) Secondly, they argue that human responses often ignore or impede opportunities for mitigation and adaption of climate change attenuating interventions, either due to cognitive limitations, one's emotional defences which lead to ignorance of environmental issues, or personal motivations which often override pro-environmental intentions (e.g., Guber, 2013; Steg et al., 2014), again stressing that psychologists possess the skillset to uncover these cognitive and emotional processes, and are well suited to identify how best to overcome such challenges. (iii) Thirdly, they stress the impact of climate change upon human beings, which has biopsychosocial implications such as poorer physical and mental health and decreased social wellbeing (Clayton et al., 2016; Patz et al., 2014). Collectively, a trifold case is made for psychologists to contribute to the understanding of climate change in ways that they may already be equipped to do.

Prominent psychologists such as Stuart Oskamp (e.g., 2000), Paul Stern (e.g., 2000) and Alan Kazdin (2009) have long advocated for the role of psychology in tackling environmental issues, strengthening its capacity to fight climate change, and Clayton et al. are explicit about *how* psychology can do this. Specifically, they propose that there is not only a need for psychologists to contribute to tackling environmental issues, but that there is also great *potential* for them to understand and address environmental problems. In their agenda, they lay out several areas in which there is a need for psychology to study human-environmental relationships, to both expand the work of psychology within climate change and to contribute to developing interventions geared towards sustainable solutions to environmental problems (Clayton et al., 2016). One of the predominant areas in which they call for the contribution of psychology is in understanding and promoting

PEB. They argue that psychology is in a unique position to consider frameworks and methods that describe, model and predict PEB, and that psychologists are therefore equipped to contribute to what we know about climate change and, more importantly, how to reach IPCC's suggested targets of staying within 1.5°C of global warming.

Given that psychology has long studied behaviour and behaviour change, Clayton et al. (2016) note that psychologists are already well-versed in understanding what leads people to living more pro-environmental lifestyles. They note that psychologists can facilitate a better understanding of factors that lead to PEB, and in doing so, can contribute to the development of strategies or interventions that lead to widespread PEB *change*. They criticize environmental psychology and particularly its transactional perspective (Lewin, 1943) for not being able to adequately account for environmental factors when considering behaviour, emphasizing the need for future research to not only consider individual-level variables but also *contextual* factors. Though they note particular advances in these areas over the past few decades (such as understanding one's social context in environmental behaviours (e.g., Stern, 2000; Steg et al., 2014; Swim & Becker, 2012)), they stress that the need remains for research which considers other *contextual* factors such as culture, one's immediate environment, or systemic infrastructures, proposing that these likely affect the presence (or lack) of many PEBs.

Although many argue that responsibility for climate change attenuation lies predominantly in the hands of major investor-owned fossil energy companies (e.g., Frumhoff et al., 2015) and large-scale corporations (Wright & Nyberg, 2015), leaders within psychology *and* other disciplines have argued that the cumulative effects of individual PEB adoption *can* help mitigate climate change (Williamson et al., 2018; van Sluisveld et al., 2016; Van Vuuren et al., 2018). The next section provides an overview of PEB and what has been learned about it over the years, an important foundation in delving to understand how we can encourage more radical lifestyle changes that consist of higher-impact PEBs in tackling climate change.

2.3 Pro-Environmental Behaviour and its Drivers

Human behaviour is central to contemporary climate problems, including climate change (Clayton et al., 2015). The urgency of addressing climate change has led researchers to explore how human actions contribute to environmental degradation and how they can be modified to mitigate such impacts. As noted in Chapter 1, large-scale transitions to the way we live are required to meet global targets in reducing the grave impacts of climate change. The starting point for this lies with PEB. Kollmuss and Agyeman (2002) define 'pro-environmental behaviour' as the sort of behaviour that consciously seeks to minimize the negative impact of one's actions on the natural and built world (p. 240). This definition emphasizes the *intentional* aspect of PEB, distinguishing it from behaviours that might incidentally benefit the environment but are not motivated by environmental concerns, linking to what was discussed in Chapter 1 about Stern's (2000) impact-intent gap. PEB consists of personal actions directly related to reducing environmental harm, improving the environment, or taking environmental action (Kollmuss & Agyeman, 2002). Examples of PEB include recycling, reducing or avoiding travel by car, or reducing meat consumption, particularly if these behaviours are taken to reduce harm to the environment. Each of these actions can contribute to reducing an individual's carbon footprint, which is crucial given that individual and household-level consumption contribute significantly to global greenhouse gas emissions (Hertwich & Peters, 2009).

More recent studies have confirmed the critical role that individual actions play in contributing to broader environmental outcomes (Wynes & Nicholas, 2017). Jensen (2002) discusses how solutions to environmental problems must be sought at both the structural/societal level as well as at a personal/lifestyle level. They suggest that if individuals are to contribute to the solutions of climate change, they must be aware to some extent of how there are, in part, personal contributors to climate change, and they must believe they have the ability to influence these conditions. Essentially, Jensen is saying that in order to expect individual PEB change, one must be aware of *how* their behaviour is impacting upon climate change, again linking back to the concern-action gap reviewed in Chapter 1.

People report an array of reasons for *why* they adopted PEBs or pro-environmental lifestyles, and this is a key area that is explored in this thesis. These motivations are often

linked to environmental concerns or specific worries about climate change. For instance, Janssen et al. (2016) found that concerns about animal welfare partly predicted vegetarianism, suggesting that ethical considerations can be a strong motivator for PEB. Similarly, Thomas et al. (2003) found that environmental concerns predicted recycling behaviours, indicating that awareness of environmental degradation can prompt people to adopt more sustainable practices. Additionally, a study by Ojala (2008) found that young people who expressed concern about environmental issues were more likely to engage in various forms of PEB, including recycling, conserving water, and reducing energy use.

Research has shown that pro-environmental motivations can vary greatly depending on individual values, beliefs, and socio-cultural contexts. For example, a study by Stern et al. (1999) demonstrated that people with strong biospheric values, who prioritize environmental well-being, are more likely to engage in a range of PEBs compared to those who hold hedonistic or 'egoistic' values, which prioritize personal benefits. Moreover, Schultz (2001) found that individuals who perceive a strong connection between their actions and environmental outcomes are more likely to engage in PEBs, highlighting the importance of Perceived Behavioural Control (PBC) in motivating PEB.

Research by Steg et al. (2016) expands on these findings, highlighting that a range of psychological, social, and contextual factors likely influence PEB. They found that in addition to one's hedonic, normative, and gain goals, psychological factors such as attitudes, values, and beliefs play a significant role in determining whether an individual will engage in PEB. Ajzen (1991) proposed the Theory of Planned Behaviour (TPB), which posits that behaviour is directly influenced by behavioural intentions, which in turn are shaped by attitudes towards the behaviour, subjective norms, and PBC. This framework has been widely used to understand PEB, with numerous studies showing that positive environmental attitudes and beliefs can encourage pro-environmental actions (Bamberg & Möser, 2007). In addition, Schwartz's Norm Activation Model (NAM) also provides a theoretical foundation for understanding how personal norms and internalized values contribute to behaviour (Schwartz, 1977). Section 2.4 presents an overview of theories used to predict and understand PEB, providing important insights into how PEB has been studied as this thesis gears towards learning about higher-impact PEBs and what might lead to radical living.

Personal moral norms have also been found to be significant predictors of pro-environmental intentions, suggesting that people are more likely to engage in PEB when they feel a moral obligation to protect the environment (Bamberg & Möser, 2007). Furthermore, De Groot and Steg (2009) demonstrated that individuals with strong altruistic values are more likely to engage in PEBs, such as reducing car use and participating in environmental activism. Harland et al. (1999) also found that personal norms driven by environmental responsibility are strong predictors of PEB. This aligns with the broader literature on moral and ethical motivations for PEB, which suggests that people who feel a strong sense of duty or moral responsibility towards the environment are more likely to adopt sustainable practices (Kaiser et al., 2005; Lindenberg & Steg, 2007).

In addition to these internal factors, external factors such as social norms and socio-demographic influences also seem to impact PEB. Social norms, which refer to the accepted behaviours within a group or society, can strongly influence individual behaviour by indicating what is considered 'typical' or appropriate. Cialdini et al. (1990) differentiate between two types of norms: *injunctive social norms*, which relate to perceptions of what people think they *should* be doing, and *descriptive social norms*, which pertain to perceptions of what others are *actually* doing. Both types of social norms have been found to contribute to PEB. For instance, Goldstein et al. (2008) found that interventions based on social norms, such as messages that highlight the environmentally friendly behaviours of others, can effectively promote recycling and energy conservation. Perry et al. (2021) conducted a review of social norms literature, finding that social norms are particularly important in predicting PEB when it comes to individual behaviour. This is consistent with the findings of Fielding et al. (2008), who reported that individuals who identified closely with environmental groups were more likely to adopt PEBs, suggesting that social identity and group membership can reinforce PEBs. Section 2.5.2 provides a more in-depth review of how social norms have been found to impact upon PEB.

Relatedly, social identity theory (Tajfel & Turner, 1986) also plays a critical role in understanding PEB. This theory posits that individuals derive a sense of identity and self-esteem from their group memberships, which can influence their behaviour. Research by Fielding et al. (2008) found that individuals who identified closely with environmental groups were more likely to adopt PEBs, suggesting that social identity and group

membership can reinforce PEBs. This aligns with the findings of Schultz et al. (2007), who found that social identity and group norms were significant predictors of recycling behaviour.

Environmental knowledge and awareness of climate-related issues have also been found to play an important role in predicting PEB. Knowledge about environmental issues can empower individuals to make informed decisions that reduce their environmental impact. Steg et al. (2005) found that individuals with environmental values and an understanding of climate change were more likely to conserve energy in their homes, indicating that knowledge can translate into concrete actions. Similarly, Kaiser and Fuhrer (2003) showed that those with a greater understanding of environmental issues were more likely to demonstrate PEB in multiple ways, such as recycling, conserving water, and reducing energy consumption.

The relationship between *knowledge* and PEB on the other hand is complex and multifaceted. While knowledge is a necessary component of environmental behaviour, it is not always sufficient on its own to prompt action. Kollmuss and Agyeman (2002) added that a feeling of efficacy and environmental responsibility accompanying this knowledge also strengthened the likelihood of practicing PEB. This suggests that knowledge must be coupled with a sense of personal agency and responsibility to effectively motivate the adoption of PEB. Frick et al. (2004) further found that knowledge combined with environmental attitudes and PBC predicted PEB, highlighting the interplay between cognitive and motivational factors in shaping PEB.

Moreover, knowledge about environmental issues can be both general and specific, and each type can have different impacts on PEB. *General* environmental knowledge, for example, refers to a broad understanding of environmental concepts, such as climate change, pollution, and biodiversity loss. *Specific* knowledge, on the other hand, refers to practical information about *how to engage* in PEBs, such as how to recycle properly or reduce energy consumption at home. A study by Hines et al. (1987) found that both general and specific knowledge were important predictors of PEB, but that *specific* knowledge is more often strongly associated with actual behaviour. This suggests that education and awareness campaigns that provide practical information on how to engage in PEBs may be more effective in promoting PEB in general, but again, less is known about

high-impact PEB or those who live radical pro-environmental lifestyles, which this thesis aims to study.

In addition to psychological and social factors, contextual factors, including structural, economic, and systemic elements, also contribute to PEB. These factors can either facilitate or hinder the adoption of sustainable practices, depending on the availability of resources, infrastructure, and policy support. Stern (2000) discusses that while individual factors play a key role in predicting PEB, they can be further enhanced by the availability of *facilitating conditions*, that is, accessibility to some of the things that help facilitate PEB. For example, having access to recycling facilities, reliable public transport systems, or energy-efficient appliances, for example, can significantly impact an individual's ability to engage in PEB. Research by Gillingham et al. (2009) demonstrated this link by finding that providing subsidies for renewable energy adoption resulted in an increase in pro-environmental *energy* behaviours. This suggests that economic incentives *can* be effective in encouraging individuals to adopt sustainable practices, particularly when the initial cost of these behaviours may be a barrier. Similarly, regulations put in place to facilitate PEB can aid this behaviour, as demonstrated by Dietz et al. (2003), who found that banning single-use plastics resulted in a significant reduction in single-use plastic consumption. This highlights the role of policy interventions in shaping individual behaviour and promoting PEB, but again, less is known about whether this interaction exists within *high-impact* PEB or radical living.

Fujii and Kitamura (2003) also showed the importance of contextual factors in influencing PEB by finding that providing individuals with free bus tickets resulted in reduced car use. This suggests that reducing the perceived cost and inconvenience of PEBs can help encourage individuals to adopt these practices. Moreover, a study by Barr et al. (2011) found that households that received information about the environmental impact of their water use, along with feedback on their consumption, were more likely to reduce their water use. This indicates that providing individuals with information about the environmental consequences of their actions, as well as feedback on their behaviour, can be an effective strategy for promoting PEB. These findings were corroborated by another study by Dietz et al. (2009), who found that providing households with real-time feedback on their energy use, along with information about energy-saving behaviours, led to significant reductions in energy consumption. The study found that households that

received this information reduced their energy use by an average of 12%, suggesting that providing individuals with timely and relevant information can be a powerful motivator for PEB. Similarly, a study by Abrahamse et al. (2007) found that households that received tailored advice on energy-saving behaviours, along with feedback on their energy use, were more likely to adopt energy-saving behaviours and reduce their energy consumption. Again, though, less is known about whether these patterns exist among higher-impact PEBs that would have the greatest impact on climate change mitigation, or within *radical* lifestyles.

Regardless of *how* PEB is steered, there may also be many benefits to the individual who adopts PEBs. For example, PEB can improve one's physical and mental health, result in reduced cost of energy in households, and can have social advantages such as stronger social bonds and greater community engagement. Rosa and Collado (2020) found that engaging in PEB, such as spending time in nature or participating in community gardening, can enhance physical health by promoting physical activity and reducing stress. Similarly, Pothitou et al. (2016) found that energy-saving behaviours, such as using energy-efficient appliances or reducing energy use during peak hours, can lead to significant cost savings for households, which of course can improve one's financial well-being.

In addition to these tangible benefits, PEB can also have positive psychological effects. Taufik et al. (2015) found that PEB can result in a positive psychological state known as 'warm glow', which refers to the feeling of satisfaction and happiness that comes from doing something 'good' for the environment. This suggests that engaging in PEB can enhance subjective well-being by providing individuals with a sense of *purpose* and *fulfilment*. Similarly, a study by Aknin et al. (2013) found that spending money on environmentally friendly products or donating to environmental causes can increase happiness and life satisfaction, indicating that prosocial spending can have positive psychological effects, and there may be the same pattern for those who make high-impact pro-environmental changes, but again, little is known about this at present.

Moreover, PEB can also have *social* benefits, such as stronger social bonds and greater community engagement. Helliwell et al. (2016) found that individuals who engage in PEB, such as participating in community clean-up events or joining environmental organizations, are more likely to report stronger social connections and a greater sense

of community. This suggests that PEB can enhance social well-being by fostering a sense of *belonging* and shared purpose. Similarly, a study by O'Brien et al. (2018) found that individuals who engage in PEB, such as volunteering for environmental causes or participating in environmental advocacy, are more likely to report higher levels of civic engagement and social capital.

In conclusion, the study of PEB is a multidisciplinary endeavour that draws on insights from psychology and various other disciplines in attempting to uncover the factors that motivate and sustain pro-environmental behaviour. This section has provided an overview of the various psychological, social, and contextual factors that influence PEB, while also outlining some of the potential benefits of adopting PEBs. However, what it has also highlighted is that while research has provided insights to many motivators of *individual* PEBs, they are often studied in isolation, or have a relatively low impact. The need remains to study *multiple* PEBs that have a higher-impact; to study 'radical' pro-environmental *lifestyles*, and this thesis aims to address this gap.

The next section provides a more detailed examination of the *theories* used to study PEB, where the focus will be on understanding how different theoretical frameworks have been used to study behaviour and inform interventions aimed at promoting PEBs. This is particularly important to reflect upon before studying 'radicals' and the motivations behind adopting radical lifestyles and higher-impact PEBs, as these theories have been used to understand much PEB to date. It is not only important to consider how PEB has been studied and understood through these models, but also helpful to consider the underlying frameworks of these theories in shaping *how* this thesis will study radicals and radical living – what elements might be important to look out for?

2.4 Theories of Pro-Environmental Behaviour

To understand how PEB has been studied over the years, this section provides on overview of how theory has been applied to understanding this behaviour. While a case is made in section 2.6 to focus on *high-impact* behaviours and potentially strive *away* from theory-driven approaches, theories have greatly aided our understanding of what might determine PEB, and may include frameworks which are important to understand before

exploring high-impact PEB and radical living. As noted, psychology has traditionally taken a 'theory-based' (Clayton et al., 2016) or 'theory-driven' (Nielsen et al., 2021) approach, whereby the seed of the research is the behavioural theory and the behaviour itself is almost secondary. Some of the predominant theories that have been used to consider PEB historically include the Theory of Planned Behaviour (TPB) (as outlined in section 2.4.1), the Value-Belief-Norm (VBN) model (as outlined in section 2.4.2), the Norm Activation Model (NAM) (as outlined in section 2.4.3), the Theory of Interpersonal Behaviour (TIB) (as outlined in section 2.4.4), Social Practice Theory (SPT) (as outlined in section 2.4.5), Goal-Framing Theory (as outlined in section 2.4.6), the Attitude-Behaviour-Context (ABC) Model (as outlined in section 2.4.7), and the Reasoned Action Approach (RAA) (as outlined in section 2.4.8). Below, an overview of each model is provided to help clarify how these theories have contributed to our understanding of PEB.

2.4.1 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) first coined by Ajzen (1991) has been used for decades in understanding many behaviours, including PEB. Put simplistically, this theory considers the direct link between *behavioural intention* and the behaviour itself. Ajzen suggests that one's behavioural intentions are shaped by three distinct aspects of one's psyche: (i) *attitudes* towards a given behaviour in addition to (ii) one's *subjective norms* and (iii) one's *perceived behavioural control*. One's 'attitudes' refers to how one perceives their own behaviour, whether that be favourable or unfavourable. Positive attitudes about protecting the environment have been found to strongly predict PEB; for example, Kaiser et al. (2005) found that those with positive attitudes about recycling were more likely to recycle themselves, and Harland et al. (1999) found that positive attitudes about car sharing increased one's intent to carshare in the future. 'Subjective norms' refers to one's perception of social pressure to behave in a certain way, and it has been highlighted that when one feels pressure from their social circle to engage in PEB they are more likely to do so. For example, Bamberg et al. (2007) found that perceived social expectations predicted one's intent to use public transport rather than their own vehicles. Finally, one's Perceived Behavioural Control (PBC) refers to how much one believes that they *are able to* behave in a certain way, often predicted by how easy or difficult they perceive that

behaviour to be, and this has been found to strongly predict PEB. For example, Klöckner and Blöbaum (2010) found that one's PBC predicted using energy-efficient appliances at home and reducing one's car use. Taken together, these three facets contribute to the TPB, which has aided our understanding of PEB.

While helpful in shaping our understanding of PEB, the TPB has faced criticism over time. For example, some say that the TPB has an overemphasis on rationality, assuming that every behaviour taken is a result of a conscious decision-making process, and some argue that this neglects to consider other important factors that may contribute to PEB, such as emotion and habit (Triandis, 1980) or situational factors (Verplanken & Orbell, 2003). Furthermore, some note the difficulty in measuring the elements proposed within TPB, such as subjective norms, and say that this can lead to inconsistent findings (Armitage & Conner, 2001). Finally, some argue that the model has a 'static nature' and is therefore inconsiderate of behaviour changes *over time*. This is consistent with other research which shows that intent does not always lead to *consistent* behaviour over a long period of time (Sheeran, 2002).

2.4.2 Value-Belief-Norm (VBN) Theory

Another prevalent model of behaviour used in understanding PEB, the Value-Belief-Norm (VBN) model combines (i) *value theory*, (ii) *norm activation*, and (iii) *the theory of ecological behaviour* to predict PEB (Stern et al., 1999). One's *values* have been found to predict many behaviours, including many PEBs. For example, De Groot and Steg (2008) found that those with stronger biospheric values intentionally reduced their energy consumption and showed stronger support for environmental policies, and Steg et al. (2005) showed that environmental protection values led to reducing energy consumption at home. Relatedly, one's *beliefs* about the consequences of their behaviours has also been found to greatly predict PEB. For example, Stern (2000) found that those who believed that their behaviours had negative impacts on climate change adopted more PEBs, and Hansla et al. (2008) found that beliefs about the benefits of reducing one's energy consumption strongly predicted energy reduction. Finally, one's *personal norms*, i.e., one's feelings of moral obligation to act in a specific way, contributed to PEB. Schultz et al. (2005) demonstrated this in their research which found that one's personal norms

resulted in reduced energy consumption, and Thøgersen (1999) found that personal norms as related to reducing waste predicted higher rates of recycling.

The VBN has also been used to study pro-environmental eating behaviours. For example, a study by Onwezen et al. (2013) applied the VBN model to examine sustainable food choices. They found that individuals with strong biospheric values (concern for the environment) were more likely to hold beliefs about the negative environmental impact of conventional food production, which in turn led to stronger personal norms and increased intentions to choose sustainable food options, such as organic or locally sourced foods. Furthermore, De Boer et al. (2013) utilized the VBN model to explore the drivers behind reducing meat consumption. The study found that individuals with stronger biospheric and altruistic values were more likely to believe in the environmental and ethical benefits of eating less meat, which activated personal norms and led to a greater intention to reduce meat intake.

When it comes to understanding pro-environmental travel behaviours, there is also plenty of work that has effectively applied the VBN model. For example, van Wee et al. (2019) applied the VBN model to examine the factors that influence the intention to cycle as a mode of sustainable travel. The study found that individuals with strong biospheric values and beliefs about the positive environmental and health impacts of cycling developed strong personal norms, which motivated them to choose cycling over more polluting forms of transport. Furthermore, Higham et al. (2014) used the VBN model to explore factors influencing the intention to reduce air travel for environmental reasons. They found that individuals with strong environmental values and beliefs about the carbon footprint of flying felt a moral obligation (personal norms) to reduce their air travel, which led to a greater intention to avoid flights and consider alternative modes of transport when possible.

The VBN model has undoubtedly aided our understanding of many PEBs such as the above. However, the VBN model also has its limitations. For example, Kaiser et al. (2005) suggest that the overcomplexity of the model makes the theory difficult to apply in studying behaviour. Furthermore, some argue that there is an overemphasis on personal norms, and Steg et al. (2005) suggests that this might lead to overlooking the role of *other* motivations, such as economic incentives and social influence. Thirdly, some say that

while the VBN has been found effective in understanding some PEBs, it is unable to account for others, such as routine PEBs or habitual PEBs (Thøgersen, 1999).

2.4.3 Norm Activation Model (NAM)

Another model adopted in understanding PEB, the Norm Activation Model (NAM) (Schwartz, 1977) takes one's *personal norms* as the basis for predicting behaviour and is comprised of two distinct facets: (i) one's *awareness of consequences (AC)*, and (ii) one's *ascription of responsibility (AR)*. *Awareness of consequence (AC)* relates to how much an individual is aware of the consequences of (not) performing a specific behaviour. Kaiser et al. (2003) found that a heightened awareness of the negative consequences of environmental degradation resulted in increased PEB overall, and Bamberg and Schmidt (2003) found that one's awareness of the damage caused to the environment by car use resulted in greater intentions to use public transport. *Ascription of responsibility (AR)* on the other hand refers to an individual recognizing their role in contributing to environmental harm and believing that their actions can make a difference. Steg and Groot (2010) found that ascription of responsibility predicted intent to reduce car use and adopt other PEBs, demonstrating a link between one's perception of their actions as related to climate change and changing their own behaviour.

The NAM has been used to understand a wide array of PEBs and is still widely used in behavioural studies in general. For example, when it comes to studying diet behaviours, Klöckner (2013) applied the Norm Activation Model to examine the intention to reduce meat consumption. The study found that individuals who were aware of the environmental consequences of high meat consumption (awareness of consequences) and who felt personally responsible for these impacts (ascription of responsibility) were more likely to develop a strong personal norm, leading them to reduce their meat intake. Furthermore, Visschers et al. (2016) applied the NAM to explore behaviours related to reducing food waste, finding that individuals who were aware of the environmental impact of food waste and felt personally responsible for minimizing waste were more likely to develop strong personal norms, which led to greater efforts to reduce food waste in their households.

Although the NAM has aided our understanding of PEB, its limitations span multiple areas. Firstly, Bamberg and Schmidt (2003) argue that the model is too narrowly focused on personal norms triggered by AC and AR, and risks overlooking other determinants of PEB such as social norms, self-efficacy and external constraints. Others argue that the model is better suited to understanding behaviours that are perceived as *moral obligations* rather than accounting for 'everyday, non-moralised' behaviours (Schwartz, 1992), and Harland et al. (1999) argue a third limitation of the model, stressing that there is too much emphasis placed on moral obligations, and too little consideration for other motivational and contextual factors that might drive behaviour.

2.4.4 Theory of Interpersonal Behaviour (TIB)

Taking a different approach to understanding behaviour is the Theory of Interpersonal Behaviour (TIB). Incepted by Triandis (1977), this TIB model focuses on understanding how individual behaviour is influenced by social and cultural contexts. According to Triandis, interpersonal behaviour is shaped by three primary factors: the individual's beliefs, social norms, and the immediate environment. He proposes that behaviour is often a result of a combination of these factors, with cultural influences playing a key role in shaping an individual's responses to social situations. Triandis also highlights the importance of personal and collective goals, suggesting that the pursuit of these goals can either align or conflict with the expectations and norms of the surrounding social environment. Overall, the theory emphasizes the complexity of human behaviour, arguing that it cannot be fully understood without considering both individual and societal influences.

Furthermore, this model considers the role of one's (i) *habits*, (ii) *emotions*, and (iii) *facilitating conditions* in predicting behaviour. Triandis suggests that one's habits (i.e., automatic behaviours that are performed subconsciously) are strong predictors of future behaviours, including PEB. Verplanken and Aarts (1999) demonstrated this in their research which found that habituated car use predicted a resistance to switch to public transportation *in spite* of one's positive attitudes towards public transport methods. Furthermore, Klöckner and Matthies (2004) found that forming new habits was a vital step in adopting carsharing behaviours and using public transport. Secondly, TIB

considers one's *emotions* to be an important predictor of behaviour, suggesting that positive emotions are predictors of PEBs. This was demonstrated in research by Carrus et al. (2008), who found that positive emotions about nature predicted outdoor activity and conservation behaviours, and Hartmann and Apaolaza-Ibáñez (2012) found that 'emotional affinity towards nature' predicted intent to buy more environmentally friendly products. Finally, *facilitating conditions* refers to the contextual factors that can enable or prevent a behaviour. Gatersleben et al. (2002) showed that those who had ease of access to recycling bins demonstrated higher rates of recycling, and Steg and Vlek (2009) found that making public transport more convenient increased the use of public transport. The TIB incorporates these three factors to understand behaviours, and much research has applied this theory in studying PEB.

The TIB has also been used to study diet behaviours. For example, Stoll-Kleemann and Schmidt (2017) applied the TIB to understand the factors influencing the adoption of plant-based diets. The study found that habits, particularly the routine consumption of meat, were significant barriers to adopting a plant-based diet. However, emotions such as concern for the environment and animal welfare, combined with social norms and the availability of plant-based options, played critical roles in facilitating dietary change. Furthermore, Laureti and Benedetti (2018) utilized the TIB to explore sustainable eating behaviours, including the reduction of food waste and the purchase of organic products. The research highlighted that habitual behaviours strongly influenced food choices, but emotional factors such as guilt about food waste and pride in buying organic products also contributed. Social norms and facilitating conditions, like the availability of organic food in local markets, were key determinants of sustainable eating practices, again supporting the applicability of the TIB.

However, as with the TPB, some have criticised the TIB for its overcomplexity, which again can limit its applicability to studying behaviour. Traindis (1977) for example argues that having too many variables that might play a role in predicting behaviour using this model can complicate testing and the validation of the model in understanding behaviour. Secondly, Verplanken and Orbell (2003) argue that attempting to measure constructs like habits and emotions can lead to reliability and validity issues due to their subjective nature, and finally, Bamberg and Schmidt (2003) argue that findings enlisting the use of

the TIB are difficult to generalise across different contexts, and therefore feel that the model is limited in its applicability to studying widespread behaviour.

2.4.5 Social Practice Theory (SPT)

Social Practice Theory (SPT) provides an alternative approach to understanding pro-environmental behaviour by focusing on practices rather than individuals. SPT posits that behaviours are embedded within social practices, which are patterns of activity that consist of interconnected elements: materials (objects, infrastructure), competences (skills, know-how), and meanings (social and symbolic significance). Rather than viewing behaviour as a result of individual choice or intention, SPT suggests that practices themselves evolve and change, influencing how individuals behave within them (Shove et al., 2012).

For example, in the context of household energy use, rather than focusing solely on individuals' attitudes or intentions to save energy, SPT would examine how heating homes might be shaped by the availability of heating technologies (materials), the knowledge of how to operate them properly (competences), and the cultural significance or normality of having a warm home (meanings). Research by Gram-Hanssen (2010) illustrated this approach by showing how energy consumption in households is not just about individual choices but is deeply embedded in the routines and practices of everyday life, such as cooking, cleaning, and staying comfortable. Furthermore, Shove et al. (2012) discuss how travel behaviours, such as cycling, can be analysed through the lens of SPT. They argue that cycling as an activity, or as a *practice,* involves the integration of materials (e.g., bicycles, bike lanes), competences (e.g., the ability to cycling), and meanings (e.g., the perception that cycling is pro-environmental or 'healthy'). By examining how these elements intertwine, they highlight how systemic changes, or changes in infrastructure (like building bike lanes for cyclists) along with shifts or changes in societal norms (like an increased awareness of the health benefits of cycling) can promote cycling as PEB.

Pro-environmental diets have also been studied using SPT. For example, Halkier (2010) applied SPT to analyse how pro-environmental or low-carbon food consumption was embedded within normal or everyday routines and how they were influenced by social *contexts*. The study explored how diet choices like vegetarianism or exclusively organic

food consumption were not just individual choices but were also shaped by the *availability* of these products (i.e., materials), the *knowledge* about pro-environmental diets (i.e., competences), and the *cultural meanings* of these food choices (i.e., health or ethical associations). Halkier also highlighted that how the media often (mis)represents food also plays a crucial role in shaping the meanings associated with diets and food choices. Furthermore, Hargreaves (2011) used SPT to study how dietary behaviours, like reducing meat consumption, could be encouraged through changes in the practices themselves. The research was based on interventions within people's places of work and aimed to promote lower-carbon eating habits and choices. They found that encouraging people to change their habits required changing the *material* elements (i.e., the availability of meat-free meals in the workplace), *competences* (i.e., peoples' knowledge about meat-free cooking), and *meanings* (i.e., shifting peoples' perceptions of meat-free eating to more of a *mainstream* practice). The study suggested that considering these specific elements could ultimately lead to *longer-lasting* changes in behaviour than just focusing on individual attitudes in isolation.

SPT has also been applied to study travel practices. For example, Spurling et al. (2013) applied SPT to study how different travel practices, such as commuting to and from work in one's own car rather than taking public transport, were sustained over the long-term, and how they might be changed out of pro-environmental intentions. They argued that systemic and policy interventions might need to focus not just on *individual* behaviour but also on 'reshaping' the practices themselves, by changing the actual *elements* that constitute these actions. For example, by improving public transport infrastructure (*material*) and by giving individuals more information and skills for effectively using public transport (*competence*), there may be more of a shift to commuting via public transport rather than by car. These findings were also supported by Blue (2017), who found that driving one's own car was *so embedded* in people's daily routines and reinforced by social norms/infrastructure that it prolonged personal car use over more pro-environmental travel alternatives.

However, similar to some of the previous models, SPT has also faced criticism for its overcomplexity and for being difficult to actually operationalize within research. Firstly, the theory's emphasis on the interconnections within practices can make it challenging to identify specific points to intervene and promote PEB (Spurling et al., 2013). Critics of

this model have also argued that by focusing on *practices* rather than *individuals*, and thus the *behaviours* alone rather than the *behavers*, SPT can overlook the *agency* of individuals to change their behaviours and the role of personal motivation within PEB (i.e., Warde, 2005). Again, the argument to take an inductive approach by considering the *behavers* who have already adopted multiple high-impact PEBs is strengthened, here, and further rationale is gained for this thesis to address these shortcomings of previous research.

2.4.6 Goal-Framing Theory

Goal-Framing Theory, proposed by Lindenberg and Steg (2007), suggests that human behaviour is influenced by three overarching types of goals: *hedonic* (pleasure-oriented), *gain* (self-interest-oriented), and *normative* (social or ethical norms). These goals can be activated in different contexts, influencing how people behave, including within pro-environmental contexts. For instance, when normative goals are 'activated', individuals may be more likely to engage in behaviours that align with social and environmental norms, such as recycling or reducing energy consumption, whereas when 'hedonic' goals are activated, individuals may be more likely to engage in pleasurable behaviours that do not align with PEB.

An application of Goal-Framing Theory can be seen in research by Steg et al. (2014), who found that framing environmental actions as normative and aligning them with people's moral values increased the likelihood of individuals engaging in energy-saving behaviours. Hedonic goals might also lead individuals to prefer environmentally friendly products if they are associated with a positive emotional experience, as demonstrated by Hartmann and Apaolaza-Ibáñez (2012) in their study on green product marketing.

Goal-Framing Theory has also been used to study pro-environmental eating habits. For example, a study by Verain et al. (2016) found that highlighting the ethical and environmental benefits of meat-free foods increased the likelihood that individuals would choose these options, demonstrating the power of *normative goals* in guiding food choices. Furthermore, in a study by Lindenberg and Steg (2007), it was found that framing sustainable food choices in terms of personal health benefits (e.g., lower risk of disease, better nutrition) increased the likelihood that individuals would adopt these behaviours, indicating that gain goals *can* be effective in promoting pro-environmental diet choices.

Goal-Framing Theory has also been applied to study and understand pro-environmental travel. In a study by Steg et al. (2001), for example, it was found that when the use of public transport was framed as a socially responsible and environmentally friendly behaviour, it 'activated' normative goals among individuals. This led to an increased *intention* to use public transportation instead of personal cars, as people were motivated by the desire to conform to environmental norms and contribute positively to society. Furthermore, research by Van der Werff and Steg (2016) explored how promoting the enjoyment and health benefits of cycling can activate hedonic goals, leading individuals to choose cycling over driving. By emphasizing the pleasurable aspects of cycling, such as experiencing the outdoors and engaging in physical activity, the study found that people were more likely to opt for cycling as a mode of transport, thereby reducing their carbon footprint.

Furthermore, Abrahamse et al. (2009) conducted a study where interventions were designed to reduce car use by appealing to *all three* types of goals. The intervention highlighted the environmental benefits (normative goals), the enjoyment of walking or cycling (hedonic goals), and the cost savings associated with reduced car use (gain goals). The study found that this comprehensive approach was effective in significantly reducing car use among participants. And finally, in a study by Lindenberg and Steg (2007), it was demonstrated that framing eco-driving practices (such as smooth acceleration and maintaining a steady speed) in terms of personal financial savings and reduced fuel costs effectively activated one's gain goals. This framing led to the increased adoption of 'eco-driving behaviours', as individuals were motivated by the potential for economic benefits, too.

Despite its contributions, Goal-Framing Theory has also been critiqued, predominantly for its oversimplification of human motivation. Critics argue that the theory does not fully account for the complexity and interplay of *multiple* goals in real-world decision-making (Lindenberg & Steg, 2013). Additionally, the theory's reliance on framing to 'activate' specific goals may lead to inconsistent outcomes, as the effectiveness of framing can greatly vary depending on context and individual differences (Van der Werff & Steg, 2016).

2.4.7 The Attitude-Behaviour-Context (ABC) Model

The Attitude-Behaviour-Context (ABC) model, developed by Guagnano et al. (1995), posits that behaviour is a function of the interaction between *individual attitudes* and *contextual factors*. This model suggests that while positive attitudes towards the environment can lead to PEB, the likelihood of such behaviour being adopted relies on various contextual factors, like the *availability* of resources, on social norms, and on policy frameworks.

For example, research by Barr et al. (2005) applied the ABC model to recycling behaviour and found that while positive environmental attitudes were necessary, they were not sufficient alone to predict recycling. The behaviour was significantly influenced by contextual factors such as the convenience of recycling facilities and local government policies supporting recycling. Furthermore, Guagnano et al. (1995) applied the ABC model to study how positive attitudes towards pro-environmental food choices like meat-free diets influenced one's actual behaviour. They found that while positive environmental attitudes were important, they did not always lead to meat-free eating unless the context was considered to be *supportive*; finally, Kollmuss and Agyeman (2002) also used the ABC model to study meat consumption, showing that even when people had positive attitudes towards reducing eating meat to be more pro-environmental, their actual behaviour was often constrained by contextual factors like cultural norms and habit.

Additionally, the ABC model has been applied to studying pro-environmental travel alternatives. For example, Rezvani et al. (2015) applied the ABC model to understand the purchasing of electric vehicles (EVs), finding that while positive environmental attitudes towards reducing emissions and interest in new technology were important, the actual adoption of EVs was more often influenced by other contextual factors like the availability of charging stations and whether the government were providing incentives to buy EVs. Furthermore, Kroesen (2017) used the ABC model to explore cycling behaviour in urban environments. The study highlighted that although many urban residents had positive attitudes towards cycling and considered it to be a sustainable and healthy mode of transportation, their *actual* cycling behaviour was heavily influenced by other contextual

factors such as the presence of safe cycling lanes and the availability of bike-sharing programs.

Like many others, however, the ABC model has been criticized for its limited ability to predict behaviours that are deeply habitual or behaviours that occur in contexts with strong structural constraints. Critics have argued that the model has also overemphasized the importance of *attitudes* and fails to address the impact of *habit* and *automatic behaviours* in PEB (Verplanken & Orbell, 2003). Additionally, the model's reliance on the interaction between attitudes and context has made it challenging to design interventions that effectively change behaviour across *different* contexts (Kollmuss & Agyeman, 2002).

2.4.8 The Reasoned Action Approach (RAA)

The Reasoned Action Approach (RAA), developed by Fishbein and Ajzen (2010), is an evolution of the TPB and the TRA. The RAA suggests that behaviour is *directly* influenced by behavioural intentions, which are shaped by three factors: *attitudes towards the behaviour*, *perceived norms*, and *PBC*. The RAA expands on these earlier models by offering a more comprehensive framework for understanding how these components interact and how they might influence behaviour, particularly in the context of PEB.

The RAA has been applied to study many different areas of PEB. For example, within energy conservation actions, researchers found that individuals' intentions to conserve energy were greatly influenced by their *attitudes* towards energy saving in general, the perceived *social pressure* to save energy, and peoples' confidence in their *ability* to reduce their energy use (Abrahamse & Steg, 2011). Across other domains, the RAA has also been useful in understanding PEB. Siegrist et al. (2015), for example, applied the RAA to examine the adoption of meat-free diets. The study found that individuals' intentions to adopt a plant-based diet were significantly influenced by their *attitudes* towards the perceived health and environmental benefits of such a diet, by perceived *social norms* (e.g., influence from family and friends), and by *PBC* (e.g., the ease of accessing meat-free food alternatives). Similarly, Graça et al. (2015) used the RAA to explore the intention to reduce meat consumption in Portugal. Their findings indicated that attitudes toward reducing meat (such as perceived health benefits and ethical concerns), social norms

(influence from peers and cultural expectations), *and* PBC (e.g., confidence in cooking meat-free meals) were key predictors of the *intention* to eat less meat.

The RAA has also been applied when studying pro-environmental travel. For example, a study by Hanyu et al. (2020) applied the RAA to study the use of public transport in Japan. They found that individuals' intentions to use public transportation were predicted by one's *attitudes* towards public transport, in addition to their perceptions of *social norms*, and their *PBC*, particularly within the *convenience* and *reliability* of the service. In addition, Gkargkavouzi et al. (2019) used the RAA to explore factors influencing the intention to adopt EVs in Greece. The study found that *attitudes* toward EVs, perceived *social norms*, and *PBC* (e.g., access to charging stations) were significant predictors of individuals' intentions to purchase and use EVs.

Nevertheless, the RAA has faced similar criticisms to its predecessors, particularly regarding its assumption that behaviour is *always* the result of intentional and rational planning. Critics have argued that this perspective overlooks the role of emotions, habits, and unconscious processes (like habit) in shaping behaviour, thereby limiting its applicability to PEBs that are less consciously controlled (Sniehotta et al., 2014). Some scholars have even suggested that the RAA's focus on *intention* as the primary determinant of behaviour may be insufficient to explain the gap between intention and actual behaviour (similar to Stern's impact-intent gap referred in Chapter 1), particularly in complex, real-world settings where various other *external* factors can influence outcomes (Sheeran & Webb, 2016).

2.4.9. Theory of 'Earth Democracy'

Taking a different approach to understanding PEB, Dr. Vandana Shiva's theory of 'Earth Democracy' connects environmental action with social justice and sustainability (Shiva, 2005). Shiva argues that 'ecological citizenship' (that is, one's *responsibility* for both local and global ecosystems) is a predominant determinant of PEB. She emphasizes that because environmental harm disproportionately affects marginalized communities across the glove, one must integrate traditional, indigenous knowledge in order to foster sustainable practices. Shiva's ideas around environmental justice and PEB have been

widely cited, especially surrounding discussions of environmental activism and sustainability in the Global South (i.e., Glover & Stewart, 2013).

In conclusion, these are some of the predominant theories that have greatly aided our understanding of factors that predict PEB, but the models have also faced much criticism in being applicable to the many nuances and other determinants of actual behaviour, including PEB. As earlier noted, Nielsen et al. (2021) stress concerns that relying on theory-based approaches *alone* can often lead to the neglect of some particularly impactful behaviours and their determinants, arguing that theory-driven psychological research can make findings appear irrelevant to other scientists and policymakers. For example, the very term 'Pro-Environmental Behaviour', they argue, risks constructing all environmentally friendly behaviours as *equal*, and that the use of PEB scales assumes that all PEBs are linked by the same construct (i.e., environmental attitude; Byrka et al., 2010). They fear that PEB research often neglects high-impact behaviours that may be too complex to be predicted by psychological theory alone (e.g., Black et al., 1985), and that behaviours such as home and vehicle purchases and decisions about family size (Dietz et al., 2009; Wynes & Nicholas, 2017) which have large impacts are therefore neglected or are largely presented only hypothetically (Nielsen et al., 2021).

Nielsen et al. (2021) therefore argue that relying on theory-driven research leads to the exclusion of some of the most important behaviours in terms of environmental impact, ultimately limiting research's contribution to climate change research. They suggest that the field 're-work' their approach to taking an *impact-first* approach, which means that the research would take high-impact behaviours and lifestyles – and *behavers* - as the starting point of the research and consider things more holistically, and less driven by theory (Nielsen et al., 2016). Clayton et al. (2016) allude to this approach in their agenda, criticizing theory-based approaches when used in isolation and recognizing the value of what they coin as 'problem-based approaches' (p. 210); and more recently, Whitmarsh et al. (2021) argue that a focus on high-impact behaviours and high-emitting groups is a vital component in tackling the climate crisis. Steering away from theory in understanding behaviour, section 2.6 discusses the need for focusing on *high-impact* PEB in more depth; before this, however, there are additional factors that have been found to help predict PEB that may also be important to consider in delving to research high-impact PEBs and radical living, and these are discussed in the next section.

2.5 Other Factors Influencing PEB

In addition to theories of PEB, there are other factors that can influence the uptake of PEB. These include one's *environmental identity*, *social norms*, and *socio-demographics*, and previous research has shown the ways in which these can contribute to PEB. These are each outlined in the following sections (2.5.1 – 2.5.3, respectively), including links to previous literature which provides evidence for how each factor contributes to PEB.

2.5.1 Environmental Identity and PEB

Environmental Identity (EID) relates to how individuals see themselves within their natural environments, and considers the joint contribution of one's environmental beliefs, values, and behaviours to one's identity (Clayton, 2003). Grounded in *Identity Theory* (IT) and *Social Identity Theory* (SIT) (see: Stets & Burke, 2000), EID is considered by some to be crucial in understanding the link between an individual and PEB. While IT focuses on the roles and social positions of individuals and how these contribute to one's 'self-concept' (Stryker & Burke, 2000), EID incorporates elements from SIT that considers how *value* is placed on being a part of social groups (Tajfel & Turner, 1986). This may be important as a potential contributor to adopting high-impact PEBs and in understanding the potential determinants of radical living.

Much research has linked the concept of environmental identity to PEB. For example, Clayton and Opotow (2003) found that one's concern for the planet had an impact upon one's identity, and that those who identified with environmental groups were more likely to adopt PEBs. Furthermore, Clayton (2003) developed an 'EID scale' for measuring the extent to which an individual integrates environmental values into their own identities, which incorporated elements such as feeling connected with nature, identifying with 'environmentalism', and the extent to which individuals found environmental protection to be of importance. Research suggests that EID is not a *static* construct, but rather it can *develop* throughout one's life, and that a great predictor of having higher EID is to have either had childhood experiences in nature (Chawla, 1998) or to have received environmental education (Kals et al., 1999).

EID has contributed greatly to our understanding of PEB within many specific contexts. For example, Whitmarsh and O'Neill (2010) found that EID predicted a range of PEBs to include conserving energy at home and opting for pro-environmental travel options. Furthermore, Gatersleben et al. (2014) found among students that those with a stronger environmental identity were more likely to involve themselves in campus initiatives around sustainability. EID has its limitations, however, and Kollmuss and Agyeman (2002) argue the need to consider the roles of *culture* and *context* in considering EID, which they say is at present neglected within the theory. Nisbet et al. (2009) suggested merging EID with other concepts such as nature connectedness and environmental values to achieve a more holistic approach, while others claim that more longitudinal research is required to truly understand the link between environmental education and EID (Chawla and Cushing, 2007). Thus, while EID is undoubtedly a vital concept in understanding PEB, Nielsen et al.'s (2021) argument is echoed that more inductive work is needed that does not rely on theory alone. As related to its underpinnings of SID, however, this model does acknowledge the contribution of one's social identity to their potential adoption of PEB, and the next section considers more specifically how *social norms* can impact upon PEB.

2.5.2 Social Norms and PEB

In developing an understanding of the various determinants of PEB, another area in which there is a large body of empirical evidence is in social norms. Social norms can be defined as the shared behaviours within a group or within society, and can help shape individual behaviour by indicating what is 'typical' or 'appropriate' (Chung & Rimal, 2016). While generally used as a catchment term for understanding socially-influenced behaviour, Cialdini et al. (1990) argue that social norms can be split into two distinct categories: *descriptive social norms,* which covers one's perceptions of what is *typically* done, and *injunctive social norms*, which relates to one's perceptions of what is approved or disapproved. Cialdini et al. (1990) found that both are important in understanding PEB, specifically showing a significance within recycling behaviours and energy conservation. Furthermore, Robinson et al. (2014) found that those who were educated about the high rates of vegetarianism within their social groups demonstrated reducing their meat consumption, and Stok et al. (2014) showed a reduction in meat consumption among

students who believed that their peers approved of vegetarianism, echoing research by Terry et al. (1999) who found that those who considered vegetarianism to be 'typical' within their social groups also reduced their own meat consumption.

The distinct study of descriptive and injunctive norms can help shape our understanding of which specific factors of social norms contribute to each behaviour. For example, Shultz et al. (2007) found that by making descriptive norms more salient and informing people of their neighbour's recycling behaviours, people demonstrated higher rates of recycling themselves. Descriptive social norms have also proved effective in promoting behaviours like energy conservation (Goldstein, Cialdini, & Griskevicius, 2008). On the other hand, injunctive norms also play an important role. For example, Smith and Louis (2008) found that highlighting the social approval of conserving water increased people's intent to conserve water themselves, and Rivis and Sheeran (2003) concluded in their meta-analysis of health and environmental behaviours that injunctive norms strongly aided recycling tendencies and energy reduction.

Further to this, Sparkman and Walton (2017) conducted research on the link between PEB and *dynamic* norms, i.e., how information about behaviours can *change* behaviour over time. They found that those who were informed about increasing 'trends' in vegetarianism demonstrated eating more meat-free meals over time, thus demonstrating the potential long-term link between social norms and behaviour. Taken together, the consideration of social norms has aided our understanding of how social influence can impact upon one's tendency to engage with PEB, and point to the possibility that the same pattern may exist in adopting *high-impact* PEBs and ultimately in adopting *radical* lifestyles.

Although vital to our understanding of PEB, the study of social norms has also faced criticism over the years. For example, Abrahamse et al. (2005) suggested that more work is needed to examine the *long-term* impacts of social norms, and how behaviour can *change* depending on how one's social circle changes over time. Furthermore, Tankard and Paluck (2016) stress that when studying behaviour through social norms, one's must consider the great impact that *context* may have, calling for more diverse contexts to be studied through this lens. There are also ethical concerns around studying social norms, such as considering how one consents to being considered within their social contexts, as stressed by Bicchieri and Dimant (2019). Nevertheless, social norms are a widely studied

phenomenon that have greatly shaped our understanding of how PEB is shaped, and undoubtedly contribute to many PEBs, hence why many behaviour models have incorporated a social component. There is also plenty of evidence to suggest that one's *socio-demographics* play an important role in predicting PEB, which leads us onto the next section of this review.

2.5.3 Socio-Demographics and PEB

Another important potential determinant of PEB lies in *Socio-Demographics* (SD), which includes one's age, gender, income, education, and background. One's environmental attitudes and behaviours have been found to be influenced by ones SDs, and Whitmarsh and O'Neill (2010) stressed the importance of considering each of these factors - and their intersectionality - when studying PEB, thus socio-demographics may also be an important area to study within this thesis when delving to understand what contributes to high-impact PEB and radical living. Furthermore, earlier works by Jones and Dunlap (1992) found that intersectional analysis provided more nuanced insights to potential *motivators* for PEBs across varying demographic groups, again making this an important area to research in this thesis. Explored separately, we can see how each socio-demographic has been shown to contribute to environmental concern and PEB below:

1. *Age*. Age can have an influence on not only the *type* of PEB engaged with but also the *extent* of environmental action taken. For example, Lee et al. (2015) found that those who are younger tend to show higher concern for climate change, and are more likely to believe that humans are the cause for climate change than older generations. Furthermore, Wray-Lake et al. (2010) found that those who are younger tend to be in greater support for environmental protection and policy, and tend to exhibit a greater sense of *urgency* to address climate change. When it comes to PEB, Larson et al. (2015) found that younger people engaged in higher rates of activism, such as attending environmental protests, and Lüdecke and von Nordheim (2020) suggested that the tendency for younger people to be more involved in environmental behaviours may be partially due to 'life-stage' factors, like being aware of climate change and its impacts.

2. *Gender*. Gender has long been considered to impact upon one's concern for the climate, with more women than men tending to demonstrate environmental concern. For example, McCright (2010) found women to be more likely to exhibit concern for environmental issues and in turn support more environmental policies across multiple cultures and contexts. Furthermore, Zelezny et al. (2000) suggested that the higher rates of environmental concern among women may be due to their typical traits of empathy and altruism. Nevertheless, women have also been found to demonstrate more PEB in some ways, such as recycling, reducing water usage, and carsharing (Brough et al., 2016), and exhibit more general PEBs at home than men (Hunter et al., 2004).

3. *Income*. Not only does income seem to have an impact on environmental concern, but it has also been found to affect one's ability to actually *engage* with some PEBs. For example, Fairbrother (2013) found that those with a higher income were better equipped to afford the oftentimes higher cost of some PEBs. Furthermore, Pampel (2014) found that those with a *lower* income must oftentimes consider more immediate personal issues, such as one's own economic needs, and that this prevented many from engaging with environmental issues, including a lack of seeking more pro-environmental alternatives when it comes to one's purchasing behaviours. Unsurprisingly, research by Martinsson et al. (2011) found that when those with lower income *do* engage with PEB, they are often more likely to change behaviours that result in saving money (such as reducing their heating and cooling at home, or opting for public transport over other travel methods) rather than spending money (such as converting one's home energy to a pro-environmental alternative by installing a heat-pump or buying an electric car, for example).

4. *Education*. As earlier noted, education about climate change and other environmental issues can lead to behaviour change. Franzen and Vogl (2013) found that those who are more informed about climate issues tend to have a higher level of education, and Kollmuss and Agyeman (2002) suggest that being more educated can lead to critical thinking and problem-solving that can *empower* individuals to adopt more PEBs. Furthermore, Gifford and Nilsson (2014) suggest that one's environmental values and personal responsibility around climate

change stems from education, particularly when one is taught about the long-term consequences of the declining environment.

5. *Culture*. Culture can greatly influence one's environmental attitudes and can often contribute to PEB. For example, Milfont and Schultz (2016) found that 'collectivist cultures' tended to depict higher environmental concern than 'individualist cultures'. Findings by Nguyen et al. (2016) support this notion, reporting that those with stronger community ties were more likely to demonstrate group-performed PEB, like community clean-ups, and Chwialkowska et al. (2020) showed that the narrative within culture can lead to greater support for environmental issues and even higher rates of PEB depending on how those behaviours align with their culture and values.

Thus, by considering socio-demographics both individually and collectively, we can see how PEB is driven depending on one's unique characteristics and background. One's socio-demographics has an undeniable impact upon their environmental concern and likelihood to engage with PEBs, and thus it may be equally vital to consider these aspects when striving to study *high-impact* lifestyles. It is also clear that while many of the approaches reported in this literature review so far have helped shape our understanding of how PEB is predicted, there remains a need to employ *multiple* standpoints in order to explore things more *inductively,* at least initially, since this is a novel area of study. As earlier mentioned, there is also a criticism that research has relied *too much* on theory-driven approaches and has largely focused on low-impact PEBs. This leads onto the next section which considers changing one's focus from looking only at specific theories and factors that might predict (often lower-impact) PEBs, to focusing on the things that might lead to *high-impact* PEB and living, the area that is of most vital importance when considering how to significantly reduce human beings' carbon emissions, particularly within capitalist societies in the Global North.

2.6 A Focus on High-Impact Behaviour

While acknowledging the interactions between individual and contextual factors in determining environmental behaviour (i.e., Steg et al., 2014), many have been criticized

for focusing largely on behaviours that are easy to change but have little impact (Gatersleben et al., 2002; Gardner & Stern, 1996), such as recycling or turning off lights more frequently, and little on PEBs that have a greater impact, like adopting low-carbon diets or avoiding air travel. It is well-documented, in fact, that the social sciences have often neglected to consider high-impact behaviours (see: Stern, 2000, 2011; Capstick, et al., 2014; Nielsen et al., 2021; Whitmarsh, 2009), and Stern (2011) argues that these behaviours are 'more important than others' (p. 303) to study when it comes to climate change mitigation.

In recognizing the relevance of *impact* in terms of PEB, Stern (2011) presents a framework for calculating the influence a PEB has on the environment, allowing researchers to consider behaviours which have greater impacts in terms of climate change. His equation, 'i = tpn', considers Impact (i) to be determined by three constructs: the *technical potential* (t) of a behaviour, i.e., how impactful the behaviour change would be for the environment if everyone were to change it, the *behavioural plasticity* of the action (p), signifying the proportion of people who could feasibly adopt the behaviour, and the *number of people* who adopt the behaviour (n). Taken together, an *impact-focused* research approach is formed, that identifies the PEBs that are more important to consider based on their environmental impact, or 'technical potential' (Stern, 2011). This approach is more focused on *impactful* PEBs and would therefore be less selective in identifying the determinants of behaviours before they have been explored. Again, this is another example of how researchers can help contribute to our understanding of PEB, and where their focus may be best placed - in the study of high-impact PEBs and lifestyles, as this thesis aims to do.

A case is therefore made for researchers to adopt a pragmatic approach, placing the environmental issue or behaviour – and the *behaver* - at the heart of the research and considering *high-impact* PEBs and those 'radical' lifestyles above others. Ultimately, researchers like Nielsen et al. (2021) envision that an impact-first approach could result in a greater incorporation of researchers in efforts within local, national and global environmental hardships. Importantly, the authors recognize the contributions of theory-driven approaches in behavioural research, and the advances this conventional stance has contributed to the study of climate change (e.g., Lange et al., 2021) yet emphasize the importance of studying *high-impact behaviours and behavers* in light of the present

urgency to address climate change and encourage effective, impactful reformations. While they acknowledge that research thus far has contributed greatly to our understanding of PEB, they emphasise the importance of taking an impact-first research approach, which breaks away from the conventional theory-driven approaches typically taken to study PEB and focuses on the behaviours and lifestyles that would have the *greatest impact* in tackling climate change.

High-impact PEBs have been the subject of numerous research studies, each exploring different aspects of how these behaviours can be encouraged and their effects on the environment. For example, Graça et al. (2019) explored motivations for adopting meat-free diets, finding that environmental concern predicted uptake, and Hoek et al. (2017) had similar findings that environmental concern led to general meat reduction, and that those who reduced meat consumption for environmental reasons were also more likely to adopt other PEBs. Furthermore, Armstrong et al. (2015) found that environmental concerns were a significant motivator for consumers who avoided buying new clothes entirely, with many participants expressing a preference for reducing waste and extending the life cycle of garments.

There has also been research on high-impact PEBs within the domain of travel. For example, Gössling et al. (2020) considered how 'flight shaming' impacted upon flying behaviours within Germany, finding that the increased trend of shaming those who fly due to its determinantal implications on the environment was causing a reduction in flying. They therefore found that social norms impacted upon reducing one's flying and seeking pro-environmental travel alternatives. Similarly, Cohen et al. (2019) researched attitudes and perceptions of flying among a population of tourists. They found that while a minority chose not to fly for environmental reasons, the majority were reluctant to avoid flying despite knowing that flying causes environmental harm. He and Thøgersen (2017) also studied attitudes of travel behaviours, but instead examined how they impacted upon car ownership in Denmark, finding that those with stronger pro-environmental attitudes were less likely to own a car.

While research about high-impact PEBs has strengthened our understanding about what might motivate more impactful change and has somewhat addressed researchers' calls for a focus on higher impact behaviours, one issue is that the majority of research within this field has explored *individual behaviours* rather than *lifestyles*. It has also largely

considered *behaviours* rather than *behavers.* In order to reach emission reduction targets, it is clear that large scale, *radical* change to the way we all live is required, and making individual changes regardless of the impact of those behaviours may not be enough. It is important to therefore consider how to encourage high-impact change across a number of individual PEBs; how to encourage the uptake of multiple high-impact PEBs that ultimately constitute the adoption of *radical pro-environmental lifestyles*. In aiming for this, it is therefore also important to consider the *behavers* - those behind these radical lifestyles, in attempting to identify how they became 'radical' or why they live this way. This is the purpose for this thesis, and what this research aims to address.

2.7 Synthesizing Previous Research & Identifying the 'Gaps'

This literature review has outlined many different facets of how PEB has been studied historically and has also identified many avenues for future research. It is important to consider how the typical theory-driven approach to studying PEB has shaped our understanding of PEB and its determinants; however, each of the theories referred in section 2.4 have faced their own criticisms. While many of the foundations of theories that examine PEB may be helpful to consider when taking an inductive approach, as this thesis begins with, none of the theories discussed in this review act as the *gold-standard* to understanding PEB. They have (i) mostly been applied to studying low-impact PEBs that are often easy to adopt, (ii) seldom been used to consider those who have adopted *multiple* behaviours, and (iii) neglected those groups *who have already* adapted their lifestyles to be as pro-environmental as possible – the *radicals*. These are the gaps that this thesis aims to address. If we know that there are many *potential* contributors to PEB, and that climate concern alone has not been sufficient in encouraging individuals to transform their lifestyles across the UK, then what are the missing pieces to solving the puzzle of how to encourage the rapid, *radical* change that the IPCC say is necessary to mitigate climate change? What are the important factors to consider to get people to change, and what can we learn from previous research and theory used to study PEB without remaining within the constraints of any one theory?

Collectively, this body of work calls for researchers in this area to *reconstruct* their traditional research approaches. Whilst most authors applaud the many successes of

research around PEB and within environmental psychology in general, tones of caution are echoed by many leaders of the field: (i) not to be married to conventional approaches and to consider *impact* as a priority, and (ii) to research what might lead to the uptake of multiple high-impact behaviours that constitute adopting radical *lifestyles*, rather than continuing to consider behaviours in isolation. We therefore need to understand what might be the drivers among those already living a radical lifestyle, and the barriers among those who are not - to see if we can learn about the factors that are *most important* to get people to change – so that we can leverage these factors and hopefully encourage the wider uptake of high-impact PEBs and, ultimately, impactful pro-environmental lifestyles that are radically less damaging to our planet than at present.

This thesis aims to take into consideration these many convictions. Environmental psychologists and scientists alike make a compelling case for the need for more (i) impact-focused, (ii) inductive *and* deductive, (iii) mixed methods' (quantitative *and* qualitative) research, which places the high-impact *behaviours*, *behavers* and *lifestyles* at the centre of the research and adopts concepts within various psychological theories only secondarily, where appropriate. Again, past research has highlighted the need to focus on lifestyle changes, as research around PEB has often considered only individual PEBs, and this is particularly important if we are to expect that widespread PEB change would have a meaningful impact on mitigating climate change - it is about many people making multiple high-impact changes, rather than many people making a few changes and having little impact.

In light of the need for more research on higher impact behaviours and to consider high-impact lifestyles as well as individual PEBs, the current thesis will be situated to explore 'radical' pro-environmental lifestyles, i.e., lifestyles that consist of multiple behaviours that have a high environmental impact and can be adopted on an individual level. Four core Research Questions (RQs) will map what needs to be learned throughout this thesis' studies: RQ1: What drives individuals to adopt radical pro-environmental lifestyles?; RQ2: What are the experiences of adopting radical pro-environmental lifestyles?; RQ3: What are the factors that prevent those who are highly concerned about climate change from living radical pro-environmental lifestyles?; and RQ4: What factors are important in predicting high-impact PEBs within a UK representative sample? It is by answering these questions that it may be revealed what key ingredients exist within radical living – to learn

how to encourage more people to adopt multiple high-impact PEBs, and effectively identify what specific factors might play the greatest role in preventing individuals from doing so within a UK context. The next section outlines the more specific rationale for this thesis.

2.8 Thesis Rationale & Plan

In summary, there have been great feats over the years in researching how to encourage PEB in order to tackle climate change. The study of environmentally driven behaviour has enriched our knowledge of *why* people might adopt PEBs in their lives with tackling climate change in mind, and prominent names within the field help light the way for psychologists and other researchers to contribute to research around climate change mitigation. However, taking together both the successes and shortcomings of previous approaches to psychological climate change research, there is scope to produce works that reveal *more* about behaviours that have greater environmental impacts, and that marry conventional and contemporary approaches to result in well-rounded studies. Much research around PEB has focused on adopting not only low-impact behaviours, but has also typically only considered individual behaviours, and little is known about what might lead someone to adopting multiple high-impact PEBs; what leads someone to adopting this 'radical' lifestyle? In the face of such catastrophic implications consequent to climate change, these are the lifestyles we need to research, to determine how to get individuals to adopt these lifestyles and contribute to climate change mitigation.

This thesis will tie together three distinct research studies to explore radical living and its determinants and aims to address many 'gaps' identified in previous research. The approach will delve beyond theory to consider things more holistically, and will begin inductively, then move towards a more deductive approach based on what was learned in the initial stages of this research. This thesis aims to follow the 'directive' put forth by contributors in the field, adopting an initial inductive approach by placing radical living and radicals themselves at the centre of the research and then incorporating a deductive approach to examine what is learned within other contexts. The unique contribution of this thesis is that it aims to look at *high-impact* behaviours, and for that matter, to consider what leads people to adopting *multiple* high-impact PEBs, i.e., *high-impact or 'radical' pro-*

environmental lifestyles. Both idiographic and nomothetic approaches will be used to incorporate mixed methods to explore radical pro-environmental living. Figure 2 illustrates the approach this thesis will take, and the aims of each research study.

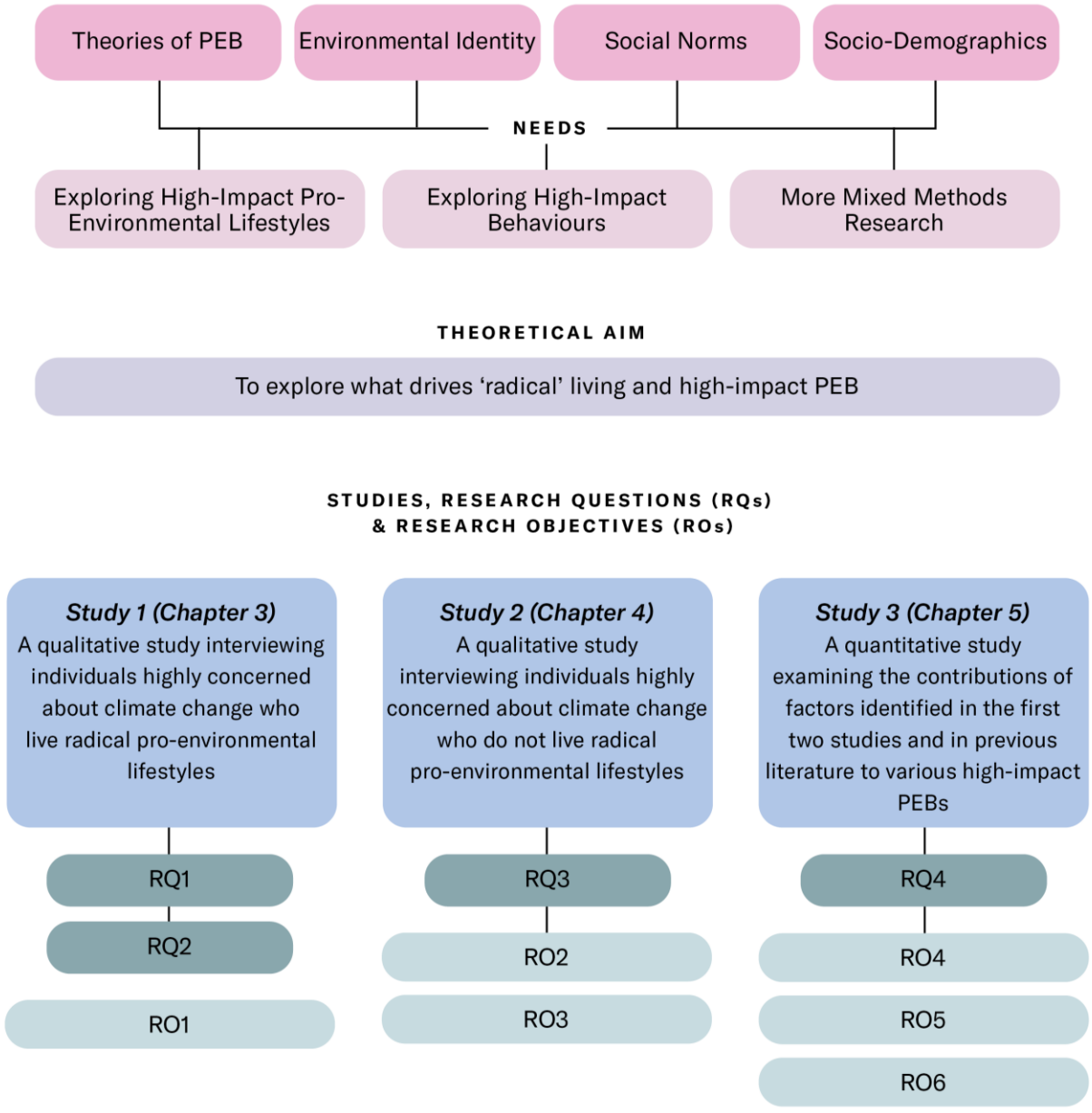

Figure 2 - The Development of the PhD, illustrating how past research has led to the theoretical aim and how three studies will address the research questions and objectives.

The next section outlines the Research Questions (RQs) and Research Objectives (ROs), and provides a research plan for how these will be addressed within this thesis.

2.9 Research Questions and Objectives

This research is designed to examine radical pro-environmental living and high-impact PEBs and their determinants across three research studies, and has the following layout, Research Questions (RQs), and Research Objectives (ROs):

i. An initial inductive, qualitative study (Study 1) will involve interviewing those who are highly concerned about climate change and are living radical pro-environmental lifestyles, with the goal of identifying any psychological, social, or contextual factors that might relate to radical living (in Chapter 3). The RQs and ROs for this chapter are as follows:

RQ1: What drives individuals to adopt radical pro-environmental lifestyles?

RQ2: What are the experiences of adopting radical pro-environmental lifestyles?

RO1: To qualitatively and inductively explore why people who are highly concerned about climate change have adopted radical pro-environmental lifestyles.

ii. Next, those who are highly concerned about climate change but *do not* live radical pro-environmental lifestyles will also be interviewed, in a deductive, qualitative study (Study 2) aiming to identify any potential barriers to radical living (in Chapter 4). The RQs and ROs for this chapter are as follows:

RQ3: What are the factors that prevent those who are highly concerned about climate change from living radical pro-environmental lifestyles?

RO2: To qualitatively and deductively explore why people who are highly concerned about climate change do not live radical pro-environmental lifestyles.

RO3: To identify any key factors that influences and prevents radical living among those who are highly concerned about climate change by comparing the results from these two studies.

iii. A final quantitative study (Study 3) shaped by the results from the qualitative data will tie the exploration together. This will be done by examining the similarities and differences between 'radicals' (in Chapter 3) and 'non-radicals' (in Chapter 4) to identify key factors that may contribute to (and prevent) radical living. These factors, in addition to some determinants suggested in previous literature to be relevant in understanding PEB, will be examined within secondary data from a nationally representative survey on PEB (in Chapter 5). The RQs and ROs for this chapter are as follows:

RQ4: What factors from the first two studies and from previous literature are important in understanding high-impact pro-environmental behaviour within a UK representative sample, and the uptake of multiple high-impact behaviours?

RO4: To assess what factors from the first two studies and from previous literature correlate with one another to show a relationship across diet, travel and material consumption.

RO5: To examine what factors from the first two studies and from previous literature might associate with high-impact pro-environmental behaviours across diet, travel and material consumption.

RO6: To assess what factors from the first two studies and from previous literature differentiates highly concerned individuals who do or do not engage in multiple high-impact pro-environmental behaviours.

This chapter contributes to addressing the theoretical aim of the PhD, which is '*to explore what drives 'radical' living and high-impact pro-environmental behaviour*', by outlining previous research and theory typically adopted to understanding PEB (in sections 2.2 - 2.6) and identifying gaps in the literature (in section 2.7) for future study within high-impact PEB and radical living. It provides the thesis rationale (in section 2.8) and lists the RQs and ROs of this thesis (in section 2.9). The next chapter (Chapter 3) reports on the first study of the thesis (Study 1); an inductive, qualitative study that involved interviewing those who are highly concerned about climate change and are living radical pro-environmental lifestyles, i.e., 'radicals'.

3 – Study 1: Interviews with 'Radicals'

3.1 Overview of Chapter

This chapter reports on the first study (Study 1) of this thesis and acts as the first part in understanding radical pro-environmental living. The overall aim of the first study is 'to qualitatively and inductively explore why people who are highly concerned about climate change have adopted radical pro-environmental lifestyles.' (Research Objective (RO)1, see section 2.9 for all ROs). More specifically, it aimed to answer Research Question (RQ)1: 'What drives individuals to adopt radical pro-environmental lifestyles?', and RQ2: 'What are the experiences of adopting radical pro-environmental lifestyles?' (see section 2.9 for all RQs). Figure 3 illustrates this explored interaction. The study involved fifteen qualitative semi-structured interviews with individuals who were specifically recruited based on radical lifestyles they had adopted.

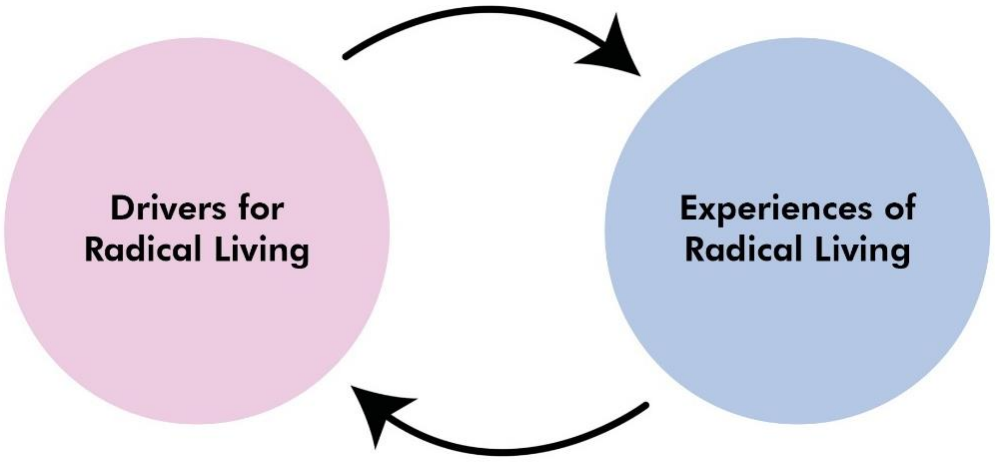

Figure 3 - The interrelationship between individuals' drivers for adopting radical pro-environmental lifestyles, and their experiences of living radical pro-environmental lifestyles.

This chapter is organised as follows. The next section (3.2) describes the methodology of the interview study, including the recruitment group. It includes a description of the procedure and the participants of the study, as well as how the data is analysed. Section

3.3 reports the results according to the aims of the study. The chapter will be concluded with a summary of the main findings (section 3.4).

3.2 Method

3.2.1 The Study

This study adopted a qualitative, inductive approach and involved fifteen semi-structured interviews (N = 15) with participants who reported living radical pro-environmental lifestyles. Semi-structured interviews are flexible in nature, allowing the participant to discuss their personal drivers and experiences without the constraints of closed-ended questions (Lewis-Beck et al. 2004), and some say that this approach encourages the production of the detailed data that are needed for explorative research (DiCicco-Bloom and Crabtree, 2006). The interview schedule was designed according to the guidelines of Smith and Osborn (2015), who provide a general overview for how to structure an interview schedule that is not too specific or restrictive for the participant. The schedule was structured to encourage participants to ease into the interview at first and shaped to gradually introduce more pertinent questions to the research, which is typical of qualitative approaches (Eide & Kahn 2008).

The schedule included three key sections: "Introductory Questions", "Motivations for Radical Living", and "Experiences of Radical Living", as well as some closing questions. The interviews began with several introductory questions (such as "Could you tell me a little bit about yourself?"), and then honed in on more specific aspects of the radical changes made by the interviewees (such as "Could you tell me about some of the things that you do, or have done, to reduce your carbon footprint?"). Later sections of the interview schedule included more specific questions that targeted participants' potential motivations for adopting these lifestyles (such as "Thinking back to when you made any of these changes, is there anything that you can recall that led you to making the decision that you were going to make a change?"), and their experiences of living these lifestyles (such as "What is it like to have made multiple environmental changes in your life?). Various prompts and probes were used throughout the interviews (see Appendix A.1 for a copy of the interview schedule). The research received ethical approval from Cardiff

University, School of Psychology Research Ethics Committee (project number EC.21.04.20.6340).

3.2.2 Participants

The study focused specifically on those who fit the criteria of having adopted 'radical' lifestyles for climate change reasons. A 'snowball sampling' technique was used as a method of recruitment (Biggerstaff, 2012). This involved asking colleagues who had connections with some environmental activism groups to spread the word about the study, and once connections were made with the first few respondents, other participants were referred by them. Prospective participants were invited to get in touch with the researcher if they wished to find out more about the study. Any interested participants who made contact (18 in total) were sent an information sheet via email.

To determine whether interested participants met the criteria of adopting radical lifestyles due to a concern for climate change, they were each asked to list some of the things that they were doing for the environment. Those who were invited for interview first indicated though email adopting a number of high-impact PEBs that seemed to meet the definition of radical living, which is "intentional, high-impact pro-environmental living" (see section 1.6, where the definition of radical pro-environmental living is outlined). Behaviours within this lifestyle, for example, included things like having a meat-free diet, not owning a car, and refusing to fly, among many others. Although each participant listed these behaviours in email before an interview was arranged, one of the opening questions of each interview asked participants to again discuss the things that they do to be more pro-environmental, to ensure that they had each adopted high-impact PEBs across multiple domains that would fit the definition of a *lifestyle* change (rather than making only a few big changes, or lots of small changes).

Preceding the interview, participants were sent a link to an online consent form and taken through the process of informed consent. Participants had to be 18 years or over and resident in the UK. Overall, seventeen participants were interviewed. However, two participants were excluded from the analyses, as it became clear during the interviews that the high-impact PEBs they adopted were few, and not driven by a concern for climate change, and a key point of interest within the greater research was why those extremely

concerned about climate change had and had not adopted radical lifestyles. Participants were either male or female, ranged from 27 to 62 years of age, and all lived in locations across the United Kingdom. Participants ranged from being full-time students to business owners to retirees. Table 1 outlines the profiles of participants.

Table 1 - Participant profiles including their resident city, age, gender, ethnic identity, self-identified disability status, and employment status

City	Age	Gender	Ethnic Identity	Self-Identified as Disabled	Employment Status
Suffolk, England	43	Female	White British	No	Employed
Stroud, England	62	Female	White British	No	Retired
Newcastle, England	29	Male	White British	No	Employed
Cardiff, Wales	62	Female	White British	Yes	Retired
Bristol, England	32	Female	White British	No	Employed
Wiltshire, England	49	Male	White British	No	Employed
Norfolk, England	27	Female	White British	No	Student
Norwich, England	28	Male	White British	No	Employed
Cambridge, England	28	Female	White British	No	Employed
Cornwall, England	43	Female	White British	No	Employed
Cardiff, Wales	27	Male	White British	No	Employed
Norwich, England	35	Male	White British	No	Employed
Exeter, England	47	Female	White British	No	Employed
Cardiff, Wales	53	Female	White British	No	Employed
Shefield, England	31	Female	White British	No	Employed

3.2.3 Sample Size Criteria

It was determined that the data corpus of the final sample (n=15) sufficiently satisfied the criterion of 'information power' (Malterud et al., 2016). The concept of 'information power' is a strategy for determining adequate sample sizes in qualitative research based on the notion that the more information power the sample holds, the smaller the sample size required. This approach emphasizes the *richness* of information rather than a predetermined number of participants. This was held in mind throughout the interview process to ensure the data were rich and detailed enough by the time fifteen participants were interviewed. A satisfactory level of information power was reached, as since this study was inductive, there was already so much data after fifteen interviews to analyse, and the overcollection of data particularly in qualitative works risks *muddying* the focus of the research and may result in overlooking some important themes (Malterud et al., 2016). The research did not use 'saturation' as a criterion to stop further data collection (i.e., the point where additional data do not lead to any new emergent themes), as some say that saturation can only be determined at the *analysis* stage rather than during data collection (Braun & Clarke., 2021).

3.2.4 Procedure

Following ethical approval, two pilot interviews were conducted. The purpose of the pilot interviews was to ensure that questions were coherent and relevant for exploring radical pro-environmental living. One pilot participant was a co-worker at Cardiff University's Centre for Climate Change and Social Transformations ('CAST') and indicated practicing a number of high-impact PEBs, so was deemed appropriate for the pilot. The other pilot participant was also from CAST, but was not an immediate co-worker, and also reported practicing many higher impact PEBs. The first author made only minor amendments to the interview schedule (mainly omitting questions that were already covered and may be repetitive) and data collection then proceeded.

Prospective participants were sent the researcher's university email address and asked to get in contact if they wished to find out more about the study. A study information sheet was emailed to them (again, to those who fit the criteria of adopting multiple high-impact

PEBs), and an interview was scheduled if they were happy to proceed. Appendix A.2 includes a copy of the information sheet. Preceding the interview, participants were sent a link via email to a consent form embedded within Qualtrics XM (an online survey platform, see: Qualtrics.com) and were asked to enter their Participant ID (enclosed within the same email) and type their full name to give consent, and an interview was arranged.

At the beginning of each interview, the first author went through the consent form to ensure participants were well informed about study procedures and answered any questions participants had. All interviews took place via Zoom in line with Covid-19 guidelines and restrictions in Summer, 2021. At the beginning of each interview, the researcher ensured participants were informed about the study's content and procedures. All interviews were audio recorded using a recording device and Otter.ai, an online service that offers audio recording and transcription (Otter.ai, 2022). The automatic transcriptions were subsequently manually checked against the original audio recordings for accuracy and amended where necessary. To protect anonymity, pseudonyms were assigned to each participant. The transcripts were stored on a password-protected PC. Each participant was compensated in the amount of a £5 donation to World Land Trust, which funds the planting and protection of a tree (worldlandtrust.org/appeals/plant-a-tree). The interviews lasted between 30 and 90 minutes, with an average of 60.38 minutes. Participants were asked if they had any questions at the end of each interview and were then sent a study debrief sheet. Appendix A.3 provides a copy of the study debrief sheet.

3.2.5 Method of Analysis

The transcripts were uploaded to NVivo, a qualitative analysis platform (QSR International Pty Ltd., 2020) and analysed using Thematic Analysis (TA). TA is a widely utilized qualitative data analysis tool which involves interviewing individuals or groups and analysing transcripts to identify ‘themes’ within a data corpus (Braun & Clarke, 2006). It is flexible in nature and is therefore a good fit for both inductive and deductive research approaches. TA's flexibility is one of its most significant strengths. It can be used within various theoretical frameworks and epistemologies, ranging from

essentialist/realist approaches (that seek to report experiences, meanings, and the reality of participants) to constructionist approaches (that examine the ways in which events, realities, meanings, and experiences are the effects of a range of discourses operating within society) (Braun & Clarke, 2006). This flexibility allows TA to be applied to a wide range of research questions and data types, making it a versatile tool for analysing qualitative data. Braun and Clarke (2006) published a user-friendly 'guide' on using TA, which outlines its applicability and sets forth step-by-step instructions for how to conduct the analysis. Their 'six-phase' approach for applying TA in psychological research was followed here, which in summary involves: (i) familiarizing with the data, (ii) generating initial codes, (iii) searching for themes, (iv) reviewing themes, (v) defining and naming themes, and finally, (vi) producing the report.

After familiarising with the data, the researcher generated the initial 'codes' for the entire dataset. The initial codes were used to generate a *thematic map* of the initial candidate themes and subthemes. The thematic map was subsequently revised by reorganising the identified themes and subthemes, using Patton's (1990) 'dual criteria' for judging categories to ensure that data within each theme cohered together meaningfully with clear distinctions between themes. Once all themes were defined and refined, a final thematic map was generated (Braun & Clarke, 2006, p. 92). The results section (3.3) summarises the final thematic map. Since qualitative methods like TA have a flexible nature, researchers are encouraged to make a number of decisions at the beginning of the research, helping to guide objectives and aims and presenting transparency to the reader (Braun & Clarke, 2006). It is further argued that transparency of analytic approaches and reflexivity of the researcher provides a level of 'validity' not commonly discussed within qualitative research (Braun & Clarke, 2006). These 'decisions' are discussed below in the context of this study:

a. The first of these considerations is whether to adopt an inductive (bottom-up) or deductive/theoretical (top-down) approach. Inductive approaches take a broader, more explorative viewpoint, whereas deductive approaches are commonly based on specificity or are driven by theory. Given both the study's explorative goals and the need for research which explores high-impact behaviours, an *inductive* approach was adopted. This meant that the study was focused on the discovery of new phenomena rather than testing a particular hypothesis. That having been

said, Braun and Clarke (2012) stress that coding and analysis often include a combination of *both* approaches. They say that while defining one's research as either inductive or deductive is important, it may not be possible to be *purely* inductive, as researchers will always have a level of bias during data analysis (Braun & Clarke, 2012, p. 59). Rather, the decision between the two approaches signals an orientation that prioritizes either data-based meaning or theory-based meaning. So, to be clear, the approach taken in this study was *data-based* rather than theory-based. In other words, the research is guided by the data, forming ideas based on the information it provides. This approach aligns with the principles of Grounded Theory, which, in its pure form, posits that the researcher begins without preconceived notions and constructs understanding entirely from the data, as much as this is humanly possible. Of course, one place in which there was a deductive element was in devising the interview schedule, where the questions written for data collection would inevitably guide the interview, and this, therefore, results in some 'top-down' influence; but when it came specifically to the *analysis* and *type* of TA constructed, an inductive approach was sought.

b. Secondly, the epistemology of this research (i.e., how meaning is theorised within the data) is situated within an essentialist/realist paradigm. In essence, this means that motivations, experience, and meaning were theorized in a straightforward way via the medium of language (Braun & Clarke, 2006; Potter & Wetherell, 1987; Widdicombe & Wooffitt, 1995), and while interpretation by the analyst is inevitable within any thematic analysis (Barun & Clarke, 2006), it did not go beyond what was actually spoken by participants.

c. In line with this epistemology, the thematic analysis was conducted using a 'semantic' approach, whereby themes were identified within the explicit or 'surface meanings' of the data (Braun & Clarke, 2006). This method focuses on the clear, direct content of the data, ensuring that the themes accurately reflect what participants explicitly stated. Unlike a 'latent' approach, which seeks to uncover underlying meanings, assumptions, or ideologies beneath the spoken words, the semantic approach prioritizes the overt and manifest content of the interviews. By adhering to this method, the analysis remains as faithful as possible to the participants' expressed views and experiences, aiming to provide a transparent and straightforward interpretation of the data.

Collectively, these decisions shaped the *type* of thematic analysis that was undertaken. Appendix A.4 includes a complete illustration of how the analysis took place and figures of each stage of analysis preceding the final thematic map displayed in the Results section (3.3) to follow.

3.3 Results

3.3.1 Overview of Themes

A thematic analysis identified four distinct themes: (i) '*Radical Pro-Environmental Living' (section 3.3.2)*, covering the *radical actions* that participants take in their own lives, the barriers and enablers to these behaviours such as *convenience* & *finance*, and other subthemes that encapsulate living a radical pro-environmental lifestyle, including *privilege* and the *need for systemic change*; (ii) '*Motivators for Radical Living*' (section 3.3.3), which provides an overview of what drives participants to adopt radical lifestyles, including *feelings of environmental guilt*, participants' *senses of environmental responsibility*, and *considering one's impact as a driving force for radical living*; (iii) '*Experiences of Living a Radical Pro-Environmental Lifestyle*' (section 3.3.4), relating to the various implications of making a radical lifestyle change, including *making sacrifices to live a radical lifestyle*, experiencing *climate change as a personal burden*, the *social implications of radical living*, and the *positive aspects of radical living*; and (iv) '*Who is a 'Radical Pro-Environmentalist'?*' (section 3.3.5), which illustrates participants' *feelings of empowerment* and how they discuss their *identity*, in addition to how participants themselves *define 'radical living'*. Figure 4 shows the final thematic map which shows the themes and subthemes.

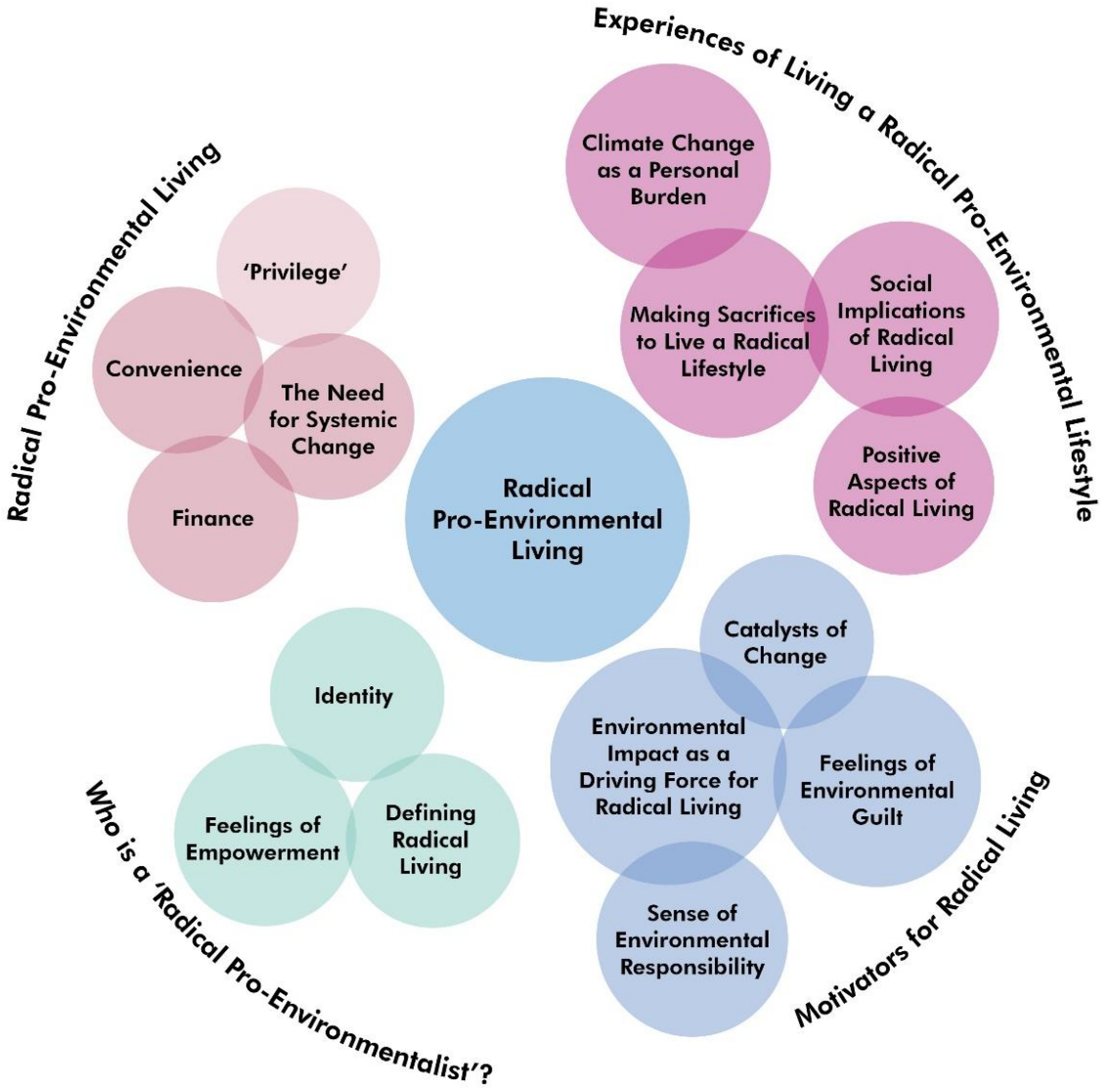

Figure 4 - Final Thematic Map comprising four themes and subthemes

As illustrated in Figure 4, there is oftentimes overlap between subthemes, illustrating the interrelated nature of these factors. For instance, within the 'Radical Pro-Environmental Living' theme, *convenience* and *finance* are interconnected. This is because in many instances participants discussed some PEBs as being sometimes inconvenience and costly; for example, when some participants discuss public transport, they discuss its unreliability and expense. Additionally, *the need for systemic change* is linked to *convenience*, *finance*, and *privilege*. This is because many participants perceived that the current 'system' in which they live places many people in a position of *privilege*, affecting the *convenience* of their actions and diminishing the impact of *financial* barriers on aspects of radical living. This interrelation is explored further in the narrated analysis

within each theme. Although subthemes within each overarching theme are discussed separately, it becomes evident that many are interconnected and influence one another, as discussed throughout the results that follow.

3.3.2 Theme 1: Radical Pro-Environmental Living

The first theme identified in the data relates to the radical actions themselves that individuals within the sample have taken. Each participant indicated adopting at least several high-impact PEBs; so, although some of the individual behaviours that follow may not constitute 'radical' actions in themselves, it is the cumulative effect of these behaviours that qualifies these participants as having adopted radical *lifestyle*s. Behaviours were varied, from making changes such as adopting a meat-free diet to not owning a car, not flying, and refusing to buy new material goods/items (such as clothing or furniture), for example.

This theme has four subthemes, '*convenience*, '*finance*', '*the need for systemic change*', and '*privilege*', each covering a distinct aspect of radical pro-environmental living. Each are discussed below and illustrated with extracts from the interviews.

The first subtheme covers '*convenience*' when it comes to radical living. This relates to the (in)convenience of many behaviours which participants have adopted within their radical lifestyles, and how this has affected their ability to take radical action. It became clear from the data that when it comes to convenience, and particularly the availability and ease of some PEBs, there were a number of barriers and enablers to adopting high-impact behaviours and radical lifestyles in general. For example, Tony discusses how the location in which he lives enables his ability to completely avoid buying plastic when shopping:

> *"We have two shops that are almost entirely… intention on unpackaged goods, you go there with candy containers, or they give you paper bags and stuff". (Tony)*

Although Tony has access to a number of other shops which don't offer unpackaged goods, Tony specifically visits these eco-friendlier alternatives. Having nearby amenities that enable pro-environmental change also arose in other aspects of being more environmentally friendly:

"I don't have a car, and I refuse to buy one, so I walk and cycle [to] everything and get the bus to work, or the train". "I don't live in a city, but I live in Norwich, so it's a lot easier than many other places to get by without having a car". (Abby)

Although it is clear that Abby has made the intentional decision not to buy a car, the public transport infrastructure in the location in which she resides (and cyclability of that area) has clearly been of aid in opting for eco-friendlier travel alternatives to owning a car.

Having local infrastructure such as effective public transport links (and/or living in a location where other modes of transport like walking or cycling are doable and safe) may act as enablers to pro-environmental change. On the hand, some participants discussed their frustrations with having to rely on car use in areas where public transport links are *not* available. Importantly, despite the fact that all participants have adopted high-impact PEBs, most participants flagged more contextual barriers than enablers when it came to adopting radical lifestyles, and the data reinforce that adopting a radical lifestyle does require a great level of both *intent* and *effort*.

The second subtheme covers aspects of '*finance*' when it comes to radical living. This relates to how perceived cost plays into adopting radical lifestyles. The majority of participants among this sample discussed how radical living can be costly, and that many PEBs themselves can be expensive to adopt. However, many noted a willingness to take action regardless of this. Here, some participants discuss the financial implications of some specific PEBs and their decision-making:

"Well, I have insulated my house as much as I can, without bankrupting myself". (Nick)

"The only time I wanted to go away, I was able to get the Eurostar, and it was like an extra hundred quid". (Sophie)

"I feel like lots of the choices which are greener cost more, they're harder, they take up more of your time, you've got to have had time to engage with the concept in the first place, and I don't know how much all of those things are equally available to the whole population". (Keira)

Several participants stressed that finances can act as a barrier to taking radical action. Although they all live radical lifestyles, there was a sense that without the burden of cost,

each participant would likely have made even more PEB changes than they already had. From the heating and cooling of their homes to how they travel, it seems that living a radical pro-environmental lifestyle can be more costly, and as much as participants are committed to making further radical changes in many aspects of their lives, they are oftentimes met with financial limitations in taking even further radical action.

The third subtheme covers aspects of '*the need for systemic change*' when it comes to radical living. This relates to how radical living fits in with wider society in the UK, and how perceived systemic barriers has oftentimes prevented the ease of radical living or the adoption of some PEBs for these participants. Although participants spoke about their individual tendencies to adopt radical lifestyles that often go *against* systemic social norms, the need for systemic change was echoed across the sample. This is illustrated by Stephen in the following extract when he discusses contextual barriers he has faced to making pro-environmental changes in his own home:

"It's an old house, the installation has practically no existence, and we have been insulating it, we've been modifying as we go, but it's grade 2 listed, it's an old farm on a hilltop in Wiltshire, so for example, we can't put double glazing in, which is really irritating because of the planning restrictions". (Stephen)

Although his willingness to make further changes is implied, Stephen discusses the ways in which he is limited to live more pro-environmentally due to top-down restrictions, highlighting the role of 'the system' in preventing some further pro-environmental lifestyle changes. Keira speaks to similar limitations she faces due to the current system in which we live, and discusses how she believes these limitations impact upon social norms in the UK:

"I can envision a better life, a better way for us all to live, but I don't think they're changes I can make on my own. I think that I can really envisage a future in which I don't need to own a car, because they've fixed public transport and made it fast and frequent, and possibly free, that would be an amazing change that would make so much difference to so many people". (Keira)

Again, it is clear that in spite of participants' already radical commitments to adopting pro-environmental lifestyles, they still face restrictions which limit them in many ways to

adopting more PEBs and making *even more* lifestyle transitions, as suggested here by Keira when she discusses travel.

What differentiates this sample of 'radicals' from the 'typical' person in society is that they adopt many behaviours *in spite of* the systemic barriers they face. They also note ways in which they envision an easier way to adopt high-impact PEBs, and sometimes discuss the ways that local infrastructure has actually enabled their radical lifestyles to some extent, such as by having effective transportation systems.

The fourth subtheme covers aspects of '*privilege'* when it comes to radical living. This relates to how participants felt that they were in a position of *privilege* when discussing living radical lifestyles, and their adoption of many PEBs, and how they felt that many people who were not in this position of privilege may struggle to adopt radical lifestyles or high-impact PEBs. Here, Tom discusses how being in a position of privilege can enable living a radical lifestyle:

"I find myself in a relatively privileged position of being able to gear nearly everything I do around worries about the environment". (Tom)

Multiple aspects encompassed how participants discussed 'privilege', from one's financial position and proximity to enabling systems, to one's race and gender, and it became clear that some consider themselves more *able* than others to live radical lifestyles. There was a consistent acknowledgement that not everyone living within our 'system' is able to adopt radical lifestyles or high-impact PEBs, and the majority of participants within this sample noted that their position of fortune (i.e., wealth, not luck) allows them to adopt more difficult PEBs. This thought process appeared to motivate some participants to do their part to adopt PEBs for the environment. In some cases, feeling that one was in a position of privilege seemed to be interconnected with one's engagement with environmental activism. Most participants noted an involvement in eco-activism in some shape or form, be the action of attending or co-organizing eco-protests, signing petitions and writing letters to party leaders, or taking the lead on local recycling initiatives, for example, activism is something that seemed among this sample to be part of the 'radical' lifestyle. However, what was prevalent among a significant portion of the sample was one's limitations or concerns around involvement in activist *protest*. George discusses his experiences and perceptions of activism with the group *Extinction Rebellion (XR)*:

"Most people can't make these choices, it's like with XR and people getting arrested". (George)

"You can't risk getting arrested if you're young, if you're black, if you're gay, if you're disabled, it's not an option to go and get arrested, so it's a massively privileged thing". (George)

Several participants echoed this view, some concerned about how their involvement in environmental protest with the risk of arrest/criminal prosecution could affect their livelihoods:

"What I can do in terms of being an educator, that could be destroyed by getting myself arrested, in prison". (Jen)

"Being a solicitor, and very subject to people's perception of me, and what's expected of me, as well as you know essentially not wanting to get in trouble with the law. Obviously, because that would be a slight issue for me, (umm) that I feel kind of limits what I would be willing to do". (Anna)

While activism may indeed be a facet of environmental change for many, this data speaks to the many complications (or again, barriers) one might face when wanting to involve themselves in climate protest. As noted above, while many participants *are* involved in various types of environmental activist protest, several participants who do not involve themselves indicated a *willingness* for involvement, but it became clear that not all are in a position to be fully committed to engagement in public displays; not all are in this position of 'privilege' that is discussed that enables this behaviour and way of life. Thus, a picture is painted of how having a sense of privilege can both enable and prevent one from involving themselves in activism as different levels. On the one hand, some participants felt that their perceived privilege meant they should use it to take radical action, whereas on the other hand, some participants felt that they lacked the privilege to ignore the potential impact of taking radical action on their livelihoods.

In summary, there are a number of contributing factors to adopting radical lifestyles and high-impact PEBs. It is clear that while a lengthy list of contributing extrinsic/contextual factors affect how *enabled* participants are in adopting many high-impact PEBs, those who have adopted radical lifestyles already make the effort to overcome barriers such as

inconvenience and higher cost. Those who live radical lifestyles may face individual financial implications and location-specific, infrastructural barriers, but they also discuss the impact of how they perceive the greater system in which they live, and it becomes clear that one's individual ability to adopt radical lifestyles may not always under one's own perceived control. In spite of this, participants among this sample discussed a continued motivation to live radical lifestyles, and this leads onto the second theme which delves into the *motivators for radical living* more specifically.

3.3.3 Theme 2: Motivators for Radical Living

The second theme that arose surrounds the potential 'driving forces' behind adopting a radical lifestyle, i.e., *why* have participants adopted this way of life? This theme has four contributing subthemes, '*feelings of environmental guilt', 'sense of environmental responsibility', 'environmental impact as a driving force for radical living'*, and *'catalysts of change'*, each covering a distinct aspect of what might motivate individuals to live radical lifestyles. Each are discussed below and illustrated with extracts from the interviews.

The first subtheme covers '*feelings of environmental guilt*' felt be participants when they think about the role they play in climate change. This was spoken about by many participants, and it seemed to be particularly motivating for adopting radical lifestyles, and for avoiding behaviours that could be damaging to the environment or are less pro-environmental. Some extracts highlight this:

"It's almost like Catholic guilt, even though I'm not a person who has a religious background, but people will refer to that, where like I get an amount of pleasure out of doing the thing that I think is right, even if it's making me feel like I missed something that I might have liked". (Camilla)

"A lot of the time I think I wish I could just do that, but then no, I would feel guilty afterwards, so I don't do it". (Nick)

"I just can't bear the guilt of knowing my frivolity, my new jeans has made anyone or anything worse off, let alone, you know, in slave conditions, or going extinct if it's an animal or whatever and, I think, I think that's just my particular motivation". (Emma)

"Kind of trying not to feel too guilty all the time about like, yeah, and worrying about it, so yeah climate crisis and anxiety is something that's, yeah, there daily for me. So therefore, impacts on all of my decisions". (Jen)

This salient theme of feeling environmentally *guilty* about one's contribution to climate change or damage to the natural environment was a clear motivator among this sample of radicals. It speaks to the self-awareness that radicals may have about how each individual plays a contributing role to climate change and environmental harm, and how adopting radical lifestyles and high-impact PEBs can help avoid one's damaging contributions to the planet, thus potentially reducing one's feelings of environmental guilt. What separates those who have adopted radical lifestyles might therefore be this negative emotional tie to behaviours that carry an environmental burden, and these extracts suggest that recognizing this, and perceiving one's own contributions to harming the planet, may be enough of a deterrent from harming actions, and enough of a motivator for altruistic, high-impact actions.

The second subtheme covers aspects of the '*sense of environmental responsibility*' felt by many participants among this sample. This relates to how radical living for this group seems to be motivated in part by feeling a 'duty' to take action to be more pro-environmental, as illustrated in the following extracts:

"We've gotta think about these things, we know about this stuff, so we have a duty, you know, with knowledge comes responsibility". (Nick)

"I have a responsibility to still be trying to improve what I'm doing". (Jen)

"I feel like it's kind of my duty to like do the best I can, because I think that the more work that I can do, the more I can then support other people, you know, and habitats and everything". (Susie)

Participants shared this sense of responsibility to take action for the environment, and it was clear across the sample that this was in part a motivator that sustains their choices to continue living radical lifestyles. Paired with the previous subtheme of experiencing 'feelings of environmental guilt', this speaks to how emotion can play a role in motivating radicals to continue striving to live pro-environmentally in each way that they feel able to.

The third subtheme covers '*considering one's environmental impact as a driving force for radical living*'. This relates to how radical living is for this group in part driven by thinking about how one's actions impact upon the environment, which may include human and animal welfare, or the impact upon the natural environment. While it was clear that participants were generally motivated to be as pro-environmental as possible, the specific reasons for wanting to impactfully reduce their impact varied, as illustrated by the following extracts:

"I do get a bit emotional when I'm out in nature and I look at you know all of the innocent animals that are just like living their lives and thinking like, I'm so sorry that we've done this to you". (Sophie)

"As long as I do something that makes life better for someone, or something, or the planet, that's fine with me, as long as I'm doing something that makes it better for someone or something". (Anna)

While the majority of participants shared that concern for the natural environment was the predominant reason for living radical lifestyles, most participants generally acknowledged the interconnection between planet, people, and wildlife. It seemed that *any* negative impacts that each participant felt that their lives were having upon the planet were cause for concern enough among this group of radicals to adopt radical lifestyles and high-impact PEBs wherever they felt possible.

The fourth subtheme identified some potential '*catalysts of change*' for living radical lifestyles. This relates to some other potential motivators that led participants to radical living. All participants discussed the adoption of their PEBs as being *gradual* rather than pinpointing a *specific* 'moment of change', as illustrated by the following extracts:

"All of the little decisions they all happen. They don't all happen at once they you get used to one new habit, and then when you're ready to do a new habit, you can like take on another one. I can't think, I think it's as soon as I learn about something being really bad. It's at that moment, I sort of recognised that I need to change that and the next step is actually changing it. So, I can't remember when I decided to stop flying I think it was quite soon after I found out how bad flying was because I had no idea. And, yeah, I just can't pinpoint them as soon as I find out something's really dreadful, I'll just look go could I give that thing up, and then I weight it up". (Sophie)

"I don't think I can pin it on a particular moment, I think it's been more acquisition of knowledge and awareness". (Stephen)

"I think just a kind of slow dawning realization, I mean there was no Big Bang moment where I suddenly thought, I'm going to change my life". (Nick)

Some participants discussed making changes to a radical way of living as something that happens piece-by-piece, a *gradual* change, and many mentioned that it was learning about how they might be having a negative impact upon the environment and contributing to climate change that motivated them to change their behaviours to be more pro-environmental where they felt it was possible. For others, the reasons behind their change was inspired by a loss of faith that the government will handle the issue of climate change from a top-down approach, and a change to living radically may have happened more quickly, as illustrated by the following extracts:

"I sort of knew about climate change, but I thought that the government would handle it. I sort of trusted that they would sort it out. And then I went to a heading for extinction talk in February 2019 sort of realised that they haven't got a plan to sort it out at all. And that was kind of the sort of light switch moment". (Sophie)

Raised awareness seemingly played a big role for many participants in making radical changes. While few participants could identify a specific *moment* of change, the above extracts illustrate that the acquisition of knowledge about individual behaviours that contribute to climate change or environmental harm played a key role in their decisions to change the way they lived and adopt a radical lifestyle for many. For others, losing faith that leaders would handle environmental issues enough that radical change may not be necessary on an individual level seemed to spark their lifestyle adaptions. Others indicated that they felt almost a compulsion to change, as noted here by Keira:

"I can't not do it. I can't not do, whatever can be done, 'cause the stakes are so ridiculously high". (Keira)

Thus, whether radicals underwent a conscious and planned gradual change or simply started to make multiple high-impact and small PEBs that eventually *led* to a lifestyle change at a *radical* level, it is clear that a lack of faith in leaders and a gained awareness of one's impact upon the planet may have acted as catalysts to adopting radical lifestyles

among this sample. Participants shared their feelings of environmental guilt when it comes to considering their impact on the environment, and this leads onto the third theme which highlights some of the *experiences of living a radical pro-environmental lifestyle*.

3.3.4 Theme 3: Experiences of Living a Radical Pro-Environmental Lifestyle

The third theme outlines the various 'experiences of living a radical pro-environmental lifestyle'. Within this complex and multi-faceted theme, there were four contributing subthemes, '*making sacrifices to live a radical lifestyle'*, '*climate change as a personal burden*', '*social implications of radical living'*, and '*positive aspects of radical living*', each covering a distinct aspect of what it's like to live a radical lifestyle. Each are discussed below and illustrated with extracts from the interviews.

The first subtheme covers aspects of '*making sacrifices to live a radical lifestyle'*. This relates to how radical living sometimes entails giving up some of the less environmentally friendly behaviours that participants may have previously done, or in some cases forsaking other things in life in order to live a radical pro-environmental lifestyle. Throughout the interview process, many participants spoke about the various ways in which radical living entailed an element of *sacrifice* in one way or another. Whether this was through simply giving up some environmentally-harmful behaviours like eating meat, or in more extreme ways like deciding not to have children due to endeavouring to live as pro-environmentally as possible, adopting a radical lifestyle undoubtedly entailed some forsaking, as illustrated by the following extracts:

"I don't buy technology, I don't have the latest gadgets and so, to show you this is my mobile phone, I use so you know, that is, sacrifices that I can make". (Nick)

"Thinking about things I've given up, my choice not to have children is also motivated by environmental factors". (Jen)

"I mean, I am jealous of people that get to go on holiday, envious is maybe the better word, you know, flying all over the place". (Tara)

Be it deciding not to have children for environmental reasons or refraining from travel for leisure, it was clear across the sample that there were many ways in which participants put striving to reduce their carbon footprints before their own hedonistic desires. As mentioned in the previous theme, change for the most part was gradual, but nevertheless the decisions to give up many behaviours that participants deemed as environmentally damaging were discussed as intentional and ongoing.

The second subtheme covers aspects of '*climate change as a personal burden*' felt by many participants when it comes to radical living. This relates to how radical living can entail thinking about climate change very frequently, and for some participants, 'constantly'. It seems that for many, concern for the climate was something that was often in one's internal narrative continuously, as illustrated by the following extracts:

"You know there are days that I wish that I didn't know all this stuff, so that I could just, uhm, forget about it for a while". (Lesley)

"It's kind of like a cross to bear all the time, really, so I'm always thinking about, what do I do personally". (Nick)

"It's just something that's in the back of my mind all the time, so I think it affects all of my decisions and judgments". (Jen)

"I think not living with a sense of a train bearing down on you is probably quite nice. Not turning every tiny decision over in your head over and over again, trying to work out how do I best achieve this thing, how can I live as minimally as possible, how do I consume less, how do I make my impact lesser". (Keira)

It seemed that, among this sample, living a radical lifestyle not only entailed giving up some behaviours or hedonistic desires, but also brought with it a continuous consideration of how one's own behaviour could potentially impact upon the environment, and on climate change. Many participants spoke of their radical pro-environmental decision-making as *ever-present*, with multiple participants likening this way of life to 'bearing the cross'. Some also discussed how this ongoing personal burden can be overwhelming at times, as it is something they feel when making 'every tiny decision' about how to behave.

The third subtheme covers aspects of the '*social implications of radical living*' experienced by participants in this sample. This relates to how radical living had both positive and negative impacts on participants' social lives, and for expands on the subtheme of 'making sacrifices to live a radical lifestyle'. While not all participants discussed negative social implications, it was clear that some had experienced social turmoil due to their lifestyles, either within relationships or with bystanders if there was a dialogue entered into around climate change, as illustrated in the following extracts:

"This…. Has cost me relationships in the… at times". (Tom)

"I've been told now by enough people that I should not mention it because it rubs people up the wrong way". (Sophie)

"I think, I do think about interactions with other people, how might affect, not just current relationships, but future ones, you know, what will, what will somebody think of me because of like, stuff I do". (Tony)

It seems that living a radical lifestyle demanded a high level of *commitment to the cause* for many participants, to the point where some participants experienced some negative social implications of radical living. While not everyone specifically indicated social *suffering* as such, it was clear throughout interviewing that living radically did entail at least some tension on participants' existing relationships, or some difficulty when it came to making new bonds with those who they felt did not share the same *agenda* for pro-environmental living.

In spite of making sacrifices and experiencing some tumultuous social implications as a result living radically discussed by many participants, it was not all 'doom-and-gloom' for this group of radicals. The fourth subtheme covers the 'positive aspects of radical living' experienced within this sample. This relates to how radical living had many benefits to the social lives of some participants, as illustrated by the following extracts:

"I think, it's nice to be around people who think, feel similar to you". (Tony)

"I'm certainly surrounded by likeminded people in a way that, the way that we're like minded, really helps sort of build that trust and build those friendships, and a closeness". (Camilla)

"Getting in a room with even a really small number of other people who feel the same way is just instantly [sighs] relax". (Keira)

What many participants discussed was the *changing* of relationships, the reconfiguration of their social circles through their journeys to living this radical lifestyle. While social struggles were inarguable for many, some participants felt many social benefits of living this lifestyle. While some spoke of relationships being strengthened through this change, it seems that many participants' social lives were *repopulated* with likeminded people.

The fourth subtheme covers some of the '*positive aspects of radical living*' experienced by participants in this sample. This relates to other positives that accompanied radical living for these participants, such as a perceived improvement to their quality of life, as illustrated by the following extracts:

"I think my quality of life has drastically improved from making those decisions, like cycling, and eating more fruits and vegetables and all of that". (Sophie)

"I have a cycle ride in the fresh air, or I walk up there and I enjoy the walk, listen to the birds see the views, breathe the air, if I zipped up there in 10 minutes in the car and got back, what then, back to the grind". (George)

Despite the aspect of sacrifice, despite the potential burden this group discussed, the majority of participants in this sample framed many behaviours that they do in a *positive* way. Adopting these behaviours apparently gave participants a sense of duty, improving the way one sees oneself within the world of climate change. Each participant keenly discussed the lifestyles they have adapted and indicated no plan to stop taking radical action. It is important to note that this was a group of highly positive, motivated individuals, who in the face of challenges persevere in their goal to living as pro-environmental as possible. It seems that a key aspect of adopting a radical lifestyle is that it entails a different way of life, bringing with it sometimes bad but sometimes good things that has shaped who each of these participants feel they are, and this leads onto the fourth and final theme which considers *who a radical pro-environmentalist* really is.

3.3.5 Theme 4: Who is a 'Radical Pro-Environmentalist'?

The fourth and final theme delves into the aspects that might *define* someone who adopts a radical lifestyle, to help identify 'who a 'radical pro-environmentalist' is'. Within this theme, there were three contributing subthemes, '*feelings of empowerment*', '*identity',* and *'defining radical living',* each covering a distinct aspect of who a radical pro-environmentalist actually *is*. Each are discussed below and illustrated with extracts from the interviews.

The first subtheme covers the '*feelings of empowerment*' experienced by many participants as a result of radical living, which often stemmed from taking pro-environmental action. Although as earlier noted a number of participants indicated concerns around the implications of involving themselves in potentially criminal activist protests, it became clear that involvement in activism brought many participants great benefit in some ways. As highlighted earlier, many spoke of their behaviours as something more automatic – something that they 'couldn't 'not' do'; but many also spoke to the empowering feeling of joining others to take part in protest, as illustrated by the following extracts:

"When I'm with other activists, and we're all together, that's when I really feel like, wow, we can do this, but it is hard when you're on your own, even if you're all on your own doing it, it's when you put us together, you start to feel like you've got a bit of hope." (Sophie)

"Sometimes I feel really empowered when I'm out with other people doing things together, I feel quite empowered." (Jen)

It seems that empowerment is achieved in great part by environmental *collectivism*, whereby individuals who share the same commitment to environmental concern group together in some way to manifest their convictions. Some participants voluntarily referred to themselves as 'activists', highlighting the undeniable implications of living a radical lifestyle on how they actually *see* themselves, which takes us onto the second subtheme which explored the implications of radical living on one's *identity*.

The second subtheme covers aspects of how participants feel that radical living has shaped their '*identity'* in some ways. This relates to how participants perceived their roles

within climate change, and ultimately how they *see* themselves, as illustrated by the following extracts:

"I would consider myself to be a full-time activist, part-time animator, because now I do get regular animation work, which is really nice, but I try and prioritise the actions and only take as much money as I need to survive on so I can do all the other stuff". (Sophie)

"At a certain point I went from seeing myself as a politically inactive civil servant to where I would apply the word activist to me." (Abby)

As evidenced in Theme 1 (section 3.3.2, 'Radical Pro-Environmental Living'), adopting a radical lifestyle requires a great level of commitment, and this data has in part illustrated how this devotion has sometimes shaped many participants' ideas of *who they are*.

The third and final subtheme covers aspects of '*defining radical living'* and relates to how participants define radical living themselves. One of the questions posed to participants was how they themselves define a 'radical' pro-environmentalist, and some shared their thoughts:

"Somebody that's happy to sacrifice their own comfort, and well, not wellbeing, because that's not the right word, their own… someone that's happy to make pretty large sacrifices that don't benefit them personally". (Sophie)

"Somebody that's willing to just totally put themselves out there when it could possibly ruin their own life, if they're doing it for a better reason… going outside of yourself". (Sophie)

"People who their entire life revolves around it, that's someone who's radical". (Tony)

"I think it's the people who are willing to make changes that kind of put them a bit outside of societal norms". (Abby)

Interestingly, some participants said that they do not see themselves as radical, despite all of the (often sacrificial and against-the-grain) behaviours that they discussed doing on a daily basis. There was a sense throughout the sample that to be at that truly *radical* level of behaviour, the feeling that you are 'doing enough' or that there is no more that you could do may never be achieved among this sample. It was also clear that many faced

financial barriers to taking even more radical action, so this may in part be to blame for that feeling that one could be doing more. Participants seldom spoke of the things that they actually did when defining radical living; their definitions were situated outside of themselves. Many simply spoke of themselves as 'doing their part', and rarely acknowledged (at least during interview) that they were living particularly 'radical' pro-environmental lifestyles.

3.4 Discussion

This chapter reported on interviews with fifteen individuals who live radical pro-environmental lifestyles. It aimed to explore: (a) individuals' drivers for adopting radical pro-environmental lifestyles, and (b) their experiences of adopting radical pro-environmental lifestyles. Four themes and fifteen subthemes were identified which helped address these aims: (i) 'Radical Pro-Environmental Living' (section 3.3.2), which related to the radical actions themselves that participants have taken, and included four subthemes, 'convenience', 'finance', 'the need for systemic change', and 'privilege', which each highlighted a different aspect of radical living; (ii) 'Motivators for Radical Living' (section 3.3.3), which related to the potential driving forces behind adopting radical lifestyles, and included three subthemes, 'feelings of environmental guilt', 'sense of environmental responsibility', and 'considering one's environmental impact as a driving force for radical living', which each covered a distinct aspect of what might motivate individuals to adopt radical lifestyles; (iii) 'Experiences of Living a Radical Pro-Environmental Lifestyle' (section 3.3.4), which outlined multiple aspects of what it is like for these participants who live a radical lifestyle, and included four subthemes, 'making sacrifices to live a radical lifestyle', 'climate change as a personal burden', 'social implications of radical living', and 'positive aspects of radical living', which each covered a distinct aspect of what it's like to live a radical lifestyle; and (iv) 'Who is a 'Radical Pro-Environmentalist'?' (section 3.3.5), which delved into the aspects that might define someone who adopts a radical lifestyle, and included three subthemes, 'feelings of empowerment', 'identity', and 'defining radical living', which each covered a distinct aspect of who a radical pro-environmentalist actually is.

The first theme, 'Radical Pro-Environmental Living' (section 3.3.2), focused on the specific high-impact PEBs that participants have adopted as part of their commitment to radical pro-environmental living. These behaviours varied widely but collectively constituted a significant departure from many 'mainstream' lifestyle choices out of a high concern about climate change. Participants discussed adopting many high-impact PEBs that included having meat-free diets, refraining from owning cars, avoiding air travel, and refusing to buy new material goods such as clothing and furniture. While some of these behaviours might not be considered 'radical' in isolation, their cumulative impact underscores the radical nature of participants' lifestyles, and all participants discussed adopting multiple PEBs, many of which were high-impact. The subtheme of 'convenience' highlighted the challenges and facilitators that participants encountered in living this lifestyle. For example, some participants benefited from living in areas with infrastructure that supported pro-environmental living, such as having access to shops that offer unpackaged goods or reliable public transport, which enabled them to live without a car. However, most participants identified more barriers than enablers, emphasizing that radical pro-environmental living often requires substantial effort and intent, a finding consistent with Steg and Vlek's (2009) identification of practical barriers to pro-environmental behaviour.

The subtheme of 'finance' revealed that the financial implications of radical living were significant for many participants. While all were *willing* to incur additional costs to live radical pro-environmental lifestyles, the perceived expense of certain PEBs - such as insulating homes, choosing greener travel options, or making ethical consumer choices - to pose a notable challenge. Participants frequently discussed how this financial burden of adopting multiple high-impact behaviours sometimes limited their ability to make even more radical changes. This echoes findings by Whitmarsh and O'Neill (2010), who also noted that the cost barrier is a significant deterrent to broader adoption of sustainable behaviours. The third subtheme, 'the need for systemic change', addressed the frustration participants felt about the broader societal and structural barriers that hinder their ability to live more sustainably. Despite their strong personal commitments, participants recognized that without systemic changes - such as improved public transportation, better housing regulations, or broader societal shifts that enable this way of life - their individual efforts might have limited impact, or they may be limited to the behaviours they have adopted thus far despite being willing to adopt even more individual PEBs. This

aligns with Stern's (2000) concept of the impact-intent gap, where individuals' pro-environmental intentions are often hindered by perceived infrastructural barriers beyond their control. Lastly, the subtheme of 'privilege' highlighted the acknowledgment among participants that their ability to live radically was often facilitated by socio-economic advantages. Several participants recognized that not everyone has the financial means, social capital, or geographic advantage to adopt such profound lifestyles and high-impact behaviours, and this supports Maniates' (2001) argument that environmental responsibility often falls unevenly across different social strata.

The second theme, 'Motivators for Radical Living' (section 3.3.3), explored the emotional and cognitive drivers behind participants' decisions to adopt radical pro-environmental behaviours and lifestyle. The first subtheme, 'feelings of environmental guilt', seemed to be a significant motivator for many participants, who described a deep-seated guilt associated with environmentally harmful behaviours that almost regulated their desire to strive to adopt high-impact PEBs wherever possible. This emotional response often drove participants to adopt further high-impact changes, and to involve themselves in environmental activism, a finding that supports the work of Hargreaves (2011), who identified guilt as a powerful motivator for PEB. The second subtheme, 'sense of environmental responsibility', further emphasized the moral duty participants felt to take action against climate change. This *sense of duty* seemed to be intertwined with their knowledge of environmental issues and how individual action can impact upon the climate crisis, reinforcing the idea that with awareness often comes a sense of responsibility, as highlighted by Thøgersen and Crompton (2009).

The third subtheme, 'considering one's environmental impact as a driving force for radical living', revealed that participants were deeply motivated by the desire to minimize their negative impact on climate change. Whether driven by a concern for wildlife or ecosystems, or in the interest of protecting future generations, participants were committed to reducing their environmental impact as much as possible. This reflects a broader understanding of the interconnectedness of human actions and environmental outcomes, as noted in previous research by Swim et al. (2011). The fourth subtheme, 'catalysts of change', explored the specific *triggers* that prompted participants to adopt high-impact behaviours and ultimately radical lifestyles. While many described their transition as gradual, often driven by accumulating knowledge and a growing awareness

of environmental issues, some pointed to specific moments or events - such as attending an educational talk or losing faith in government action on climate change - that they felt catalysed their shift towards radical living. This gradual but deliberate transition aligns with findings by Kollmuss and Agyeman (2002), who suggest that environmental behaviour change is often a complex, multi-stage process influenced by both cognitive and emotional factors.

The third theme, 'Experiences of Living a Radical Pro-Environmental Lifestyle' (section 3.3.4), provided insights into the lived realities of living and maintaining a radical pro-environmental lifestyle. The first subtheme, 'making sacrifices to live a radical lifestyle', highlighted the various ways in which participants had to forgo certain comforts or conveniences in their pursuit of living as pro-environmentally as possible. From giving up meat and avoiding air travel to foregoing the latest technology or even deciding not to have children, participants described a lifestyle characterized by significant personal sacrifice. As mentioned earlier, many participants spoke of enabling systems that make their lifestyles easier, like reliable public transport or local 'green' shops; however, even when discussing inconvenient PEBs, they were willing to do them anyway – even when discussing sacrifice, they were willing to live this lifestyle anyway; they were that driven. This is consistent with the findings of Huddart Kennedy et al. (2015), who noted that those committed to sustainable living often make substantial sacrifices that go beyond simple lifestyle adjustments.

The second subtheme, 'climate change as a personal burden', revealed that participants often felt a continuous and sometimes overwhelming concern about their environmental impact. Many described this burden as an ever-present aspect of their daily lives, influencing every decision they made, from the food they ate to the way they travelled. This constant awareness of one's environmental impact appeared to be both a motivator and a source of stress, reflecting the findings of Reser and Swim (2011), who noted that high levels of environmental concern can lead to significant psychological strain. The third subtheme, 'social implications of radical living', discussed the social challenges participants faced as a result of their lifestyle choices. While some experienced friction in their relationships or felt isolated due to their radical behaviours, others found solidarity and support among like-minded individuals. This duality highlights the complex social dynamics that can accompany radical pro-environmental living, where radicals may need

to navigate both positive and negative social consequences of their lifestyles. However, the fourth subtheme, 'positive aspects of radical living', emphasized the personal *rewards* that many participants experienced as a result of their lifestyles. For example, many reported an improved quality of life, greater physical health, and a strong sense of *purpose*, suggesting that the benefits of radical living can often outweigh the challenges at least among this sample of radicals.

The fourth and final theme, 'Who is a 'Radical Pro-Environmentalist'?' (section 3.3.5), sought to define the characteristics of individuals who adopt radical pro-environmental lifestyles. The first subtheme, 'feelings of empowerment', revealed that participants often felt empowered by their ability to take meaningful action in terms of climate change. This sense of empowerment was particularly strong when participants engaged in collective action, such as environmental activism, which provided many of them with a sense of community and purpose. This finding supports the work of Clayton and Opotow (2003), who argue that environmental identity and collective action are key components of empowerment in the context of pro-environmental living. The second subtheme, 'identity', explored how participants' radical lifestyle choices had become integral to their sense of self. Many described themselves as activists or as environmentalists, and their commitment to high-impact PEBs seemed to shape their personal and social identities. This reflects the broader literature on environmental identity, which suggests that PEBs are often closely linked to how individuals perceive themselves and see their roles in the world (Clayton & Opotow, 2003).

The third subtheme, 'defining radical living', focused on how participants themselves defined what it means to live a radical pro-environmental lifestyle. While some described radical living as making significant sacrifices or living outside societal norms, others seemed to see this way of living as almost a natural extension of their values and beliefs. Interestingly, despite their apparent great commitment to radical pro-environmental living, most participants hesitated to label themselves as 'radical', suggesting that the term might carry connotations that they found uncomfortable or did not fully embrace. This ambiguity highlights the subjective nature of what it means to be a *'radical' pro-environmentalist* and suggests that individuals' definitions of radicalism may vary depending on their personal experiences and possibly their cultural contexts.

In summary, living a radical pro-environmental lifestyle seems among this group of participants to require a significant level of commitment and often involves navigating various practical, financial, and social challenges. While participants in this study faced numerous barriers, including the often inconvenient and cost of radical living, they remained largely motivated by a deep sense of environmental responsibility and a desire to minimize their impact on the planet in every way possible. Despite the sacrifices and burdens associated with radical living among this sample, many participants reported feeling *empowered* and *fulfilled* by their choices, suggesting that the rewards of such a lifestyle may ultimately outweigh the difficulties. The study also found that participants' radical behaviours were closely tied to their identities and that their commitment to sustainability was often a defining feature of how they saw themselves.

This chapter contributes to addressing the theoretical aim of the PhD, which is '*to explore what drives 'radical' living and high-impact pro-environmental behaviour'*. It also specifically contributes to answering *Research Question (RQ) 1*: "*What drives individuals to adopt radical pro-environmental lifestyles?*" and *RQ2*: "*What are the experiences of adopting radical pro-environmental lifestyles?*", and satisfies the demands of *Research Objective (RO) 1*: "*To qualitatively and inductively explore why people who are highly concerned about climate change have adopted radical pro-environmental lifestyles.*" (see section 2.9 for all RQs and ROs).

To extend our knowledge about the things that might enable and prevent radical living and the adoption of high-impact PEBs, Chapter 4 will report on the results from an interview study with a sample of individuals who are also very concerned about climate change but *have not* adopted radical lifestyles ('non-radicals'). Whereas the present study had an *inductive* approach, the next chapter will be *deductive*, asking more specific questions based on what we have learned to be some potential barriers/enablers to radical living from the current study. Paired with the present study, the hope is that we will develop further insights into the things that relate to *and prevent* radical living, in order to better understand the factors that play an important role if we are to expect widespread, pro-environmental societal change.

4 – Study 2: Interviews with 'Non-Radicals'

4.1 Overview of Chapter

This chapter reports on the second study (Study 2) of the thesis and acts as the second part in developing initial understandings about radical pro-environmental living. The focus of Study 1 was on the drivers and experiences of individuals who indicated adopting radical pro-environmental lifestyles, and inductively identified four themes and fifteen subthemes which highlighted several motivations and an array of positive and negative experiences accompanying this way of life among this sample.

To better understand how 'radicals' are different from other environmentally concerned individuals, this study aims 'to qualitatively and deductively explore why people who are highly concerned about climate change do not live radical pro-environmental lifestyles' (Research Objective (RO)2, see section 2.9 for all ROs). More specifically, it aimed to answer Research Question (RQ)3: 'What are the factors that prevent those who are highly concerned about climate change from living radical pro-environmental lifestyles?'.

It is particularly important to consider those who are climate concerned but *have not* adopted radical lifestyles as this may better reveal what differentiates those who are at the radical end of the spectrum ('radicals', as in Chapter 3) from others ('non-radicals', as in the present chapter). By comparing the results from Studies 1 and 2 (as presented in Chapters 3 and 4, respectively) this addresses Research Objective(RO)3: 'To identify any key factors that influences and prevents radical living among those who are highly concerned about climate change by comparing the results from these two studies'. This study involved fifteen qualitative semi-structured interviews with individuals who were specifically recruited based on having high concern about climate change but who have not adopted radical pro-environmental lifestyles.

This chapter is organised as follows. The next section (4.2) describes the methodology of the interview study, including the recruitment group. It includes a description of the procedure and the participants of the study, as well as how the data is analysed. Section 4.3 reports the results according to the aims of the study. Section 4.4 provides a summary of the main findings, and section 4.5 discusses the results of Studies 1 and 2 together.

More specifically, it discusses the differences and similarities between the 'radicals' interviewed in Study 1 (presented in Chapter 3) and the 'non-radicals' interviewed in Study 2 (presented in Chapter 4).

4.2 Method

4.2.1 The Study

This study adopted a qualitative, deductive approach and involved fifteen semi-structured interviews (N = 15) with participants who reported being highly concerned about climate change but not living radical pro-environmental lifestyles, using the same approach as in Study 1. As in Chapter 3, the interview schedule was designed according to the guidelines of Smith and Osborn (2015), who provide a general overview for how to structure an interview schedule that is not too specific or restrictive for the participant. The similar approach allows the comparison between climate concerned individuals who have adopted radical lifestyles, 'radicals' (in Study 1), and have not, 'non-radicals' (in Study 2).

The schedule included four key sections: "Introductory Questions", "Barriers to Radical Living", "Willingness to Make Radical Changes in the Future", and "Climate Change and You", as well as some closing questions. The interview schedule was organized similarly to the schedule in Chapter 3 but was built around identifying barriers to change (as opposed to motivators for radical living among the radicals in Chapter 3). Instead of focusing on experiences of adopting radical lifestyles as in Chapter 3, it sought to identify how willing non-radicals were to adopt radical lifestyles in the future, and how non-radicals posit themselves in relation to climate change. The interviews began in the same way as in Chapter 3, with some general opening questions, and then led onto more specific aspects of what participants perceived as barriers to adopting radical lifestyles and making high-impact PEB changes, such as "Would you consider making any more, 'big' changes to be more environmentally friendly or to reduce your carbon footprint?", "What would it take to help you make any of these changes?", and "Are there reasons you're not doing these things already?", for example. Various prompts and probes were used throughout the interviews. Appendix A.5 provides a copy of the interview schedule. The

research received ethical approval from Cardiff University, School of Psychology Research Ethics Committee (project number EC.21.04.20.6340).

4.2.2 Participants

As in Chapter 3, a 'snowball sampling' technique was used as a method of recruitment (Biggerstaff, 2012), whereby some friends of friends were asked to volunteer, and they in turn referred other friends and colleagues of theirs to also volunteer. Prospective participants were invited to get in touch with the researcher if they wished to find out more about the study. Any interested participants who made contact (18 in total) were sent an information sheet via email. Appendix A.2 includes a copy of the information sheet. As the study focused specifically on those who fit the criteria of being very concerned about climate change but not living radical pro-environmental lifestyles, interested participants were asked to indicate how they feel about climate change and then asked to list the things that they were doing for the environment. Only those who indicated an apparent high concern for climate change and had not adopted radical lifestyles or multiple high-impact PEBs were invited to be interviewed. Preceding the interview, participants were sent a link to an online consent form and taken through the process of informed consent. Participants had to be 18 years or over and resident in the UK.

Overall, fifteen participants were interviewed. Participants were either male or female, ranged from 26 to 65 years of age, and all lived in locations across the United Kingdom. Like in Chapter 3, participants ranged in career from being students to full-time employees, and some were retired. Table 2 outlines the profiles of participants.

Table 2 - Participant profiles including their resident city, age, gender, ethnic identity, self-identified disability status, and employment status

City	Age	Gender	Ethnic Identity	Self-Identified as Disabled	Employment Status
London, England	28	Male	White British	No	Employed
Manchester, England	57	Female	White British	No	Employed
Coventry, England	26	Female	British Indian	No	Student
Cardiff, Wales	38	Female	White British	No	Employed
Bridgend, Wales	45	Female	White British	No	Employed
Leicester, England	65	Female	White British	No	Retired
Birmingham, England	42	Female	White British	No	Employed
Leeds, England	31	Male	White British	No	Employed
Norwich, England	47	Female	White British	No	Unemployed
Cardiff, Wales	40	Female	White British	No	Employed
Wolverhampton, England	37	Female	White British	No	Employed
York, England	32	Male	White British	No	Employed
Manchester, England	26	Female	White British	No	Student
Cardiff, Wales	29	Female	White British	No	Employed
Norwich, England	30	Female	White British	No	Employed

4.2.3 Sample Size Criteria

It was determined that the data corpus of the final sample (n=15) sufficiently satisfied the criterion of 'information power' (Malterud et al., 2016). Again, the research took the same approach as in section 3.2.3, thus did not use 'saturation' as a criterion to stop further data collection (i.e., the point where additional data do not lead to any new emergent themes), as saturation can only be determined at the analysis stage rather than during data collection (Braun & Clarke., 2021).

4.2.4 Procedure

The procedure was identical to the one in Chapter 3, whereby interviews took place via Zoom, but instead during Summer, 2022. Chapter 3 describes the interviewing process in more detail, which was mirrored in this study. To protect anonymity, pseudonyms were assigned to each participant. Each participant was compensated in the amount of a £5 donation to World Land Trust, which funds the planting and protection of a tree (worldlandtrust.org/appeals/plant-a-tree). The interviews lasted between 25 and 85 minutes, with an average of 57.00 minutes. Participants were asked if they had any questions at the end of each interview and were then sent a study debrief sheet. Appendix A.3 includes a copy of the debrief sheet.

4.2.5 Method of Analysis

The data were analysed using Thematic Analysis (TA) set out by Braun & Clarke (2006) and Patton's (1990) 'dual criteria' for judging categories, as was done in the previous study and outlined in section 3.2.5. The difference is that this study took predominantly a *deductive* approach. The means that the data were analysed using predominantly the same codes as were established in Study 1, reported in Chapter 3. For example, since 'convenience' was identified as a subtheme in Chapter 3, the data in Chapter 4 were scanned and coded for themes that specifically related to 'convenience'. This was done with the original codes and all fifteen subthemes from Chapter 3 in mind, as the goal of the research was to learn about what might differentiate those who have adopted radical pro-environmental lifestyles from those who have not, and therefore identifying commonalities and differences was the focus of this research.

However, as said in section 3.2.5, Braun & Clarke (2012) stress that coding and analysis often include a combination of both inductive *and* deductive approaches. They say that while defining one's research as either inductive or deductive is important, it may not be possible to be *purely* inductive, as researchers will always have a level of bias during data analysis (Braun & Clarke, 2012, p. 59). It is therefore important to note that while this study was largely deductive in its approach, other initial codes and themes that seemed pertinent to the research but did not emerge in the previous study were also coded in

NVivo. This means that there were some *new* codes that were generated in this study, in addition to those used from the previous study. This aspect of the analysis, i.e., the generating of new codes and nodes, would therefore be the 'inductive' facet of the study. To have taken a purely deductive approach would have meant ignoring these additional emergent themes and could therefore have resulted in missing some important aspects of why individuals do not live radical lifestyles. Therefore, it was important to approach the data again with an open-mind and with as little bias as possible, and while the majority of data was coded using the nodes generated in the previous study (Study 1, as reported in Chapter 3), there were also some new nodes created that represented data that did not fit into the previous nodes. Appendix A.6 provides a complete illustration of how the analysis took place, which includes figures of each stage of analysis preceding the final thematic map displayed in the Results section (4.3) to follow.

4.3 Results

4.3.1 Overview of Themes

A thematic analysis identified three distinct themes: (i) 'Barriers to radical pro-environmental living', covering the perceived *inconvenience* of adopting high-impact PEBs and radical lifestyles, the perceived *financial* implications of adopting these behaviours, and participants' calls for *systemic change* which addresses these barriers; (ii) 'Inactive concern', covering participants' *concern about climate change*, the *perceived impact of climate change* among the sample, and participants' *beliefs about climate change*; and (iii) 'Climate change and me', covering participants' feelings of *disempowerment*, *willingness to make pro-environmental changes*, the feeling of *climate change as a personal burden*, and *feelings of environmental guilt* among participants. These themes were generated using the same coding system as in Study 1, so although the theme names differ, they included similar concepts within each theme but more accurately reflected themes representing this group of non-radicals. Figure 5 shows the final thematic map which shows the themes and subthemes.

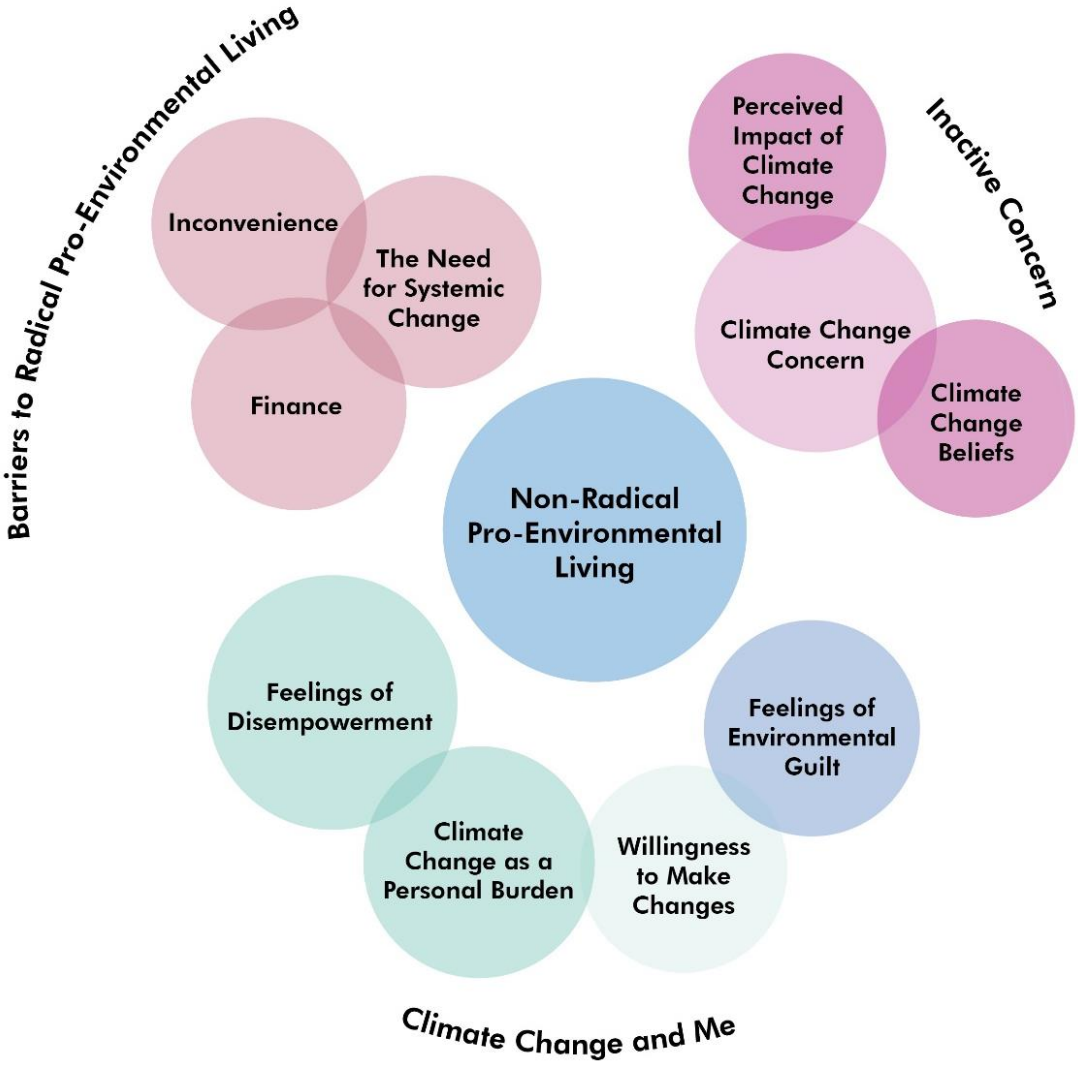

Figure 5 - Thematic map comprising of three themes and subthemes.

As illustrated in Figure 4, there was oftentimes overlap between subthemes, illustrating the interrelated nature of these factors. For instance, within 'Barriers to Radical Pro-Environmental Living', *Inconvenience*, *Finance*, and *The Need for Systemic Change* each overlapped with one another. This is because they are each presented as distinct subthemes but seemed to relate to one another on multiple occasions when participants discussed their experiences. For example, many participants noted that many pro-environmental travel alternatives were less convenient, more costly, and that systemic changes were needed to address these issues, hence why those subthemes overlapped. This interrelation is explored further in the narrated analysis within each theme. Although subthemes within each overarching theme are discussed separately, it became

evident that many were interconnected and influenced one another, as discussed throughout the results that follow.

4.3.2 Theme 1: Barriers to Radical Pro-Environmental Living

The first theme identified in the data relates to the barriers participants perceived to taking radical pro-environmental action. This theme has three subthemes, '*inconvenience*', '*finance*', and '*the need for systemic change*', each covering perceived barriers to radical pro-environmental living. Each are discussed below and illustrated with extracts from the interviews.

The first subtheme covers '*inconvenience*' when it comes to radical living. This relates to participants' perceptions of the inconvenience of radical pro-environmental living, and how this has prevented them from taking radical action or adopting high-impact PEBs. Participants referenced many ways in which they deemed pro-environmental change from their current behaviours to be inconvenient:

"I would say people find change difficult, and if something is more convenient then they'd be more likely to want to make that change". (Rosie)

What many participants noted, however, was that to them, the inconvenience of many pro-environmental actions was due to a lack of infrastructure which encouraged lower-carbon behaviours. Maggie discusses:

"I think it's not as easy as saying, don't drive your cars don't do this, you know, particularly living somewhere where we haven't got the infrastructure". (Maggie)

"If you live in a city where there are buses and trains and you can walk places, and you know, actually maybe it's that slight kind of not getting… because to them, it's so easy and convenient". (Maggie)

Importantly, those who discussed facing barriers to adapting to pro-environmental travel methods noted living outside of a city where public transport is more readily available. Katie reflected on a time in their life when they did have access to more reliable public transport:

"When I lived in Melbourne, I didn't have a car and I didn't miss it, but I think the transport there, or at least where I was, was really easy, like they had the tram, they have the train, they've got buses, it's just, everywhere seems very well connected, whereas here, it's not so much". (Katie)

When it came to discussing the convenience of (high-impact) PEBs, the majority of participants referred only to travel, as if it was the predominant area in which they face barriers to opting for pro-environmental alternatives, and it seems like lacking access to reliable public transport methods (or at least *perceiving* them to be unreliable/inaccessible) is what dissuades participants among this sample from making changes in that area. Some participants mentioned that these travel barriers reach beyond convenience for them, noting that to live car-free would greatly impact upon their lifestyles:

"If you just said to me, just take away your car, and you now have no transport, and you have no way of getting to a doctor's appointment or no way of buying food or no way to see your daughter, why would I do that? You know, there needs to be something in place that would work instead". (Sarah)

Again, having travel alternatives readily available seemed to have a great impact on whether participants among this sample owned a car, and for some, living car-free was not an option they perceived. Having convenient and reliable infrastructure which supports pro-environmental change, particularly when it comes to travel, appears to be an important component of why among this sample there is resistance to make changes, and many discussed their frustrations with having to rely on a car.

The second subtheme covers aspects of '*finance'* as a perceived barrier to radical living. This relates to how perceived cost acts as a barrier to making radical lifestyle changes, and how participants perceive many PEBs themselves to be too expensive to adopt. Here, Carrie discusses the perceived financial implications of more pro-environmental travel options:

"Buses to and from where I need to go don't exist, and the price of rail travel at the minute is just extortionate". (Carrie)

High-cost perception was prevalent across the sample, many of whom alluded to inconsideration to opt for public transport due to the cost incurred. Beyond travel, however, some participants also discussed perceiving pro-environmental change in other areas to also be more costly, including in diet and the heating/cooling of their homes:

"Thinking about vegetarian and veganism, although it's more expensive." (Susie)

"This is probably something that I'm not very good, it's something that I would like to get better at, I feel like at the moment I'm quite time poor and money poor in being able to like reduce my carbon footprint". (Rosie)

"I can't afford it that at the moment, I wouldn't be able to afford to change the heating system". (Clare)

"If I'm going to try and be sustainable but like, potentially save for a car or house, deposit, all that, it's just impossible". (Jane)

While there were often specific examples of how participants perceived pro-environmental living to be more expensive, what was common across the sample was that participants discussed pro-environmental living in general to be more costly, as though they view that kind of lifestyle to be more expensive regardless of the specific changes one makes. Lizzie discusses:

"What I've noticed is that a lot of, so for example, social media, when you go on those sites, and you see the people living an organic, free life with sustainable clothing and recycling and package free foods and sort of maybe a completely green house with solar panels and generators and things like that, they have a lot of money, and it's a lot, lot of money and it's a massive privilege to be able to live that way, but the vast majority of the population aren't able to be fortunate enough to live that life, 'cause you have to travel for work, you have to do the commute, you don't have a choice, you might have to fly across the world, you don't have a choice". (Lizzie)

What Lizzie illustrates here is the perceived lack of choice many participants allude to. When discussed pro-environmental lifestyle alternatives across multiple domains, participants discuss the lack of access they have to make changes, and even more prevalently, the high cost of making pro-environmental lifestyle changes. It seems that

among this sample of 'non-radicals', many perceive too many barriers to change when it comes to convenience and finance, and there is a real perception that those who live radically are in a more privileged position in order to make these lifestyle changes.

The third subtheme covers aspects of '*the need for systemic change*' when it comes to radical living. This relates to how perceived systemic barriers has oftentimes prevented the adoption of radical living and many PEBs for these participants. Along the same lines of having an infrastructure that supports pro-environmental change, many participants discussed their frustrations with leaders when it comes to pro-environmental living, with the 'system' in which we live. Sarah discusses:

"I still feel at the moment a lot of that has got to kick in at government level and I don't really think they're yet taking it seriously enough, because I think once they do then they will start with how to consider infrastructure and that… they've got to make it easy for people to do things differently". (Sarah)

Again, related to convenience and finance, Sarah stresses here that they feel that the governments/country leaders are not doing enough to support pro-environmental change, and this was echoed throughout the majority of the sample:

"instead of just being like, you need to do this, this, this, this on an individual level, and on a corporate level, I don't know maybe they are doing something, but on a corporate level, there needs to be at least the more visible that they're actually doing something about the corporates". (Alice)

"I think there are some things that… on an individual level, everybody can do some little things and lots of little things make a bigger thing, and make a change, but I think some of the big things, they've really got to be… they've got to be part of the overall strategy of the country". (Sarah)

Many participants discussed feeling that impactful change would only stem from the top-down, from government. They mentioned that world leaders could be doing more to reform the ways in which large corporations are impacting upon climate change, and many felt that their individual changes were either not enabled or would have little impact (a theme that is discussed later). If participants have little faith that world leaders/governments are not handling the issue when it comes to the world's biggest

polluters, it could be that they feel less motivated to change themselves, something that was implied by the majority of participants among this sample. This leads onto the next theme which explores how participants see climate change and their roles within the climate crisis.

4.3.3 Theme 2: Inactive Concern

The second theme that arose surrounds the relationship between participants' concern about climate change and their lack of adopting radical lifestyles and high-impact PEBs. The theme has three contributing subthemes, '*climate change concern'*, '*perceived impact of climate change*', and '*climate change beliefs'*, each covering a distinct aspect of how participants perceive climate change.

The first subtheme covers aspects of '*climate change concern'*. This relates to how concerned about climate change participants indicated being. It was clear across the sample that participants generally shared a great concern for climate change, and some participants mentioned thinking about the climate crisis frequently, as illustrated by the following extracts:

"Well, it's something that worries me a lot, and I think we should be doing more really to get to there, to become carbon neutral". (Tina)

"I think that it is a very serious issue, and I think that it will be great to do all that we can to slow it down". (Katie)

"It can be quite overwhelming if you really think about it or if you ever watch like documentaries that tell you that the world's suffering because of how we're treating it". (Katie)

"I mean, I think it's definitely something that I think about when I do things. I do feel quiet, I guess quite strongly about it, but also, in my day-to-day life, probably don't do as much as I should do to kind of address my own kind of actions towards it". (Susie)

Participants' concerns about climate change is important to note. While among the group of radicals, where they have aligned their lifestyles to be as pro-environmental as possible

for climate change reasons, one might expect that non-changers are not as concerned; however, each and every participant among this sample of non-radicals stressed their worries about climate change.

The second subtheme covers aspects of the '*perceived impacts of climate change*' among these participants. This relates to what effects participants perceive climate change to be having. While participants were undoubtedly aware of climate change and indicated being very concerned, what was common among this sample was the perception that climate change is affecting other countries more so than the UK, and many discussed not seeing any impacts of climate change themselves, as illustrated by the following extracts:

"Personally, I don't know if it's affected me very much. You know, I'm not living somewhere where I experience you know, adverse weather or, you know, horrendous flooding or droughts or anything like that, I'm very privileged to be living in a kind of part of the world and a part of the country that is relatively unaffected by you know, like huge weather changes". (Rosie)

Some participants noted that they believe that not seeing the impacts of climate change in one's own environment might be partially why many do not change their behaviours to be more pro-environmental:

"To be honest, like it genuinely at the moment hasn't affected me that much and I think that is probably the position of quite a lot of people, which is also why they're not making massive changes because they haven't seen it yet themselves". (Jake)

"I think that's the problem, it's very easy to ignore, pretend it's not happening because I do feel like actually day to day, is this an okay thing to say, I know if it does affect me day to day". (Katie)

"I think probably, if you've seen, actually seeing the impact, whether that's something you've seen on TV or seen it in real life, then I think definitely anything visual helps a lot". (Katie)

While many participants could not see an impacts of climate change in their everyday lives, some mentioned that this allows them to 'ignore' climate change, unless they are shown its impacts in other countries via media outlets like television documentaries.

The third subtheme covers aspects of '*climate change beliefs'* among participants. This relates to how aware participants in this sample were about the impact that human beings are having on climate change, and how individual behaviour can contribute to this negative impact. The majority of participants indicated awareness about how people impact upon the natural environment, as illustrated here by James:

"I believe I understand the climate crisis reasonably well, at least from a layman's standard, at least. You know, I understand we're playing a role in climate change but, the significant one, and that humanity has to change quite a lot in order to try and rein that in and prevent too much devastation in the near future". (James)

While there was a consensus that climate change is ongoing, is severe, and is propelled by human lifestyles, some participants, though concerned about climate change, did not perceive it to be as dire as most:

"Climate change is something we've got to be aware of, but actually progress we are currently making, if the trend of progress continues, it's not going to be disastrous, you know, humanity's not going to get wiped out or anything like that, so we need to rein it in". (James)

Though all participants indicated concern for climate change, few participants actually spoke of the direness of the climate crisis, and James illustrates here that they do not perceive it to be an existential threat to humanity. This is a sample of individuals who are aware of climate change, are largely aware of its negative impacts across the world, and are very concerned about climate change, but may not perceive that it is a threat to their personal lives (at least at present) and may to some extent not perceive it to be as dire as was seen among the radicals in Chapter 3. This leads onto the final theme which more specifically identifies how participants see themselves within climate change.

4.3.4 Theme 3: Climate Change and Me

The third and final theme outlined the ways that participants see themselves within climate change. There were four contributing subthemes, '*feelings of disempowerment*' , '*willingness to make changes*', '*climate change as a personal burden'*, and '*feelings of*

environmental guilt', each covering a distinct aspect of how participants see themselves in relation to climate change. Each are discussed below and illustrated with extracts from the interviews.

The first subtheme covers aspects of '*disempowerment*' felt by participants. This relates to how participants often felt disempowered to make meaningful pro-environmental changes on an individual level. This subtheme was inarguably the most pertinent amongst the data, with many participants feeling that any change they made would be small and would not have a significant impact, as illustrated in the following extract by Susie:

"I think you kind of get bogged down in the well, you know, I can do X, Y and Z, but there's kind of massive [not transcribable], you know, people flying, hundreds of flights every single day and so much plastic waste in more so other countries probably than our own now, but I think sometimes that gets in the way, 'cause you're like well you know, me not drinking milk two days a week isn't gonna have a drop in the ocean for what we need to do". (Susie)

The vast majority of participants share the view that their changes would not be impactful enough within climate change. Many spoke of this disempowering feeling, whereby it was less about a willingness to change, and more about a perception that change on an individual scale would be fruitless. This left many feeling hopeless when it comes to climate change, as indicated here by Rosie:

"It makes me feel frustrated, it made me feel hopeless, it can make me feel like I don't know how to define this in one word, but why should we have to be, you know, bearing the brunt of our you know, previous generations' issues that kind of, why should we now have to be the ones dealing with it so it can make me feel, yeah, extremely frustrated and like, I want to give up and just say, well, you know, if we're going that way what can we do about it?" (Rosie)

While most participants felt unable to make significant changes individually, many spoke of their perception that corporations/large businesses and the most polluting countries are where change needs to happen in order for it to have a significant impact:

"Some people I know will say, what's the country a thing because China is responsible for 90% of emissions, so what we do in Cardiff is irrelevant". (Don)

"Unfortunately, in the case of like Nestle, Nestle is evil, just straight up that we can't avoid, well, I can't avoid Nestle products because they're everywhere. But I do try and be conscious of what I buy but in the same vein, like I'm kind of jaded 'cause it's like, all this individualism, it's like, we're not going to make that much of an impact compared to the big bigs you know". (Jane)

"Everyday people can do as many of these little things as they want, then they can, but at the end of the day, it's those big companies that are, you know, really causing the problem". (Carrie)

"I feel like making those little changes does make me feel better, but there's always the kind of, it's outweighed by just feeling like globally, it's not really making a huge difference". (Rosie)

The feeling that change needs to happen on a larger scale resulted in that feeling if disempowerment echoed through the sample and seemed to have a big impact on why many have not adopted radical lifestyles or high-impact PEBs. What was also discussed by some participants was a lack of knowledge on what PEBs would have the biggest impacts individually, indeed, *how* to change:

"I think it's very easy to think, oh, well, I'll stop using plastic or single use plastic or I'll do this or do that, and actually, once you get into it, it's really difficult and complex, and you know, I was all for a hybrid or an electric car, I was like that's definitely the way forward, fossil fuels are terrible, and then you look at lithium and mining lithium, so I think climate change is really, really complicated, and I think the problem is you're trying to make it easy to understand so that the general public buy into it, but that's very difficult because it's not simple, and it's very, very complex". (Maggie)

"My general view is there isn't a massive amount individuals can actually do, the bulk of like carbon emissions they come from energy generation, from production and that kind of thing, I think it needs to be the bigger companies and countries' governments that take a lead on it and drive the change, 'cause individuals, I mean, we can recycle plastic and we can we can go for a half an hour walk instead of a two minute car ride and that kind of thing, depending on the weather, but we're not going to make a massive change ourselves individually, unfortunately". (James)

It is not surprising that many participants felt disempowered to change, since after all, this is a group of individuals who have not adopted radical lifestyles or multiple high-impact PEBs. As discussed here, however, many participants refer to individual pro-environmental change as difficult and 'complex'. It seems that many participants feel there is conflicting information on *what* to change or indeed *how* to change to be more pro-environmental, and this dissuaded many from trying to make changes themselves.

The second subtheme covers aspects of '*willingness to make changes*' among these participants. This relates to how participants discussed how willing they would be to adopt pro-environmental changes in the future, and what might have to happen for their willingness to change to increase. Most participants claimed to be already willing to make changes, but it seemed that this willingness depends on how much participants prioritize addressing climate change on an individual level, which among this sample seemed not to be a priority, as illustrated in the following extract by Rosie:

"I think I've kind of been the same level of willing, it's just that other things always seem to take priority, which I recognise is a shame, but you know, I've got, I know everybody's busy with work and that kind of thing, but I just kind of tend to not prioritise it as much". (Rosie)

Aside from clarity on how to make change, some participants discussed their lack of adopting radical lifestyles or high-impact PEBs as being due to having *other priorities*. These included having taxing work and family commitments, and again often related to convenience and finances, although many still perceived themselves as *willing* to make pro-environmental changes, and some discussed the ways in which their willingness has sometimes translated into some extent of pro-environmental action:

"I still do eat meat, but I eat probably a lot less than I used to. Because I'm just a lot more conscious of things". (Katie)

"I don't think I would have ever considered even being half vegan even a few years ago, so I think that I'm definitely more willing with that". (Susie)

"I'm definitely more willing and if there's anything we can do, be happy to do it". (Tina)

As related to having information available for how to change, when participants discussed the things they have done or are doing to be more pro-environmental, it largely related to

what they know about making change; thus, despite a willingness to change, there exist a number of perceived barriers as earlier discussed, and paired with a lack of knowledge on how to make meaningful change, this willingness was seldom converted into action.

The third subtheme covers aspects of '*climate change as a personal burden*' for these participants. This relates to how participants see themselves and their behaviour within climate change. Similarly to when participants discussed feeling disempowered, many felt that it was not their responsibility to make changes to address the climate crisis, as illustrated by the following extracts:

"We shouldn't be telling individuals that they're the problem, especially when you've got so much else on their plates". (James)

"It's difficult balancing that, between the individual responsibility as in what you can do, and system wide things that can make bigger changes on a bigger scale". (Jake)

Multiple participants alluded again to the priorities in their lives and how this affected taking action. It seems that while concerned about climate change, this feeling of disempowerment to make effective change, paired with the perception that impactful change can only come from the world's largest polluters resulted in a feeling like it was not the *responsibility* of the individual to make changes in their own lives to tackle the climate crisis. James discusses:

"This is my problem, because you see, you see companies like BP in that produce you know, what can we do to make our individual difference? And I kind of feel like that distracts from the fact that it's companies like BP that are a major part of the problem, they're that, you know, they're kind of, I suppose they're scapegoating. They're trying to put the emphasis on the individual, and you know, we've got, you've got right now we've got cost of living crisis, we've got, you know, work life balance issues that people got to think about, people can't raise families with just one income anymore, you need two incomes, but then what do you do about your kids, that kind of thing". (James)

James notes many ways in which other aspects of their life takes priority over addressing climate change on an individual level. This was common amongst this sample, the feeling that there are too many other issues these individuals face to make pro-environmental changes that may incur more cost, time, and less convenience. If participants feel that

there is not enough change occurring from the top-down, and lack the knowledge on how to most effectively change, it is not surprising that they have not made impactful changes individually, and that they see their role in climate change to be negligible. However, many still suffered from negative feelings about their roles and ultimately impacts upon climate change, which leads onto the next subtheme.

The fourth and final subtheme covers aspects of '*feeling environmental guilt*' among participants. This relates to how an awareness of the role they play within climate change has affected the extent to which many participants feel 'guilty' about the environment. While the predominant feeling appeared to be around sadness about climate change, or 'hopelessness' about how to tackle the climate crisis on an individual level, some participants shared their feelings of environmental guilt that they experienced by not making changes, as illustrated in the following extracts:

"Family is like something that's really important to me, so I'd do it but feel guilty, if that makes sense". (Jake)

"Lazy I guess actually because I could, there's things I could do, like I said I could get the bus to work I just don't because it's more convenient not to. I guess it can be a bit frustrating when other cities might have better transport links than here". (Katie)

It seemed that many participants among this sample wanted to do 'their part' for climate change, they *wanted* to make a difference. However, the unclarity they have around how to take action has resulted in a lack of change in their lives, and that in turn has resulted for some in the feeling of environmental guilt for not doing more to tackle climate change. Paired with what was learned in the first theme about other barriers to making pro-environmental change, it seems that the things that stopped individuals within this sample from adopting radical lifestyles or multiple high-impact PEBs were both external *and* internal and resulted for many in negative feelings about their roles in climate change.

4.4 Discussion

This chapter reported on interviews with fifteen individuals who are concerned about climate change but have not adopted radical lifestyles or multiple high-impact PEBs. The study aimed 'to qualitatively and deductively explore why people who are highly concerned about climate change do not live radical pro-environmental lifestyles' (Research Objective (RO)2, see section 2.9 for all ROs). Three themes and ten subthemes were identified which helped address this aim: (i) 'Barriers to radical pro-environmental living' (section 4.3.2), which related to participants perceived reasons for not making changes and included three subthemes, 'inconvenience', 'finance', and 'the need for systemic change', which each highlighted a different aspect of perceived barriers to change; (ii) 'Inactive concern' (section 4.3.3), which related to the relationship between participants' concern about climate change and their lack of making radical change and included three subthemes, 'climate change concern', 'perceived impact of climate change', and 'climate change beliefs', which each related to a different aspect of participants' perceptions around climate change and its impacts; and (iii) 'Climate change and me' (section 4.3.4), which related to the ways that participants see themselves within climate change and included four subthemes, 'feelings of disempowerment' , 'willingness to make changes', 'climate change as a personal burden', and 'feelings of environmental guilt', each covering a distinct aspect of how participants see themselves in relation to climate change.

The first theme, 'Barriers to radical pro-environmental living' (section 4.3.2), captured the various obstacles that participants perceived as barriers that prevented them from adopting high-impact PEBs. The subtheme of 'inconvenience' highlighted how participants often view high-impact PEBs as impractical or burdensome, particularly when existing infrastructure does not support sustainable choices. A recurring example of this was that many participants discussed having unreliable public transportation links, and this seemed to have a great impact on their travel behaviours. This finding aligns with previous research by Steg and Vlek (2009), which emphasizes that practical barriers, including a lack of accessible and convenient alternatives, are critical factors that hinder the adoption of sustainable behaviours. Moreover, the financial aspect, covered under the 'finance' subtheme, resonated with many participants' beliefs that pro-

environmental living can often be cost-prohibitive. This is a concern also noted within literature by Whitmarsh and O'Neill (2010), who found that perceived high costs are a significant deterrent to adopting more sustainable lifestyles. The final subtheme, 'the need for systemic change', reflects a broader frustration with the perceived inadequacy of governmental action and incentives around adopting high-impact PEBs, underscoring a common belief among participants that individual efforts are insufficient without systemic support - a notion consistent with Stern's (2000) discussion of the impact-intent gap, where individuals feel that their actions are insignificant in the face of global environmental challenges. Further to Stern's impact-intent theory, many participants did discusses adopting some low-impact PEBs, but it was the adoption of high-impact PEBs, and particularly multiple behaviours, that participants perceived too many barriers to consider.

The second theme, 'Inactive concern' (section 4.3.3), delved into the paradoxical relationship between participants' high levels of concern about climate change and their lack of adopting high-impact PEBs. The subtheme 'climate change concern' revealed that participants consistently expressed feeling concern about the climate crisis and about the effects of climate change, and most acknowledged understanding its severity. However, as highlighted in the 'perceived impact of climate change' subtheme, many participants believed that the most severe impacts of climate change are felt in distant locations, not within their immediate environments. This perception of climate change having a more considerable impact in other parts of the world than one's own seemed to impact upon one's willingness to take action, or at least affected the perceived *urgency* of taking action. This phenomenon is supported by Spence et al. (2012), who found that people are less likely to take proactive measures when they perceive environmental threats as being far removed from their own experiences. Additionally, the 'climate change beliefs' subtheme illustrated a complex understanding among participants, who generally accepted that human activity significantly contributes to climate change but remained sceptical about the efficacy of individual actions. This scepticism is again closely tied to Stern's (2000) impact-intent gap, where individuals' beliefs about the limited effectiveness of personal actions seems to create a barrier to adopting high-impact PEBs.

The third theme, 'Climate change and me' (section 4.3.4), explored how participants see their roles within the broader context of climate change. The subtheme 'feelings of

disempowerment' was particularly prominent, with many participants expressing a almost sense of *helplessness* or a feeling that their individual efforts would not make a significant difference in addressing climate change, even if they were to adopt multiple high-impact PEBs. This sentiment echoes findings by Lorenzoni et al. (2007), who noted that feelings of powerlessness can act as a major psychological barrier to engaging in PEB. Despite this, the 'willingness to make changes' subtheme indicated that participants *were* generally open to adopting more high-impact PEBs, but it seems that this is the case only if these PEBs were easier to implement and did not conflict with other priorities in their lives. This conditional willingness suggests that while concern about climate change may be high, practical considerations and a lack of clear, impactful pathways to action often override these intentions, and again flag the issue of perceiving systemic barriers as a preventing factor from making significant changes.

Furthermore, the subtheme 'climate change as a personal burden' highlighted how participants struggled with the expectation that they *should* bear the responsibility for adopting multiple high-impact PEBs, often feeling overwhelmed by the scale of the issue and the perceived inaction of larger entities like governments and large polluting corporations. This aligns with the concept of the "tragedy of the commons" (Hardin, 1968), where individuals feel that their contributions are too small to matter, which typically leads to inaction. Lastly, the subtheme 'feelings of environmental guilt' revealed that while participants often felt guilty about not doing more to combat climate change, this guilt was typically coupled with frustration over the barriers that prevented them from taking action. This emotional conflict yet again underscores the complexity of Stern's (2000) impact-intent gap, where the disconnect between environmental concern and impactful behaviour can lead to feelings of guilt and disempowerment rather than constructive action.

In summary, while participants in this study clearly appreciate the severity of the climate crisis, they perceive numerous barriers to adopting radical lifestyles or multiple high-impact PEBs. These barriers include the perceived inconvenience and high costs associated with such behaviours, as well as an echoed belief that individual action is likely to be insignificant compared to the necessary systemic changes that must be driven by governments and large corporations. Despite expressing feelings of environmental guilt and discussing a *willingness* to make changes, many participants remain uncertain about

how to make meaningful changes or doubt the efficacy of their efforts. This highlights a significant impact-intent gap, where the intention to engage in high-impact PEB often fails to translate into impactful action, largely due to perceived psychological and structural barriers. The findings of this study suggest that for radical pro-environmental living to become more widespread, there must be a concerted effort to address these barriers, including improving infrastructure, reducing the financial burden of sustainable living, and fostering a greater sense of individual agency by aligning personal actions with broader systemic changes, aligning with much previous literature in the area of PEB (e.g., Stern, 2000; Steg & Vlek, 2009; Whitmarsh & O'Neill, 2010). The next section will compare the results from Study 1 (as reported in Chapter 3) to those of Study 2 (reported in the present chapter), in order to compare 'radicals' (Study 1) and 'non-radicals' (Study 2).

4.5 Comparing Radicals (Chapter 3) and Non-Radicals (Chapter 4)

This section aims to compare the data representing 'radicals' reported in Study 1 (Chapter 3) to the data representing 'non-radicals' reported in Study 2 (Chapter 4). The goal is to reflect on what was learned about both samples, and to identify where these two groups differ. This addresses RO3, which is "to identify any key factors that influences and prevents radical living among those who are highly concerned about climate change by comparing the results from these two studies". While a more comprehensive comparison is reported in the discussion included in Chapter 6, this section outlines the main similarities and differences between themes and provides a foundation for Study 3 (reported in Chapter 5).

Study 1 (in Chapter 3) interviewed fifteen individuals who live radical pro-environmental lifestyles and aimed to explore (a) individuals' drivers for adopting radical pro-environmental lifestyles, and (b) their experiences of adopting radical pro-environmental lifestyles; Study 2 (in Chapter 4) interviewed fifteen individuals who are concerned about climate change but *have not* made impactful changes in their own lives, and aimed to qualitatively and deductively explore why people who are highly concerned about climate change do not live radical pro-environmental lifestyles. Study 1 identified four key themes that underpinned radical living: "Radical Pro-Environmental Living" (section 3.3.2), "Experiences of Living a Radical Lifestyle" (section 3.3.3), "Motivators for Radical Living"

(section 3.3.4), and "Who is a 'Radical Pro-Environmentalist'" (section 3.3.5), each of which helped build a picture of who a 'radical' might be, and what might drive them. Study 2 identified three key themes that underpin not having made radical changes: "Barriers to Radical Pro-Environmental Living" (section 4.3.2), "Inactive Concern" (section 4.3.3), and "Climate Change and Me" (section 4.3.4) , each of which helped us understand what might prevent an individual from adopting a radical lifestyle or high-impact PEBs. Figure 6 illustrates both theme maps side-by-side, where we can see the themes in common across both sets of data.

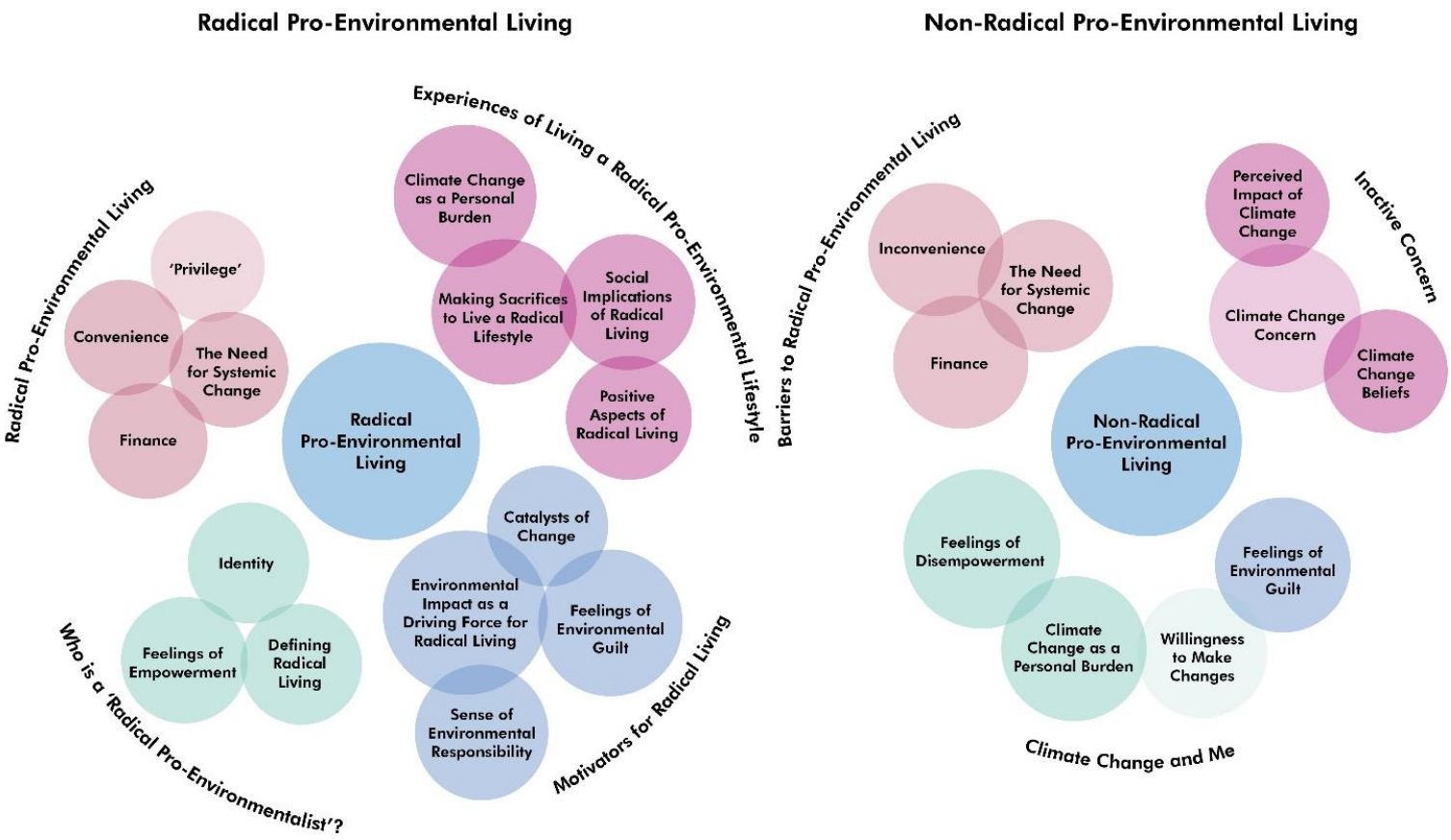

Figure 6 - Thematic map comprising themes and subthemes identified in Chapter 3 (left) and Chapter 4 (right).

As a reminder, while both samples consisted of very different individuals when it comes to the way that they live, what all participants had in common was a high concern for climate change. That being said, there were six themes that were shared among radicals and non-radicals: '*Convenience*' (section 4.5.1), '*Finance*' (section 4.5.2), '*Perceived Impact*

on Climate Change' (section 4.5.3), '*The Need for Systemic Change*' (section 4.5.4), '*Feelings of Environmental Guilt*' (section 4.5.5), and '*Willingness*' (section 4.5.6). Each of these themes is discussed below to highlight how radicals differed from non-radicals, or how there were similarities between radicals and non-radicals. Following this, section 4.5.7 summarizes the differences between radicals and non-radicals, and the chapter conclusions are presented in section 4.5.8.

4.5.1 Convenience

Convenience was an important subtheme in both samples, and this was the first instance where radicals differed from non-radicals. While both samples agreed at times that many individual PEBs, such as always using public transport, were oftentimes inconvenient, the way in which radicals (in Study 1) differed from non-radicals (in Study 2) was that they were willing to do these things despite them oftentimes being less convenient. In fact, there were many times during interviews with radicals that they talked about doing things that were inconvenient, but they ensued in order to make as many changes as possible; seemingly, they did these things anyway, in order to live radical lifestyles and alleviate as much of their existential burden on the environment as they could. Non-radicals, however, discussed the inconvenience of many PEBs as a barrier to change; this was one of the main things that seemed to prevent them from adopting radical lifestyles and high-impact PEBs. Thus, it was not the case that radicals perceived individual PEBs or radical living as a whole to be more convenient than non-radicals did, but rather that radicals were willing to live this way in spite of its inconvenience, whereas non-radicals did not seem willing to overcome this inconvenience and make change.

4.5.2 Finance

The same pattern seemed to exist when it came to *finance*. While many radicals perceived many individual PEBs and ultimately radical living in general to be more costly, they adopted many behaviours *despite* perceiving them to be more expensive, whereas non-radicals, again, identified finance as a barrier to making big changes, and did not seem willing to adopt radical living if it meant that it would be more costly to them. Again, many

radicals discussed during interview that they perceived many radical changes to be more costly, and that is where radicals and non-radicals seemed to share the perception that this was of life can cost more; rather, it was that radicals were determined enough to live radical lifestyles *in spite of* the increased cost of some of their PEBs, whereas non-radicals perceived cost as a barrier to living radical lifestyles.

4.5.3 Perceived Impact on Climate Change

An area in which perceptions differed between radicals and non-radicals was in how they perceived that individual action could impact upon climate change. While radicals and non-radicals shared a concern for climate change, radicals seemed to be *compelled* to make radical changes wherever possible and seemed to feel that they *could* have an impact upon climate change. Conversely, non-radicals seemed to feel that individual change would have little impact on climate change. Similarly, radicals felt that the responsibility to take action existed at the government level *and* at the individual level, whereas most non-radicals felt little individual responsibility to make changes and seemed to put the onus exclusively on governments and world-leaders. While radicals seemed to be propelled in making big changes by the feeling that they *could* make a difference to climate change, non-radicals' beliefs that their behaviour would have little impact certainly seemed to act as a barrier to making change. This was particularly evident when it came to feelings of empowerment. While radicals seemed to feel empowered by taking action and especially when coming together with other climate activists, non-radicals seemed to feel *dis*empowered to make changes, as though nothing they did on an individual level would have any real impact upon climate change. Therefore, what seemed to be a motivator for radicals to live radical lifestyles - this feeling of empowerment when doing the things that they do in their lives - the absence of feeling empowered seemed to act as a barrier for non-radicals, almost as though even if they were to adopt more PEBs or make radical changes, they perceived that it wouldn't feel as though they were having a *real* impact, and this seemed to prevent them from trying to live radically.

Radicals also seemed to perceive climate change as something that is more *dire* and that will have more devastating consequences, whereas non-radicals often discussed the

perception that climate change is something that will affect other countries more than their own, or as something that will not be as *extreme* as many think. Again, radicals appeared to be more motivated to make change because of perceiving that climate change is more of a serious threat, whereas non-radicals seemed to not perceive the impacts to be as severe and seemed to be therefore less motivated to make changes to some extent, in spite of indicating high concern about climate change generally.

4.5.4 The Need for Systemic Change

Where radicals and non-radicals *agreed*, however, was in both perceiving *the need for systemic changes* that encourage and enable (radical) pro-environmental living. Again, the difference seemed to be that radicals are willing to overcome these systemic issues where possible and do these things *despite* facing barriers, whereas non-radicals perceived them as enough of a barrier to prevent making radical changes. By examining these similarities and differences, what is suggested as a potential factor in understanding radical versus non-radical living lies in Perceived Behavioural Control (PBC). While radicals and non-radicals discuss conflicting feelings on whether their individual changes would result in meaningful environmental impacts, they shared the view that systemic barriers affected the extent to which they had *control* over their own PEBs (whether there existed barriers in terms of access to effective public transport links or the perceived increased cost of less environmentally harmful food options). This is also related to how radicals and non-radicals discussed feelings of (dis)empowerment, in that while radicals sometimes discussed feeling empowered when taking environmental action, non-radicals often spoke of feeling disempowered as they did not feel that they had control (PBC) over their environmental behaviours.

4.5.5 Feelings of Environmental Guilt

Radicals and non-radicals also shared feelings of environmental guilt. Radicals seemed to experience more environmental guilt, and some participants in this group said that guilt affected most of their behavioural decision-making, whereas non-radicals did mention

feeling environmental guilt, but seemed to experience it less intensely than radicals; environmental guilt appeared to be a driving force for radicals, whereas for non-radicals it was more something they felt that did not affect their propensity to make big pro-environmental lifestyle changes.

4.5.6 Willingness

The final factor that radicals and non-radicals seemed to share was willingness - the difference was whether this willingness *translated* into radical action. While radicals discussed being willing to adopt even more high-impact PEBs or to expand their radical lifestyles in any way they felt was possible, non-radicals for the most part discussed being willing *in theory*, but again noted a number of barriers to adopting radical lifestyles. 'Willingness' seems to be related to all of the above factors when it comes to radical living. Radicals are willing to overcome issues related to *convenience* and *finance*; they mostly feel that their behaviours have an *impact on climate change*, and in spite of perceiving *the need for systemic changes*, their *environmental guilt* translates to an actionable willingness that almost enables them to act. On the other hand, non-radicals perceive many barriers to radical living, related to (in)*convenience*, high cost (*finance*), a perception that their behaviours have a low *impact on climate change*, and note *the need for systemic change* to be enough of a barrier, that collectively, in spite of experiencing *environmental guilt*, does not translate to action – it is as if non-radicals are willing, but only if the aforementioned barriers were overcome. That is the difference here – radicals' willingness translates to action and overcoming barriers, whereas non-radicals' willingness is more of a static signal that does not at present translate to taking action.

4.5.7 Summary of Differences between Radicals and Non-Radicals

In conclusion, while non-radicals did indicate a *willingness* to make lifestyle changes in the future, they differed from radicals in many ways. Radicals seemed to indicate a *compulsion* to make changes, which involved overcoming many perceived barriers and living radical lifestyles *despite* them oftentimes being inconvenient or more costly, and

despite facing systemic infrastructural barriers which often made their behaviours more difficult. For many radicals in this sample, this way of life seemed to result in a changed identity. Non-radicals, on the other hand, predominantly flagged *barriers* to living radical lifestyles or making PEB changes. Most individuals in this sample shared a belief that individual change would not have a great impact upon climate change, leaving many of them feeling disempowered and uninspired to make radical changes, and despite both samples being concerned about climate change and sharing a feeling of environmental guilt to some extent, PBC seemed to differ between radicals and non-radicals, thus separating the two groups.

4.5.8 Conclusions

By comparing themes across the two studies, six main factors were identified as key differences and commonalities between these two groups of individuals: '*Convenience'*, '*Finance'*, '*Perceived Impact on Climate Change'*, '*The Need for Systemic Change*', '*Feelings of Environmental Guilt'*, and '*Willingness'*. Following this comparison, it seems that 'Perceived Behavioural Control (PBC)' may be a more accurate way of framing participants' perceptions of needing systemic change, as these systemic barriers and enablers seem to translate to how much PBC participants possess. Therefore, the final six factors that were identified will be referred to as: '*Convenience'*, '*Finance'*, '*Perceived Impact on Climate Change*', '*Perceived Behavioural Control (PBC)'*, '*Feelings of Environmental Guilt',* and '*Willingness'*.

This chapter contributes to addressing the theoretical aim of the PhD, which is '*to explore what drives 'radical' living and high-impact pro-environmental behaviour'*. It also contributes to answering *RQ3*: "*what are the factors that prevent those who are highly concerned about climate change from living radical pro-environmental lifestyles?*", and specifically satisfies the demands of *RO2*: "*To qualitatively and deductively explore why people who are highly concerned about climate change do not live radical pro-environmental lifestyles.*" and RO3: "*To identify any key factors that influences and prevents radical living among those who are highly concerned about climate change by comparing the results from these two studies"* (see section 2.9 for all RQs and ROs).

To tie together what has been learned so far about the adoption of, and barriers to, radical pro-environment living and high-impact PEBs, Chapter 5 will quantitatively examine how the factors identified among climate-concerned 'radicals' (in Study 1, as presented in Chapter 3) and climate-concerned 'non-radicals' (in Study 2, as presented in Chapter 4) affect reported behaviour within secondary data from a nationally representative survey on pro-environmental living. Together with what has been learned in Studies 1 and 2, the hope is that we will develop further insights into the things that lead to and prevent radical living and high-impact PEB, in order to better understand the factors that play an important role if we are to expect widespread, impactful, pro-environmental societal change.

5 – Study 3: Factors Involved in High-Impact Pro-Environmental Behaviours and Living: A Secondary Data Analysis

5.1 Overview of Chapter

This chapter reports on the third study (Study 3) of the thesis. This quantitative study seeks to uncover whether certain factors relate to high-impact pro-environmental living and behaviours and seeks to identify what might differentiate 'radicals' (i.e., those who engage in multiple high-impact Pro-Environmental Behaviours (PEBs) and therefore live radical lifestyles) from others. This study builds on the combined results of the qualitative studies (Studies 1 and 2, reported in Chapters 3 and 4, respectively). Broadly, the aim is to examine the potential determinants of high-impact PEB and living across the domains of *diet*, *travel* and *material consumption*, and acts as the third part in seeking to develop initial understandings around what might determine the uptake of radical pro-environmental living and high-impact PEB.

The qualitative works within this PhD revealed multiple potential factors that may contribute to adopting radical lifestyles and high-impact PEBs. Study 1 (reported in Chapter 3) identified fifteen subthemes broadly surrounding living a 'radical' pro-environmental lifestyle that were categorised into four overarching themes: (i) 'Radical Pro-Environmental Behaviour', outlining areas from the actions taken to minimize one's carbon footprint to some barriers and enablers to radical living, (ii) 'Experiences of Living a Radical Lifestyle', outlining themes like sacrifice, the social implications of living radically, and the positive outcomes of living this lifestyle, (iii) 'Motivators for Radical Action', which include potential catalysts to change and both internal and external motivators for taking radical climate action, and (iv) 'Who is a 'Radical Pro-Environmentalist'', covering personal aspects such as identity, willingness and empowerment within this group.

From Study 2 (reported in Chapter 4), we learned about some of the factors that may have *prevented* climate-concerned individuals from adopting radical lifestyles and high-impact PEBs. Here, ten subthemes emerged that were categorised into three overarching themes:

(i) 'Concern about Climate Change', which included the extent to which individuals within this group perceived climate change to be a threat, and also outlined their beliefs about climate change and its implications, (ii) 'Barriers & Enablers to (Radical) Pro-Environmental Living', covering themes such as *convenience* of high-impact PEBs, including some perceived financial implications of taking the extra step to adopting radical lifestyles or multiple high-impact PEBs, and (iii) 'Climate Change and Me', which illustrated subthemes such as senses of (dis)empowerment, environmental guilt connected to climate change, and one's willingness to make further changes in the future, and also explored participants introspection when it comes to climate change and themselves.

By comparing themes across the two studies, six main factors were identified as potential determinants of radical living and high-impact PEBs: '*Convenience*', '*Finance*', '*Perceived Impact on Climate Change*', '*Perceived Behavioural Control (PBC)*', '*Feelings of Environmental Guilt*', and '*Willingness*'. These factors set the stage for further exploration of what might predict radical lifestyle adoption and the uptake of multiple high-impact PEBs, and thus brings us to the third and final study within the PhD. Analyses were conducted on survey items that represented these factors from a nationally representative online survey (n=1,893) that was collected in 2020 (see further: Capstick et al., 2020), in addition to factors suggested in previous literature to also be relevant in understanding PEB.

This study is the third and final component designed to address the theorical objective of the overall research, which was '*to explore what drives 'radical' pro-environmental behaviour and living*'. This study uses 'aims' as opposed to 'hypotheses' for several reasons. Firstly, as an exploratory study, the aim is to examine an area that is not well understood, which in this case is radical pro-environmental living. For this reason, the thesis has general research questions and objectives (outlined in section 2.9) and does not rely on specific hypotheses. Secondly, aims guide research without specifically outlining anticipated outcomes. This is particularly useful in this thesis, as the qualitative findings are drawn from two samples of people and are therefore non-generalizable; they act as mere indicators of *potential* factors that may affect radical living, in which case the present study is exploring potential significant interactions. Furthermore, the use of aims

rather than hypotheses can in some instances reduce bias, as no particular interactions are being specified before analysis has taken place.

The aim is to answer Research Question (RQ)4, "what factors from the first two studies and from previous literature are important in understanding high-impact pro-environmental behaviour within a UK representative sample, and the uptake of multiple high-impact behaviours?" and to address the following Research Objectives (ROs) (see section 2.9 for all RQs and ROs):

1. To assess what factors from the first two studies and from previous literature correlate with one another to show a relationship across diet, travel and material consumption (RO4). The purpose of this RO is to see if and how factors interact with one another and inform the later analyses on which relationships to explore in particular (and is presented in section 5.3.1).

2. To examine what factors from the first two studies and from previous literature might associate with high-impact pro-environmental behaviours across diet, travel and material consumption (RO5). The purpose of this RO is it see whether there is a relationship between these factors and the reported behaviours of participants who took the survey (and is presented in section 5.3.2).

3. To assess what factors from the first two studies and from previous literature differentiates highly concerned individuals who do or do not engage in multiple high-impact pro-environmental behaviours (RO6). The purpose of this RO is to see how these factors differ for those who have reported taking high-impact pro-environmental action in these domains (and is presented in section 5.3.3).

Figure 7 illustrates how the findings from the studies reported in chapters 3 and 4 shaped the aims of the present study.

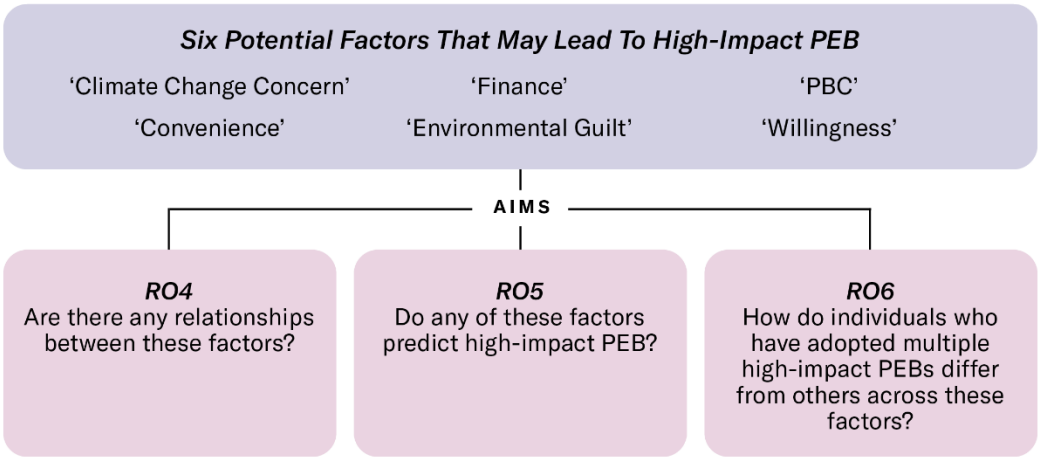

Figure 7 - The link between the previously identified six potential factors of radical living and the three study aims.

The chapter is organized as follows. The next section describes the methodology of the study, including the sample. It describes the measures included in the study and how groups were categorised, and outlines the statistical analyses performed. Section 5.3 presents the results of the study, and the findings are discussed in section 5.4.

5.2 Method

5.2.1 Study Overview

This study involves a secondary analysis of a nationally-representative online survey that was collected by the *Centre of Climate Change and Social Transformations* (CAST). The 'CAST survey' was conducted in the United Kingdom (UK), China, Sweden and Brazil (total N=4,724), but here, only data collected within the UK was used. This consisted of a core sample of N=1,893 and boosters in Scotland (N=485) and Wales (N = 467). The survey took around 20 minutes to complete. Data were obtained between 29th September and 26th October 2020. Although there have been more recent waves of data collection, the 2020 data was deemed to be less affected by the Covid-19 pandemic, especially since associated worldwide lockdowns impacted upon travel behaviours. The survey received ethical approval from Cardiff University, School of Psychology Research Ethics Committee

(project number EC.20.08.11.6068). Appendix A.7 includes a copy of the survey. Table 3 shows the characteristics of the sample.

Table 3 - Characteristics of the CAST survey United Kingdom (N=1,893) sample (%)

Characteristic		%	*Characteristic*		%
Gender	Male	46.4	**Ethnicity**	Asian/Asian British	2.6
	Female	50.9		Black/Black British	0.8
	Prefer not to say	2.7		Mixed (e.g., White & Asian, White & Black)	1.6
				White British	85.5
Age	18-24	3.5		White Irish/White Other	6.4
	25-34	11.7		Other	.5
	35-44	25.3		Prefer Not To Say	.5
	45-54	12.7			
	55-64	20.9	**Employment Status**	Full-time	38.4
	65 and older	23.1		Part-time	12.9
				Self-employed	4.4
Income	Low	26.4		Unemployed	4.2
	Average	48.5		Not eligible for employment	2.1
	High	17.9		Studying	1.1
	Refused	7.1		Retired	26
				Prefer not to say	.5
Education	No formal qualifications	5.1			
	High school or secondary school	44.2	**Type of Location**	Large City	18.9
	Undergraduate degree	35		Small City or Large Town	20.9
	Graduate degree	11.4		Small Town	27
	Other	3.1		Suburb near a big city	13.5
				Rural	18
Country	England	46.1			
	Northern Ireland	1.6			
	Scotland	26.1			
	Wales	24.9			

While the CAST survey covered four domains of PEB (diet, travel, heating/cooling, and material consumption), heating/cooling items were not included in the present study.

This was decided because the earlier qualitative works revealed barriers such as not owning one's home or being able to afford to insulate properties/convert to pro-environmental heating systems, so the other three domains were the focus of this study.

5.2.2 Measures

5.2.2.1 Independent Variables

The study involved ten independent variables that represent the factors to be explored, which are presented below. These first consisted of five of the six factors that were identified following a comparison between radicals and non-radicals (in section 4.5): '*Convenience*', '*Finance'*, '*Perceived Behavioural Control (PBC)'*, '*Feelings of Environmental Guilt*', and '*Willingness'*. Although '*Perceived Impact on Climate Change*' was also identified as a potential contributing factor when comparing radicals and non-radicals (in section 4.5), there were no items in this survey that accurately captured this factor, and therefore it was not included as a variable in this study. Instead, however, five additional factors suggested in previous research to play a role in PEB were included as variables in some analyses: *Descriptive Social Norms* (as outlined in section 2.5.2), *Injunctive Social Norms* (as also outlined in section 2.5.2), *Socio-Demographics* (as outlined in section 2.5.3), *Environmental Identity* (as outlined in section 2.5.1), and *Climate Change Concern* (as outlined in section 2.2).

Convenience

Convenience was included as a variable as it was identified as a potential determinant for radical living following the comparison between radicals and non-radicals (in section 4.5). This variable covered aspects of one's perceived convenience to lower-carbon travel behaviours. Participants reported the extent to which they agreed or disagreed with two statements: (i) "Using the car is more convenient than using public transport" (Q033_1), and (ii) " Using the train instead of flying takes too long". Both items were rated on a scale

from 1 (Strongly Disagree) to 5 (Strongly Agree). The variables were not combined as one pertains to driving behaviour while the other pertains to flying.

Finance

Finance was included as a variable as it was identified as a potential determinant for radical living following the comparison between radicals and non-radicals (in section 4.5). This variable covered aspects of one's finances in terms of lower-carbon behaviours across the three domains. Participants reported the extent to which they agreed or disagreed with four statements: (i) for *Diet*, "It's more expensive to cook meals without meat" (Q021_2); for *Travel*, "Using the train instead of flying is too expensive" (Q033_2); for *Material Consumption*, (i) "I'd be happier if I could afford to buy more things" (Q050_3), and (ii) "The products I buy are limited by my financial situation" (Q050_6). All items were rated on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The variables were not combined as they pertained to different behaviours (diet, travel, material consumption).

Perceived Behavioural Control (PBC)

Perceived Behavioural Control (PBC) was included as a variable as it was identified as a potential determinant for radical living following the comparison between radicals and non-radicals (in section 4.5). This variable covered aspects of the extent to which one feels in control of their behaviours across the three domains. PBC will be used in lieu of some other common factors suggested in Chapter 5, such as '*the need for systemic change*' and '*feelings of empowerment*' . This decision was made as (i) there were not items identified within the survey which accurately reflected either 'the need for systemic change' or 'feelings of empowerment', (ii) it was suggested that some of the feelings within these themes lied within how *in control* of making environmental changes participants felt, and that (iii) the need for *systemic changes* often revolved a perception that there were systemic barriers which affected the decisions individuals *could* make around environmental behaviour alternatives, which to some extent refers to their environmental PBC. Participants reported their extent of agreement with four statements: for *Diet*, "I feel in control of making decisions about what food I eat" (Q021_4);

for *Travel*, "I feel in control of making decisions about how I travel" (Q033_4); and for *Material Consumption*, "It is completely up to me what products I buy" (Q050_5). All items were rated on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The variables were not combined as they pertained to different behaviours (diet, travel, material consumption).

Feelings of Environmental Guilt

Environmental guilt was included as a variable as it was identified as a potential determinant for radical living following the comparison between radicals and non-radicals (in section 4.5). Environmental guilt was measured by asking respondents "When you think about climate change and everything that you associate with it, how strongly, if at all, do you feel each of the following emotions?: Guilt" (Q063_2). Respondents could use a scale from 1 (Not at all) to 5 (Very much).

Willingness

Willingness was included as a variable as it was identified as a potential determinant for radical living following the comparison between radicals and non-radicals (in section 4.5). This variable covered aspects of one's willingness to adopt lower-carbon behaviours in the future across three behavioural domains. Although this was not a distinct theme identified among radicals (in Study 1), it was a significant theme among non-radicals (in Study 2), and therefore merits inclusion as a potential contributing factor. Furthermore, many radicals (in Study 1) indicated a *willingness* to adopt even more PEBs in other subthemes, (such as in finance, when discussing their willingness to further adapt their homes if such changes were more cost-effective, for example). In all cases respondents were asked how willing or unwilling they were to take those actions using a scale ranging from 1 (Very Unwilling) to 5 (Very Willing). The behaviours included "eat less meat or meat products in the future" (Q018), "reduce how much you travel by car" (Q031), "reduce how much you travel by plane" (Q029), "buy fewer things overall" (Q049_1), buy more products second hand" (Q049_2), and "rent items such as washing machines,

clothes or tools instead of owning them" (Q049_3). The variables were not combined as they pertained to different behaviours (diet, travel, material consumption).

Descriptive Social Norms

Descriptive Social Norms was included as a variable as it was suggested in previous literature as a potential contributor to PEB (see section 2.5.2). Participants reported the extent to which they agreed or disagreed with four statements: for *Diet*, "Most of my friends follow a vegetarian (meat-free) diet" (Q021_7); for Travel, (i) "Most people close to me fly regularly for leisure purposes" (Q033_7), and (ii) "Most of my friends or family own a car" (Q033_8); and for Material Consumption, "People close to me don't buy new things unless they have to" (Q050_8). All items were rated on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The variables were not combined as they pertained to different behaviours (diet, travel, material consumption).

Injunctive Social Norms

Injunctive Social Norms was included as a variable as it was suggested in previous literature as a potential contributor to PEB (see section 2.5.2). Participants reported the extent to which they agreed or disagreed with two statements: "I feel that most people close to me would disapprove if I stopped eating meat" (Q21_9), and "Being vegetarian is frowned upon by my friends and family" (Q21_10). All items were rated on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The variables were not combined as while Q21_9 pertained specifically to a *behaviour* (not eating meat), Q21_10 was more related to a perceived attitude toward a *behaver*, i.e., 'a vegetarian', and my combining these variables, detail may be lost on which of these plays a bigger role in high-impact PEB.

Socio-Demographics

Various *Socio-Demographics* were included as variables as they were suggested in previous literature as potential contributors to PEB (see section 2.5.3). Socio-Demographic factors included *gender*, *age* and *income*. Although socio-demographics

were not specifically identified in the previous qualitative works as being important, previous research (as outlined in section 2.5.3 of this thesis) indicates that gender, age and income may be important contributors to PEB, and therefore may have an effect when it comes to pro-environmental lifestyles. Respondents who answered with "Prefer not to say" to any of these questions were excluded from the analyses, as this response does not provide meaningful data when considering the potential impact of one's socio-demographic factors on pro-environmental living. Removing this response can also simply the subsequent analyses and avoid any potential significant interactions from being diluted (Field, 2013).

Environmental Identity

Environmental identity was included as a variable as it was suggested in previous literature as a potential contributor to PEB (see section 2.5.1). This variable was measured by asking participants to what extent they agreed or disagreed with statements, (i) "Being environmentally friendly is an important part of who I am" (Q062_1), and (ii) "I think of myself as someone who is very concerned with environmental issues" (Q062_2). Respondents could use a scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The items had an inter-item Pearson correlation of .8 (p=<.001).

Climate Change Concern

Climate change concern was included as a variable as it was suggested in previous literature as a potential contributor to PEB (see section 2.2). The variable 'Climate Change Concern' was created by combining responses to five items. First, participants were asked "How worried, if at all, are you about climate change?" (Q07), which they could answer on a scale from 1 (Not at all worried) to 5 (extremely worried). Second, they were asked "How serious a threat, if at all, is climate change to each of the following?" – "You and your family" (Q010_1) and "The UK as a whole" (Q010_2). Both could be rated on a scale from 1 (Not at all serious) to 5 (Extremely Serious). Third, "Overall, how positive or negative do you think the effects of climate change will be on the UK" (Q011), which could be

answered using a scale from 1 (Entirely negative) to 5 (Entirely Positive). Fourth, respondents were asked "Which of these best describes your views about the level of urgency with which climate change needs to be addressed?" (Q012). Respondents could use an answering scale that ranged from 1 (Little or no urgency) to 5 (An extremely high level of urgency). The final variable 'Climate Change Concern' had a Cronbach's Alpha score of .898 for combining these items, and therefore reliability was satisfactory.

5.2.2.2 Dependent Variables

The dependent variables represented PEBs across the three domains: diet, travel, and material consumption. These were identified in order to measure different types of PEB among the sample.

Having a Meat-Free Diet

To identify those with a meat-free diet, those who responded with "I am completely vegetarian" (Q20_5) or "I follow a vegan diet" (Q20_7) were considered to have relatively lower-carbon diets by avoiding meat consumption. A dummy variable was created, including those who reported being meat-free and therefore had relatively low-carbon diets (1) and those who did not (0). The purpose of creating a dummy variable was to combine two different responses to the question about diet, and ensure that both vegetarians and vegans were captured, as both of these fit the criteria of having 'meat-free' diets. Since the research is about pro-environmental *lifestyles*, creating a dummy variable representing a more pro-environmental diet aided this focus. Furthermore, a dummy variable was created in order to represent *categorical* data and ensure that the categorises were accurately represented within the model. The method of using dummy variables also further reduces the risk of multicollinearity (Pourhoseingholi et al., 2008).

Living Car-Free

To identify those who live car-free, those who reported not owning a car (Q27) were included. A dummy variable was created, including those who reported not owning a car (1) and those who reported owning a car (0). The purpose of creating a dummy variable in this instance was to only include responses to this question that pertained to car ownership specifically. Since the research is about pro-environmental lifestyles, creating a dummy variable representing more pro-environmental travel choices aided this focus. There was another response in this question which pertained to car *access*, but this was not the focus of this variable, as whether or not someone has access to a car does not indicate whether or not their behaviour is therefore 'pro-environmental', whereas an argument could be made that it is less pro-environmental to own a car than to not own a car, and therefore live 'car-free'. Having 'access' to a car also does not provide a good indication of how frequently that car might be used by the respondent. While car-use frequency was not captured by car ownership, it is more likely that someone who owns a personal vehicle and is therefore burdened with the costs of keeping a car will use that car more frequently than someone who may have access to another car but not use it very often (for example, someone who might be a 'named driver' on another's insurance policy, but not use that vehicle themselves). Furthermore, a dummy variable was created in order to represent categorical data and ensure that the categorises were accurately represented within the model. The method of using dummy variables also further reduces the risk of multicollinearity (Pourhoseingholi et al., 2008).

Avoiding Air Travel

To identify those who avoid air travel, those who reported not having flown in the previous 12 months (Q24) were included. A dummy variable was created, including those who reported not having flown in the previous 12 months (1) and those who reported having flown in the previous 12 months (0). A dummy variable was created in this instance to consider only these two responses and to omit other responses that were not relevant for the focus of these analyses (again, the focus being on whether or not the behaviour would be considered 'pro-environmental' (not flying versus flying)). Furthermore, since the research is about pro-environmental lifestyles, creating a dummy

variable representing more pro-environmental travel choices aided this focus. Also, a dummy variable was created in order to represent categorical data and ensure that the categorises were accurately represented within the model. The method of using dummy variables also further reduces the risk of multicollinearity (Pourhoseingholi et al., 2008).

Having Low Material consumption

To identify those who have relatively low material consumption, a distribution analysis was conducted on responses to the following question: "Please think about the products you buy such as clothes, cosmetics, electronics or sporting equipment. Roughly what percentage of your disposable income (what you have left after paying for your bills and food) do you spend on buying new things per month?" (Q048). Those who responded with 9% or lower (the bottom 25% of the sample – 342 respondents) were considered to have relatively low material consumption. A dummy variable was created to represent having low material consumption, including those who have low material consumption (1) and those who do not have low material consumption (0). Since the research is about pro-environmental lifestyles, creating a dummy variable representing more pro-environmental material consumption aided this focus. This was also done to make this variable binary, in order to determine whether participants met a category of having low material consumption or not, which in this case is the marker of being more 'pro-environmental' in this area. Furthermore, a dummy variable was created in order to represent categorical data and ensure that the categorises were accurately represented within the model (having low material consumption versus not having low material consumption). The method of using dummy variables also further reduces the risk of multicollinearity (Pourhoseingholi et al., 2008).

5.2.2.3 Group Categorisation

To categorise the sample by low/high climate change *concern* and low/high pro-environmental *action*, an all-groups dummy variable was created by 'scoring' respondents across their reported behaviours in diet, travel and material consumption. This was done to specifically categorise participants across the sample into categories (or

groups) depending on (a) how concerned they were about climate change and (b) how many high-impact PEBs they reported adopting. By doing so, those who were highly concerned about climate change and indicated adopting multiple high-impact PEBs would be identified, and this group of participants (Group 1) would closely resemble 'radicals' who were the focus of Study 1 (reported in Chapter 3).

This process also allowed the identification of those highly concerned about climate change who *had not* indicated adopting multiple high-impact PEBs (Group 2), who would closely resemble 'non-radicals' who were the focus of Study 2 (reported in Chapter 4). Again, this process laid the foundation for a discriminant analysis which addressed RO6, which sought to assess what factors from the first two studies and from previous literature differentiates highly concerned individuals who do or do not engage in multiple high-impact PEBs. Table 4 illustrates how groups were categorised.

Table 4 - Group categorisation by climate change concern and behaviour

		Climate Change Concern	
Pro-Environmental Lifestyle		*High*	*Low*
	High	**Group 1**	**Group 3**
	Low	**Group 2**	**Group 4**

Participants were organized into these groups as follows:

1. Those who had high 'Climate Change Concern' (determined by the independent variable described in section 5.2.3) were in Groups 1 and 2. Those who had a score of 4 or higher were considered to have high concern about climate change. Those who had low 'Climate Change Concern' were in Groups 3 and 4. Those who had a

score of 2 or lower were considered to have low concern about climate change. Please see section 5.2.2.1 to understand how the climate change variable was constructed, and how the questions were scored.

2. Those who reported adopting *at least three of four* high-impact PEBs (having a meat-free diet, living car-free, avoiding air travel, having low material consumption) were in Groups 1 and 3, and considered to have respectively *high* pro-environmental lifestyles, while those who reported low-carbon behaviours across *one or less* of these PEBs were in Groups 2 and 4, and considered to have respectively *low* pro-environmental lifestyles. The reason for creating groups in this way was to allow for an analytical focus on those who had (a) respectively high and low climate change concern and (b) respectively high and low pro-environmental *lifestyles* across multiple high-impact PEBs.

5.2.2.4 Statistical Analyses

Multiple analyses were conducted using SPSS (version 27) to address the ROs of this study. The data were screened for exclusions and missing values, and tested assumptions of normality. No violations were identified. To assess normality, univariate kurtosis for each item below 7 (West et al., 1995) and multivariate kurtosis below 5 (Byrne, 2016) were taken to indicate normally distributed data for each of the variables used. Figure 8 illustrates how each statistical analysis addressed the three aims of the study.

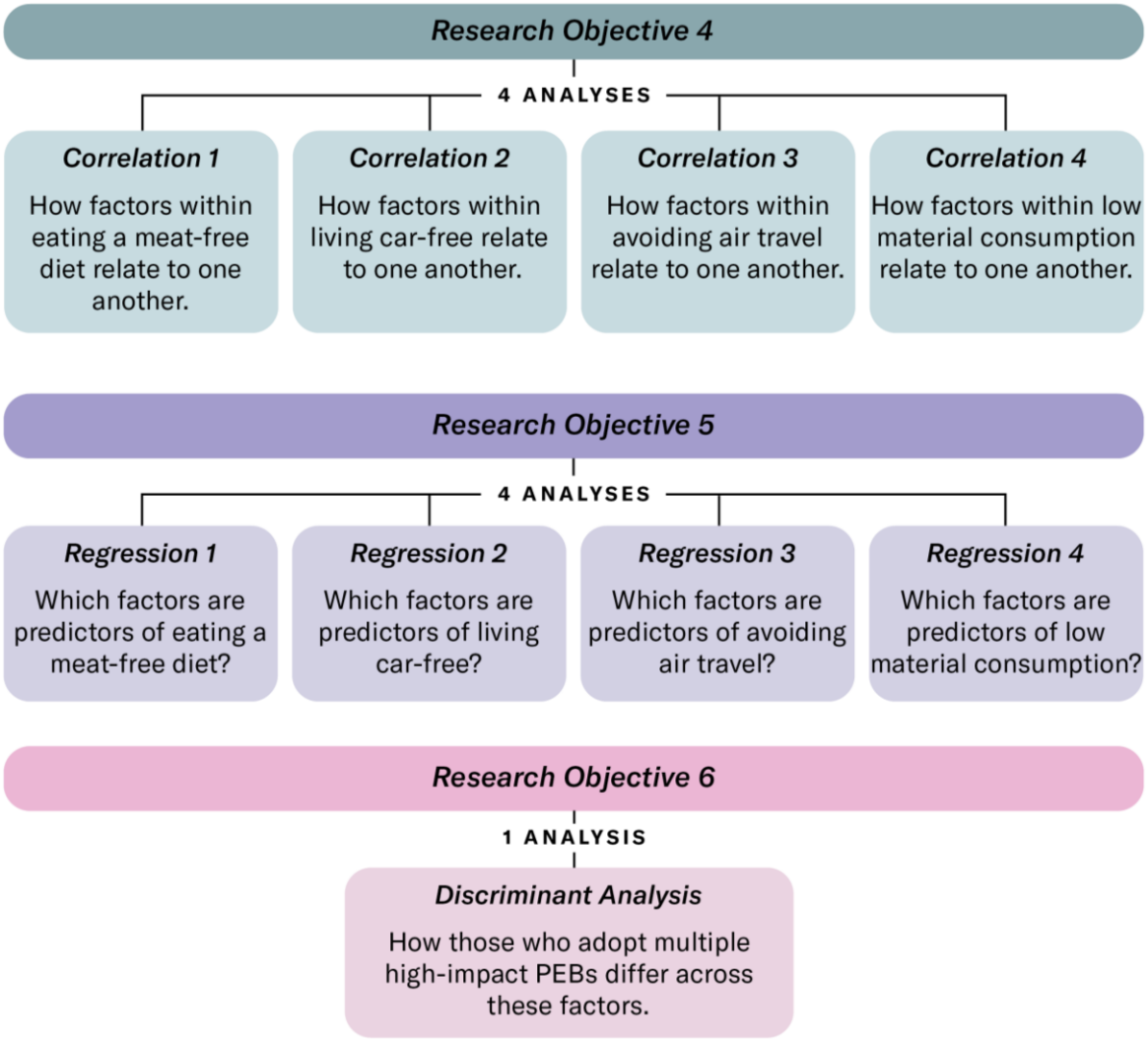

Figure 8 - The statistical analysis structure as mapped onto each study RO

1. To address RO4 ('to assess what factors from the first two studies and from previous literature correlate with one another to show a relationship across diet, travel and material consumption'), four separate Pearson's correlations were conducted on items representing Convenience, Finance, PBC, Descriptive Social Norms, and Willingness for each of the focus domains (*diet*, *car travel*, *plane travel*, and *material consumption*). The outcome variables (*having a meat-free diet, living car-free, avoiding air travel,* and *having low material consumption*) were also included in each correlation. Pearson correlations rely on a set of assumptions. The first relates to linearity within the data, i.e., the outcome variable and predictor variable must be generally linear when plotted, which was done prior to any correlations. Second, the data were checked for homoscedasticity, which

ensures that the variance of errors is consistent across all levels of the independent variables. Thirdly, the data were checked for independence, ensuring that the observations were independent of one another, and lastly, the data were checked for normality, to ensure they were normally distributed (Field, 2013).

2. To address RO5 ('to examine what factors from the first two studies and from previous literature might associate with high-impact pro-environmental behaviours across diet, travel and material consumption'), four separate logistic regression analyses were conducted. Each analysis was a backward elimination stepwise logistical regression, which means that the regression considered all variables collectively and then gradually eliminated variables in an attempt to explain the predictive model with a reduced set of contributing factors (Neter et al., 1996). The analysis started with an initial model that included all candidate predictors. Predictors were removed iteratively based on their significance levels, using a removal criterion of $p > 0.10$.

   Again, logistic regression relies on a number of assumptions. The first is that the dependent variable must be binary, which each analysis below adhered to. The second is that there must be independence of observations, meaning that one observation should not influence another, which again was ensured for each analysis. As with correlations, logistic regressions also require approximate linearity between the outcome and predictor variables, which was checked prior to the regressions.

   The independent variables were also checked to ensure there was no perfect multicollinearity (where independent variables were perfectly correlated). When the predictor variables have a high correlation, we have what is called multicollinearity. And when multicollinearity is present, it can cause problems for our multiple regression equation, making it highly inaccurate (Eid et al., 2013; Field, 2009). The way to gauge just how bad the multicollinearity is, is through the use of something called the Variance Inflation Factor (VIF). The VIF assesses just how much the standard errors have been affected by the presence of multicollinear predictors. A VIF of 1 means that all of our predictors are independent from each other. A number over 10, and certainly over 20, indicates that multicollinearity is biasing our standard errors and, thus, the overall equation

(Eid et al., 2013; Field, 2009). The VIF scores representing the independent variables within each regression are reported below.

Other assumptions that were met included that of sample size requirement. The sample size was sufficient enough to address the assumption that there should be a large sample size, and the data were also scanned for influential outliers which can distort regression outcomes. The variables included were properly specified, meaning that each model included only relevant predictors and not irrelevant ones, and finally, the data were plotted to ensure the data were generally independent of errors (Field, 2013). Once assumptions were checked, the following logistic regressions were undertaken:

(i) The first logistic regression used *having a meat-free diet* as the dependent variable (representing participants within the sample who indicated having a meat-free diet). The independent variables were Willingness, Finance, PBC, Descriptive Social Norms, Injunctive Social Norms, age, income, and gender. Multicollinearity between the independent variables is low, as indicated in Table 5.

Table 5 - Multicollinearity of predictor variables representing having a meat-free diet

	Unstandardized Coefficients			Collinearity Statistics	
	B	S.E.	t	Tolerance	VIF
Willingness *(Willingness to eat less meat)*	.01	.00	41.66	.89	1.13
Finance *(Perceiving meat-free cooking as more expensive)*	-3.78	.49	-7.71	.85	1.18
PBC *(Feeling in control of what one eats)*	2.34	.64	3.65	.87	1.15
Descriptive Social Norms *(Most of one's friends follow a meat-free diet)*	2.95	.53	5.60	.81	1.24
Descriptive Social Norms *(Most people 'close to me' eat meat every day)*	-1.40	.52	-2.68	.80	1.26
Injunctive Social Norms *(Anticipating disapproval from close ones if stopped eating meat)*	-1.59	.57	-2.78	.57	1.75
Injunctive Social Norms *(Perceiving friends or family to frown upon veganism or vegetarianism)*	.67	.58	1.14	.60	1.66
Age	-.62	.33	-1.90	.87	1.16
Low Income	3.40	1.05	3.24	.98	1.02
Gender	4.67	.97	4.83	.94	1.06

* p < .05, ** p < .01, *** p < .001

(ii) The second logistic regression used *living car-free* as the dependent variable (representing participants within the sample who indicated not owning a personal vehicle). The independent variables were Willingness, Convenience, PBC, age, income, and gender. Multicollinearity between the independent variables is low, as indicated in Table 6.

Table 6 - Multicollinearity of predictor variables representing living car-free

	Unstandardized Coefficients			Collinearity Statistics	
	B	S.E.	t	Tolerance	VIF
Willingness *(Willingness to reduce one's travel by car)*	.01	.00	25.80	.96	1.04
Convenience *(Perceived convenience of car travel)*	-.01	.00	-3.12	1.00	1.00
PBC *(Feeling in control of how one travels)*	.01	.00	1.24	.99	1.01
Age	-.03	.01	-.12	.95	1.05
Low Income	.16	.02	.17	.95	1.05
Gender	.02	.02	.98	.95	1.05

* p < .05, ** p < .01, *** p < .001

(iii) The third logistic regression used *avoiding air travel* as the dependent variable (representing participants within the sample who indicated not flying within the past 12 months preceding data collection). The independent variables were Willingness, Finance, Convenience, PBC, Descriptive Social Norms, age, income, and gender. Multicollinearity between the independent variables is low, as indicated in Table 7.

Table 7 - Multicollinearity of predictor variables representing avoiding air travel

	Unstandardized Coefficients			Collinearity Statistics	
	B	S.E.	t	Tolerance	VIF
Willingness *(Willingness to reduce one's travel by plane)*	.01	.00	16.31	.93	1.07
Finance *(Perceiving travel by train instead of plane to be too expensive)*	-.00	.00	-.28	.50	2.02
Convenience *(Perceiving travel by train instead of plane to be too time consuming)*	-6.01	.00	-.02	.50	2.01
PBC *(Feeling in control of how one travels)*	-.01	.01	-1.70	.99	1.01
Descriptive Social Norms *(Having a social network of people who fly regularly for leisure)*	-.00	.00	-1.44	.89	1.12
Age	-.01	.01	-1.75	.95	1.05
Low Income	.12	.02	5.05	.93	1.08
Gender	.02	.02	.77	.95	1.05

* p < .05, ** p < .01, *** p < .001

(iv) The fourth logistic regression used *having low material consumption* as the dependent variable (representing participants within the sample who had a relatively low material consumption based on responses given to consumption-relevant survey items). The independent variables were Willingness, Environmental Guilt, PBC, Descriptive Social Norms, age, income, and gender. Multicollinearity between the independent variables is low, as indicated in Table 8.

Table 8 - Multicollinearity of predictor variables representing having low material consumption

	Unstandardized Coefficients			Collinearity Statistics	
	B	S.E.	t	Tolerance	VIF
Willingness – buying less *(Willingness to buy fewer things overall)*	.06	.01	4.80	.79	1.26
Willingness – buying second hand Willingness *to buy more second-hand items)*	.03	.01	2.65	.74	1.36
Willingness – renting items *(Willingness to rent more items)*	-.05	.01	-3.92	.81	1.24
Finance *(Perceiving oneself to be 'happier' if they could afford more things)*	-.02	.01	-2.14	.84	1.19
PBC *(Feeling in control of one's purchasing decisions)*	.03	.02	1.64	.96	1.04
Descriptive Social Norms *(One's friends/family don't buy new things unless they must)*	.01	.01	.44	.98	1.03
Age	.04	.01	5.04	.77	1.30
Low Income	.07	.03	2.51	.96	1.04
Gender	-.01	.02	-.20	.92	1.08

* p < .05, ** p < .01, *** p < .001

3. To address RO6 ('to assess what factors from the first two studies and from previous literature differentiates highly concerned individuals who do or do not engage in multiple high-impact pro-environmental behaviours), a discriminant analysis with Varimax rotation (including a post-hoc MANOVA analysis) was conducted. A discriminant analysis identifies the linear combination of the variables that best separates the groups, with the goal of illuminating the

relationship between the variables and group membership (Field, 2013). Since the aim was to identify attributes that separate the predefined groups, this was deemed an appropriate method of analysis to address this aim. The data met the assumptions needed to run a discriminant analysis, which included having normal distribution, homogeneity of variances, independence of observations, linearity and no multicollinearity, and having an adequate sample size (Field, 2013).

The analysis was performed by inputting items representing all factors/independent variables (*Climate Change Concern, Convenience, Finance, Environmental Guilt, Environmental Identity, PBC, Descriptive Social Norms, Injunctive Social Norms, Willingness, and Socio-Demographics*) into the analysis and entering the dummy variable representing the four groups as a 'categorisation variable'. The end result of the discriminant analysis was a model that represents how the independent variables are best grouped, highlighting which of the factors are most relevant across the four groups (*Group 1*: high concern/high action, *Group 2*: high concern/low action, *Group 3*: low concern/high action, and *Group 4*: low concern/low action).

5.3 Results

5.3.1 Correlational analyses (RO4)

To address *RO4* of the study (see section 5.1.1: "to assess what factors from the first two studies and from previous literature correlate with one another to show a relationship across diet, travel and material consumption"), four separate Pearson corelations were performed on items from the CAST survey representing high-impact PEBs: (i) having a meat-free diet (representing 'diet' behaviours), (ii) living car-free and (iii) avoiding air travel (representing 'travel' behaviours), and (iv) having low material consumption (representing 'material consumption' behaviours). These were performed in order to identify potential *key factors* in understanding high-impact PEB across these domains to input into later analyses which examine potential predictors of high-impact PEB and

living. Each correlation also included an outcome variable created to represent self-reported behaviour within each domain.

5.3.1.1 Having a Meat-Free Diet

The first correlation examined whether Finance, PBC, Descriptive Social Norms, and Willingness were associated with one another and with the outcome variable, having a meat-free diet. All factors significantly correlated with one another. Of note, there was a positive relationship between: (a) Willingness and having a meat-free diet ($r(1893)=.735$, $p<.001$); (b) Descriptive Social Norms and having a meat-free diet ($r(1893)=.153$, $p<.001$); (c) Descriptive Social Norms and Willingness ($r(1893)=.126$, $p<.001$); (d) Finance and Descriptive Social Norms ($r(1893)=.075$, $p<.001$); (e) PBC and Willingness ($r(1893)=.067$, $p<.001$), and (f) PBC and having a meat-free diet ($r(1893)=.057$, $p<.05$). In contrast, there were significant negative relationships between: Finance and (g) Willingness ($r(1893)=-.213$, $p<.001$), (h) PBC ($r(1893)=-.146$, $p<.001$), and (j) having a meat-free diet ($r(1893)=-.146$, $p<.001$). Based on Cohen's (1977) guidelines on effect sizes, correlation 'a' had a large effect size indicating a strong correlation, while correlations 'b'-'j' had small effect sizes, indicating significant but weaker correlations.

Table 9 illustrates the correlation (R) values between each of these factors and having a meat-free diet.

Table 9 - Correlations between Finance, PBC, Descriptive Social Norms, Willingness, and Having a Meat-Free Diet

Item	1	2	3	4	5
1. Finance *(Perceiving meat-free cooking as too expensive)*	1				
2. PBC *(Feeling in control of what one eats)*	-.146**	1			
3. Descriptive Social Norms *(Most of one's friends follow a meat-free diet)*	.075**	-.242**	1		
4. Willingness *(Willingness to eat less meat)*	-.213**	.067**	.126**	1	
5. Having a Meat-Free Diet	-.146**	.057*	.153**	.735**	1

**Correlation is significant at the .01 level (two-tailed)
*Correlation is significant at the .05 level (two-tailed)

5.3.1.2 Living Car-Free

The second correlation examined whether Convenience, PBC, and Willingness were associated with one another and with the outcome variable, living car-free. Only one significant correlation was identified, between Willingness and living car-free ($r(1893)=.566$, $p<.001$). Based on Cohen's (1977) guidelines on effect sizes, this was a large effect size indicating a strong correlation.

Table 10 illustrates the correlation (R) values between each of these factors and living car-free.

Table 10 - Correlations between Willingness, Convenience, PBC, and Living Car-Free

Item	1	2	3	4
1. Willingness *(Willingness to reduce one's travel by car)*	1			
2. Convenience *(Perceived convenience of car travel)*	.034	1		
3. PBC *(Feeling in control of how one travels)*	-.039	.022	1	
4. Living car-free	.566**	-.043	-.008	1

**Correlation is significant at the .01 level (two-tailed)

5.3.1.3 Avoiding Air Travel

The third correlation examined whether Convenience, Finance, PBC, Descriptive Social Norms and Willingness were associated with one another and with the outcome variable, avoiding air travel. There was a relationship between: (a) Convenience and Finance ($r(1893)=.655$, $p<.001$); (b) Willingness and avoiding air travel ($r(1893)=.402$, $p<.001$); (c) Finance and Descriptive Social Norms ($r(1893)=.264$, $p<.001$); (d) Convenience and Descriptive Social Norms ($r(1893)=.262$, $p<.001$); and (e) Finance and Willingness ($r(1893)=.065$, $p<.001$). In contrast, there was a negative relationship between (f) PBC and avoiding air travel ($r(1893)=-.050$, $p<.05$). Based on Cohen's (1977) guidelines on effect sizes, correlations 'a' and 'b' had large effect sizes indicating strong correlations, while correlations 'c' and 'd' had medium effect sizes indicating fair correlations, and correlations 'e' and 'f' had small effect sizes indicating significant but weaker correlations.

Table 11 illustrates the correlation (R) values between each of these factors and avoiding air travel.

Table 11 - Correlations between Willingness, Finance, Convenience, PBC, Descriptive Social Norms, and Avoiding Air Travel

Item	1	2	3	4	5	6
1. Willingness *(Willingness to reduce one's plane travel)*	1					
2. Finance *(Perceiving travel by train instead of plane to be too expensive)*	.065**	1				
3. Convenience *(Perceiving travel by train instead of plane to be too time consuming)*	.032	.655**	1			
4. PBC *(Feeling in control of how one travels)*	-.035	.008	.010	1		
5. Descriptive Social Norms *(Having a social network of people who fly regularly for leisure)*	.018	.264**	.262**	-.010	1	
6. Avoiding Air Travel	.402**	.012	.005	-.050*	-.029	1

**Correlation is significant at the .01 level (two-tailed)
*Correlation is significant at the .05 level (two-tailed)

5.3.1.4 Having Low Material Consumption

The fourth correlation examined whether Willingness, Finance, and PBC were associated with one another and with the outcome variable, having low material consumption. There was a relationship between: Willingness to buy less items and (a) to buy more second-hand items ($r(1893)=.409$, $p<.001$), and (b) to rent rather than buy more items ($r(1893)=.189$, $p<.001$); (c) Willingness to buy more second-hand items and to rent rather than buy more items ($r(1893)=.345$, $p<.001$); (d) Willingness to buy less items and having low material consumption ($r(1893)=.164$, $p<.001$); (e) Willingness to rent more items and Finance ($r(1893)=.097$, $p<.001$); (f) Willingness to buy more second-hand items and having low material consumption ($r(1893)=.078$, $p<.001$); and (g) PBC and having low material consumption ($r(1893)=.078$, $p<.001$). In contrast, there were

negative relationships between: (h) Willingness to rent rather than buy more items and PBC (r(1893)=-.185, p<.001); (j) Willingness to buy less items and Finance (r(1893)=-.144, p<.001); (k) Willingness to rent more items rather than buy them and having low material consumption (r(1893)=-.096, p<.001); and (l) Finance and having low material consumption (r(1893)=-.135, p<.001). Based on Cohen's (1977) guidelines on effect sizes, correlation 'a' had a large effect size indicating a strong correlation, while correlation 'c' had a medium effect size indicating a fair correlation, and correlations 'b' and 'd'-'l' had small effect sizes, indicating significant but weaker correlations.

Table 12 illustrates the correlation (R) values between each of these factors and having low material consumption.

Table 12 - Correlations between Willingness, Finance, PBC, and having Low Material Consumption

Item	1	2	3	4	5	6
1. Willingness – buying less *(Willingness to buy fewer things overall)*	1					
2. Willingness – buying second-hand *(Willingness to buy more second-hand items)*	.409**	1				
3. Willingness – renting items *(Willingness to rent rather than buy more items*)	.189**	.345**	1			
4. Finance *(Perceiving oneself to be 'happier' if they could afford more things)*	-.144**	.012	.097**	1		
5. PBC *(Feeling in control of one's purchasing decisions)*	.004	-.044	-.185**	-.042	1	
6. Having Low Material Consumption	.164**	.078**	-.096**	-.135**	.078**	1

**Correlation is significant at the .01 level (two-tailed)

*Correlation is significant at the .05 level (two-tailed)

5.3.2 Regression analyses: Factors Associated with Radical Pro-Environmental Behaviours (RO5)

To address *RO5* of the study (see section 5.1.1: "to examine what factors from the first two studies and from previous literature might associate with high-impact pro-environmental behaviours across diet, travel and material consumption."), four separate logistic regression analyses were performed to determine any potential unique relationships (within diet, travel, and material consumption) between: (i) having a meat-free diet and factors identified as potentially important (willingness, finance, PBC, descriptive social norms, injunctive social norms, age, income, and gender), (ii) living car-free and factors identified as potentially important (willingness, convenience, PBC, age, income, and gender), (iii) avoiding air travel and factors identified as potentially important (willingness, finance, convenience, PBC, descriptive social norms, age, income, and gender), and (iv) having low material consumption and factors identified as potentially important (willingness, finance, PBC, descriptive social norms, age, income, and gender). These were performed in order to identify the extent to which each factor associated with high-impact PEBs across diet, travel, and material consumption to input into a later analysis, which examines how groups of participants differ across the factors explored depending on their level of climate concern and uptake of high-impact PEBs (presented in section 5.3.3).

5.3.2.1 Factors Associated with Having a Meat-Free Diet

The first regression explored whether there was a significant associative relationship between Having a Meat-Free Diet on the one hand (the DV) and Willingness, Finance, PBC, Descriptive Social Norms, and Injunctive Social Norms on the other (the IVs). In addition, socio-demographic variables were added to each analysis to examine any further potential associations.

Table 13 presents the results of the logistic regression analysis for Having a Meat-Free Diet.

Table 13 - Factors associated with Having a Meat-Free Diet.

Factor	B	S.E.	Exp(B)	P	Lower CI (95%)	Upper CI (95%)
(Constant)	-.1639	1.016	-	.107	-	-
1. Willingness *(Willingness to eat less meat)*	.841	.111	.431	<.001**	.347	.536
2. Finance *(Perceiving meat-free cooking as more expensive)*	-.191	.124	.826	.123	.648	1.053
3. PBC *(Feeling in control of what one eats)*	.079	.161	1.082	.626	.789	1.484
4. Descriptive Social Norms *(Most of one's friends follow a meat-free diet)*	.541	.131	1.718	<.001**	1.328	2.223
5. Descriptive Social Norms *(Most people 'close to me' eat meat every day)*	-.066	.130	.936	.613	.725	1.209
6. Injunctive Social Norms *(Anticipating disapproval from close ones if stopped eating meat)*	-.084	.144	.920	.559	.694	1.219
7. Injunctive Social Norms *(Perceiving friends or family to frown upon veganism or vegetarianism)*	.104	.141	1.109	.462	.841	1.462
8. Age	-.269	.085	.764	.001**	.648	.902
9. Low Income	.163	.305	1.177	.593	.647	2.142
10. Gender	-.204	.244	.816	.403	.506	1.315

DV: Having a Meat-Free Diet

**Correlation is significant at the .01 level (two-tailed)

*Correlation is significant at the .05 level (two-tailed)

The predictor variable representing having a meat-free diet was tested prior to analysis and no violation of assumptions was identified. A positive association was found between *having a meat-free diet* and:

a) Willingness (B=.841, S.E=.111, OR=1.43, 95% CI [.35, .54]). The odds ratio of 1.43 indicates that participants who are willing to eat less meat are 1.43 times more likely to have a meat-free diet.
b) Descriptive Social Norms (B=.541, S.E=.131, OR=1.72, 95% CI [1.33, 2.22]). The odds ratio of 1.72 indicates that participants who have friends and/or family who follow a meat-free diet are 1.72 times more likely to have a meat-free diet.

In contrast, a negative association was found between *having a meat-free diet* and:

a) Age (B=-.269, S.E=.085, OR=.76, 95% CI [.65, .90]). The odds ratio of 0.76 indicates that those of a higher age are 0.24 times less likely to have a meat-free diet.

The removal of predictors across each step of the backward elimination stepwise approach did not significantly change the model fit.

5.3.2.2 Factors Associated with Living Car-Free

The second regression explored whether there was a significant associative relationship between Living Car-Free on the one hand (the DV) and Willingness, Convenience, and PBC on the other (the IVs). In addition, socio-demographic variables were added to each analysis to examine any further potential predictors.

Table 14 presents the results of the logistic regression analysis for living car-free.

Table 14 - Factors associated with living car-free.

Factor	B	S.E.	Exp(B)	P	Lower CI (95%)	Upper CI (95%)
(Constant)	-.958	.180	-	<.001**	-	-
1. Willingness *(Willingness to reduce one's travel by car)*	.072	.009	1.074	<.001**	1.056	1.093
2. Convenience *(Perceived convenience of car travel)*	-.063	.016	.939	<.001**	.909	.969
3. PBC *(Feeling in control of how one travels)*	.024	.025	1.024	.344	.975	1.075
4. Age	-.281	.049	.755	<.001**	.685	.832
5. Low Income	-1.213	.151	.297	<.001**	.221	.400
6. Gender	-.191	.151	.826	.206	.614	1.111

DV: Living car-free
**Correlation is significant at the .01 level (two-tailed)
*Correlation is significant at the .05 level (two-tailed)

The predictor variable representing living car-free was tested prior to analysis and no violation of assumptions was identified. A positive association was found between living car-free and Willingness (B=.072, S.E=.009, OR=1.07, 95% CI [1.06, 1.09]). The odds ratio of 1.07 indicates that those who are willing to reduce travel by car are 1.07 times more likely to indicate living car-free.

In contrast, a negative association was found between *living car-free* and:

a) Low income (B=-1.213, S.E=.151, OR=.30, 95% CI [.22, .40]). The odds ratio of 0.30 indicates that those with low income are 0.70 times less likely to live car-free.

b) Age (B=-.281, S.E=.180, OR=.76, 95% CI [.53, 1.07]). The odds ratio of 0.76 indicates that those of a higher age are 0.24 times less likely to live car-free.

c) Convenience (B=-.063, S.E=.016, OR=.94, 95% CI [.91, .97]). The odds ratio of 0.94 indicates that those who perceive travel by car to be more convenient than travel by train are 0.06 times less likely to live car-free.

The removal of predictors across each step of the backward elimination stepwise approach did not significantly change the model fit.

5.3.2.3 Factors Associated with Avoiding Air Travel

The third regression explored whether there was a significant associative relationship between Avoiding Air Travel on the one hand (the DV) and Willingness, Finance, Convenience, PBC, and Descriptive Social Norms on the other (the IVs). In addition, socio-demographic variables were added to each analysis to examine any further potential predictors.

Table 15 presents the results of the logistic regression analysis for avoiding air travel.

Table 15 - Factors associated with avoiding air travel

Factor	B	S.E.	Exp(B)	P	Lower CI (95%)	Upper CI (95%)
(Constant)	1.025	.289	-	<.001**	-	-
1. Willingness *(Willingness to reduce one's travel by plane)*	.053	.006	1.055	<.001**	1.041	1.068
2. Finance *(Perceiving travel by train instead of plane to be too expensive)*	-.010	.018	.990	.589	.956	1.026
3. Convenience *(Perceiving travel by train instead of plane to be too time consuming)*	-.001	.016	.999	.927	.968	1.030
4. PBC *(Feeling in control of how one travels)*	-.066	.061	.936	.279	.832	1.055
5. Descriptive Social Norms *(Having a social network of people who fly regularly for leisure)*	-.041	.014	.960	.003**	.934	.987
6. Age	-.068	.038	.934	.075	.867	1.007
7. Low Income	-.710	.142	.492	<.001**	.373	.649
8. Gender	-.063	.116	.939	.588	.749	1.178

DV: Avoiding air travel
**Correlation is significant at the .01 level (two-tailed)
*Correlation is significant at the .05 level (two-tailed)

The predictor variable representing avoiding air travel was tested prior to analysis and no violation of assumptions was identified. A positive association was found between Willingness and avoiding air travel (B=.053, S.E=.006, OR=1.05, 95% CI [1.04, 1.07]). The odds ratio of 1.05 indicates that those who are willing to reduce travel by plane are 1.05 times more likely avoid air travel.

In contrast, a negative association was found between *avoiding air travel* and:

a) Low income (B=-.710, S.E=.142, OR=.49, 95% CI [.37, .65]). The odds ratio of 0.49 indicates that those who have low income are 0.51 times less likely to avoid air travel.

b) Descriptive Social Norms (B=-.041, S.E=.014, OR=.96, 95% CI [.93, .99]). The odds ratio of 0.96 indicates that those who have a social network of people who fly regularly for leisure are 0.04 times less likely to avoid air travel.

The removal of predictors across each step of the backward elimination stepwise approach did not significantly change the model fit.

5.3.2.4 Factors Associated with Having Low Material Consumption

The fourth regression explored whether there was a significant associative relationship between Having Low Material Consumption on the one hand (the DV) and Willingness, Finance, PBC, and Descriptive Social Norms on the other (the IVs). In addition, socio-demographic variables were added to each analysis to examine any further potential predictors.

Table 16 presents the results of the logistic regression analysis for avoiding air travel.

Table 16 - Factors associated with Having Low Material Consumption.

Factor	B	S.E.	Exp(B)	P	Lower CI (95%)	Upper CI (95%)
(Constant)	-1.942	.496	-	<.001**	-	-
1. Willingness – buying less *(Willingness to buy fewer things overall)*	.314	.065	1.368	<.001**	1.204	1.555
2. Willingness – buying second hand *(Willingness to buy more second-hand items)*	.128	.048	1.136	.008**	1.034	1.249
3. Willingness – renting items *(Willingness to rent more items)*	-.214	.056	.807	<.001**	.724	.900
4. Finance *(Perceiving oneself to be 'happier' if they could afford more things)*	-.107	.052	.899	.039*	.812	.995
5. PBC *(Feeling in control of one's purchasing decisions)*	.121	.073	1.128	.097	.979	1.301
6. Descriptive Social Norms *(One's friends/family don't buy new things unless they must)*	.020	.055	1.020	.718	.915	1.137
7. Age	.204	.041	1.227	<.001**	1.132	1.329
8. Low Income	-.298	.123	.743	.016*	.583	.946
9. Gender	.025	.116	1.026	.826	.818	1.287

DV: Having low material consumption.
**Correlation is significant at the .01 level (two-tailed)
*Correlation is significant at the .05 level (two-tailed)

The predictor variable representing having relatively low material consumption was tested prior to analysis and no violation of assumptions was identified. A positive association was found between *having low material consumption* and:

a) Willingness to buy fewer items (B=.314, S.E=.065, OR=1.37, 95% CI [1.21, 1.55]). The odds ratio of 1.37 indicates that those who are willing to buy fewer items are 1.37 times more likely to have low material consumption.

b) Age (B=.204, S.E=.041, OR=1.23, 95% CI [1.13, 1.33]). The odds ratio of 1.23 indicates that those of a higher age are 1.23 times more likely to have low material consumption.

c) Willingness to buy more second-hand goods (B=.128, S.E=.048, OR=1.14, 95% CI [1.03, 1.25]). The odds ratio of 1.14 indicates that those who are willing to buy more second-hand goods are 1.14 times more likely to have low material consumption.

In contrast, a negative association was found between *having low material consumption* and:

a) Low Income (B=-.298, S.E=.123, OR=.74, 95% CI [.58, .94]). The odds ratio of 0.74 indicates that those with low income are 0.26 times less likely to have low material consumption.

b) Willingness to rent rather than buy more items (B=-.214, S.E=.056, OR=.81, 95% CI [.72, .90]). The odds ratio of 0.81 indicates that those who are willing to rent rather than buy more items are 0.19 times less likely to have low material consumption.

c) Finance (B=-.107, S.E=.052, OR=.90, 95% CI [.81, .99]). The odds ratio of 0.90 indicates that those who perceive themselves to be 'happier' if they could afford more things are 0.10 times less likely to have low material consumption.

The removal of predictors across each step of the backward elimination stepwise approach did not significantly change the model fit.

5.3.3 Discriminant analysis: differences between groups (RO6)

To explore *RO6* of the study (see section 5.1.1: "To assess what factors from the first two studies and from previous literature differentiates highly concerned individuals who do or do not engage in multiple high-impact pro-environmental behaviours"), a discriminant analysis with Varimax rotation (including a post-hoc MANOVA analysis) was conducted ($X2=874.94$, $df=27$, $p<.001$) to examine potential contributions of Willingness, Finance, PBC, Descriptive Social Norms, age, income and gender (the IVs) to each of the four groups (the DVs).

Table 17 presents the results of the discriminant analysis for the four groups.

Table 17 - Discriminant Analysis Structure Matrix (After Varimax Rotation) Showing the 3 Functions

	F(3, 125)	Function		
		1	2	3
1. Environmental Identity	145.0**	**.734***	**-.515**	-.088
2. Environmental Guilt *(Feeling environmental guilt)*	71.72**	**.457**	**-.484***	.116
3. Willingness – buying less *(Willingness to buy fewer things overall)*	38.89**	**.398***	-.195	**.332**
4. Willingness -diet *(Willingness to eat less meat)*	73.01**	**.500**	**.377**	**-.634***
5. Willingness – buying second-hand *(Willingness to buy more second-hand items)*	32.19**	**.379***	-.106	.246
6. Willingness – reducing car travel *(Willingness to reduce one's travel by car)*	74.23**	**.394**	**.582***	**.459**
7. Willingness – reducing plane travel *(Willingness to reduce one's travel by plane)*	18.03**	.156	**.332***	.048
8. Income	21.13**	-.206	**-.313***	-.295
9. Descriptive Social Norms *(One's friends/family don't buy new things unless they must)*	1.50	-.003	-.006	**.406***
Explained Variance		62.7	34.7	2.7
Chi-square ($\chi 2$)		874.94	342.93	26.82
Degrees of freedom (*df*)		27	16	7
Significance (*p*)		<0.001	<0.001	<0.001

*Note: *p < 0.01, **p , 0.001; Factor loadings of 0.30 and higher are in bold.*

All three discriminant functions (DFs) were found to be statistically significant (Wilks's Λ = .575, (27) = 874.94, p<.001 for discriminant function 1 through 3; Wilks's Λ = .805, (16) = 342.93, p<.001 for discriminant function 2 through 3; Wilks's Λ = .983, (7) = 26.82 for discriminant function 3). The first discriminant function explains 62.7% of variance, the

second discriminant function explains 34.7% of variance, and the third discriminant function explains 2.7% of variance. Canonical correlations are .53 for DF1, .43 for DF2, and .13 for DF3, indicating that 53% and 43% of variances were explained by the relationship between predictors and group membership by DF1 and DF2, respectively.

DF1 has the largest relationship with Environmental Identity, followed by Willingness to reduce travel by car, Willingness to reduce meat consumption, Environmental Guilt, Income (negative relationship), Willingness to buy more second-hand products, Descriptive Social Norms, Willingness to buy fewer things overall, and finally, Willingness to reduce travel by plane. DF2 has the largest relationship with Willingness to reduce travel by car, followed by Willingness to reduce meat consumption, Environmental Identity (negative relationship), Environmental Guilt (negative relationship), Income (negative relationship), Willingness to reduce travel by plane, Willingness to buy fewer things overall (negative relationship), Descriptive Social Norms, and finally, Willingness to buy more second-hand goods (negative relationship). DF3 has the strongest relationship with Willingness to reduce meat (negative relationship), followed by Willingness to reduce travel by car (negative relationship), Descriptive Social Norms, Willingness to buy fewer things overall, Income (negative relationship), Environmental Identity (negative relationship), Willingness to buy more second-hand things, Environmental Guilt, and finally, Willingness to reduce travel by plane (negative relationship). Table 18 presents the average discriminant scores for the four groups, separated by function.

Table 18 - Average Discriminant Scores by Function for the Four Groups

	Function		
	1	2	3
Group 1 *(High Concern/High Action)*	2.233a	.661b	-.451d
Group 2 *(High Concern/Low Action)*	.627b	-.674d	.094b
Group 3 *(Low Concern/High Action)*	.659b	1.241a	.318a
Group 4 *(Low Concern/Low Action)*	-.387c	.060c	-.037c

Note: Means with different superscripts are significantly different from each other.

Pairwise comparison on DF1 scores indicates that differences on DF1 were found between Group 4 (M = -.39) and each of the other groups (Group 1 (M = 2.23), Group 2 (M = .63), and Group 3 (M = .66)), respectively. In addition, pairwise comparison on DF2 scores indicates that differences on DF2 were found between Group 2 (M = -.67) and each of the other groups (Group 1 (M = .66), Group 3 (M = 1.24), and Group 4 (M = .06)), respectively. Finally, pairwise comparison on DF3 scores indicated that differences of DF3 were found in the following pairs: Group 1 (M = -.45) vs. Group 2 (M = .09) and Group 3 (M = .32), Group 2 (M = .09) vs. Group 4 (M = -.04), and Group 3 (M = .32) vs. Group 4 (M = -.04).

5.4 Discussion

This study aimed to examine potential factors that relate to high-impact PEBs and living across diet, travel, and material consumption. The process involved identifying relationships between survey items representing the factors of interest and generating variables that categorized participants into four distinct groups based on (a) their level of climate concern and (b) whether they engaged in high-impact PEBs.

The factors examined in this study were those identified within the previous qualitative work when comparing the results of Studies 1 and 2 (in section 4.5, where 'radicals' were compared to 'non-radicals'), which were 'Convenience', 'Feelings of Environmental Guilt', 'Finance', 'Perceived Behavioural Control (PBC)', 'Perceived Impact on Climate Change' and 'Willingness'. In addition, factors suggested in previous literature as important in understanding PEB and living were included: 'Climate Change Concern' (as outlined in section 2.2), 'Environmental Identity' (as outlined in section 2.5.1), 'Descriptive Social Norms' and 'Injunctive Social Norms' (as outlined in section 2.5.2), and 'Socio-Demographics' (as outlined in section 2.5.3). The goal was to identify what factors might be important when considering high-impact PEB, and ultimately to determine what might differentiate climate-concerned 'radicals' who have adopted multiple high-impact PEBs from others.

The first stage of analysis involved running correlations on items representing factors within the three target domains: diet, travel, and material consumption. Within diet, the

study found significant correlations between items representing Finance, Perceived Behavioural Control (PBC), Descriptive Social Norms, and Willingness. Notably, the strongest relationships were between Willingness and Descriptive Social Norms, suggesting that social influences and a readiness to change may be critical in dietary choices. This finding is consistent with previous research by Sparkman and Walton (2017), which showed that social norms significantly impact dietary behaviour, particularly in encouraging meat-free diets. For instance, having friends who follow meat-free diets was related to a greater willingness to reduce meat consumption and a stronger sense of control over diet choices. However, a negative relationship was observed between willingness to reduce meat consumption and feelings of control over food choices (PBC), indicating that individuals may be less inclined to change their diet if they do not feel enabled to do so.

In the domain of travel, it was found that items representing Convenience, Finance, PBC, Descriptive Social Norms, and Willingness significantly correlated with one another. It was also found that those who reported a willingness to reduce travel by car reported living car-free themselves, highlighting the role of personal resolve and existing behaviours in shaping transportation choices. Additionally, a relationship between Finance and Willingness emerged, particularly regarding air travel. Participants who perceived train travel as too expensive were more willing to reduce flying, suggesting that making alternative travel options more affordable *could* encourage reductions in air travel. These findings align with earlier research by Graham-Rowe et al. (2011), which identified cost and convenience as significant barriers to adopting pro-environmental travel behaviours. Furthermore, those who viewed train travel as too time-consuming (and therefore less convenient) also had friends and family who flew regularly, underscoring the influence of descriptive social norms on one's travel decisions. This relationship between social norms and travel behaviour echoes findings by Cialdini and Goldstein (2004), who emphasized the power of social influence in shaping individual choices. Again, PBC was significantly related to not flying, where those who feel in control of how they travel reported avoiding air travel.

Within material consumption, the study identified correlations between Finance, PBC, and Willingness. Not surprisingly, a strong association was found between the willingness to buy fewer things and the willingness to purchase more second-hand items or rent

instead of buying. This suggests that individuals who are open to reducing material consumption are likely to explore multiple avenues for doing so. However, a relationship was also found between the willingness to adopt these practices and the perception that one would be happier if they could afford to buy more. This dichotomy reflects the tension between consumerist, hedonistic desires and pro-environmental intentions, a theme explored in the work of Jackson (2005), who discusses the conflict between materialism and pro-environmental living. Additionally, PBC was negatively related to the willingness to rent more items, indicating that individuals who feel less control over their consumption behaviour may be less inclined to embrace alternative consumption models like buying second-hand goods or renting instead of buying.

The second stage of analysis involved running regressions on items representing factors within the three target domains. Within diet, the study revealed that Willingness, Descriptive Social Norms, and Age significantly associated with having a meat-free diet. For instance, individuals who followed a meat-free diet were more willing to eat less meat, were younger, and were more likely to have friends or family who also abstained from eating meat. This supports the idea that descriptive social norms play a critical role in dietary behaviour and aligns with previous research by Stoll-Kleemann and Schmidt (2017), who found that social networks can strongly influence dietary choices. Again, Willingness seemed to be an important factor, although this might be expected since one is more likely to indicate a willingness to perform a behaviour they are already doing. Moreover, age emerged as a significantly associative factor, with younger individuals more likely to adopt meat-free diets, a trend supported by Ruby (2012), who found that younger generations are increasingly adopting meat-free diets out of environmental concern.

In terms of car travel, regression analysis showed that age, Convenience, income, and Willingness were significantly associated with car ownership. The results suggest that individuals who live car-free are more willing to reduce car use, have a higher income, are younger, and perceive car use as less convenient than alternative transport methods. This is consistent with the work of Anable and Gatersleben (2005), who found that perceptions of convenience and financial resources are key determinants of car use and ownership.

Regarding air travel, income, Willingness, and Descriptive Social Norms were identified as factors associated with flying behaviour. Those with higher incomes, greater

willingness to reduce flying, and social networks that discourage air travel were more likely to avoid flying themselves. These findings resonate with earlier studies by Gössling et al. (2009), who identified income and social influence as major factors in flying behaviour. Once again, Descriptive Social Norms and Willingness emerged as significantly associative factors, reinforcing the importance of these factors as potentially shaping high-impact PEB across different domains of travel.

In the domain of material consumption, regression analysis showed that Age, Finance, Income, and Willingness were significantly associated with having low material consumption. Willingness was the strongest associative factor, with those exhibiting low material consumption being more willing to buy fewer things and purchase more second-hand products, although they were less likely to rent items. This finding is supported by the work of Vergragt and Akenji (2014), who emphasize the role of willingness and financial resources in adopting sustainable consumption practices. Moreover, those with higher material consumption perceived themselves as happier if they could afford more items, a reflection of the consumerist mindset that Jackson (2005) critiques. Interestingly, older individuals and those with higher incomes tended to have lower material consumption, suggesting that life stage and financial stability might influence the adaptation of a life with low material consumption.

The third stage of analysis involved running a discriminant analysis on four pre-defined 'groups' representing participants who varied in terms of concern for climate change and high-impact PEBs across diet, travel, and material consumption: 'High concern/high action' (Group 1), 'high concern/low action' (Group 2), 'low concern/high action' (Group 3), and 'low concern/low action' (Group 4). The analysis revealed that those in Group 1 (high concern/high action) were distinctly different from all other groups. Specifically, Environmental Identity, Environmental Guilt, and Willingness were the main predictors of Group 1 membership. Environmental Identity in particular was found to be a crucial determinant, suggesting that individuals in this group may deeply integrate climate concerns into their self-concept, and that in order to reach this level of lifestyle change for environmental reasons, one may need to truly relate their own identity to issues of climate change. This finding corroborates the work of Gatersleben et al. (2014), who identified a strong link between environmental identity and PEB. The qualitative findings

of this research further support this, showing that significant pro-environmental action often results in a shift in identity for those living radical lifestyles.

Relatedly, Environmental Guilt also emerged as a prominent predictor of Group 1 membership. Individuals in Group 1 (high concern/high action) appeared to be driven by a need to alleviate guilt through adopting radical lifestyles. This aligns with the findings of Van Der Linden (2015), who highlights the role of intrinsic motivation, such as guilt, in fostering pro-environmental behaviour. The concept of Motivational Interviewing (Hettema, 2005) further supports this, suggesting that identifying and addressing internal motivations can lead to meaningful behaviour change. These results suggest that intrinsic motivation, driven by changes in identity and feelings of environmental guilt, may act as precursors to adopting high-impact PEBs. This is consistent with the qualitative findings in this research, which revealed that many 'radicals' experience environmental guilt, prompting them to take more pro-environmental action. It was also found that Group 1 (high concern/high action) was completely different to Group 4 (low concern/low action), which is unsurprising as they are polar opposites when it comes to climate concern and behaviour.

The analysis showed that Willingness was the main determinant of Group 2 (high concern/low action) membership, particularly within diet and travel domains. Individuals in this group demonstrated a willingness to adopt high-impact PEBs in these areas but were less inclined to reduce material consumption. The previous analyses revealed that certain socio-demographics and factors such as Convenience, Finance, PBC, Descriptive Social Norms, and Willingness might each act as barriers to making substantial changes across the three domains. Paired with these results, it is suggested that individuals in Group 2 (high concern/low action) perceive barriers to change at present but may be willing to make changes in the future, particularly in diet and travel. The findings suggest that addressing issues like the affordability of meat-free foods and the reliability of public transport could be key to encouraging large-scale changes in this group. Additionally, reshaping social norms and providing education about the convenience and affordability of PEBs could help convert high concern/low action individuals into high concern/high action individuals. These findings align with the qualitative portion of this thesis, where participants who were highly concerned about climate change but had not made radical changes ('non-radicals', as presented in Chapter

4) discussed perceived barriers to change and a willingness to take action if these barriers were overcome.

In contrast, those in Group 4 (low concern/low action) appeared to *be in opposition* to change. These individuals were not concerned about climate change and were unwilling to take action. One potential explanation for this could be a lack of education about climate change and its impacts. Previous research by Jones and Davison (2021) has shown that some individuals feel disempowered when it comes to tackling climate change, which may contribute to resistance to change. Additionally, some people may view individual high-impact PEBs as an infringement on personal freedom, further discouraging PEB and lifestyle reform. To foster widespread change, it may be necessary to better educate the public about the importance of individual actions in addressing the climate crisis and to attempt to instil the intrinsic motivation observed in those who are in Group 1 (high concern/high action).

In summary, this research sought to assess the extent to which previously identified factors in the qualitative portion of this thesis (Studies 1 and 2, reported in Chapters 3 and 4, respectively) and previous research (outlined in Chapter 2) might be associated with high-impact PEBs across diet, travel, and material consumption. The findings, when paired with the qualitative research, paint a comprehensive picture of the internal and external factors that act as perceived barriers and enablers to adopting high-impact PEBs in the UK. The results reveal that certain socio-demographics, Convenience, Finance, PBC, Descriptive Social Norms, and Willingness may each play a role in adopting high-impact PEBs like having meat-free diets or avoiding air travel and corroborate many of the qualitative findings that identified these factors as critical when considering radical pro-environmental living and high-impact PEB. The study found that individuals in Group 1 (high concern/high action), representing the 'radicals' interviewed in Study 1 (reported in Chapter 3), are *distinctly different* from other groups in terms of these factors, particularly when it comes to environmental identity and environmental guilt. Those in Group 2 (high concern/low action), representing the 'non-radicals' interviewed in Study 2 (reported in Chapter 4), indicated a *willingness* to make changes in the future, suggesting that overcoming perceived barriers could lead to more widespread high-impact PEB adoption. Meanwhile, those in Group 4 (low concern/low action) show *resistance* to change, highlighting the potential need for further education and a means of

instilling intrinsic motivation to encourage high-impact PEB. Together, these findings provide valuable insights into the factors that lead to - and prevent – adopting multiple high-impact PEBs and what differentiates those who are already living this way from others.

This chapter contributes to addressing the theoretical aim of the PhD, which is '*to explore what drives 'radical' living and high-impact pro-environmental behaviour*. It also contributes to answering RQ4: "What factors from the first two studies and from previous literature are important in understanding high-impact pro-environmental behaviour within a UK representative sample, and the uptake of multiple high-impact behaviours?", and specifically satisfies the demands of RO4: "To assess what factors from the first two studies and from previous literature correlate with one another to show a relationship across diet, travel and material consumption", RO5: "To examine what factors from the first two studies and from previous literature might associate with high-impact pro-environmental behaviours across diet, travel and material consumption", and RO6: "To assess what factors from the first two studies and from previous literature differentiates highly concerned individuals who do or do not engage in multiple high-impact pro-environmental behaviours" (see section 2.9 for all RQs and ROs).

The next chapter presents the Discussion of the overall thesis, where the findings from the three studies (outlined in Chapters 3, 4, and 5) will be synthesised and linked with previous research, in order to present the overall findings of the PhD, and specifically to address the theoretical aim of this thesis: "*to explore what drives 'radical' living and high-impact pro-environmental behaviour*" (as outlined in section 2.9).

6 – Discussion

6.1 Overview of Chapter

The aim of this chapter is to synthesize the findings from the three studies in this thesis (presented in Chapters 3, 4, and 5), and to link these findings with previous research. The chapter is organized as follows. The next section provides a brief summary of how this thesis was focused and a brief rationale for looking at radical living and high-impact PEB. Section 6.3 provides a summary of the results from the three studies undertaken in this thesis, including the main findings from each chapter. Section 6.4 synthesizes the main findings of the thesis. Section 6.5 then includes a breakdown of the factors that potentially contribute to radical living and high-impact PEB identified in this thesis, drawing examples from each of the studies and connecting these findings with previous research. The discerning qualities of 'radicals' and 'non-radicals' identified in this thesis are then discussed explicitly in section 6.6, and this is followed by section 6.7 which includes the potential implications of the findings. Section 6.8 discusses the strengths and limitations identified within this thesis, and by study. Finally, section 6.9 outlines some potential future research directions, and section 6.10 provides a conclusion for the thesis.

6.2 Brief Summary and Rationale for Thesis

Current lifestyles are significantly harming the environment, and reducing emissions on an individual level would have a positive effect on climate change mitigation (Wynes & Nicholas, 2017; Gardner & Stern, 2008). Some researchers argue that only rapid and radical transitions will allow humanity to operate within planetary boundaries (Johnstone & Newell, 2018; Rockström et al., 2013). While contributions in this area have greatly aided our understanding of pro-environmental behaviour (PEB), research has mostly focused on (a) *individual behaviours* rather than lifestyles that consist of multiple PEBs, on (b) behaviours that have relatively *low* environmental impacts, rather than on *high-impact* PEBs (Whitmarsh et al., 2021), and (c) on behaviours rather than *behavers*.

Research around PEB has also been largely *theory-driven*, which some say has limited insights into the potential determinants of higher-impact, more transformative changes that people can make (e.g., Nielsen et al., 2021; Whitmarsh et al., 2021). While most people are prepared to undertake small-scale individual actions, few take action beyond this (Whitmarsh, 2009). Thus, little is understood about what factors might lead individuals to take multiple higher-impact actions simultaneously and change one's way of living to be significantly more pro-environmental; little is known about 'radical' pro-environmental living and high-impact PEB (van der Linden, 2016), and this was the focus of this thesis.

A mixed methods approach was adopted involving three studies that sought to uncover the nuances of radical living, including its potential determinants and barriers, and to examine what factors might lead to and prevent radical living and high-impact PEBs. The theoretical aim of the thesis was "*to explore what drives 'radical' living and high-impact pro-environmental behaviour*", with radical living being defined as "*intentional, high-impact pro-environmental living*".

6.3 Summary of Results

To reflect on what has been learned from each of the three studies in this thesis, the following section offers a brief summary of the predominant findings from Studies 1, 2, and 3 (as presented in Chapters 3, 4, and 5, respectively), including how they have contributed to addressing this thesis' Research Questions (RQs) and Research Objectives (ROs).

6.3.1 Interview Study with 'Radicals' (Study 1, presented in Chapter 3)

The first study in this thesis involved fifteen semi-structured interviews with 'radicals', i.e., individuals who were specifically recruited based on radical lifestyles they lived. It aimed to qualitatively and inductively explore why people who are highly concerned about climate change have adopted radical pro-environmental lifestyles (to address Research Objective (RO)1; see section 2.9 for all RQs and ROs). More specifically, it aimed

to answer Research Question (RQ)1: “What drives individuals to adopt radical pro-environmental lifestyles?” and RQ2: “What are the experiences of adopting radical pro-environmental lifestyles?”.

The main findings were identified through four themes and fifteen subthemes. The theme "Radical Pro-Environmental Living" related to the radical actions and high-impact PEBs themselves that participants have adopted and included subthemes such as ‘convenience’, ‘finance’, ‘the need for systemic change’, and ‘privilege’, highlighting different aspects of radical living. The theme "Motivators for Radical Living" related to the driving forces behind adopting radical lifestyles, including subthemes like ‘feelings of environmental guilt’, ‘sense of environmental responsibility’, and ‘considering one’s environmental impact as a driving force for radical living’. The theme "Experiences of Living a Radical Pro-Environmental Lifestyle" outlined multiple aspects of what it is like for these participants to live a radical lifestyle, including subthemes such as ‘making sacrifices to live a radical lifestyle’, ‘climate change as a personal burden’, ‘social implications of radical living’, and ‘positive aspects of radical living’. Lastly, the theme "Who is a ‘Radical Pro-Environmentalist’" delved into the aspects that might *define* someone who adopts a radical lifestyle, including subthemes such as ‘feelings of empowerment’, ‘identity’, and ‘defining radical living’.

6.3.2 Interview Study with ‘Non-Radicals’ (Study 2, presented in Chapter 4)

This chapter had two parts. Part 1 reported on the results from Study 2, which aimed to qualitatively and deductively explore why people who are highly concerned about climate change do not live radical pro-environmental lifestyles. (RO2; see section 2.9 for all RQs and ROs). More specifically, it aimed to answer RQ3: “What are the factors that prevent those who are highly concerned about climate change from living radical pro-environmental lifestyles?”. The study involved fifteen qualitative semi-structured interviews with individuals who were specifically recruited based on having high concern about climate change but who had not adopted radical pro-environmental lifestyles or multiple high-impact PEBs.

Main findings were identified through three themes and ten subthemes. The theme "Barriers to Radical Pro-Environmental Living" related to participants' perceived reasons for not making changes and included subthemes such as 'inconvenience', 'finance', and 'the need for systemic change'. The theme "Inactive Concern" related to the relationship between participants' concern about climate change and their lack of making radical changes, including subthemes like 'climate change concern', 'perceived impact of climate change', and 'climate change beliefs'. The theme "Climate Change and Me" related to the ways that participants see themselves within climate change and included subthemes such as 'feelings of disempowerment', 'willingness to make changes', 'climate change as a personal burden', and 'feelings of environmental guilt'.

The second part of Chapter 4 saw a comparison between the themes identified among 'radicals' (participants in Study 1 as presented in Chapter 3) and those identified among 'non-radicals' (participants in Study 2 as presented in Chapter 4). By comparing the results from Chapters 3 and 4, this addressed RO3: 'To identify any key factors that influences and prevents radical living among those who are highly concerned about climate change by comparing the results from these two studies' (see section 2.9 for all RQs and ROs). There were six themes that were shared among radicals and non-radicals, whether or not they were in agreement: 'Convenience', 'Feelings of Environmental Guilt', 'Finance', 'Perceived Impact on Climate Change', 'The Need for Systemic Change', and 'Willingness'.

6.3.3 Factors Associated with Radical Pro-Environmental Living: *A Secondary Data Analysis* (Study 3, presented in Chapter 5)

This third and final study aimed to examine potential factors that were associated with high-impact PEBs across diet, travel, and material consumption, based on (a) five factors identified across the qualitative works as potentially associative with radical living ('Convenience', 'Feelings of Environmental Guilt', 'Finance', 'Perceived Behavioural Control (PBC)', and 'Willingness'), and (b) six additional factors suggested in previous literature as potentially predictive of PEB ('Climate Change Concern', 'Environmental Identity', 'Descriptive Social Norms', 'Injunctive Social Norms' and 'Socio-Demographics').

The process involved (i) identifying relationships between items within the survey that represent these factors, then (ii) identifying relationships between these factors and high-impact PEBs across diet, travel, and material consumption, and finally, (iii) generating and comparing variables that represented four 'groups' of participants who varied in terms of climate concern and pro-environmental living, ultimately to represent 'radicals' and 'non-radicals', and determining how those who reported high climate concern and taking multiple high-impact PEBs *differed* across the target factors from other groups. This was done to answer RQ4: "What factors from the first two studies and from previous literature are important in understanding high-impact pro-environmental behaviour within a UK representative sample, and the uptake of multiple high-impact behaviours?" (see section 2.9 for all RQs and ROs).

Main findings to address RO4 ("to assess what factors from the first two studies and from previous literature correlate with one another to show a relationship across diet, travel and material consumption") were as follows. Within diet, it was found that items representing Finance, Perceived Behavioural Control (PBC), Descriptive Social Norms, and Willingness significantly correlated with one another. There was also a negative relationship between one's willingness to reduce meat consumption and feeling in control of their food choices. Within travel, items representing Convenience, Finance, PBC, Descriptive Social Norms, and Willingness significantly correlated with one another. Those who reported a willingness to reduce travel by car reported living car-free. A relationship was found between Finance and Willingness to reduce flying if train travel was more affordable and convenient. Several factors were found to be interrelated when it comes to material consumption, including Finance, PBC, and Willingness. There was also a strong association between willingness to buy fewer things and willingness to buy more second-hand items.

Main findings to address RO5 ("to examine what factors from the first two studies and from previous literature might associate with high-impact pro-environmental behaviours across diet, travel and material consumption") were as follows. Age, Descriptive Social Norms, and Willingness were associated with having a meat-free diet. Age, Convenience, income, and Willingness were associated with car ownership. Income, Willingness, and Descriptive Social Norms were associated with flying. Finally, Age, Finance, Income, and Willingness were associated with material consumption.

Addressing RO6 ("to assess what factors from the first two studies and from previous literature differentiates highly concerned individuals who do or do not engage in multiple high-impact pro-environmental behaviours") involved using a discriminant analysis to determine which factors best predicted group membership among participants divided into 4 groups of high/low climate concern and high/low action. The main findings were that those in Group 1 (high concern/high action, representing 'radicals') were distinctly different from *all* other groups, particularly in Environmental Identity, Environmental Guilt, and Willingness, which were the main predictors of Group 1 membership. Those within this group had strong environmental identities and environmental guilt, possibly consequent to the multiple high-impact PEBs they have adopted, essentially the environmentally driven lifestyles that they live, and demonstrated even more willingness to adopt more high-impact PEBs in the future. Willingness was the main determinant of Group 2 membership (high concern/low action, presenting 'non-radicals'). Those within this group demonstrated *willingness* to adopt high-impact PEBs within diet and travel in the future (despite reporting not currently performing these high-impact PEBs) but were unwilling to reduce their material consumption. Those in Group 4 (low concern/low action) appeared to be *in opposition* to change, as they were grouped in contrast to Group 1 across all factors. The next section aims to synthesize these findings and examine how they relate to previous literature in this area.

6.4 Novel Findings of this Thesis

The findings from this research aimed to provide a multidimensional understanding of the complexities involved in radical pro-environmental living and high-impact PEB. Taking together the results from these three individual studies, much is revealed around the motivations and experiences of radical living among 'radicals', the barriers and enablers of adopting radical lifestyles among 'non-radicals', and the potential determinants of adopting (multiple) high-impact PEBs across a UK representative sample. While section 6.5 reflects on the *specific* factors identified through this research as potential determinants of radical living, some 'take-aways' are summarised below (in sections 6.4.1 - 6.4.7) which illustrate the predominant findings of this thesis. These serve as an *overview* of what has been learned before breaking down the findings by

considering the evidence of individual factors that may contribute to radical living that follow in the next section (6.5).

6.4.1 'Radical' – Not 'Typical'

Radicals (those who have adopted radical pro-environmental lifestyles) display a significant commitment to reducing their environmental impact by adopting lifestyles that very much *go against* what might be considered 'mainstream' living in the UK. Among the sample of radicals interviewed in this study, participants discussed adopting a plethora of high-impact PEBs, including those examined in Study 3 (as reported in Chapter 5), which were having meat-free diets, avoiding car ownership and air travel, and refraining from purchasing new material goods. These actions, while diverse, collectively demonstrate a profound departure from what might be considered 'typical' living in the UK, and this way of life seems to be driven by a deep-seated concern for climate change and a desire to align their daily practices with their environmental values. Radicals seem to place environmental living above their hedonistic desires, and many discussed almost a continuous narrative in their daily lives that reminded them of how each action has an environmental impact, which seemed to drive their every behavioural decision.

6.4.2 Calling for 'Systemic Change'

Another critical finding across the research is the role of perceived *systemic barriers* in shaping individuals' willingness and PBC to engage in radical pro-environmental living and adopt high-impact PEBs. A predominant perceived barrier echoed across radicals and non-radicals was 'the system' in which participants live, and many called for systemic changes to help facilitate the adoption of many high-impact PEBs and ultimately the adoption of radical lifestyles. For example, despite their strong personal commitments, participants often expressed frustration with many broader societal and structural barriers that they believed hindered their ability to live radical lifestyles, or at least made the individual behaviours within those lifestyles consistently more challenging. They recognized that without systemic changes, such as improved public transportation, more environmentally agreeable housing regulations, and generally broader societal shifts that

enable pro-environmental living, individual efforts might have limited impact or be more difficult to do on a daily basis.

In line with calls for systemic changes, many participants identified practical challenges to radical living or the adoption of individual high-impact PEBs, such as the lack of convenient infrastructure to support PEB and the perceived financial burden associated with many high-impact PEBs. For example, many 'non-radicals' (those interviewed in Study 2 as presented in Chapter 4) perceived that pro-environmental travel options are of high cost and ethical consumer choices were frequently cited as a deterrent to adopting high-impact behaviours and, ultimately, radical lifestyles. This aligns with previous research by Whitmarsh and O'Neill (2010), who found that financial constraints are a significant barrier to the adoption of many PEBs.

Furthermore, the perceived inconvenience of certain PEBs, such as unreliable public transportation, seems to further exacerbate these challenges, highlighting the potential need for systemic changes that facilitate and support pro-environmental lifestyle choices at a societal level (Steg & Vlek, 2009), and this is particularly important to consider if we are to strive for rapid and far-reaching change within the UK. While radicals also acknowledged many systemic barriers to their lifestyles, they displayed such a remarkable level of commitment and resilience that they have adopted these lifestyles in spite of perceiving many systemic barriers themselves (which is explored in the following section). The need for systemic change and call for change across both samples underscores the importance of aligning individual actions with broader policy measures and societal support to facilitate more widespread adoption of high-impact PEBs, and this would theoretically make the adoption of radical lifestyles easier and more desirable.

6.4.3 Feeling *Empowered*, yet Driven by *Guilt*

Another key finding in this thesis is that radicals seem to be driven by intrinsic motivations (including feelings of environmental guilt, a strong sense of environmental responsibility, and a desire to minimize their negative environmental impact in almost every avenue possible) and may also be driven by a greater feeling of *empowerment* than experienced by non-radicals when they consider the outcome of their pro-environmental

actions. These motivations also appear to be intertwined with participants' knowledge of environmental issues and their understanding of the broader consequences of climate change, that is the direness of climate change in all parts of the world. This reflects a broader understanding of the interconnectedness of human actions and environmental outcomes noted in research by Swim et al. (2011). This sense of 'moral duty' to take action against climate change on an individual level, coupled with a desire to alleviate one's own environmental guilt associated behaviours that cause harm to the planet seems to serve as a powerful catalyst for adopting and maintaining radical lifestyles. These findings corroborate with the works of Hargreaves (2011), who found that guilt was a potent motivator for PEB.

6.4.4 Having *Environmental Identity*

The research also highlights the potential importance of one's own environmental identity in adopting radical pro-environmental lifestyles. This thesis' findings suggest that those who identify strongly with environmentalism or activism are more likely to adopt radical lifestyles and view their lifestyle choices as integral to their senses of self. These findings corroborate with the work of Clayton and Opotow (2003), who found that PEBs are often closely linked with how individuals actually perceive themselves and see their roles in the world.

6.4.5 Guided by Social Norms

While a comparison of qualitative Studies 1 and 2 offered some insights into the factors that may lead to and prevent radical living, Study 3 extended these findings by shining light on some additional factors that impact upon adopting high-impact PEBs. Namely, descriptive social norms seemed to play an important role in understanding high-impact PEB, whereby one is influenced by those around them to adopt certain behaviours. For instance, having friends or family who follow meat-free diets or avoid air travel was found to significantly impact one's willingness to adopt similar behaviours. This finding echoes

the work of Cialdini and Goldstein (2004), who emphasized the power of social influence in shaping individual choices.

6.4.6 Perceiving One's *Impact* on Climate Change

The research also reveals a significant disparity in perceptions of the *impact* of individual actions on climate change. While radicals seemed to generally believe that their efforts would have a meaningful impact, non-radicals were more sceptical about the efficacy of their individual pro-environmental actions, particularly in the absence of larger-scale systemic changes being made from the top-down. This scepticism appeared to create somewhat of a psychological barrier to adopting high-impact PEBs and radical lifestyles and seemed to result in feelings of disempowerment which led to disengagement. This finding aligns with the concept of the "tragedy of the commons" (Hardin, 1968), where many individuals feel that their environmental impacts are likely too small in the grand scheme of things, and this generally leads to inaction. The challenge, therefore, lies in instilling a greater sense of individual agency and empowerment of adopting impactful pro-environmental lifestyles, and in helping individuals see the value of their pro-environmental actions within climate change. Since the results across the three studies in this thesis point towards the importance of having a strong environmental identity which links with experiencing environmental guilt, coupled with a feeling that one's individual actions can have meaningful implications for climate change mitigation, this is an important area to consider when deciphering how to encourage the widespread adoption of radical lifestyles and high-impact PEBs.

Furthermore, while radicals felt that their lifestyles were having a positive environmental impact, many non-radicals discussed feeling disempowered, although making radical changes would have little impact on climate change, and this seemed to be an internal barrier to adopting radical lifestyles and high-impact PEBs for many. This sentiment is consistent with Stern's (2000) discussion of the impact-intent gap, where individuals who feel that their actions are insignificant in the face of global environmental challenges are less likely to make changes, or that they stick to making small changes that are easier to do rather than opting for multiple, high-impact changes.

6.4.7 Battling Barriers

Interestingly, the research also suggests a dichotomy between the experiences of those who have adopted radical pro-environmental lifestyles and those who have not. While both groups express concerns about climate change and its impacts, their perceptions of barriers and motivations that drive their behaviours significantly differ. Those who have adopted radical lifestyles are often willing to make substantial sacrifices and overcome significant challenges, and this again seems to be driven by a deep-seated commitment to their environmental values. In contrast, those who have not made radical changes perceive these barriers to be too great. Be it perceived inconvenience, financial cost, or a lack of systems that support PEB, this perception that these issues are almost insurmountable prevents non-radicals from taking more significant action. This highlights the importance of addressing these perceived barriers to encourage more widespread adoption of radical pro-environmental lifestyles and high-impact PEBs in general. If we are to expect more people to engage with radical pro-environmental living, addressing these perceived barriers and encouraging more agency and self-efficacy to change is imperative.

6.4.8 Summary

In summary, the findings of this thesis provide valuable insights into the potential determinants of radical pro-environmental living and the uptake of high-impact PEBs. There are various motivations, barriers, social influences, and perceived systemic factors that play important roles in whether or not individuals adopt radical pro-environmental lifestyles. While individuals who engage in high-impact PEBs and live radical pro-environmental lifestyles display a strong commitment to the cause in reducing their environmental impacts wherever possible, even they discussed facing significant challenges that hindered their efforts or made their actions consistently more difficult. Addressing these challenges, both at the individual and systemic levels, is crucial in promoting more sustainable lifestyles and encouraging broader societal engagement with high-impact PEBs. By understanding the factors that drive and prevent radical and high-impact pro-environmental living, this research offers a foundation for future studies

and intervention strategies aimed at fostering a more sustainable future. While this summary provides a general discussion of what has been found across this thesis, the next section is aimed to provide a more nuanced overview of how each of the individual potential factors might determine the uptake of radical pro-environmental living and high-impact PEBs.

6.5 Evidence for Factors That Contribute to Radical Living & Links to Wider Literature

In understanding the role of each individual factor identified as a potential determinant to radical living and the adoption of high-impact PEBs, this section aims to break down the factors explored and link these findings with previous research. This includes the five factors shared among radicals and non-radicals (discussed in Chapter 4) that were then examined empirically (in Chapter 5), '*Convenience*' (section 6.5.1), '*Finance*' (section 6.5.2), '*Perceived Behavioural Control (PBC)*' (section 6.5.3), '*Feelings of Environmental Guilt*' (section 6.5.4), and '*Willingness*' (section 6.5.5), in addition to the factors highlighted in previous research to be potentially important in understanding PEB (discussed in Chapter 2) that were also considered empirically (in Chapter 5), '*Descriptive Social Norms*' (section 6.5.6), '*Injunctive Social Norms*' (section 6.5.7), '*Socio-Demographics*' (section 6.5.8), and '*Environmental Identity*' (section 6.5.9). Additionally, evidence for '*Climate Change Concern*' (section 6.5.10) itself as a potential contributor to radical living will also be summarised. Section 6.5.11 will then briefly synthesize these findings. Figure 8 illustrates how the ten potential determinants (factors) may influence whether or not an individual adopts a radical lifestyle or multiple high-impact PEBs.

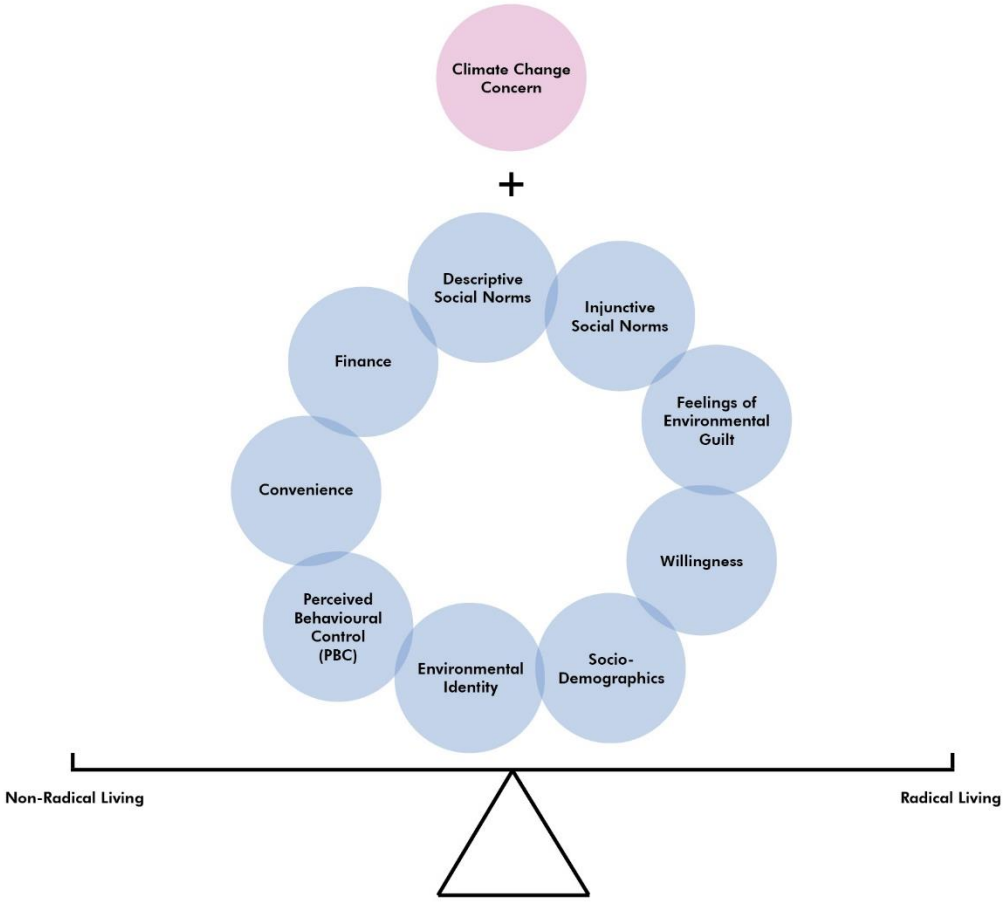

Figure 9 - Ten potential determinants that may influence whether or not an individual adopts a radical lifestyle or multiple high-impact PEBs.

6.5.1 Evidence for 'Convenience' as Important in Understanding Radical Living

The first factor identified within this thesis as a potential contributor to radical living and high-impact PEB related to the perceived *convenience* of PEBs. Within this thesis' qualitative works, radicals undertook inconvenient actions *regardless* of the difficulty of those actions, while non-radicals viewed inconvenience as a significant barrier to taking action. It was clear that while those who indicated living radical lifestyles mentioned many systemic barriers that can often make radical living more difficult (such as having

ineffective or unreliable public transport links, the additional time travel by rail can take compared to travel by plane) they opted for pro-environmental actions *despite* them often being less convenient. Many of the radicals acknowledged that their pro-environmental choices were often less convenient, however, but many indicated almost a *compulsion* to do these things anyway. When it came to the non-radicals, however, many noted the inconvenience of high-impact PEBs to be a *barrier* to making changes. In agreeance with the radicals, some non-radicals noted that many high-impact PEBs were remarkedly less convenient (such as public transport being inconsistent and unreliable), and that this was enough of a barrier for them to making lifestyle changes.

Within the quantitative findings, convenience was found to be significantly associated with *only* car ownership, again suggesting that when it comes to travel choices this may be a barrier to change among non-radicals. Convenience has been shown to predict and prevent PEB in previous research. For example, Stern (2000) found that while individual factors were crucial in engagement with PEB, they were enhanced by the availability of *facilitating conditions*, Gatersleben et al. (2002) demonstrated that ease of access to recycling bins led to higher recycling rates, and Steg and Vlek (2009) found that making public transport more convenient increased its use. Furthermore, Graça et al. (2015) found that convenience was a key factor that affected whether individuals adopted high-impact PEB, specifically in adopting plant-based diets.

As convenience wasn't ultimately identified as a strong predictor within the quantitative study of this thesis for high-impact PEBs other than car ownership or in predicting group membership of radicals (represented by Group 1) versus others, these findings cannot fully corroborate previous research on convenience or availability of PEBs, but it is suggested that the convenience of travel choices may be the most pertinent area in which barriers to radical living and the uptake of high-impact PEB are identified.

6.5.2 Evidence for 'Finance' as Important in Understanding Radical Living

The second factor identified within this thesis as a potential contributor to radical living related to perceived *financial* aspect of radical living and high-impact PEBs. Within the qualitative works, finance was sometimes a barrier for radicals but did not always prevent

action, whereas for non-radicals, financial constraints were perceived as a *constant* barrier. Although some radicals discussed ways in which they faced financial barriers to adopting *further* high-impact PEBs, many were willing to bear the financial burdens associated with living a radical lifestyle – again, out of a strong motivation to live radial lifestyles wherever possible. Some radicals expressed frustration around high costs associated with pro-environmental home renovations (such as insulating their homes or installing heat-pumps), but others spoke of the affordability of public transport and other PEBs in comparison to the less environmentally friendly alternatives. Many of the non-radicals spoke about the higher cost of many high and low impact PEBs (such as travel by train versus flying when discussing holidays, or the higher cost of pro-environmental diets), and this perceived higher cost seemed to be enough of a barrier to prevent making changes. Within the quantitative works, finance was *only* associated with having lower material consumption. This may be expected, however, as those with less funds would likely afford to buy less goods.

The findings from this thesis related to finance corroborate with many previous works on cost as a predictor of PEB. For example, Gillingham et al. (2009) found that subsidies for renewable energy adoption increased PEB, and Kitamura (2003) showed that providing free bus tickets reduced car use. The findings also corroborate with research by Kollmuss and Agyeman (2002), who found that PEBs are influenced not only by internal factors, but also external factors, to include institutional, *economic* and sociocultural influences. Furthermore, Pampel (2014) found that those with a lower income often felt that they needed to consider more immediate personal issues, such as one's own economic needs, and that this prevented many from engaging with environmental issues, including a lack of seeking more pro-environmental alternatives when it comes to one's purchasing behaviours. Unsurprisingly, research by Martinsson et al. (2011) found that when those with lower income do engage with PEB, they are often more likely to change behaviours that result in saving money (such as reducing their heating and cooling at home, or opting for public transport over other travel methods) rather than spending money (such as converting one's home energy to a pro-environmental alternative by installing a heat-pump or buying an electric car, for example). Thus, finance does in fact seem to be a potential contributor to many individual high-impact PEBs, and may be a predictor of whether or not somebody adopts a radical lifestyle, too.

6.5.3 Evidence for 'Perceived Behavioural Control (PBC)' as Important in Understanding Radical Living

The third factor identified within this thesis as a potential contributor to radical living related to one's *Perceived Behavioural Control (PBC)* as related to specific (radical) PEBs. The qualitative findings indicated that radicals seemed to feel in control of most of their individual PEBs and their lifestyles. While both radicals and non-radicals agreed on the necessity for systemic changes to help *enable* more PEBs, radicals deliberately adopted a wide array of PEBs *despite* noting systemic barriers that they had to overcome. Radicals also felt empowered and capable of making a difference by making individual changes. Non-radicals, on the other hand, felt that they had little control over adopting high-impact PEBs, again largely due to the perceived systemic barriers they faced as mentioned above (convenience and finance being the predominant two barriers non-radicals repeatedly referenced). They also believed that their individual efforts would be insignificant in the grand scheme of climate change, and this seemed to be another barrier they perceived to making radical lifestyle changes or adopting multiple high-impact PEBs.

Within the quantitative works, PBC was found to be related to other factors like finance and willingness (within 'diet'), convenience, finance, descriptive social norms, and willingness (within 'travel'), and finance and willingness (within 'material consumption') but was not found to be significantly associated with any behaviour, nor was it found to be a discerning factor in separating participants by group. In terms of previous research on the potential contributor of PBC to PEB, Frick et al. (2004) found that knowledge combined with environmental attitudes and PBC predicted PEB, and Klöckner and Blöbaum (2010) found that one's PBC predicted one's adoption of using energy-efficient appliances at home and reducing one's car use. The Theory of Planned Behaviour (TPB) also incorporates an element of PBC in their model. However, due to the inconsistent findings between the qualitative and quantitative works within this thesis', it is not suggested that PBC is particularly useful at understanding PEB or in explaining how radicals differ from non-radicals.

6.5.4 Evidence for 'Feelings of Environmental Guilt' as Important in Understanding Radical Living

The fourth factor identified within this thesis as a potential contributor to radical living related to experiencing *feelings of environmental guilt*. Within the qualitative works, many radicals experienced intense environmental guilt that influenced much of their decision-making around behaviour. The theme of environmental guilt was prominent in Chapter 3 among radicals, where many participants spoke of their lifestyles as 'bearing the cross', i.e., as a continuous burden that affected their every intent. Conversely, while some non-radicals in Chapter 4 mentioned feeling an extent of environmental guilt, they seemed to experience it less intensely than radicals did. For non-radicals, it seemed to be more of a feeling that one experiences when they actively think about the role that they play in climate change, but not something that was as continuously on their minds as indicated by radicals.

In terms of the quantitative findings, environmental guilt was a strong predictor of Group 1 membership (those of high concern/high action, representing 'radicals'). These findings therefore corroborate with the qualitative results of this thesis (reported in Chapter 3 and 4) and indicate the potential importance of experiencing environmental guilt in predicting radical living and the uptake of high-impact PEBs. Bamberg and Möser, (2007) found that PEB was mediated by moral and social norms, guilt and attribution processes. Furthermore, Harland et al. (1999) found that environmental responsibility-driven personal norms were strong predictors of PEB, and Kollmuss and Agyeman (2002) suggested that efficacy and environmental responsibility enhance the likelihood of practicing PEB. This finding also relates to Shiva's (2005) theory of 'Earth Democracy' (presented in section 2.4.9), which flags the importance of environmental responsibility in understanding PEB. Furthermore, Steg and Groot (2010) found that ascription of responsibility predicted intentions to reduce car use and adopt other PEBs. While some of these works are more situated around responsibility than the experience of guilt, it is suggested that a consciousness about one's impact upon climate change that can often lead to experiencing environmental guilt may be an important determinant of radical living and the uptake of high-impact PEBs.

While conventional wisdom often advises against the use of *guilt* as a motivational tool, the data suggests that guilt does, to some extent, motivate individuals to engage in PEBs and adopt radical lifestyles. This is not to advocate for overt moralizing or guilt-inducing strategies, which can backfire (Feinberg & Willer, 2013). Instead, it is important to recognize the implicit role of guilt and morality in driving these behaviours. Throughout the study, there is no evidence that external 'guilt-tripping' directly influences high-impact PEB or radical living. Rather, it appears that an internalized sense of guilt and moral responsibility plays a critical role in motivating and sustaining these actions.

6.5.5 Evidence for 'Willingness' as Important in Understanding Radical Living

The fifth factor identified within this thesis as a potential contributor to radical living related to one's *willingness* to adopt radical lifestyles or high-impact PEBs. The qualitative findings showed that radicals were willing to make pro-environmental changes wherever possible and felt *compelled* to make these changes, which ultimately seemed to have an impact on how their identities were constructed. Non-radicals, on the other hand, again identified many barriers to making impactful pro-environmental changes. However, they consistently expressed a willingness to make changes in the future. The message among non-radicals seemed to be that the other barriers identified (predominantly around convenience and finance) prevented their adoption of many PEBs, but that if systemic issues were addressed to bring down the perceived cost and inconvenience of radical living, they may be more willing to make lifestyle changes. Within the quantitative findings, willingness showed many significances. It was found that willingness was associated with multiple high-impact PEBs, such as having a meat-free diet, not owning a car, not flying, and having low material consumption. When it came to examining these factors by group, willingness was the strongest factor that predicted Group 2 membership (those of high concern/low action, i.e., 'non-radicals'), which corroborates with the qualitative findings of this thesis.

Willingness to make changes has also been shown to be a crucial predictor of PEB in past research, as it reflects an individual's readiness to adopt pro-environmental practices. Past research suggests that willingness often stems from intrinsic motivations and a

heightened awareness of environmental issues, which together drive proactive behaviours. Bamberg and Möser (2007), for example, found that individuals with a strong willingness to change were more likely to engage in a variety of PEBs, including reducing energy consumption and participating in environmental activism. Furthermore, De Groot and Steg (2010) highlighted that a willingness to adopt new behaviours was significantly influenced by one's environmental values and beliefs, which in turn enhanced the perceived importance and impact of these actions. Furthermore, another study by Gifford and Nilsson (2014) demonstrated that willingness to engage in environmentally friendly behaviours was strongly correlated with PEB, underscoring the role of personal commitment in bridging the gap between environmental concern and action. Van Loo et al. (2020) also found that consumers were more willing to buy organic chicken despite its higher cost if they had a concern for the environment. The findings of this thesis therefore corroborate with previous research and find that willingness seems to play a crucial role in understanding radical living or the adoption of high-impact PEBs.

6.5.6 Evidence for 'Descriptive Social Norms' as Important in Understanding Radical Living

The sixth factor identified within this thesis as a potential contributor to radical living related to *descriptive social norms*. Within the qualitative works, social norms in general were not identified as a specific theme, but within our quantitative findings, *descriptive social norms* were associated with having a meat-free diet and not flying. Previous research corroborates with these findings, and descriptive social norms have been found to predict PEB. For example, Robinson et al. (2014) observed that individuals informed about high rates of vegetarianism within their social groups reduced their meat consumption. Furthermore, Sparkman and Walton (2017) found that descriptive social norms (and particularly 'dynamic' descriptive social norms, which are those that signal changing one's behaviour) predicted meat consumption reduction, and Farrow et al. (2017) found that descriptive social norms predicted recycling behaviour and reducing energy consumption.

Research has also found that social norms *in general* play a significant role in influencing PEB (Cialdini et al., 1990). For example, Goldstein et al. (2008) found that interventions

leveraging social norms effectively promoted recycling and energy conservation. Similarly, Perry et al. (2021) reviewed literature on social norms and emphasized their critical importance in predicting individual PEB, and Cialdini et al. (1990) underscored the importance of social norms in understanding PEB, particularly in recycling behaviours and energy conservation. Indeed, a body of research suggests that social norms in general are important in predicting PEB which may stretch to living radical lifestyles, and while our qualitative works did not reveal much about how descriptive social norms play into radical living, our quantitative findings suggest that they may be important in understanding the adoption of specific high-impact PEBs.

6.5.7 Evidence for 'Injunctive Social Norms' as Important in Understanding Radical Living

Again, while injunctive social norms were not explored qualitatively in this thesis, they were integrated into some analyses within Chapter 5. Notably, however, only *descriptive social norms* were significant in our quantitative component, suggesting that this type of social norm may be more relevant in influencing high-impact PEBs. However, past research does suggest that injunctive social norms may play a role in PEB. For example, Bamberg et al. (2007) discovered that perceived social expectations influenced individuals' intentions to use public transport over personal vehicles, and Stok et al. (2014) noted a reduction in meat consumption among students who believed their peers approved of vegetarianism. Therefore, while the findings from this thesis generally cannot corroborate these findings when it comes to radical living, there is clearly evidence that they play a role in PEB. However, our findings suggest that when it comes to understanding high-impact PEB, descriptive social norms play a more important role than injunctive social norms.

6.5.8 Evidence for 'Socio-Demographics' as Important in Understanding Radical Living

The eighth factor identified within this thesis as a potential contributor to radical living and high-impact PEB related to one's *socio-demographics*. Although this was not particularly explored within our qualitative works, the quantitative findings showed that *age* and *income* were both found to be significant in understanding some PEBs. Firstly, those who were younger were more likely to have a meat-free diet and live car free, whereas those of a higher age were more likely to have low material consumption. However, those with a lower income were less likely to live car free, less likely to avoid air travel, and less likely to have low material consumption. This suggests that although younger people may engage with some more high-impact PEBs, those with a lower income may engage with less high-impact PEBs. Previous research finds that younger individuals tended to show higher concern for climate change and support for environmental protection policies (Lee et al., 2015; Wray-Lake et al., 2010). They also engage more in activism (Larson et al., 2015). Furthermore, higher income individuals are better equipped to afford PEBs, while lower income individuals face barriers due to economic needs (Fairbrother, 2013; Pampel, 2014; Martinsson et al., 2011). Thus, our findings are that those who are younger and have a higher income engage with more high-impact PEBs when it comes to diet and travel in particular, and this generally corroborates with past research that finds that age and income may both be important in understanding radical living and the uptake of high-impact PEBs.

6.5.9 Evidence for 'Environmental Identity' as Important in Understanding Radical Living

The ninth factor identified within this thesis as a potential contributor to radical living related to one's *environmental identity*. Environmental identity was shown in our qualitative works to be crucial for radicals, and seemed to influence all of their decisions, ultimately becoming an integral part of their lives. Many participants among the group of radicals in Study 1 (presented in Chapter 3) defined themselves as environmental 'activists', and again spoke of a continuous thought process about how each of their

behaviours could have an impact upon the environment. In contrast, environmental identity was not found to be significant among non-radicals in Study 2 (presented in Chapter 4). Our quantitative findings were that environmental identity was a key predictor of Group 1 membership (high concern/high action, representing 'radicals') and *not* Group 2 membership (high concern/now action, representing 'non-radicals'), which corroborates with the qualitative findings that environmental identity is more an aspect of radical (versus non-radical) living.

Previous research supports these findings. For example, Bamberg and Möser (2007) found that those with stronger environmental values were more likely to engage in PEB. Altruistic values also correlated with increased PEBs, including reducing car use, reducing energy consumption, and participating in environmental activism (Steg et al., 2005), and environmental identity and values were found in some instances to influence energy conservation and other PEBs (Fielding et al., 2008; De Groot & Steg, 2008; Clayton & Opotow, 2003; Gatersleben et al., 2014). Finally, Whitmarsh and O'Neill (2010) found that having stronger environmental identity predicted a range of PEBs such as conserving energy use at home and opting for more pro-environmental travel options. Therefore, our findings corroborate with previous research, and it seems that environmental identity may be an important factor in understanding radical living and the uptake of high-impact PEBs.

6.5.10 Evidence for 'Climate Change Concern' as Important in Understanding Radical Living

Finally, one's *concern about climate change* was identified as a potential contributor. The qualitative findings revealed that while both radicals and non-radicals were selected for being highly concerned about climate change, only radicals adopted radical lifestyles, suggesting that concern *alone* may be insufficient to drive radical living. Our quantitative findings corroborated with this, showing that high concern alone did not predict multiple high-impact PEBs, and the fact that those of high concern fell across *both* groups of high and low action again suggests that a concern about climate change alone *does not* predict radical living or the uptake of high-impact PEBs.

In terms of previous research, however, many have found a link between climate concern and PEB. For example, Janssen et al. (2016) found that animal welfare concerns predicted vegetarianism, and Thomas et al. (2003) identified environmental concerns as predictors of recycling behaviour. Similarly, Stern (2000) found that those who believed their behaviours negatively impacted climate change adopted more PEBs. However, this thesis finds that climate concern *alone* was not a predictor of radical living or high-impact PEB, and thus our findings tend to conflict with this previous research to some extent. However, our findings *do* align with the concern-action gap referred in Chapter 1 (i.e., Kollmuss & Agyeman, 2002), which states that climate change alone does not spark action. This thesis finds that having high concern about climate change combined with some of these other factors is what is more likely to contribute to radical living. One is highly unlikely to be *un*concerned about climate change yet live a radical pro-environmental lifestyle, so climate concern is clearly an important ingredient in determining this way of living; however, it seems that it is the basis for living radically rather than a solitary determining factor.

6.5.11 Conclusions Regarding Evidence for Each Factor

In conclusion, the evidence presented above highlights a multifaceted understanding of factors that may contribute to radical living and the adoption of high-impact PEBs. Several key factors were identified, including *convenience*, *finance*, *environmental guilt*, *willingness*, *descriptive social norms*, *socio-demographics* (including age and income), *environmental identity*, and *climate change concern*, while *PBC* and *injunctive social norms* were found to be less important in understanding high-impact PEB and did not seem to be a determinant of radical living.

This thesis' mixed-methods findings suggest that while many factors are shared between radicals and non-radicals, distinct differences in how these groups interact with barriers and facilitators to radical living - such as *convenience* and *finance* - play a crucial role in determining whether one adopts a radical lifestyle and/or high-impact PEBs. For instance, radicals often overcome perceived barriers of inconvenience and cost through a strong *compulsion* to act on their environmental values, whereas non-radicals view these as insurmountable obstacles unless systemic changes were to reduce these perceived

barriers. These findings align with previous research on the impact of convenience and financial constraints on PEB, but also highlight the unique motivators driving radical living and high-impact PEB, such as strong feelings of *environmental guilt*; although, again, *PBC* and *injunctive social norms* were less relevant than other factors in understanding high-impact PEB and radical living.

The thesis also demonstrates the significance of *descriptive social norms*, *environmental identity*, and *willingness* in potentially determining radical living and the adoption of high-impact PEBs. *Descriptive social norms* were in particular identified as strongly associated with high-impact PEBs within Study 3 (as presented in Chapter 5), like adopting a meat-free diet and avoiding air travel, supporting prior research on the role of peer behaviour in influencing PEB. Furthermore, the internalization of *environmental identity* and *willingness* to engage in radical actions, despite perceived barriers, emerged as key drivers for radicals. *Environmental identity* was notably absent among non-radicals, further emphasizing its role in shaping radical living among those who have already adopted radical lifestyles. Finally, while *climate change concern* was important across both radicals and non-radicals, it was not sufficient alone in predicting radical action, suggesting that concern must be paired with other factors (i.e., *environmental identity* or *willingness*) to drive significant lifestyle changes. These insights contribute to a more nuanced understanding of the determinants of radical pro-environmental lifestyles, with important implications for encouraging the broader adoption of high-impact PEBs.

6.6 Discerning Qualities of 'Radicals' Versus 'Non-Radicals'

The above sections aim to synthesise the main findings of this thesis and provide an overview of each factor identified as potentially contributing to radical living and high-impact PEB within this thesis, including their links to previous literature. This section, however, highlights particularly *discerning qualities* of radicals and non-radicals within the qualitative works of this thesis that did not get examined quantitatively. The aim is to more concisely present the 'take-away' messages that were learned through interviewing radicals and non-radicals, and to point out the main qualities that seem to differentiate those who live radical pro-environmental lifestyles from those who do not.

While both groups shared a high level of concern for climate change, their approaches to addressing this concern varied markedly. Radicals, characterized by their adoption of multiple high-impact PEBs, despite significant barriers, demonstrated a profound *commitment* to mitigating climate change on an individual level wherever possible. In contrast, non-radicals, although also very concerned about the climate crisis, were less inclined to overcome the barriers that they perceived to making radical lifestyle changes and adopting high-impact PEBs, which predominantly included their perceived inconvenience and costs associated with radical living and high-impact PEBs in general.

Living a radical pro-environmental lifestyle involves a high level of *commitment to the cause*. This way of life can be sometimes inconvenient and costly, and many radicals noted the same barriers as discussed by non-radicals; the difference is that radicals did these things *despite* facing many barriers. Radicals made many sacrifices, and that is the difference; they seemed to gear everything they do around how much environmental harm each behaviour could cause, and 'bear the cross' of making every effort possible to live impactful pro-environmental lifestyles. This finding aligns with those of Huddart Kennedy et al. (2015), who found that those who were deeply committed to pro-environmental living tend to make substantial sacrifices beyond simple lifestyle adjustments. Of note, however, participants also indicated reaping much *value* from radical living, including strengthened relationships and a feeling that one is contributing to making an environmental difference. Many participants mentioned that one must be in a position of *privilege* to make radical changes and called for systemic changes to address the climate crisis and enable high-impact PEB.

Anecdotally, an important point about the concept of *privilege* is that the radicals (in 'Study 1', as reported in Chapter 3) seemingly had diverse socioeconomic backgrounds, including high, low, and middle socioeconomic status (SES). Previous research has shown that high-earning groups are among the largest contributors to pollution. For instance, a study by Pichler et al. (2021) found that individuals with high SES disproportionately affect energy-driven greenhouse gas emissions through their consumption patterns. This suggests that low-earning groups would be the smallest polluters. However, the range of SESs among the radicals in Study 1 indicates that individuals who adopt radical lifestyles may be found across the entire socioeconomic spectrum, not just among low or high

earners. While further research is needed to explore this, it is crucial to highlight this observation from the radicals in this study.

Research by Bolderdijk and Jans (2021) shows that pro-environmental minorities (like radicals) can encourage 'tipping points' and societal change, but supporting those who adopt radical lifestyles may be of vital importance to mitigating climate change. The fact is that radicals are still a minority within society. Although these do constitute a subset of individuals who are willing to overcome barriers and centre their lives around pro-environmental living, there are just that – a subset. Scientists call for widespread change; that is, we need a lot of people making high-impact changes if we are to tackle climate change. Therefore, encouraging and enabling change is a very important step. Many of the issues participants perceived in making radical living and high-impact PEB more difficult, or in fact in *preventing* radical living, seemed to be systemic. Cost, convenience, a feeling that individual change has little impact, these are some of the issue that non-radicals perceive; these are the barriers to significant lifestyle change. Beyond this, systemic barriers are stopping those who are already living radical lifestyles from making even more changes. Society may need to revisit its infrastructure centred around high-impact pro-environmental living, and consider not only how to make things cheaper, more convenient, reliable, accessible, but also reward radicals for already having adopted these lifestyles.

Radicals also seemed to gain a sense of empowerment, and a *purpose*, framing their changes positively despite facing many systemic barriers to the way they live. Conversely, non-radicals seemed to appreciate the severity of the climate crisis for the most part, but perceived many barriers to radical changes. They did however discuss feeling some extent of environmental guilt and discussed being *willing* to make changes; the issue seems to be that they either did not know *how* to make meaningful changes or believed that their changes would have little impact, especially as compared to large polluters and countries that they perceived to have the most impact upon climate change. These findings corroborate with the work of Lorenzoni et al. (2007), who found that feelings of powerlessness, as indicated among the non-radials, can prevent individuals from engaging in PEBs. Furthermore, it corroborates with findings by Spence et al. (2012), who found that individuals are less likely to engage in PEBs if they perceive the impacts of climate change as distant or less immediate. Non-radicals ultimately called for systemic

changes and felt disempowered in their roles within climate change, but it seemed that the extreme environmental guilt was experienced only by radicals, and appeared to be a crucial motivator that upheld their lifestyles. This corroborates with the findings of work by Hargreaves (2011), who identified guilt as a powerful motivator for PEB.

In conclusion, it may not necessarily be the case that those who live radical pro-environmental lifestyles have different opportunities to those who do not, live in environments that better facilitate pro-environmental living, or come from different backgrounds. Radicals in this study discussed facing many of *the same barriers* as non-radicals. They discussed some of the same struggles, and shared the same thirst for systemic changes that better enables their lifestyles. However, an instilled awareness of how grave climate change is, of its dire and impending impacts, and the role individuals play in contributing to climate change seemed to instil a strong sense of environmental guilt that resulted in an encompassment of a new environmental identity among radicals.

6.7 Implications

This section outlines the research implications of this thesis. Taking together the main findings surrounding radical pro-environmental living and the uptake of high-impact PEBs, insights are offered into both theoretical and practical applications. The Theoretical Implications (in section 6.7.1) discuss how understanding the motivations and barriers of individuals who adopt 'radical' lifestyles, or multiple high-impact PEBs, can enhance current models of PEB, particularly by integrating systemic factors and the role of environmental identity and environmental guilt. The Practical Implications (in section 6.7.2) provide somewhat more actionable recommendations for encouraging a broader adoption of radical lifestyles, also emphasizing the need for systemic changes alongside targeted interventions that can help facilitate change and support individuals in adopting radical lifestyles or at least some higher impact PEBs. Taken together, these insights contribute to a more comprehensive approach to promoting radical living and high-impact PEB adoption in making individual changes that help mitigate climate change.

6.7.1 Theoretical Implications

Understanding the drivers and experiences of individuals who adopt radical pro-environmental lifestyles offers valuable insights into the complexities of adopting multiple high-impact PEBs to significantly reduce one's negative environmental impacts. Those who have already adopted these lifestyles, referred to as 'radicals', demonstrate a profound commitment to playing their part in mitigating climate change, often overcoming significant individual and systemic barriers to align their lifestyles with their environmental values and identities in every way they feel is possible. This commitment suggests that the adoption of radical lifestyles is not solely a matter of personal choice but is also deeply intertwined with one's identity, environmental values, and to some extent, their perceived agency, or PBC.

Collectively, the research presented throughout this thesis highlights several theoretical implications for understanding radical living and high-impact PEBs. Firstly, the findings challenge many traditional, theory-driven approaches to studying PEB, which often focus on individual, low-impact behaviours rather than the adoption of multiple, higher impact behaviours and *behavers* that ultimately results in a focus on lifestyles rather than isolated PEBs (Whitmarsh et al., 2021), as was done in this thesis. By exploring radical pro-environmental living as an intentional, high-impact lifestyle, this research contributes to a more nuanced understanding of what drives individuals to make more significant and sustained environmental commitments. This shift from behaviour-specific studies to lifestyle-based research broadens the scope of environmental psychology and research on PEB in general and supports calls for more integrative and holistic frameworks (Nielsen et al., 2021; Whitmarsh et al., 2021).

Secondly, the study emphasizes the role of contextual factors in understanding radical living; specifically, it highlights the impact of systemic factors and the need for systemic change in facilitating radical pro-environmental lifestyles. Both radicals (presented in Study 1, reported in Chapter 3) and non-radicals (presented in Study 2, reported in Chapter 4) identified similar barriers to adopting high-impact PEBs, such as convenience, financial costs, and to some extent, PBC, as significant determinants of their ability to engage in high-impact PEB. This aligns with the concept of the 'impact-intent gap', where individuals' intentions to act pro-environmentally are often constrained by external

factors (Stern, 2000). This emphasis on systemic barriers suggests that theories of PEB may need to account for the broader socio-economic and infrastructural contexts in which individuals operate, rather than their tended focus on the individual. Models like the Theory of Planned Behaviour (TPB) and Value-Belief-Norm (VBN) Theory (Ajzen, 1991; Stern, 2000) may need to be expanded to incorporate these external constraints more explicitly if they are to account for factors beyond the individual that may act as important determinants of high-impact behaviour and radical living.

Furthermore, this thesis' findings highlight the importance of environmental identity and the internalization of environmental values as other potential drivers of radical pro-environmental living and high-impact PEB. For example, radicals often indicated having a strong environmental identity, which seemingly influenced their daily pro-environmental actions and reinforced their commitment to environmentalism. This suggests that encouraging or in fact *instilling* a strong environmental identity somehow could be a key strategy for encouraging high-impact PEB and an ultimate adoption of radical lifestyles, as individuals who see themselves as environmentally responsible may be more likely to adopt and maintain higher impact pro-environmental lifestyles (in line with the findings of Clayton & Opotow, 2003, and De Groot & Steg, 2008).

Lastly, the roles of feeling environmental guilt and having a moral responsibility to tackle climate change and environmental issues emerged as a significant motivator for radical living. This experience of *guilt*, while considered a negative feeling, appears to *drive* individuals to align one's behaviours with one's environmental values, suggesting a potential avenue for developing interventions that appeal to these intrinsic moral considerations (as also suggested by Hargreaves, 2011). Again, it is important to approach this *carefully*, as overt scaremongering or 'guilt-inducing' strategies may backfire and ultimately cause resistance to change amongst those who do not already live radical lifestyles (e.g., Feinberg & Willer, 2013). Instead, developing an understanding of the implicit role of environmental guilt in driving these behaviours could help refine existing theories and develop more effective interventions that may encourage high-impact PEB adoption or radical living. It is also important to note that these theoretical implications could be considered *preliminary*, since this is research conducted on a fairly undiscovered topic (radical living); therefore, more research is needed to expand on the potential theoretical implications of this work. Further work may also facilitate the development of

a *theory* of radical living or radical change, but again this is currently not feasible at these early stages of research.

6.7.2 Practical Implications

The practical implications of this research include highlighting the need for both systemic changes and reforming or creating new individual-level interventions to promote the broader adoption of radical pro-environmental lifestyles. Generally, the findings suggest that while internal motivators such as environmental guilt and identity are crucial, external and systemic facilitators may be equally important for enabling high-impact PEBs and radical living.

6.7.2.1 Systemic Changes to Encourage Radical Living

To effectively promote radical pro-environmental lifestyles and the uptake of high-impact PEBs, considerable systemic changes may be necessary. Clayton et al. (2016) suggested a need to focus more on contextual factors such as systemic issues in enabling (high impact) PEB, which this thesis does to some extent. Addressing barriers related to convenience, affordability (finance), and PBC are likely crucial for facilitating high-impact PEBs and radical living. Enhancing public transportation systems, for example, by making them more reliable, affordable, and accessible, could significantly reduce the perceived inconvenience and high cost of adopting pro-environmental travel behaviours (e.g., Steg & Vlek, 2009). Alternatively, providing financial incentives aimed at carbon offsetting or reducing, such as giving subsidies for electric vehicles or tax relief for more sustainable products, may make pro-environmental choices and actions more economically viable for individuals, and therefore more accessible in general (Gillingham et al., 2009).

Moreover, policies that support renewable/green energy adoption, implementing stricter carbon emission regulations, and introducing more thorough carbon pricing could create a more conducive environment for pro-environmental living (UNFCCC, 2024); however, a word of caution should be that *encouraging* and making *easier* the adoption of high-

impact PEBs might be better achieved with cost offsetting and reinforcement, rather than by penalising those who engage in behaviours that are environmentally damaging. This is pointed out as non-radicals sometimes discussed facing *more barriers* to change than enablers, and individuals who are like Group 4 (low concern/low action) in Study 3 (reported in Chapter 5) who appeared to be *in opposition* to change may only become more resistant to change if they feel that their individual liberties are being taken away. This thesis finds that it is important to *facilitate* high-impact pro-environmental living and reward those who make high-impact changes, rather than 'punish' those who do not. Furthermore, encouraging corporate responsibility and transparency about their environmental impacts may further drive systemic changes, helping to address the perceived insignificance of individual actions in the face of global environmental challenges (Hardin, 1968). If individuals feel that corporations and governments, i.e., the 'big polluters' of the world, are making significant pro-environmental changes, they may ultimately feel that they have more of a role to play – an environmental responsibility to make high-impact PEB changes now that leaders in the world are *leading* the way. By aligning individual actions with broader policy measures and societal support, it *may be* possible to facilitate the adoption of high-impact PEBs and reduce the barriers to radical living.

6.7.2.2 Encouraging Individuals to Make Radical Changes

In addition to systemic changes, targeted interventions at the individual level are essential for promoting radical pro-environmental living and the adoption of high-impact PEBs in general. Educational campaigns that raise awareness about the impact of individual actions on climate change may better empower people to make more informed choices (Swim et al., 2011). Leveraging social norms and peer influence through social marketing campaigns and community programs, and potentially even through social media may also encourage wider participation in high-impact PEBs (Cialdini et al., 1990; Goldstein et al., 2008).

Developing tools such as mobile apps that provide personalized, positive feedback on the environmental impact of one's lifestyle choices may motivate individuals to consider the consequences of their actions more carefully (Harland et al., 1999), but again, this should

be framed around facilitation of PEBs rather than penalising environmentally harmful behaviours. Additionally, creating community support networks where individuals can share resources, tips, and encouragement for one another to live pro-environmentally may help create a sense of belonging and shared experience, in addition to helping to reshape descriptive social norms to be more environmentally aligned, and may further motivate individuals to adopt and maintain high-impact PEBs (Gatersleben et al., 2002).

Finally, promoting environmental education and encouraging stronger senses of environmental identity from an early age may have long-lasting effects on PEB, impacting the likelihood that one might adopt a radical lifestyle. Integrating environmental education into school curricula and rewarding environmental 'role models' might better instil a sense of environmental responsibility and inspire future generations to adopt pro-environmental lifestyles (as suggested by Clayton & Opotow, 2003 and De Groot & Steg, 2008). By combining these systemic changes with individual incentives, a more holistic approach to facilitating radical living can be developed, and we may be able to better reduce barriers to adopting high-impact PEBs, ultimately promoting and encouraging a more *sustainable* future.

In summary, this section underscores the importance of addressing both structural and individual factors in promoting radical pro-environmental living. By understanding the motivations and barriers associated with adopting high-impact PEBs, this thesis offers a foundation for developing more effective interventions and policies that can better support individuals in making meaningful contributions to climate change mitigation.

6.8 Strengths and Limitations

While this thesis offers some valuable insights into radical living and the uptake of high-impact PEB and its potential drivers, it is not without its limitations. First, it is important to acknowledge that this research largely surrounds consumer behaviour, and that although this is inarguably an important aspect in addressing climate change, it is not the *only* consideration. Thus, this thesis also acknowledges that there are structural issues that must be addressed in striving to address climate change. Furthermore, the rigorous qualitative and quantitative components, alongside the comprehensive mixed methods

approach, contribute to a fairly robust account of radical living. However, certain constraints must be acknowledged. These limitations, detailed below, include potential biases, sample size constraints, data collection challenges, and the inherent complexity of integrating diverse methodological approaches. Recognizing both the strengths and limitations is essential for contextualizing the findings and understanding the scope and applicability of the study's conclusions.

6.8.1 Strengths and Limitations of the Qualitative Findings

The qualitative approach taken in Studies 1 and 2 (as presented in Chapters 3 and 4) provided initial insights into the drivers and barriers of radicals and non-radicals. It allowed for a detailed comparison between the two groups, which identified factors in common that were then later examined empirically. Generally, qualitative research offers several strengths that make it a valuable approach in many fields of study, including in exploring lesser discovered areas such as radical living. One of the primary strengths is its ability to provide deep, rich, and nuanced insights into human behaviour, experiences, and social phenomena (Smith, 2015). Unlike quantitative research, qualitative approaches can offer more detail on the complexities of context, meaning, and subjectivity (Creswell, 2013), and has been particularly useful when taking an inductive approach to explore a field of study broadly at the beginning of research (as was done in Chapter 3) to provide the grounds for more particular foci in later phases of a research project (as done in Chapters 4 and 5). This approach is particularly effective in understanding the "how" and "why" behind certain behaviours and decisions, offering a detailed perspective that can be crucial for developing the latter stages of a research project and in generating aims (Denzin & Lincoln, 2011). Additionally, qualitative methods such as interviews, focus groups, and ethnographies allow for flexibility and adaptability in the research process, enabling researchers to explore new directions as they emerge during the study (Patton, 2015).

However, qualitative research also has several weaknesses that must be considered. Firstly, the themes discussed throughout this study may not be generalisable to the wider society. One of the main limitations is its subjective nature, which can lead to potential biases in data collection and interpretation (Miles, Huberman, & Saldaña, 2014). It is also

important to acknowledge that as with the majority of qualitative works, a 'double hermeneutic' exists, whereby the researcher is unable to remain completely objective and will always have some level of influence on data interpretation (Rennie, 2012). The researcher's perspectives, background, and interactions with participants can influence the findings, making it challenging to ensure objectivity and replicability (Maxwell, 2013). In Chapter 3, an inductive approach to data analysis was employed, aiming to remain as open as possible to emerging themes, similar to the principles of Grounded Theory (Glaser & Strauss, 1967). However, it is acknowledged that researchers inevitably bring their own preconceived notions and ideas to the analysis process, which can influence the findings (Charmaz, 2006). Despite this, every effort was made to minimize these biases and allow the data to speak for itself as much as possible.

Another consideration is that qualitative research often involves smaller sample sizes, which may limit the generalizability of the findings (Morse, 2015). This limitation can make it difficult to apply the results to larger populations or different contexts. It is also important to note that the samples of radicals and non-radicals presented in Chapters 3 and 4 were not particularly diverse. They were *mostly* white, British, able individuals, and therefore the findings may not be representative of other socio-demographic backgrounds. Additionally, qualitative research can be time-consuming and resource-intensive, requiring more extensive data collection and analysis (Smith, 2015).

Despite these challenges, the depth and richness of the insights gained through the qualitative findings in Studies 1 and 2 (reported in Chapters 3 and 4) provided valuable contributions to knowledge. It is also important to note that the approach deemed appropriate for this thesis was to first conduct inductive, open research to explore radicals in Study 1 and to then conduct a deductive approach to explore non-radical living in Study 2. This may have led to overlooking some factors or phenomena among the non-radicals, as the approach was to specifically ask about some of the themes identified in Study 1, and to then analyse the data using the same nodes created in Study 1, too. The consequence of taking this approach was that a 'funnel' was created throughout the thesis, whereby it started very broadly and inductively, and then built the remainder of the study on a more focused approach of what was learned in Study 1. This narrowed and sharpened the focus, but potentially entailed overseeing some aspects of the data that was not being 'searching' for. The insights gained in Study 1 were also limited to the

experiences/perceptions of those fifteen individuals; had this research been conducted with fifteen other participants who lived radical lifestyles, there is the potential for different initial factors to have been identified. However, this is the very aspect of qualitative research, to gain in depth insights into a subset of participants, and it is therefore flagged in the interest of transparency and self-awareness rather than as a limitation. Future research could conduct interviews with another group of radicals and non-radicals, and explore whether similar factors are identified as potential motivators and barriers to radical living.

It is also important to note that individuals may engage in PEBs for reasons unrelated to environmental concern, and not necessarily in order to live radically. To address this, the study required 'radical' participants (in Study 1, presented in Chapter 3) to perform *multiple* high-impact PEBs (a criterion also applied when defining 'groups' in Chapter 5). This approach was intended to control for the possibility that single behaviours might be misleading, and that some individuals may be performing high-impact PEBs out of a different motivation to a concern for climate change or the environment. Consequently, the focus was placed on *lifestyles* rather than isolated behaviours. This methodology also explains why two participants were withdrawn from Study 1 (presented in Chapter 3), as their drivers were not centred around climate change concern. Furthermore, all participants in Studies 1 and 2 were specifically selected having self-identified as very concerned about climate change; nevertheless, this limitation is acknowledged and addressed through the study's emphasis on multiple behaviours and lifestyle considerations.

6.8.2 Strengths and Limitations of the Quantitative Findings

In terms of the quantitative works in this thesis, there were also many strengths and limitations to acknowledge. One of the primary advantages of quantitative work in general is the ability to better generalize findings from a sample, thanks to its use of structured methods and the application of statistical analyses (Creswell, 2014). This approach allowed for the *testing* of the research aims and the establishment of patterns or relationships between variables, providing a higher level of precision and reliability in

the results (Bryman, 2016). This advantage was reaped in Study 3 (presented in Chapter 5), where insights were developed into which of the potentially contributing factors to radical living identified across Studies 1 and 2 (reported in Chapters 3 and 4) were the most pertinent in understanding individual high-impact PEBs across diet, travel, and material consumption, and in predicting group membership representing those of high/low climate concern and high/low action. Moreover, the quantitative dataset involved a much larger sample size, enhancing the representativeness and therefore external validity of the findings (as suggested by Babbie, 2013), and this was the case when performing secondary data analysis on this sample of 1,893 UK-based participants. The use of standardized instruments and protocols further ensures consistency and objectivity within quantitative works, reducing the potential for researcher bias (Field, 2013), and one is often able to achieve more 'concrete' findings as a result.

Having noted these strengths, the quantitative findings also face several limitations. One significant drawback is the often-limited ability to explore the depth and complexity of human experiences and social phenomena (Patton, 2015); however, this was done in the qualitative components of this thesis. The focus on numerical data and statistical analysis can risk the overlook of contextual and subjective aspects that qualitative methods can capture (Silverman, 2016). Additionally, it must be noted that a limitation of the present research was that the use of secondary data as drawn from an existing survey limited the ability to specifically measure *radical* living. Furthermore, while statistical methods can identify correlations, they do not necessarily imply causation, requiring careful interpretation and supplementary qualitative insights to fully understand the underlying mechanisms (Shadish, Cook, & Campbell, 2002).

Furthermore, while using secondary data analysis offered various advantages, such as cost and time efficiency and the ability to study a large population, it also comes with several limitations. One of these limitations is the lack of control over data quality and completeness. Since secondary data are collected by other researchers, the researcher has no control over the accuracy, reliability, and validity of the data (Johnston, 2017). There may be errors within the original data collection process, and these issues can carry over into the secondary analysis (Smith, 2008). Additionally, secondary data sets may not contain all the variables necessary for the current research questions, leading to potential gaps or the need for assumptions that could compromise the study's validity (Vartanian,

2011). This was the case when one of the shared factors identified in the comparison of the two qualitative datasets (in Chapter 4) 'Perceived Impact on Climate Change' was not examined in Study 3 (reported in Chapter 5) as there were not items which accurately captured this factor well enough in the survey. Another significant limitation is the potential for misalignment between the original data's purpose and the current research objectives. Secondary data are typically collected with specific goals in mind, which may not align perfectly with the new research questions (Heaton, 2004). While some stress that this misalignment can result in difficulties in interpreting the data or in drawing meaningful conclusions relevant to the new context (i.e., Hinds et al., 1997), this may be less of a consideration for this thesis, as the original survey sought to collect data on PEB, including the high-impact PEBs that were the focus of this secondary analysis, which does in fact align with the focus of this thesis. It is also important to note that these findings were cross-sectional and that the data were taken at one point in time, so one cannot assess radical *change* using these findings, which would need to be addressed in future research.

Future research could collect primary data with specific questions on high-impact PEBs and radical lifestyles, including longitudinal studies to assess changes *over time*. This would also allow the additional potentially-contributing factor 'Perceived Impact on Climate Change' to be examined empirically, which this thesis did not do. The study also lacked insights into heating and cooling behaviours, which could be better examined in future research.

6.8.3 Strengths and Limitations of the Mixed Methods Design

Mixed methods research combines qualitative and quantitative approaches, offering several strengths that make it a valuable approach when used together. Combining the inductive and deductive approaches taken in Studies 1 and 2 (reported in Chapters 3 and 4) provided a comprehensive understanding of the initial research questions, and some would argue that this approach enhanced the validity and reliability of the findings through 'triangulation' (Tashakkori and Teddlie, 2010). Nielsen et al. (2021) note the value of and need for impact-first research, and their message promotes an 'inductive' research approach, which is highly compatible with many qualitative methods (i.e.,

thematic analysis (Braun & Clarke, 2006)). Many studies have successfully integrated a *paired* approach of inductive and deductive work in order to facilitate a holistic exploration. Johnson and Onwuegbuzie (2004) discuss how combing inductive and deductive approaches can result in a more comprehensive understanding of psychological phenomena, and Tashakkori and Teddlie (2010) echo this, referring to the outcome of 'triangulation' resulting from this marriage of approaches, whereby the validity and reliability of a body of research may be enhanced.

Another key strength of mixed methods work is its ability to provide a comprehensive understanding of research problems by integrating numerical data with detailed contextual insights (Creswell & Plano Clark, 2017). This integration allows researchers to corroborate findings across different types of data, enhancing the validity and robustness of the conclusions (Tashakkori & Teddlie, 2010). Mixed methods research also enables the exploration of complex phenomena from multiple perspectives, capturing the richness and depth of qualitative data while benefiting from the generalizability and precision of quantitative analysis (Johnson, Onwuegbuzie, & Turner, 2007).

Mixed methods can also be particularly effective in addressing research questions that cannot be fully answered by qualitative or quantitative approaches alone. For instance, it allows for exploring the underlying mechanisms and contextual factors through qualitative methods while enabling the examination of causal relationships through quantitative analysis (Bryman, 2006), as was done in this thesis. This 'dual approach' led to more nuanced and actionable insights within this thesis, and again allowed the shaping of a 'funnel' like approach, which explored things inductively in Study 1 when interviewing radicals, then deductively explored whether these factors applied in Study 2 among non-radicals, and funnelled further when examining the specific factors identified though these qualitative works in the quantitative component in Study 3.

However, mixed methods research also presents several limitations. One significant challenge is the increased complexity and resource requirements associated with designing and conducting studies that effectively integrate qualitative and quantitative components (Teddlie & Tashakkori, 2009). As mentioned in Chapter 1, some argue that mixing these methodologies is in a way mixing *philosophies*, which is not possible (Bryman, 2008). Differences in underlying philosophical assumptions and data collection techniques can complicate the process of combining results, leading to challenges in

interpreting and presenting findings coherently (Greene, 2007); however, as suggested by Howe (1988), this research simply focused on the methods that would work for the research questions laid out in section 2.9, and took a more *pragmatic* approach to the thesis.

Another limitation is the potential for methodological conflicts and difficulties in integrating data from qualitative and quantitative sources (Bazeley, 2015). Moreover, the increased scope of mixed methods research can sometimes lead to 'superficial treatment' of each component, where neither the qualitative nor quantitative aspects are explored in sufficient depth (Bryman, 2007); however, this was not the case in the present thesis, as each study was given significant time to be conducted, and the depth of insights gained in each of the studies (reported in Chapters 3-5) are testament to the careful consideration that was given at each stage of this thesis. Finally, reflecting upon the reflexivity and positionality of the researcher in section 1.7.2, it is important to reiterate that one's own background, experiences, and perspectives may inevitably influence the interpretation of the results (e.g., Berger, 2015). While every effort was made to remain as neutral as possible, particularly given the inductive nature of the early stages of this research, it is widely accepted that complete objectivity and impartiality are unattainable (Guba & Lincoln, 1989). Therefore, it is acknowledged that the results in this thesis are not considered *factual* but are rather due to interpretation of a small subset of participants, and that there will always be the potential for bias in research.

6.9 Future Research Directions

Future research should build upon the findings of this thesis to further explore the complex factors that influence radical pro-environmental living and high-impact PEB. Given the strong commitment of radicals to adopting multiple high-impact PEBs and their determination to overcome significant barriers, future studies should aim to understand more deeply the psychological, social, and contextual motivators that drive these individuals, and furthermore, to ensure that the factors identified within this sample of radicals are important within other samples of radicals. Investigating these motivators can provide valuable insights into how to encourage more individuals to adopt similar lifestyles, and may help us understand how to encourage more widespread behaviour

change. One potential direction for this is to examine the role of intrinsic versus extrinsic motivations in driving radical behaviour, particularly focusing on how feelings of environmental responsibility and guilt contribute to sustained commitment to high-impact PEBs. This research could help identify specific interventions that tap into these motivators, encouraging broader adoption of radical pro-environmental lifestyles and high-impact PEBs.

Additionally, future research should aim to contribute further to our understanding of the systemic barriers faced by both radicals and non-radicals in adopting and maintaining high-impact PEBs. While this thesis has highlighted the importance of addressing systemic issues such as convenience and finance in facilitating high-impact PEBs, further studies could explore more in-depth how these systemic barriers vary across different socio-demographic groups, and in locations beyond the UK. Understanding the diverse experiences of individuals from various backgrounds could lead to more targeted and effective strategies for promoting high-impact PEB, and again our understanding of how to encourage radical lifestyle adoption. For instance, research could investigate how different socio-economic contexts might influence perceptions of convenience and affordability related to high-impact PEBs, thereby informing policy recommendations for making sustainable options more accessible and attractive to a broader population beyond those included specifically within this thesis.

Moreover, this thesis highlights a need to examine the long-term impacts of radical pro-environmental living on individuals and communities. Future research could employ longitudinal studies to track *changes* in behaviours, attitudes, and perceived environmental impacts over time among those who adopt radical lifestyles. This approach would provide a clearer understanding of the *sustainability* of these behaviours and this way of living and the factors that support or hinder long-term commitment. Additionally, such studies could explore the potential psychosocial benefits or challenges associated with radical pro-environmental living, including its impact on community cohesion, one's social identity, and individual well-being, for example. By exploring these long-term outcomes, researchers can gain insights into the broader societal implications of promoting radical pro-environmental lifestyles, and may gain a better understanding of what *benefits* await someone who makes radical changes.

Another important area for future research lies in the exploration of effective communication and educational strategies to promote radical pro-environmental living and high-impact PEBs. While this thesis has shown that both radicals and non-radicals recognize the need for systemic change, there is still a gap in understanding how best to communicate the importance and feasibility of individual actions in mitigating climate change. Research could focus on identifying the most effective messaging techniques, considering factors such as framing, emotional appeal (as related to inducing environmental guilt), and source credibility. Additionally, studies could examine how different *forms* of education might influence individuals' *willingness* to engage in radical living and high-impact PEBs. This could involve exploring the role of environmental education in schools, community workshops, or digital platforms in fostering pro-environmental values and behaviours.

Furthermore, future research should investigate the potential for leveraging *social norms* (particularly, descriptive social norms, as these were found to be most relevant within this thesis) and community engagement to promote radical pro-environmental living. Research could explore how to effectively harness these norms to encourage radical living and the adoption of high-impact PEBs within different social and cultural contexts. This might include examining the impact of social influence strategies, such as peer pressure or public engagement, on individuals' willingness to adopt high-impact behaviours. Additionally, studies could investigate the role of community support networks and grassroots movements in fostering a *culture* of radical pro-environmentalism, providing insights into how to build (and sustain) this collective environmental action.

In conclusion, future research should aim to build a more comprehensive understanding of the factors that drive and hinder radical pro-environmental living, building on what was learned throughout this thesis. By examining the motivations, barriers, long-term impacts, communication strategies, and social dynamics associated with radical pro-environmental living and high-impact PEBs, researchers may be better equipped to develop more effective interventions to promote impactful lifestyles. Such efforts will be crucial for addressing the global challenge of climate change and shaping a more sustainable future for all.

6.10 Conclusion

This thesis aimed '*to explore what drives 'radical' living and high-impact pro-environmental behaviour'* through a mixed methods approach. The findings contribute to the limited literature on high-impact PEB and 'radical' pro-environmental living and offer insights into the drivers, experiences, and barriers faced by individuals. By addressing these factors and focusing on facilitating conditions and systemic changes, it is possible to encourage broader adoption of radical pro-environmental lifestyles and high-impact PEBs in general, and this thesis provides some preliminary insights into the factors that might influence the adoption of radical living, as well as some of the factors that might act as barriers. Future research should build on these findings to develop strategies that support individuals in making significant lifestyle changes for the benefit of the environment.

Chapter 6 has synthesized the findings from three studies presented in this thesis (Studies 1, 2 and 3, as presented in Chapters 3, 4 and 5, respectively), linking them with previous research and highlighting the factors that may contribute to (and prevent) radical pro-environmental living. The qualitative interviews with radicals (in Study 1, as reported in Chapter 3) and non-radicals (in Study 2, as reported in Chapter 4) revealed potential distinct drivers, experiences and barriers to radical living and the uptake of high-impact PEBs, while the secondary data analysis (in Study 3, reported in Chapter 5) identified some key determinants of high-impact PEB. This discussion has provided a nuanced understanding of how factors such as convenience, environmental guilt, finance, PBC, willingness, climate change concern, environmental identity, descriptive social norms, and socio-demographics may influence radical lifestyle changes and the uptake of high-impact PEB. The findings demonstrate the complexity of adopting radical lifestyles and high-impact PEBs, highlighting the interplay between individual motivations and systemic barriers.

In summary, while radicals are driven by a strong sense of environmental responsibility and identity, non-radicals perceive significant barriers related to convenience and cost of many high-impact PEBs. The quantitative analysis further corroborates these insights, showing how various factors associate with specific high-impact PEBs such as having a meat-free diet or having low material consumption. This comprehensive approach

underscores the importance of addressing both individual *and* systemic factors to facilitate radical lifestyle changes. Future research should focus on developing strategies to overcome these barriers, promoting broader adoption of high-impact PEBs, and exploring the long-term impacts of adopting radical lifestyles.

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A – Appendices

A.1 Interview Schedule with Radicals (used in Chapter 3)

Introductory Questions

1. Could you tell me a little bit about yourself?
    a. *Prompt*: What you do, where you live?
2. Could you tell me about some of the things that you do, or have done, to reduce your carbon footprint?
    a. *Prompt*: What things do you do to be more environmentally friendly?
3. How, if at all, have these things affected your everyday life?
    a. *Prompt*: Do you feel that these changes you've made have any impact on the way that you live?
4. Thinking back to when you made any of these changes, is there anything that you can recall that led you to making the decision that you were going to make a change?
    a. *Prompt*: Was there a specific event or moment that you can pinpoint that 'broke the cycle' or made you decide to be more environmentally friendly?
        i. *Probe*: Tell me about this
5. Thinking about when you made each of these changes, did it happen all at once?
    a. *Prompt*: Did you all of a sudden decide to change multiple things in your life to limit your carbon footprint, or was it something that occurred over time?
    b. *Prompt: Was it transitionary*? Were there stages?

Motivations for Radical Living

1. Thinking about the reasons that you have changed your behaviour to live more environmentally friendly, what would you say are the main things that led you to this change (or changes)?
    a. *Prompt*: Why did you change?
    b. Was it something that you came to a decision about for a particular reason i.e. the environment?
2. What impacts of climate change have affected your decision to live more environmentally friendly?
3. What aspects of the impacts of climate change motivated you to live more 'greenly'?
    a. *Prompt*: Was it mainly its effect on animals, on humans, on Earth, all of the above, etc.?

Experiences of Radical Living

Self-Efficacy / Agency

1. How much do you feel that you can - or are able to - make pro-environmental changes to the way you live?
    a. *Prompt*: Is there anything that you feel affects your ability to make environmental changes in your life?
2. How empowered do you feel in making pro-environmental changes to your lifestyle?
3. Overall, how empowered do you feel in fighting climate change?

Identity

1. What is it like to have made multiple environmental changes in your life?
    a. *Prompt*: How does it feel? What's it like?
2. If at all, how do you feel this change to your life has affected how you see yourself as a person?
3. Has your sense of *who you are* changed since making these changes to your lifestyle?
    a. *Prompt*: If you consider one of the environmental behaviours that you do, i.e. [not eating meat], is this something that affects who you are as a person?
4. In your opinion, what makes someone a 'radical pro-environmental person'?
5. To what extent do you consider yourself an 'activist'?
6. What do you gain from being part of activism?
7. How does your involvement in activism or activism groups affect you outside of your protests, marches, etc.)?
    a. *Prompt*: Is activism something that, for you, stays within the activist demonstrations or participation (i.e. marches, etc.), or does it also exist in other aspects of your life?

Willingness

1. How willing are you to make changes to your lifestyle that have a positive impact upon the environment?
    a. i.e. Eating less meat, flying less, etc.
2. How do you feel that your willingness to change has changed?
    a. *Prompt*: As compared to a previous time in your life, do you feel as though you are more or less willing to live more environmentally friendly now?
3. Why has your willingness to change changed?
    a. *Prompt*: Were there any triggers that for you has affected your willingness to make changes to the way you live?
4. Is there anything that you would be willing to change in your life in the future?
    a. *Prompt*: Anything that you haven't done so far to be more environmentally friendly that you might be willing to change at some point in the future?

Climate Change

1. How has climate change affected you?
    a. *Prompt*: How, if at all, has your life been impacted by climate change?
2. Is there anything you've changed *to adapt* more to the effects of climate change?
    a. *Prompt*: For example, some people have moved away from coastlines, out of fear of coastal erosion caused by climate change
3. What is your role in Climate Change?
    a. Prompt: What part do you play?
4. How, if at all, do you feel that your life impacts upon Climate Change?
5. How about the lifestyles of others?

Convenience

1. What's it like being someone who has made these changes to your lifestyle?
2. Thinking about your environmental behaviours, what is your experience like as a person within society?
    a. *Prompt*: What's it like to be (insert appropriate): [vegan/vegetarian] / [someone who avoids air travel] / [live car free]?
    b. *Prompt*: Do you feel that you are treated any differently because of your lifestyle choices?
        i. How so?
3. How do your friends and family view your lifestyle?
    a. *Prompt*: Do you feel that you are seen as *different* in any way for having made big environmental changes?
4. Is life any more or less difficult as someone who has made these changes?
5. What are some of the challenges you face in day-to-day living as a result of the changes you have made to the way you live?
6. How has the coronavirus pandemic affected the things that you do (or your ability) to be more environmentally friendly?

Close

(Thank participant for their time and for sharing so openly; remind them that they are contributing to research with a good cause, and of their value to this research)

1. Is there anything that you would like to add that we haven't covered?
2. Are there any questions I can answer for you about the research or interview?
3. How, if at all, do you feel that this exercise (the interview) has made you think differently about your individual role in climate change?

(Remind participant of confidentiality and their study rights)

[Send debrief sheet]

- END –

A.2 Information Sheet used for the Interview Study with 'Radicals' (reported in Chapter 3) and 'Non-Radicals' (reported in Chapter 4)

Study Information Sheet

Thank you for your interest in taking part in our research study! This sheet provides an overview of our research and what getting involved as a participant will look like. Please reach out to us if you have any further questions.

Main Researcher
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Name of the Study: "*An Explorative Study on the Psychosocial Influences of Radical Pro-Environmental Behaviour Change*"

What is the Study About?

This research is focused on the way people live in terms of their environmental impact. We are trying to understand what leads people to making big changes in their lives to reduce their carbon footprint.

What Will I do if I Participate?

You will be asked to attend a 1-hour interview online (via Skype, Zoom, or similar) at a convenient time with the main researcher, Daniel Carr, who is a PhD student at Cardiff University. In the interview, you will be asked to tell us about your lifestyle, such as where you live, where you do your grocery shopping, and so on - it will be a bit more like a chat than a formal interview!

How Will My Information be Protected?

Your privacy is important to us, and we take several steps to ensure confidentiality. The video call will be recorded, as part of this research will involve writing up our interview as a transcript. Both the recording and the interview transcript will be anonymised as soon as possible, to protect your identity. Only the three researchers above will have access to any personal information. The interview recording will be stored on a password-protected laptop only accessible by Daniel Carr and will be destroyed after a maximum of 7 years from the date of interview. Please see 'Privacy Notice' below for further information on data protection.

What Will I Get for Taking Part?

We will make a donation of £5 to *World Land Trust*, which funds the planting and protection of a tree! (worldlandtrust.org/appeals/plant-a-tree).

Thank you again for your interest in this study, and please do not hesitate to ask if there are any further questions!

Privacy Notice

The information provided will be held in compliance with GDPR regulations. Cardiff University is the data controller and James Merrifield is the data protection officer (MerrifielDJ1@Cardiff.ac.uk). The lawful basis for processing this information is public interest. This information is being collected by Daniel Carr.

The information on the consent form will be held securely and separately from the research information. Only the researcher will have access to this form and it will be destroyed after 7 years.

The research information you provide will be used for the purposes of research only and will be stored securely. Only Daniel Carr, Professor Wouter Poortinga and Dr Stuart Capstick will have access to this information. After collection, the data will be anonymised (any identifying elements removed) and this anonymous information may be kept indefinitely or published.

- END -

A.3 Study Debrief Sheet used for the Interview Study with 'Radicals' (reported in Chapter 3) and 'Non-Radicals' (reported in Chapter 4)

Study Debrief Sheet

Thank you for taking part in this research study! This sheet recaps what you did with us today. Please reach out to us if you have any further questions.

Main Researcher
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Name of the Study: "*An Explorative Study on the Psychosocial Influences of Radical Pro-Environmental Behaviour Change*"

What is the Study About?

This study explores the things that lead someone to making a significant (or 'radical') change in their lives to help tackle climate change. By identifying these things, we hope to better understand how we can encourage people to make changes to their lifestyles that reduce their carbon footprints!

How Will My Information be Protected?

We'd like to remind you that your privacy is important to us, and we take several steps to ensure confidentiality. The video call was recorded, and both the recording and the interview transcript will be anonymised as soon as possible. Only the three researchers above will have access to any personal information. The interview recording will be stored on a password-protected laptop only accessible by Daniel Carr and will be destroyed after a maximum of 7 years from the date of interview. Please see 'Privacy Notice' below for further information on data protection.

What Did I Get for Taking Part?

We will soon be making a donation of £5 to *World Land Trust*, which funds the planting and protection of a tree! (worldlandtrust.org/appeals/plant-a-tree).

On the next page, there are some further contact details for our research ethics committee, and our privacy policies.

Thank you again and please do not hesitate to get in touch if you have any further questions!

Secretary of the Ethics Committee
School of Psychology
Cardiff University
Tower Building
Park Place
Cardiff
CF10 3AT

Tel: 029 2087 0360

Email: psychethics@cardiff.ac.uk

Cardiff University is the Data Controller and is committed to respecting and protecting your personal data in accordance with your expectations and Data Protection legislation. The University has a Data Protection Officer who can be contacted at inforequest@cardiff.ac.uk. Further information about Data Protection, including your rights and details about how to contact the Information Commissioner's Office should you wish to complain, can be found at the following: https://intranet.cardiff.ac.uk/staff/supporting-your-work/manage-use-and-protect-data/data-protection

Privacy Notice

The information provided will be held in compliance with GDPR regulations. Cardiff University is the data controller and James Merrifield is the data protection officer (MerrifielDJ1@Cardiff.ac.uk). The lawful basis for processing this information is public interest. This information is being collected by Daniel Carr.

The information on the consent form will be held securely and separately from the research information. Only the researcher will have access to this form and it will be destroyed after 7 years.

The research information you provide will be used for the purposes of research only and will be stored securely. Only Daniel Carr, Professor Wouter Poortinga and Dr Stuart Capstick will have access to this information. After collection, the data will be anonymised (any identifying elements removed) and this anonymous information may be kept indefinitely or published.

- END -

A.4 Stages of the Thematic Analysis of Interview Transcripts with 'Radicals' (reported in Chapter 3)

A.4.1 The initial parsing of the interview transcripts yielded a series of thematic nodes Representing the Interview Transcripts with 'Radicals' (reported in Chapter 3) ('Phase 2' of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

- RPEB Actions
  - Food/Diet
  - Travel
  - Heating/Cooling
  - Material Consumption
- Finance
  - More expensive
  - Cheaper
- Accessibility
  - Ease
  - Barriers
- Convenience
  - More Convenient
  - Less Convenient
- RPEB Outcome Motivations
  - Planet/Biodiversity/Animal
  - People
- Psychological Motivations
  - Guilt
  - Sense of Responsibility
  - Positive - Other
- Social Implications
  - Positive Social Implications
  - Negative Social Implications
- Health Implications
- Social Norms
- Identity or Sense of Self
- Catalyst of Change
  - Moment of Change
  - Gradual Change
- Empowerment
  - Positive Empowerment
  - Powerlessness
- Activism
  - Activist Displays
  - Organic activism
  - Activism concerns
  - Talking to Other about CC
- Time Involvement
- Overall Positive Consequences

A.4.2 Initial ‘themes’ generated by ‘searching for themes’ within the Interview Transcripts with ‘Radicals’ (reported in Chapter 3) (Phase 3 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

A.4.3 Reviewing themes Representing the Interview Transcripts with 'Radicals' (reported in Chapter 3) (Phase 4 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

Radical living

Finance

Convenience

Privilege

Systemic change

Who is a radical

Feelings of empowerment

Defining radical living

Identity

Experiences

Climate change as a personal burden

Sacrifices

Social implications

Positive aspects

Motivators

Catalysts

Environmental impact as a motivator

Sense of responsibility

guilt

A.4.4 Defining and naming themes Representing ‘Radicals’ (reported in Chapter 3) (Phase 5 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

Radical Pro-Environmental living

Finance

Convenience

'Privilege'

The Need for Systemic Change

Who is a 'Radical Pro-Environmentalist?'

Feelings of Empowerment

Defining Radical Living

Identity

Experiences of Living a Radical Pro-Environmental Lifestyle

Climate Change as a Personal Burden

Making Sacrifices to Live a Radical Lifestyle

Social implications of Radical Living

Positive Aspects of Radical Living

Motivators for Radical Living

Catalysts of Change

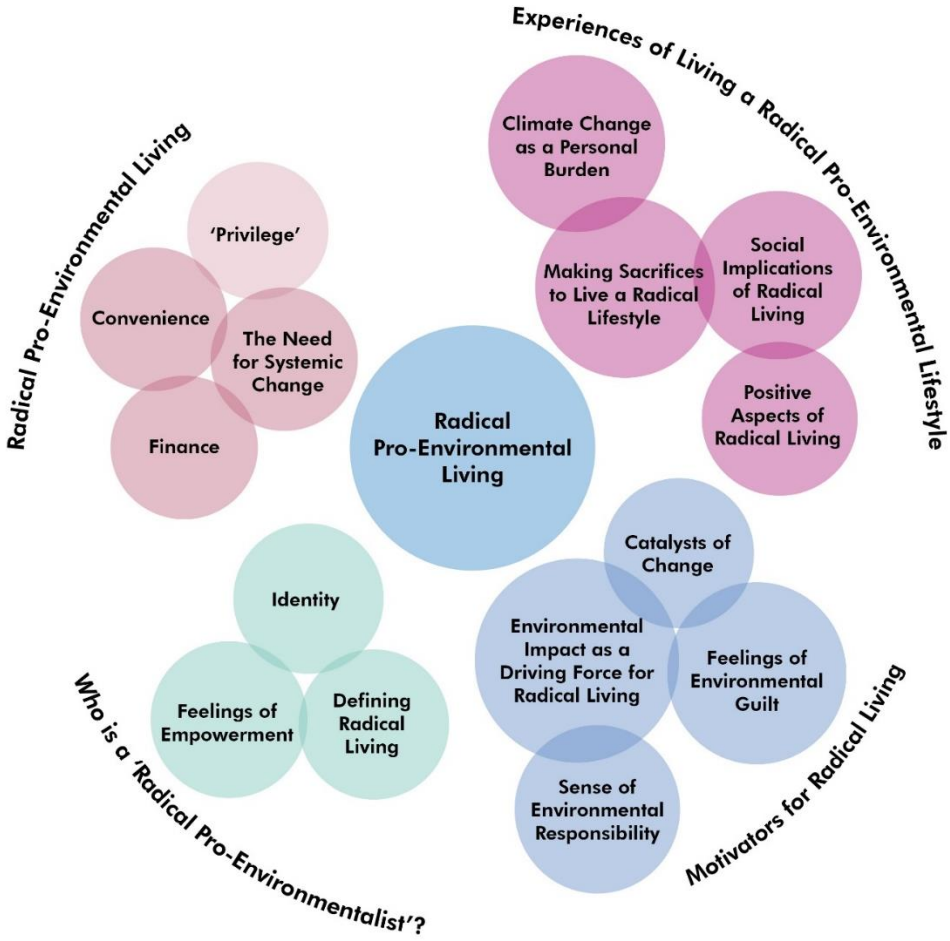
Environmental Impact as a Driving Force for Radical Living

Sense of Environmental Responsibility

Feelings of Environmental Guilt

A.4.5 The Final Thematic Map Representing Interviews with ‘Radicals’ (reported in Chapter 3) (Phase 6 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

STUDY 1
Radical Pro-Environmental Living



A.5 Interview Schedule with Non-Radicals (reported in Chapter 4)

Introductory Questions

6. Could you tell me a little bit about yourself?
    a. *Prompt*: What you do, where you live?
7. My research is about climate change and the things we can do to address it. Do you have a view or an opinion on climate change?"
    a. Prompt: could be any aspect, the science, the politics, personal action.
8. Could you tell me about some of the things that you do, or have done, to be more environmentally friendly or reduce your carbon footprint?
9. Are any of these things changes you've made in the past few years?
    a. Prompt: Past 3 years? 5, 10?
10. How, if at all, do these things affect your everyday life, whether for better or for worse?
    a. *Prompt*: Do you feel that the changes you've made have any impact on the way that you live?

Barriers to Radical Living

Motivators

1. How concerned are you about climate change?
2. Thinking about the things you do to be more environmentally friendly, why do you do them? What drives you?

    Prompt 1: If you were to do everything you could to reduce your carbon footprint, what would be the driving force behind that?

    Prompt 2: Would it be the effect of climate change on people, animals, the Earth, all of the above, etc.?
3. In what ways do you feel that people are having an impact upon climate change?

Convenience

7. How much do you feel that you can - or are able to - make pro-environmental changes to the way you live?
    a. *Prompt*: Is there anything that you feel affects your ability to make environmental changes in your life?
8. Thinking about the financial side of living in a more 'green' way, do you feel like it is more or less expensive?
9. Is life any more or less <u>difficult</u> for someone who has made environmentally friendly changes?
10. Would you say it is any more or less <u>convenient</u>?
11. How has the coronavirus pandemic affected the things that you do (or your ability) to be more environmentally friendly?

Identity

1. As long as it's relevant: You spoke earlier about how some things get in your way of making more changes to be environmentally friendly. How do these barriers make you feel?
2. How able do you feel in making pro-environmental changes to your lifestyle?

3. Overall, how much do you feel you are able to tackle climate change?
4. In your opinion, what makes someone take more 'radical' action?
5. Who is a 'radical' person?

Social Norms/Social Implications

6. What do your friends and family think about climate change?
7. What would they say about you if they heard you had decided to take new or more radical changes in your life to tackle climate change?
8. Could you tell me about any people you know who have made some big changes?
    a. Prompt: What do they do, what are they like?
9. If you were to make some bigger changes, are there any ways in which you think any of your relationships would be affected?

Willingness to make radical changes in the future

1. Do you feel that there any other environmental changes you could make to your lifestyle?
    Prompt: What are they/what could you do?
2. Would you consider making any more, 'big' changes to be more environmentally friendly or to reduce your carbon footprint? – (give a couple of examples:)
    i. Going Vegan?
    ii. Never flying again?
    iii. Living car free?
    iv. Never buying new things again (i.e. clothes, furniture)?
3. What would it take to help you make any of these changes?
4. Are there reasons you're not doing these things already?
5. What do you think your life would be like if you make some of these bigger changes?
    Prompt: What aspects of your life do you think they would affect?
6. How, if at all, do you feel that your willingness to change compares to a previous time in your life? Are you more or less willing to change now?

Climate Change and You

1. How has climate change affected you?
    a. *Prompt*: This could be anything, from concern about how people are affected, animals, the planet, etc. How, if at all, are you impacted by climate change?
2. How do you feel about how the UK government is handling climate change?
3. How do you feel about climate change activists?
    a. Prompt: People who especially in the past few years have been protesting, laying in roads, etc.
    b. Prompt 2 if necessary: Do you feel they are having an impact?

Close

(Thank participant for their time and for sharing so openly; remind them that they are contributing to research with a good cause, and of their value to this research)

4. How, if at all, do you feel that this exercise (the interview) has made you think differently about your individual role in climate change?
5. Is there anything that you would like to add that we haven't covered?
6. Are there any questions I can answer for you about the research or interview?

(Remind participant of confidentiality and their study rights)

[Send debrief sheet]

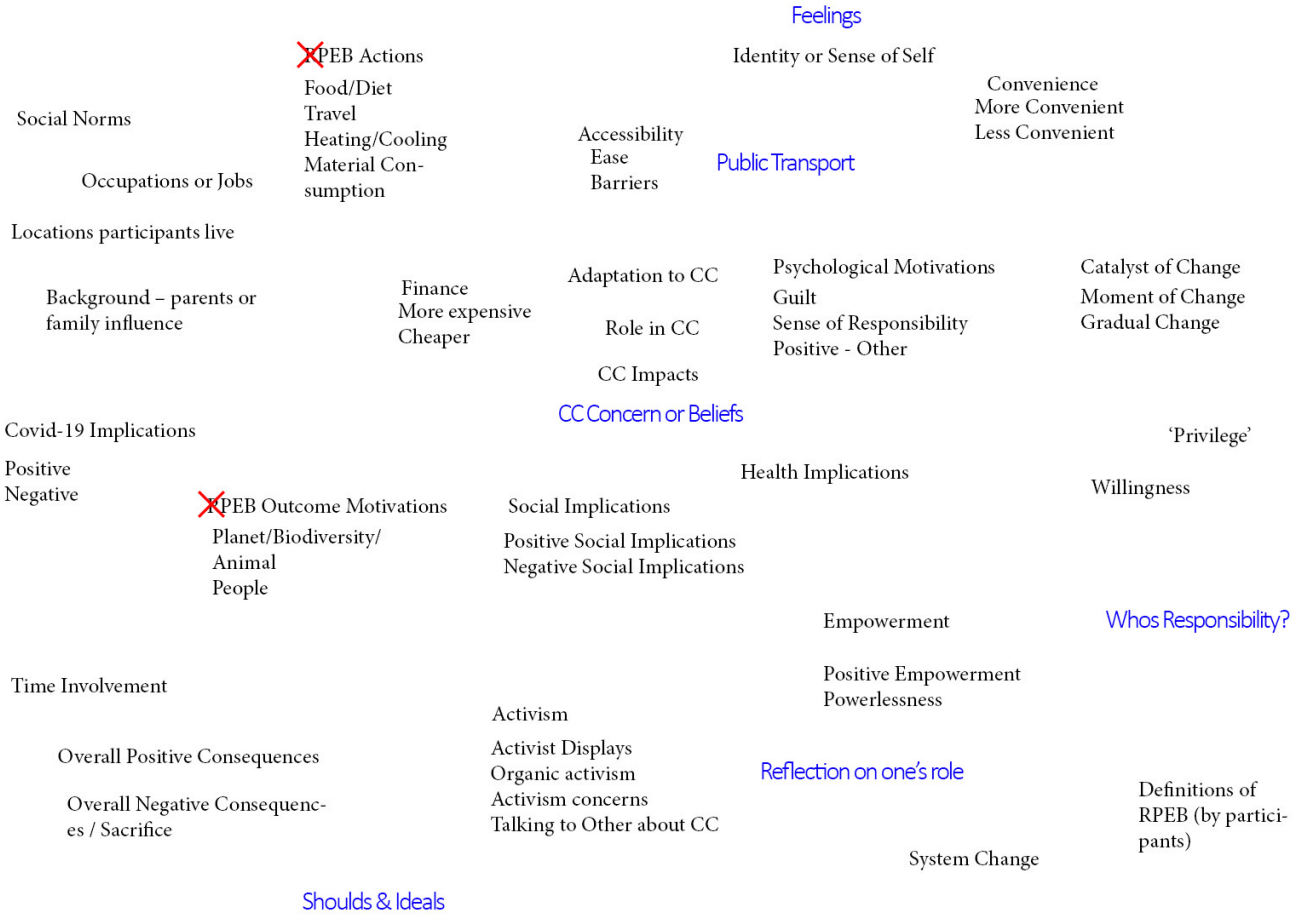
- END -

A.6 Stages of the Thematic Analysis of Interview Transcripts with ‘Non-Radicals’ (reported in Chapter 4)

A.6.1 The initial parsing of the interview transcripts yielded a series of thematic nodes (‘Phase 2’ of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

- RPEB Actions
  - Food/Diet
  - Travel
  - Heating/Cooling
  - Material Consumption
- Finance
  - More expensive
  - Cheaper
- Accessibility
  - Ease
  - Barriers
- Convenience
  - More Convenient
  - Less Convenient
- RPEB Outcome Motivations
  - Planet/Biodiversity/Animal
  - People
- Psychological Motivations
  - Guilt
  - Sense of Responsibility
  - Positive - Other
- Social Implications
  - Positive Social Implications
  - Negative Social Implications
- Health Implications
- Social Norms
- Identity or Sense of Self
- Catalyst of Change
  - Moment of Change
  - Gradual Change
- Empowerment
  - Positive Empowerment
  - Powerlessness
- Activism
  - Activist Displays
  - Organic activism
  - Activism concerns
  - Talking to Other about CC
- Time Involvement
- Overall Positive Consequences

A.6.2 Initial 'themes' generated by 'searching for themes' (Phase 3 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)



A.6.3 Reviewing themes (Phase 4 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

Barriers to Radical living

Finance

Inconvenience

Privilege

Systemic change

Who is a non-radical

Disempowerment

Climate change as a personal burden

Willingness to change

Guilt

'Inactive' concerns for climate change

Perceived impacts

Climate concern

Climate

A.6.4 Defining and naming themes (Phase 5 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

Barriers to Radical Pro-Environmental Living

Finance

Inconvenience

The Need for Systemic change

Climate Change and Me

Feelings of Disempowerment

Climate Change as a Personal Burden

Willingness to Make Changes

Feelings of Environmental Guilt

Inactive Concern

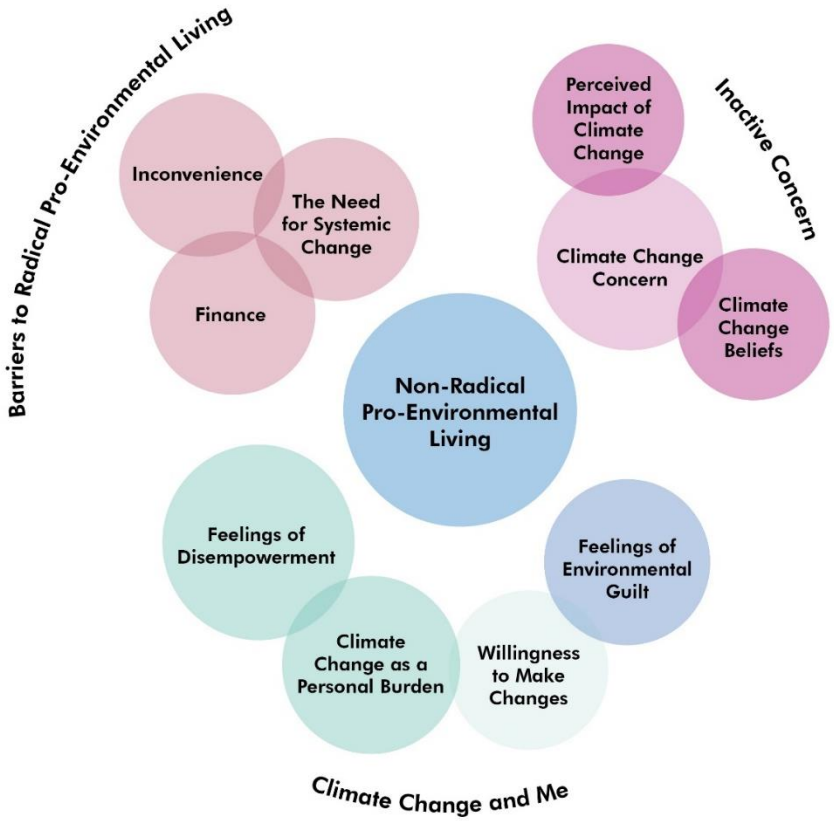
Perceived impact of Climate Change

Climate Change Concern

Climate Change Beliefs

A.6.5 The Final Thematic Map Representing Interviews with 'Non-Radicals' in Chapter 4 (Phase 6 of the Thematic Analysis, following the 6-phase method proposed by Braun & Clarke, 2006)

STUDY 2
Non-Radical Pro-Environmental Living



A.7 The 'CAST Survey'; This was the survey on which secondary data analysis was performed (reported in Chapter 5)

Questionnaire: Climate Change Survey

Client name:	Cardiff University
Project name:	Climate Change Survey
Job number:	7370
Methodology:	Online
Version	3

Notes on this document

- Instructions in CAPS are for computer programming
- Instructions in *italics* are for telephone interviewers
- **Bold** or underlined words are for emphasis within a question
- Different question types have different numbers:
  - Screener questions are labelled S01, S02, S03 etc.
  - Main survey questions are labelled Q01, Q02, Q03 etc.
  - Further demographic / classification questions are labelled C01, C02, C03 etc.
  - Number codes are included on each question for data processing purposes

Questionnaire quality checklist

Please use this list to check your script before it is sent to data for set up. Speak to your PM if you are unsure about any of these checks.

	Are quotas or sampling requirements clearly specified?	
Labelling	Is the script labelled with the client name, job, project code and version?	
	Do all questions have a unique number?	
	Are all questions numbered consistently with proper conventions for screener (S0X) and classification (C0X) questions?	
	Have all information pages been entered correctly as 'INFO1', 'INFO2'…	
	Have all notes to data (which aren't questions) been entered onto one line starting with 'DP NOTE:'?	
	Is each question to one of the specified question types? (See 'labelling_questionnaire.xls' in your project file if you aren't sure).	
	Have all grid questions been entered into separate tables with the grid label (column) first then a separate table for grid item (row)?	
Routing, ordering	Does each question have a base description which begins 'Base:'?	
	Are routing instructions easy to understand, do they reference the correct questions earlier in the survey?	
	Are exclusive and fixed codes identified where necessary?	
	Are answer lists ordered or randomized appropriately?	
Language	Is the phrasing of each question complete, simple and easily read on screen and aloud?	
	Is the phrasing of each question appropriate for its delivery mode (self-completion or interviewer led)?	
	Do the answer codes of closed questions relate directly to the question?	
NR	Have options for 'other, don't know etc.' been deployed appropriately?	
	Do all sensitive or personal questions include 'Prefer not to say'?	
Code labels	Are answer options coded correctly (Unique, sequential order 1~79)	
	Are all DK/PNTS options coded correctly? (80~99) • Other (80 - 82) • Don't know (85) • Prefer not to say / refused (86) • None of the above / not applicable (87) • Can't remember (88) • Not stated / not answered (89)	
Quality	Does this survey require any of the following? Include if appropriate • Contact collection for further research • Contact collection for interviewer validation • Attention or data quality check questions	
Have you proof-read the questionnaire for spelling and grammatical errors?		

Please confirm that you have checked this script against these criteria:

Initials		Date	

Introduction

INSTRUCTION: ADD CARDIFF UNIVERSITY LOGO TO TEMPLATE

Thank you for taking part in this research. This survey is on behalf of a research group at Cardiff University. We expect the survey will take about 20 minutes of your time.

The survey aims to examine public opinions of current and (potential) future issues. There are no right or wrong answers; all views are important to us, so please answer all questions as best as you can.

A few pieces of information before you start:

- Your participation is voluntary. If you decide you do not want to complete the survey, you are able to withdraw by closing the browser and the data will not be collected.
  - The data collected as a result of this survey may be held indefinitely. The data will be used to produce reports and academic publications and presentations.
  - The survey will be conducted under the Market Research Society Rules guaranteeing anonymity and there would be strictly no sales or other comeback from taking part.
  - You will be provided with further information about the research at the end of the survey.
- Contact details for the research team:

Dr. Christina Demski
Senior Lecturer
School of Psychology
Cardiff University
Tower Building, Park Place
Cardiff, CF10 3AT
Tel: +44 (0)29 2087 6020
Email: demskicc@cardiff.ac.uk

Are you happy to take part?

If yes, please click 'Next' to continue

TOTAL RESPONSES:

SEE '7370_CDU_PANEL QUOTAS' FOR MORE DETAILS

AUDIENCE (aged 18+)	QUOTA LIMIT	TAKEN FROM WHERE?
UK	1,000	Panel provider
Scotland boost	440	Panel provider
Wales boost	450	Panel provider

China	1,000	Panel provider
Sweden	1,000	Panel provider
Brazil	1,000	Panel provider

SCREENING QUESTIONS

INFO1. We would first like to ask a few questions about you. This is to make sure that we are speaking to a good cross-section of people.

Q01.
Base: All respondents

Which gender do you most identify with?
Please select one option
SINGLE RESPONSE - CHECK QUOTA

Code	Answer list	Scripting notes	Routing
1	Male		
2	Female		
3	I prefer to describe my gender in another way		
86	Prefer not to say		

Q02.
Base: All respondents

What is your age?
Please type your age into the box below
NUMERIC RANGE BOX (1-99) - CHECK QUOTA

Code	Answer list	Scripting notes	Routing
		OPEN NUMBER BOX	Screen out if under 18
86	Prefer not to say		

Q03.
Base. All respondents (UK SURVEY ONLY)

Please think about the chief income earner in your household. This is the person in your household who has the largest income – it may be you or someone else.

Please tell us which of the descriptions below best describes the chief income earner's occupation? These occupations also apply to self-employed people.
Please select one option only
SINGLE RESPONSE – CHECK QUOTA

Code	Answer list	Scripting notes	Routing
1	Professional at very high management level (e.g. Director of large company, senior manager in business or commerce, GP with own practice)	A	
2	Intermediate-level manager (e.g. Middle manager in large organisation, Director of small organisation)	B	
3	Non-manager in specified occupation (e.g. Non-manager working as doctor, solicitor, accountant etc.)	B	
4	Supervisory or clerical/ junior managerial/ professional/ administrative (e.g. junior manager, owner of small establishment, teacher, office worker)	C1	
5	Skilled manual worker or craftsman who has served an apprenticeship, foreman, manual worker with special qualifications (e.g. HGV driver, ambulance driver, qualified hairdresser)	C2	
6	Semi-skilled or unskilled manual worker; apprentice or trainee learning a skilled occupation (e.g. supermarket cashier, postman, cleaner, child minder, building labourer)	D	
7	Student	E	
8	Housewife/househusband/stay at home parent/full-time carer of other household member	E	
9	Unemployed for **more than six months** or employed as a casual worker [Note: if unemployed for **less than six months**, please choose the option that best fits their previous occupation]	E	
10	Retired and **living on state pension only** [Note: if retired but receiving a **private or occupational pension**, please choose the option that best fits their previous occupation]	E	
11	Not working due to long term sickness or disability	E	

Base. All respondents (BRAZIL SURVEY ONLY)

Please think about the chief income earner in your household. This is the person in your household who has the largest income – it may be you or someone else.

Please tell us which of the descriptions below best describes the chief income earner's occupation? These occupations also apply to self-employed people.
Please select one option only
SINGLE RESPONSE – CHECK QUOTA

Code	Answer list	Scripting notes	Routing
1	Professional at very high management level (e.g. Director of large company, banker, investor, major landowner)	A	
2	Intermediate-level manager (e.g. Middle manager in large organisation, Director of small organisation)	B	
3	Non-manager in specified occupation (e.g. Non-manager working as doctor, lawyer, professor, accountant etc.)	B	
4	Supervisory or clerical/ junior managerial/ professional/ administrative (e.g. junior manager, teacher, office worker, nurse)	C	
5	Skilled manual worker or craftsman who has served an apprenticeship, foreman, manual worker with special qualifications (e.g. HGV driver, ambulance driver, electrician, mechanic)	C	
6	Semi-skilled or unskilled manual worker; apprentice or trainee learning a skilled occupation (e.g. supermarket cashier, driver, child minder, building labourer, bartender)	D	
7	Student	E	
8	Housewife/househusband/stay at home parent/full-time carer of other household member	E	
9	Unemployed for **more than six months** or employed as a casual worker (e.g. cleaner) [Note: if unemployed for **less than six months**, please choose the option that best fits their previous occupation]	E	
10	Retired without a private or occupational pension [Note: if retired but receiving a **private or occupational pension**, please choose the option that best fits their previous occupation]	E	
11	Not working due to long term sickness or disability	E	

Q04.
Base: All respondents

In which region do you live?
Please select one option
SINGLE RESPONSE - CHECK QUOTA

Code	Answer list	Scripting notes	Routing
1	East Anglia	UK ONLY	
2	East Midlands	UK ONLY	
3	London	UK ONLY	
4	North East	UK ONLY	
5	North West	UK ONLY	
6	South East	UK ONLY	
7	South West	UK ONLY	
8	West Midlands	UK ONLY	
9	Yorkshire & Humberside	UK ONLY	
10	Northern Ireland	UK ONLY	
11	Scotland	UK ONLY	
12	Wales	UK ONLY	

Code	Answer list	Scripting notes	Routing
1	Centro-Oeste	BRAZIL ONLY	
2	Nordeste	BRAZIL ONLY	
3	Norte	BRAZIL ONLY	
4	Sudeste	BRAZIL ONLY	
5	Sul	BRAZIL ONLY	

Code	Answer list		Scripting notes	Routing
1	Central	Henan, Hubei, Hunan	CHINA ONLY	
2	East	Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong	CHINA ONLY	
3	North	Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia	CHINA ONLY	
4	North East	Liaoning, Jilin, Heilongjiang	CHINA ONLY	
5	North West	Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang	CHINA ONLY	
6	South	Guangdong, Guangxi, Hainan	CHINA ONLY	
7	South West	Chongqing, Sichuan, Guizhou, Yunnan, Tibet	CHINA ONLY	

Code	Answer list	Scripting notes	Routing
1	East	SWEDEN ONLY	
2	Middle	SWEDEN ONLY	

3	North	SWEDEN ONLY	
4	South	SWEDEN ONLY	
5	South East	SWEDEN ONLY	
6	West	SWEDEN ONLY	

Q05.
Base: All respondents

What is your annual gross household income range? Please note that your details will be kept completely confidential.
Please select one option
SINGLE RESPONSE - CHECK QUOTA FOR CHINA AND SWEDEN ONLY
DP: The equivalent Chinese, Brazil and Swedish income bands will be added based on exchange rates when we get closer to the translation date.

Code	Answer list	Scripting notes	Routing
1	Under £10,000	UK ONLY	
2	£10,000 - £19,999	UK ONLY	
3	£20,000 - £29,999	UK ONLY	
4	£30,000 - £39,999	UK ONLY	
5	£40,000 - £49,999	UK ONLY	
6	£50,000 - £59,999	UK ONLY	
7	£60,000 - £79,999	UK ONLY	
8	£80,000 - £99,999	UK ONLY	
9	£100,000 or more	UK ONLY	
86	Prefer not to say	UK ONLY	

Code	Answer list	Scripting notes	Routing
1	Under RMB 48,000	CHINA ONLY	
2	RMB 48,000 – RMB 95,999	CHINA ONLY	
3	RMB 96,000 – RMB 107,999	CHINA ONLY	
4	RMB 108,000 – RMB 119,999	CHINA ONLY	
5	RMB 120,000 – RMB 143,999	CHINA ONLY	
6	RMB 144,000 – RMB 215,999	CHINA ONLY	
7	RMB 216,000 or more	CHINA ONLY	
86	Prefer not to say	CHINA ONLY	

Code	Answer list	Scripting notes	Routing
1	Under 20,000 BRL	BRAZIL ONLY	
2	20,000 - 60,999 BRL	BRAZIL ONLY	
3	61,000 - 99,999 BRL	BRAZIL ONLY	
4	100,000 - 130,999 BRL	BRAZIL ONLY	
5	131,000 - 160,999 BRL	BRAZIL ONLY	
6	161,000 - 200,999 BRL	BRAZIL ONLY	
7	201,000 - 230,999 BRL	BRAZIL ONLY	
8	231,000 - 260,999 BRL	BRAZIL ONLY	
9	261,000 BRL or more	BRAZIL ONLY	
86	Prefer not to say	BRAZIL ONLY	

Code	Answer list	Scripting notes	Routing
1	Under 100,000SEK	SWEDEN ONLY	
2	100,000 – 199,999SEK	SWEDEN ONLY	
3	200,000 - 299,999SEK	SWEDEN ONLY	
4	300,000 – 399,999SEK	SWEDEN ONLY	
5	400,000 – 499,999SEK	SWEDEN ONLY	
6	500,000SEK or more	SWEDEN ONLY	

86	Prefer not to say	SWEDEN ONLY	

Climate change beliefs

Q06.
Base: All respondents

What would you say will be the most important issue facing <INSERT COUNTRY: the UK/ China / Brazil / Sweden> in the next 20 years?
Type your comment in the box below in less than 5 words
OPEN RESPONSE

Code	Answer list	Scripting notes	Routing
85	Don't know		

Q07.
Base: All respondents

How worried, if at all, are you about climate change?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Not at all worried		
2	Not very worried		
3	Fairly worried		
4	Very worried		
5	Extremely worried		
85	Don't know		

Q08.
Base: All respondents

Thinking about the causes of climate change, which, if any, of the following best describes your opinion?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Climate change is entirely caused by natural processes		
2	Climate change is mainly caused by natural processes		
3	Climate change is caused about equally by natural processes and human activity		
4	Climate change is mainly caused by human activity		
5	Climate change is entirely caused by human activity		
6	There is no such thing as climate change		
85	Don't know		

Q09.
Base: All respondents

When, if at all, do you think <INSERT COUNTRY: the UK/ China / Brazil / Sweden > will start feeling the effects of climate change?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	We are already feeling the effects		
2	In the next 10 years		
3	In the next 25 years		
4	In the next 50 years		
5	In the next 100 years		
6	Beyond the next 100 years		
7	Never		
85	Don't know		

Q010.
Base: All respondents

How serious a threat, if at all, is climate change to each of the following?
Please select one option for each
SINGLE RESPONSE, GRID QUESTION

Code	Answer list	Scripting notes	Routing
1	Not at all serious		
2	Not very serious		
3	Fairly serious		
4	Very serious		
5	Extremely serious		
6	Don't know		

Statement number	Statement	Scripting notes	Routing
1	You and your family		
2	<INSERT COUNTRY: The UK/ China / Brazil / Sweden> as a whole		
3	People in less developed countries		

Q011.
Base: All respondents

Overall, how positive or negative do you think the effects of climate change will be on <INSERT COUNTRY: the UK/ China / Brazil / Sweden >?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Entirely negative		
2	More negative than positive		
3	Neither positive nor negative		
4	More positive than negative		
5	Entirely positive		
85	Don't know		

Q012.
Base: All respondents

Which of these best describes your views about the level of urgency with which climate change needs to be addressed?

Addressing climate change requires...

Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Little or no urgency		
2	A low level of urgency		
3	A moderate level of urgency		
4	A high level of urgency		
5	An extremely high level of urgency		
85	Don't know		

Q013.
Base: All respondents

Thinking about the ways to limit climate change, to what extent do you think we should do the following?
Please select one option for each
SINGLE RESPONSE, GRID QUESTION, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	We don't need to do this at all		
2	We don't really need to do this		
3	We should probably do this		
4	We should definitely do this		
85	Don't know		

Statement number	Statement	Scripting notes	Routing
1	Reduce the amount of meat in our diets		
2	Limit the amount of air travel (flying) we do		
3	Reduce our overall levels of consumption (the amount of things we buy)		
4	Reduce the amount of energy we use in our homes		

Q014.
Base: All respondents

If everybody in <INSERT COUNTRY: the UK/ China / Brazil / Sweden > did the following, which three of these do you think would have the biggest impact on tackling climate change?
Please select up to three options
MULTI RESPONSE, MAX 3, RANDOMISE

Code	Answer list	Scripting notes	Routing
1	Walk, cycle or use public transport more instead of using a car		
2	Eat less red meat (e.g. beef, lamb)		
3	Minimise throwing away food		
4	Drive an electric car		
5	Minimise the amount of energy we use at home		
6	Use a low-carbon heating/cooling system (e.g. solar, heat pump) in our home		
7	Minimise air travel		
8	Reduce the amount of new things we buy		
9	None of these will have an impact on climate change	EXCLUSIVE. FIXED	
85	Don't know	EXCLUSIVE.FIXED	

Q015.
Base: All respondents

How worried, if at all, are you about the Coronavirus (Covid-19) pandemic and its impacts?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Not at all worried		
2	Not very worried		
3	Fairly worried		
4	Very worried		
5	Extremely worried		
85	Don't know		

Q016.
Base: All respondents

To what extent do you agree or disagree with the following statement?

In the economic recovery, after Covid-19, it's important that government actions prioritise climate change.

Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Diet – ROTATE SECTION

SCRIPTING NOTE: Rotate the order shown of these sections:

- Diet
- Transport
- Heating and home comfort
- Material consumption

INFO 2. The next set of questions explore your diet and future choices.

Q017.
Base: All respondents

How many days in a typical week do you eat each of the following?
Please choose the number of days for each type of food group from the list
DROP-DOWN LIST 0-7. RANDOMISE

Code	Answer list	Scripting notes	Routing
1	Red meat (e.g. lamb, beef)		
2	White meat (e.g. chicken, pork)		
3	Fish		
4	Vegetables		
5	Soja based products (e.g. tofu)		
6	Dairy products (e.g. cheese, milk)		

Q018.
Base: All respondents

How willing or unwilling are you to eat less meat or meat products in the future?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Very unwilling		
2	Fairly unwilling		
3	Neither willing nor unwilling		
4	Fairly willing		
5	Very willing		
87	I already don't eat meat or meat products		

Q019.
Base: All respondents who are willing to eat less meat (Q18/3,4 or 5)

If you were to reduce your meat consumption, how would you most likely do that?

Please select as many options as apply

MULTI RESPONSE

Code	Answer list	Scripting notes	Routing
1	Replace meat products with non-meat alternatives (e.g. tofu, veggie burger)		
2	Eat as before but reduce the use of meat products		
3	Replace meat products with fish		
86	None of these		

Q020.
Base: All respondents

Which, if any, of the following applies to you?

Please select as many options as apply

MULTI RESPONSE. RANDOMISE

Code	Answer list	Scripting notes	Routing
1	I avoid certain foods for medical reasons		
2	I am on a diet trying to lose weight		
3	I avoid certain food for religious or cultural reasons		
4	I am allergic or intolerant to certain food		
5	I am completely vegetarian		
6	I am partly vegetarian		
7	I follow a vegan diet		
8	I avoid certain food for other reasons		
87	None of these things apply to me	EXCLUSIVE. FIXED	

Q021.
Base: All respondents

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

Please select one option for each

SINGLE RESPONSE, GRID RESPONSE, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Code	Statements	Scripting notes	Routing
1	Eating meat is important for a healthy diet		
2	It's more expensive to cook meals without meat		
3	Vegan meals (meals without meat or dairy products) can be very tasty		
4	I feel in control of making decisions about what food I eat		

5	There are a lot of vegetarian or meat-free options to choose from (e.g. in supermarkets/restaurants)		
6	Eating meat is an important part of my culture		
7	Most of my friends follow a vegetarian (meat free) diet		
8	Most people close to me eat meat every day		
9	I feel that most people close to me would disapprove if I stopped eating meat		
10	Being vegetarian is frowned upon by my friends and family		

Q022.
Base: All respondents

In the last 12 months have you made any of the following changes…?
Please select as many options as apply
MULTI RESPONSE. RANDOMISE

Code	Answer list	Scripting notes	Routing
1	Changed to a vegan diet		
2	Changed to a vegetarian diet		
3	Reduced how much red meat (e.g. beef, lamb) I eat		
4	Reduced how much white meat (e.g. chicken, pork) I eat		
80	Another change to my diet (please specify)	OPEN TEXT BOX. FIXED	
87	No changes made	EXCLUSIVE. FIXED	

Q023.
Base: All respondents who made any changes (Q22/1-80)

Was the reason for these changes the Covid-19 pandemic? If not, please let us know why you made these changes.

Either select one option or type your reason into the box

OPEN RESPONSE

Code	Answer list	Scripting notes	Routing
1		OPEN TEXT BOX	
2	Yes, Covid-19 was the reason for the change	EXCLUSIVE	
85	Don't know	EXCLUSIVE	

Transport – ROTATE SECTION

INFO 3. This section explores how you travel and your future choices.

Q024.
Base: All respondents

In the last 12 months, did you fly by plane at all?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Yes		
2	No		

Q025.
Base: All respondents who travelled by plane (Q24/1)

Please indicate how many single flights you took for leisure/holiday and for work in the last 12 months (counting a return journey as two flights)?

Please type in a number for each

SINGLE RESPONSE, GRID QUESTION WITH NUMERIC BOXES

Code	Answer list	Scripting notes	Routing
1	Up to 2 hours flight time	NUMBER BOX + OPTION TO CLICK IF HAVEN'T TAKEN ANY FLIGHTS	
2	2-5 hours flight time	NUMBER BOX + OPTION TO CLICK IF HAVEN'T TAKEN ANY FLIGHTS	
3	Longer than 5 hours flight time	NUMBER + OPTION TO CLICK IF HAVEN'T TAKEN ANY FLIGHTS BOX	

Code	Category	Scripting notes	Routing
1	Leisure/holiday		
2	Work		

Q026.
Base: All respondents who travelled by plane (Q24/1)

Would you have taken more flights in the last 12 months if the Covid-19 pandemic had not happened?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Yes, definitely		
2	Yes, probably		
3	No, probably not		
4	No, definitely not		
85	Don't know		

Q027.
Base: All respondents

Do you own a car or have access to a car?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Yes, I own a car		
2	Yes, I have access to a car		
3	No		

Q028.
Base: All respondents

How frequently do you travel by car, either as a driver or passenger? This includes trips for work and/or leisure purposes.

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Every day (7 days a week)		
2	Most days (4-6 times a week)		
3	1-3 days a week		
4	1-3 times a month		
5	3-4 times a year		
6	Once or twice a year		
7	Less often/not at all		
85	Don’t know		

Q029.
Base: All respondents

How willing or unwilling are you to reduce how much you travel by plane (excluding work travel)?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Very unwilling		
2	Fairly unwilling		
3	Neither willing nor unwilling		
4	Fairly willing		
5	Very willing		
87	Not applicable, I don’t fly		

Q030.
Base: All respondents who are willing to reduce plane travel (Q29/3, 4 or 5)

If you were to reduce how much you travel by plane (excluding work travel), which alternative would you consider?

Please select as many options as apply

MULTI RESPONSE, RANDOMISE

Code	Answer list	Scripting notes	Routing
1	I would simply reduce the amount I travel		
2	I would pick destinations that are close by		
3	I would travel by long distance trains		
4	I would travel by car		
80	Other (please specify)	TEXT BOX. FIXED	
87	None of these	FIXED	

Q031.
Base: All respondents

How willing or unwilling are you to reduce how much you travel by car?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Very unwilling		
2	Fairly unwilling		
3	Neither willing nor unwilling		
4	Fairly willing		
5	Very willing		
87	Not applicable, I don't travel by car		

Q032.
Base: All respondents who are willing to reduce car travel (Q31/3, 4 or 5)

If you were to reduce how much you travel by car, which alternative would you consider?

Please select as many options as apply

MULTI RESPONSE. RANDOMISE

Code	Answer list	Scripting notes	Routing
1	Using public transport (bus, train, tram)		
2	Walking		
3	Cycling		
4	Car sharing or taxi facilities		
5	I would travel less		
80	Other (please specify)	TEXT BOX. FIXED	
87	None of these	EXCLUSIVE, FIXED	

Q033.
Base: All respondents

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

Please select one option for each

SINGLE RESPONSE, GRID RESPONSE, RANDOMSIE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Code	Statements	Scripting notes	Routing
1	Using the car is more convenient than using public transport		
2	Using the train instead of flying is too expensive		
3	Using the train instead of flying takes too long		
4	I feel in control of making decisions about how I travel		
5	My work involves travelling over which I have little choice	Add N/A option	
6	There are not a lot of alternatives to travelling by car in the area I live		
7	Most people close to me fly regularly for leisure purposes		
8	Most of my friends or family own a car		
9	People close to me would disapprove if I decided to give up flying		
10	ho		

Q034.
Base: All respondents

In the last 12 months, have you made any of the following changes?

Please select as many options as apply

MULTI RESPONSE, RANDOMISE

Code	Answer list	Scripting notes	Routing
1	Worked from home more		
2	Bought an electric car		
3	Reduced the amount I fly		
4	Cycled more		
5	Started commuting by public transport		
80	Another change to how I travel (please specify)	TEXT BOX. FIXED	
87	No changes made	EXCLUSIVE. FIXED	

Q035.
Base: All respondents who made any changes (Q34/1-80)

Was the reason for these changes the Covid-19 pandemic? If not, please let us know why you made these changes.

Either select one option or type your reason into the box

OPEN RESPONSE

Code	Answer list	Scripting notes	Routing
1		OPEN TEXT BOX	
2	Yes, Covid-19 was the reason for the change	EXCLUSIVE	
85	Don’t know	EXCLUSIVE	

Heating and home comfort – ROTATE SECTION

INFO 4. Next, we will ask you a number of questions about how you heat and cool your home.

Q036.
Base: All respondents

What is the main way you currently heat your home?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Gas boiler		
2	Coal fuel		
3	Biomass boiler/bioenergy/wood		
4	Air/ground source heat pump		
5	District heating/heat network		
6	Oil/fuel oil/LPG		
7	Solar thermal/solar energy		
8	Electric		
9	Electric (heating radiators)		
80	Other (please specify)	TEXT BOX	
87	I don't heat my home		
85	Don't know		

Q037.
Base: All respondents

And what is the main way you currently cool your home?
Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Electric air-conditioning		
2	Fixed electric fans		
3	Portable fans		
4	By opening windows/doors		
87	Not necessary to cool my home		
80	Other (please specify)	TEXT BOX	
85	Don't know		

Q038.
Base: All respondents

How often do you experience the following in your home?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Never		
2	Very rarely		
3	Rarely		
4	Occasionally		
5	Frequently		
6	Very frequently		
87	Not applicable		

Code	Statements	Scripting notes	Routing
1	Feeling too hot		
2	Feeling too cold		
3	Condensation and/or mould		
4	Failure of the heating or cooling system		
5	Poor air ventilation		

Q039.
Base: All respondents who heat their home (Q36/1-80)

How satisfied or dissatisfied are you with your current heating system?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Very dissatisfied		
2	Dissatisfied		
3	Neither satisfied nor dissatisfied		
4	Satisfied		
5	Very satisfied		

Q040.
Base: All respondents

What best describes your home?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	House with up to 2 bedrooms		
2	House with more than 2 bedrooms		
3	Flat with up to 2 bedrooms		

4	Flat with more than 2 bedrooms		
80	Other (please specify)	TEXT BOX	

Q041.
Base: All respondents

How willing or unwilling are you change to a low carbon heating/cooling system? *By low carbon we mean any system that does not use coal, gas or oil. For example, low carbon heating/cooling may be provided by a district heating network, heat pump or solar systems.*

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Very unwilling		
2	Fairly unwilling		
3	Neither willing nor unwilling		
4	Fairly willing		
5	Very willing		
87	Already using a low carbon heating system		
85	Don't know		

Q042.
Base: All respondents

Which of the following best describes your home?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Being bought on a mortgage		
2	Owned outright		
3	Rented (from local authority/ government)		
4	Rented (privately)		
80	Other (please specify)	TEXT BOX	
85	Don't know		

Q043.
Base: All respondents who own a home (Q42/1-2)

How willing or unwilling are you to invest in substantial renovations to improve the insulation of your house?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Very unwilling		
2	Fairly unwilling		
3	Neither willing nor unwilling		
4	Fairly willing		
5	Very willing		
87	I am not a homeowner		
85	Don't know		

Q044.
Base: All respondents

How willing or unwilling are you to reduce how much you heat and/or cool your home?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing

1	Very unwilling		
2	Fairly unwilling		
3	Neither willing nor unwilling		
4	Fairly willing		
5	Very willing		
85	Don’t know		

Q045.
Base: All respondents

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

Please select one option for each

SINGLE RESPONSE, GRID RESPONSE, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Code	Statements	Scripting notes	Routing
1	I don't know very much about low-carbon heating/cooling systems		
2	Improving the insulation of my home would be very expensive	Add N/A option	
3	Changing the heating/cooling system in my home would be a hassle	Add N/A option	
4	I feel in control of how I heat or cool my home		
5	The use of heating and cooling in my home is restricted by how much it costs		
6	Most of my friends and family keep their home at a comfortable temperature at all times		
7	It's unacceptable to heat or cool your home when no-one is home		
99	We're just checking to see that you're engaging with the survey. Please select "tend to agree" on this row		CLOSE IF TEND TO AGREE NOT SELECTED

Q046.
Base: All respondents

In the last 12 months, have you made any of the following changes?

Please select as many options as apply

MULTI RESPONSE, RANDOMISE

Code	Answer list	Scripting notes	Routing
1	Installed a low carbon heating system (e.g. heat pump, solar panel)		
2	Improved insulation of my home		
3	I used a lot less heating or cooling in my home		
4	I used a lot more heating or cooling in my home		
80	Another change to my home heating or cooling (please specify)	TEXT BOX. FIXED	
87	No changes made	EXCLUSIVE. FIXED	

Q047.
Base: All respondents who made any changes (Q46/1-80)

Was the reason for these changes the Covid-19 pandemic? If not, please let us know why you made these changes.

Either select one option or type your reason into the box

OPEN RESPONSE

Code	Answer list	Scripting notes	Routing
1		OPEN TEXT BOX	
2	Yes, Covid-19 was the reason for the change	EXCLUSIVE	
85	Don’t know	EXCLUSIVE	

Material consumption – ROTATE SECTION

INFO 5. Next, we will ask you a number of questions about how you buy and use products.

Q048.
Base: All respondents

Please think about the products you buy such as clothes, cosmetics, electronics or sporting equipment. Roughly what percentage of your disposable income (what you have left after paying for your bills and food) do you spend on buying new things per month?

Please select the percentage (%) on the sliding scale below

SLIDING SCALE FROM 0% - 100%

Code	Answer list	Scripting notes	Routing
85	Don't know	EXCLUSIVE	

Q049.
Base: All respondents

How willing or unwilling are you to…?

Please select one option

SINGLE RESPONSE, GRID QUESTION, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Very unwilling		
2	Fairly unwilling		
3	Neither willing nor unwilling		
4	Fairly willing		
5	Very willing		
85	Don't know		

Code	Statements	Scripting notes	Routing
1	Buy fewer things overall		
2	Buy more products second hand		
3	Rent items such as washing machines, clothes or tools instead of owning them		

Q050.
Base: All respondents

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

Please select one option for each

SINGLE RESPONSE, GRID RESPONSE, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Code	Statements	Scripting notes	Routing
1	I enjoy buying and owning new things		
2	I like a lot of luxury in my life		
3	I'd be happier if I could afford to buy more things		
4	The things I own aren't all that important to me		
5	It is completely up to me what products I buy		
6	The products I buy are limited by my financial situation		
7	Second-hand products are generally lower quality than new products		
8	People close to me don't buy new things unless they have to		
9	I feel an expectation to always buy the latest products		

Q051.
Base: All respondents

In the last 12 months, have you made any of the following changes?

Please select as many options as apply

MULTI RESPONSE, RANDOMISE

Code	Answer list	Scripting notes	Routing
1	Reduced how many new products (e.g. electronics, clothes) I bought		
2	Started buying more second-hand products		
3	Entered a leasing/renting agreement instead of buying new (e.g. car, tools)		
80	Another change to how I use or buy things (please specify)	TEXT BOX, FIXED	
87	No changes made	EXCLUSIVE. FIXED	

Q052.
Base: All respondents who made any changes (Q51/1-80)

Was the reason for these changes the Covid-19 pandemic? If not, please let us know why you made these changes.

Either select one option or type your reason into the box

OPEN RESPONSE

Code	Answer list	Scripting notes	Routing

1		OPEN TEXT BOX	
2	Yes, Covid-19 was the reason for the change	EXCLUSIVE	
85	Don’t know	EXCLUSIVE	

Policy support

Q053.
Base: All respondents

To what extent do you support or oppose the following policies in <INSERT COUNTRY: the UK/ China / Brazil/ Sweden>?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION, RANDOMISE STATEMENTS

ADD SOME VISUAL LINES BETWEEN OPTIONS TO MAKE THE LONG LIST CLEAR

Code	Answer list	Scripting notes	Routing
1	Strongly oppose		
2	Tend to oppose		
3	Neither support nor oppose		
4	Tend to support		
5	Strongly support		
85	Don't know		

Code	Statement list	Scripting notes	Routing
1	Making vegetarian and vegan options mandatory in canteens and restaurants		
2	Shifting subsidies away from meat production to plant or grain producing agriculture		
3	Encouraging research on alternative meat sources such as lab grown meat		
4	Introducing food labelling systems that show the carbon emissions of food products		
5	Increasing the price of meat products		
6	Stopping airport expansions		
7	Reducing road space for cars and increase space for cycling and walking		
8	Introducing higher road charges that would be used to improve public transport		
9	Phasing out the sale of petrol and diesel cars in favour of electric or hybrid ones		
10	Phasing out the sale of gas/coal boilers in favour of heating systems using renewable energy	ASK UK ONLY	
11	Building regulations to force developers to install low carbon heating and cooling systems in new homes		
12	Subsidies to help people insulate their homes		
13	Changing product pricing to reflect how environmentally friendly products are (e.g. lower prices for low carbon products)		
14	Regulations to require products to be more reusable, repairable and recyclable		

Q054.
Base: All respondents

In Paris in December 2015, most countries agreed to an international agreement that aims to keep global temperature rises below 2 degrees. Do you support or oppose <INSERT COUNTRY: the UK/ China / Brazil/ Sweden> being part of this agreement?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Strongly oppose		
2	Tend to oppose		
3	Neither support nor oppose		
4	Tend to support		
5	Strongly support		
85	Don’t know		

Behavioural intentions

Q055.
Base: All respondents

Please indicate how likely or unlikely you are to take each of the following actions in the next 12 months? If you are already taking any of these actions and intend to continue to do so, please choose "fairly likely" or "very likely" as the response.

Please select one option for each

SINGLE RESPONSE, GRID QUESTION, RANDOMISE STATEMENTS

ADD SOME VISUAL LINES BETWEEN OPTIONS TO MAKE THE LONG LIST CLEAR

Code	Answer list	Scripting notes	Routing
1	Very unlikely		
2	Fairly unlikely		
3	About as likely as unlikely		
4	Fairly likely		
5	Very likely		
85	Don't know		

Code	Statement list	Scripting notes	Routing
1	Eat fewer calories a day to reduce consumption		
2	Plan meals ahead to avoid food waste		
3	**Follow a vegan diet**		
4	**Follow a vegetarian diet**		
5	Buy locally produced food		
6	Use a bike for commuting (or for other regular journeys)		
7	Live car free		
8	Go on holiday by train instead of flying		
9	Buy an electric car		
10	Reduce car journeys during the week by working at home more often		
11	Keep your home at a colder temperature in the winter (by 1 degree)		
12	Keep your home at a warmer temperature in the summer (by 1 degree)		
13	Use leasing schemes instead of buying new (e.g. for washing machines, cars)		
14	**Avoid buying new things (e.g. clothing, luxury items)**		
15	**Buy or sell things on peer-to-peer websites (e.g. eBay) (non radical)**	UK ONLY	
16	Buy or sell things on peer-to-peer websites (e.g. Taobao)	CHINA ONLY	
17	Buy or sell things on peer-to-peer websites (e.g. Tradera)	SWEDEN ONLY	
18	Buy or sell things on peer-to-peer websites (e.g. MercadoLivre)	BRAZIL ONLY	
19	Persuade relatives or friends to reduce their carbon emissions		
20	Take part in community action for environmental initiatives		

Q056.

Base: All respondents

Please imagine a person based on the following description…

HALF OF THE SAMPLE TO BE ASKED 'a' and half to be asked 'b'

SCRIPTING NOTE: REPLACE NAMES FOR EACH COUNTRY. UK (Sam Smith), China (Xiao Wang), Brazil (Araci Santos), Sweden (Chris Andersson)

a) <INSERT NAME> likes cooking for family and friends. Every time they throw a dinner party, <INSERT NAME> tries new recipes to provide a good selection of meat dishes for their guests.

b) <INSERT NAME> likes cooking for family and friends. Every time they throw a dinner party, <INSERT NAME> tries new recipes to provide a good selection of vegetarian dishes for their guests.

Considering this, how much would you agree or disagree with the following statements?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		
85	Don't know		

Code	Statements	Scripting notes	Routing
1	I would like to be friends with <INSERT NAME>		
2	I think that <INSERT NAME> and I would get along well		
3	<INSERT NAME> would be highly regarded by others		
4	A lot of people would like to be friends with <INSERT NAME>		

Q057.
Base: All respondents

Now, please imagine a person based on the following description…

HALF OF THE SAMPLE TO BE ASKED 'c' and half to be asked 'd'

SCRIPTING NOTE: REPLACE NAMES FOR EACH COUNTY. UK (Alex Jones), China (Bao Li), Brazil (Darci Silva), Sweden (Alex Johansson)

c) Every year <INSERT NAME> and her family go on holiday for three weeks in the summer. They go to a new country every year and make a long journey by plane with the whole family.

d) Every year <INSERT NAME> and their family go on holiday for three weeks in the summer. They go to a new country every year and make a long journey by train with the whole family.

Considering this, how much would you agree or disagree with the following statements?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		
85	Don't know		

Code	Statements	Scripting notes	Routing
1	I would like to be friends with <INSERT NAME>		
2	I think that <INSERT NAME>and I would get along well		
3	<INSERT NAME>would be highly regarded by others		
4	A lot of people would like to be friends with <INSERT NAME>		

Identity

Q058.
Base: All respondents

To what extent do agree or disagree with the following statements?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION, RANDOMISE ORDER OF STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Code	Statement list	Scripting notes	Routing
1	I am *not* the type of person to become vegetarian		
2	Eating meat is an important part of who I am		
3	Travelling far and often is an important part of how I choose to live my life		
4	My car defines who I am		
5	I am the kind of person who chooses to *not* fly		
6	Having an energy efficient home is an important part of who I am		
7	I see myself as someone who always keeps their home at a comfortable temperature		
8	I am the type of person that tries to own as little as possible		
10	Having the latest gadgets is an important part of who I am		

Status

Q059.
Base: All respondents

To what extent do agree or disagree with the following statements?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION, RANDOMISE ORDER OF STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Code	Statement list	Scripting notes	Routing
1	Eating meat is associated with high status in my society		
2	If you are vegetarian or vegan, others might view you negatively		
3	A car provides status and prestige		
4	I may be jealous of someone with a nice car		
5	Flying on holiday at least once a year is something to aspire to		
6	If you have never flown, others might view you negatively		
7	Having your home at a comfortable temperature for your famSuily or guests is associated with high status in my society		
8	If you do *not* keep your home at a comfortable temperature, others might view you negatively		
9	Owning a lot of things is associated with high status and prestige		
10	If you buy second hand, others might view you negatively		

Values/psychological factors

Q060.
Base: All respondents

Thinking about the way you want to live and the society you wish to live in, on a scale of 0–7 (0 being not important and 7 being extremely important), how important are the following values to you?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	0 – not important		
2	1		
3	2		
4	3		
5	4		
6	5		
7	6		
8	7 – extremely important		

Code	Statements	Scripting notes	Routing
1	A strong and growing economy		
2	A society in which a good standard of living is affordable for everyone		
3	My personal quality of life		
4	Autonomy regarding how I choose to live my life		
5	Being able to trust government and businesses		
6	A society that values the environment		
7	A society that cares for minorities and vulnerable groups		

Q061.
Base: All respondents (EXCLUDING CHINA)

In politics, people sometimes talk of "left" and "right". Using a scale from 0 to 10, where 0 means the left and 10 means the right, where would you place yourself on this scale?

Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	0 – left		
2	1		
3	2		
4	3		
5	4		
6	5		
7	6		
8	7		
9	8		
10	9		
11	10 – right		
85	Don't know		

Q062.
Base: All respondents

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

Please select one option for each
SINGLE RESPONSE, GRID QUESTION

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		

Code	Statement list	Scripting notes	Routing
1	Being environmentally friendly is an important part of who I am		
2	I think of myself as someone who is very concerned with environmental issues		
3	I am confident that together, people in <INSERT COUNTRY: the UK/ China/ Brazil/ Sweden> can make a difference when it comes to climate change		

Q063.
Base: All respondents

When you think about climate change and everything that you associate with it, how strongly, if at all, do you feel each of the following emotions?

Please select one option for each

SINGLE RESPONSE, GRID QUESTION, RANDOMISE STATEMENTS

Code	Answer list	Scripting notes	Routing
1	Not at all		
2	A little		
3	Moderately		
4	Quite a bit		
5	Very much		

Code	Answer list	Scripting notes	Routing
1	Hope		
2	Guilt		
3	Fear		
4	Outrage		

Perception of actors/vested interests

Q064.
Base: All respondents

How much do you trust or distrust the <INSERT COUNTRY: UK / Chinese/ Brazilian/ Swedish> government to address climate change?

Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Strongly distrust		
2	Somewhat distrust		
3	Neither trust nor distrust		
4	Somewhat trust		
5	Strongly trust		
85	Don't know		

Q065.
Base: All respondents

How much do you oppose or support politicians allowing citizens' opinions about climate change to directly feed into policy making (e.g. through citizen assemblies)?

Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Strongly oppose		
2	Tend to oppose		
3	Neither support nor oppose		
4	Tend to support		
5	Strongly support		

Q066.
Base: All respondents

Who is mainly responsible for reducing <INSERT COUNTY: the UK / Chinese/ Brazilian/ Swedish> emissions which are causing climate change?

Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Individuals and their families		
2	Local communities		
3	Local authorities		
4	Business and industry		
5	The <INSERT COUNTRY: UK/ Chinese/ Brazilian/ Swedish> government		
6	The international community		
7	Environmental charities		

Additional demographics

Thank you for your time today, you are almost at the end of the survey. We just have a few final questions to ask you…

Q067.
Base: All respondents

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

Please select one option for each

SINGLE RESPONSE, GRID QUESTION

Code	Answer list	Scripting notes	Routing
1	Strongly disagree		
2	Tend to disagree		
3	Neither agree nor disagree		
4	Tend to agree		
5	Strongly agree		
86	Prefer not to say		

Code	Statements	Scripting notes	Routing
1	I often struggle to pay my bills on time		
2	I feel financially stable		

Q068.
Base: All respondents

Which of the following best describes your ethnicity? This information is used for monitoring purposes only.

Please select one option

SINGLE RESPONSE – MONITORING QUOTA

Code	Answer list	Scripting notes	Routing
1	Asian/ Asian British	UK ONLY	
2	Black/ Black British	UK ONLY	
3	Mixed (e.g. White & Asian, White & Black)	UK ONLY	
4	White British	UK ONLY	
5	White Irish/ White Other	UK ONLY	
80	Other	UK ONLY	
86	Prefer not to say	UK ONLY	

Code	Answer list	Scripting notes	Routing
1	Caucasian/ White	CHINA ONLY	
2	Chinese	CHINA ONLY	
3	Chinese Indonesian	CHINA ONLY	
4	Malay	CHINA ONLY	
5	Japanese	CHINA ONLY	
6	Eurasian	CHINA ONLY	
7	Indian	CHINA ONLY	
8	Filipino	CHINA ONLY	
9	Thai	CHINA ONLY	
10	Korean	CHINA ONLY	
11	Other Asian	CHINA ONLY	
80	Other	CHINA ONLY	
86	Prefer not to say	CHINA ONLY	

Code	Answer list	Scripting notes	Routing
1	Caucasian/ White	BRAZIL ONLY	
2	Pardo	BRAZIL ONLY	
3	Black	BRAZIL ONLY	
4	Asian	BRAZIL ONLY	
5	Indigenous	BRAZIL ONLY	
80	Other	BRAZIL ONLY	
86	Prefer not to say	BRAZIL ONLY	

Code	Answer list	Scripting notes	Routing

1	Indigenous Swede	SWEDEN ONLY	
2	Sweden Finns	SWEDEN ONLY	
3	Finnish	SWEDEN ONLY	
4	Sami	SWEDEN ONLY	
5	Other European	SWEDEN ONLY	
6	Other non-European	SWEDEN ONLY	
80	Other	SWEDEN ONLY	
86	Prefer not to say	SWEDEN ONLY	

Q069.
Base: All respondents

And are you…?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Employed full time (30+hrs/wk)		
2	Employed part time (9-29 hrs/wk)		
3	Self-employed		
4	Unemployed – been seeking work for up to 12 months		
5	Unemployed – been seeking work for over 12 months		
6	Not eligible for employment		
7	Looking after home/ family		
8	Studying		
9	Retired		
80	Other		
86	Prefer not to say		

Q070.
Base: All respondents

What is the highest level of education you have achieved so far?

Please select one option

SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	No formal qualifications		
2	High school or secondary school qualifications		
3	Undergraduate/college degree level (e.g. Bachelor's degree)		
4	Graduate/Postgraduate degree level (e.g. Masters, PhD)		
80	Other		
86	Prefer not to say		

Q071.
Base: All respondents

Please indicate how many people (over or under 18) are part of your household?

Please type in the number of each box

MULTI RESPONSE, NUMERIC BOXES

ADD LOGIC CHECK SO NUMBER OF ADULTS CANNOT BE BELOW 1

Code	Answer list	Scripting notes	Routing
1	Children under 18	NUMBER BOX	
2	Adults 18 or over (including yourself)	NUMBER BOX + LOGIC CHECK	

Q072.
Base: All respondents

How would you describe the area you live in?

Please select one option
SINGLE RESPONSE

Code	Answer list	Scripting notes	Routing
1	Large city		
2	Small city or large town		
3	Small town		
4	Suburb near a big city		
5	Rural (village, hamlet)		

Q073.
Base: All respondents

Are there any aspects of this survey that you would like to feedback on, particularly any parts that did not make sense?

Please type in the box below or click no further comment

OPEN RESPONSE

Code	Answer list	Scripting notes	Routing
86	No further comments		

Closing Screen

Many thanks for helping with our research. Further information about the research can be found below, or click next to submit your response.

The survey you participated in forms part of the research by the Centre for Climate Change and Social Transformations, at Cardiff University.

Further information about the research programme

This research centre aims to examine society-wide changes that are needed to address climate change. A main focus of the centre is to understand people's engagement with four challenging areas – material consumption, diet, mobility, and thermal comfort – which have substantial climate impacts, but which have so far proven difficult to change.

One aim of the survey you just participated in is to identify key social barriers or concerns and opportunities for changes in how we eat, travel, buy or use energy in our house.

If you want to find out more about the research and why it was carried out, you can have a look at our website https://cast.ac.uk/ or get in touch with the research team directly (see below).

All data will be held totally anonymously, so that it is impossible to trace this information back to you individually. This information may be retained indefinitely and will be made available for research purposes.

If you feel negatively affected by taking part in this research we strongly encourage you to contact the research team who will be able to provide further guidance.

Contact details

Please contact the research team for any questions regarding this research project:

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Please contact the School of Psychology Ethics Committee if you have any concerns regarding this project:

Secretary of the Ethics Committee
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Cardiff University
Tower Building, Park Place
Cardiff, CF10 3AT
Tel: 029 2087 0360
Email: psychethics@cardiff.ac.uk

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