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Moral licensing and sustainable eating

Exploring mechanisms for rebound effects in dietary consumption choices

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Abstract

Rebound effects, though well-documented in consumption areas such as household energy consumption, have been far less explored in nutrition. This is despite the fact that the nutrition may be just as crucial of a consumption area when considering how to reduce carbon footprints in personal lifestyle choices. This thesis explores the existence of one of the possible mechanisms behind a rebound effect in sustainable nutrition- the moral licensing effect. It does so through testing the following hypothesis - *A causal relationship can be identified between (i) priming an individual with a moral licensing effect related to their sustainable dietary choices, and (ii) their subsequent decision, when given two consumption choices, to select the less sustainable one*; as well as through answering two research questions: *To what kind of individual consumption behaviour do sustainable dietary choices lead to?* And *How can a possible moral licensing effect related to sustainable dietary choices be measured from a research design standpoint?* A mixed method intervention design consisting of a quasi-experiment through an online survey setting with an *N* of 101 participants, followed by semi-structured online interviews with an *N* of 5 participants was used. Findings were mixed, showing in the quantitative part no evidence for the moral licensing effect, whilst showing some in the qualitative part. Results further showed the co-existence of the moral licensing effect with its counter-phenomenon, the positive behavioural spillover effect – which predicts that a good environmental deed will lead to additional good environmental deeds, creating a 'virtuous circle'. Findings also highlighted the limitations of using a sequential behaviour paradigm to investigate moral licensing effects related to sustainable consumptions, notably regarding the highly subjective costs of different consumption areas. These last two findings should be kept in mind by policymakers and academics alike, as it may no longer be advisable to view the moral licensing and the behavioural spillover effect in silos. Lastly, new research design avenues should be considered for questions related to sustainable consumption behaviours.

Keywords: Sustainable consumption, moral licensing effect, rebound effect, positive behavioural spillover effect, sustainable dietary choices

Executive Summary

Background and Aim

The role of individual consumption behaviour and overall lifestyle choices are often recognised as key to addressing sustainability challenges, chiefly related to rising rates of GHG emissions (Kalfagianni et al., 2019). Recent evidence has shown the importance of nutrition consumption choices (intake of all foodstuffs and beverages) to align lifestyle carbon footprints with the Paris Agreement's 1.5°C commitments. Indeed, an important body of literature has demonstrated the strong GHG emission savings which a switch away from animal meat and products can represent (Lettenmeier et al., 2019; Foley et al., 2011; Tukker et al., 2010, amongst others).

Nonetheless, the benefits of sustainable dietary choices (named SDCs throughout this thesis) may be hindered by the so-called rebound effect. The rebound effect can be broadly defined as the unintended consequences of actions performed by either individuals or households to reduce their environmental footprint, leading to unrealised environmental savings (Sorrell, 2010). In practice, a rebound effect related to SDCs would entail that an individual engaging in SDCs would subsequently engage in additional consumption behaviour, leading to an environmental impact that would hinder (partially or entirely) the environmental savings initially incurred from the SDCs.

Rebound effects are well-documented in certain consumption areas- namely household energy consumption, which has received attention from the field of microeconomics (European Commission, 2011). The evidence for rebound effects in household energy consumption has translated into some recognition by policymakers, such as the UK's Department for Environment, Food and Rural Affairs (DEFRA) accounting in 2010 for a 15% energy saving estimation downgrade in domestic insulation measures (Sorrell, 2007). The same cannot be said for potential rebound effects related to SDCs, where less work has been done- both from an academic and a policymaking perspective (Grabs, 2015).

This thesis aims to explore one of the proposed mechanisms for potential rebound effects in SDCs, as theorised by the field of psychology- the moral licensing effect. Moral licensing effect theory proposes that past morally good actions may liberated individuals to engage in present actions that are immoral or unethical (Merritt et al., 2010). Applied to sustainable consumption, this would entail that individuals are capable of justifying environmentally damaging actions based on prior good environmental deeds. Moral licensing effects have mostly been researched in areas of morality such as egalitarianism and distributional justice, typically using a so-called sequential behaviour paradigm experiment design- a randomised control experiment made up of two subsequent tasks (Mullen & Monin, 2016).

By comparison, moral licensing effects related to sustainable consumption – and SDCs in particular – have been less studied (some examples include Geng et al. (2016); Khan & Dhar (2006); Mazar & Zhong (2010); Monin & Miller (2001); Burger et al. (2022); Tiefenbeck et al. (2013)). In addition, some evidence also points to an opposite, competing theory- the positive behavioural spillover effect. The positive behavioural spillover effect, contrary to the moral licensing effect, predicts that a good environmental deed will lead to additional good environmental deeds, creating a 'virtuous circle' effect (Freedman & Fraser, 1966; Thøgersen, 1999).

As a consequence, this thesis seeks to address this research gap by investigating whether a moral licensing effect for individuals engaging in SDCs can be identified. The following research problem can thus be outlined: *With regards to individuals undertaking SDCs, there is a lack of understanding as to whether a moral licensing effect, one of the possible mechanisms behind a potential rebound effect, takes place.*

This thesis' aim can as such be defined as *contributing new knowledge to the possible existence of a moral licensing effect in individuals undertaking SDCs, as well as the factors influencing this possible moral licensing effect.*

This aim will be addressed by first testing the following hypothesis:

H1: A causal relationship can be identified between (i) priming an individual with a moral licensing effect related to their SDCs, and (ii) their subsequent decision, when given two consumption choices, to select the less sustainable one.

This thesis also seeks to answer the following research questions:

RQ1: To what kind of individual consumption behaviour do SDCs lead to?
RQ1a: Is this behaviour related to the moral licensing effect, to the behavioural spillover effect, or to both?
RQ1b: What kind of factors influence the individual consumption behaviours SDCs lead to?

RQ2: How can a possible moral licensing effect related to SDCs be measured from a research design standpoint?
RQ2a: What is the reliability and validity of a sequential behaviour paradigm as a way of measuring a possible moral licensing effect related to SDCs?

Research Design, Material and Methods

This thesis uses a mixed method approach to test H1, and to subsequently answer RQ1 and RQ2. This design begun with a quasi-experiment, i.e., quantitative methods (Part A), followed by qualitative methods (part B), to support the interpretation of the results through semi-structured interviews (Creswell, 2014).

Part A sought to use a sequential behaviour paradigm experiment, based on past moral licensing theory literature, to test for H1. This consisted in a quasi-experiment using an online survey setting, where the experimental and the control group were compared to test levels of the independent variable targeting the population of European residents and/or nationals currently undertaking SDCs. The total *N* was of 101, with $n = 52$ in the treatment group and $n = 49$ in the control group. The survey was made up of three question blocks.

Block I related to the inclusion and exclusion criteria for the quasi-experiment, as well as the confounding variables of age, gender, occupation, country of origin and residence, and type of SDC. Block II consisted in Task 1 of the quasi-experiment, which was related to the independent variable, and consisted in a moral licensing primer for the treatment group, and an unrelated task for the control group. The moral licensing primer was two short texts for participants to read about the environmental benefits of their SDCs, taken from newspaper and academic sources. Participants were then asked follow-up questions about the content they had just read, and then made to select within a list the sustainability benefit in their diet which was the most significant to them. Lastly, participants were asked to choose, amongst a list of positively worded statements, the one which captured their feelings about their SDCs the most.

These tasks were meant to *remind* participants of the environmental benefits of their SDCs and specifically to the one they felt the closest to. Block III consisted in Task 2, which was then related to the dependent variable and invited participants to choose between the chance to win either of the following prizes. The first- the unethical choice, or the unsustainable consumption choice, was a gift voucher for an airline travel company. The second- the ethical choice, or the sustainable consumption choice, was a gift voucher for a train travel company. Both Task 1 and Task 2's instruments were this thesis' own and were tested initially through a pilot (n = 5).

Part B sought to use semi-structured interviews to support the interpretation of Part A's results, and answer RQ1 and RQ2. Online interviews were conducted with an N of 5, with an interview protocol informed by part A, as well as by Truelove at al. (2014)'s theoretical framework. This framework posits that individuals are more or less likely to follow either the moral licensing, or the positive behavioural spillover effect, based on two key factors. Firstly, their decision mode- individuals making affect-based decisions are more likely to engage in moral licensing. Secondly, causal attribution: a pro-environmental behaviour that has been coerced onto an individual will more likely lead to the moral licensing effect, whilst one that has intrinsic motivations will lead to the positive behavioural spillover effect. Based on this, the interview protocol was divided in three overarching themes. The first related to respondents' views on the existence of a moral licensing effect, as well as of a positive behavioural spillover effect, amongst individuals undertaking SDCs. The second related to respondents' views on the experiment's methodological choices, and in particular the reliability of Task 1 and Task 2, as well as the results obtained. The third related to respondents' views on motivations behind SDCs as well as their strictness.

Main findings

Part A's results were analysed through various Pearson's chi-square tests of independence (to test H1, as well as to test for the confounding variables of gender, country of origin, residence, and occupation). In addition, a logistic regression analysis, a Student's t-test as well as a Mann-Whitney test were run to test for age as a confounding variable. Part B's results were analysed through a code built abductively, informed by Part A's results as well as Truelove et al.'s 2014 framework.

Mixed evidence was found as to the existence of a moral licensing effect related to SDCs. Firstly, no evidence was found corroborating H1. Virtually no difference was found in terms of how the treatment and the control group behaved- within the treatment group, an n of 13 chose the plane voucher, whilst within the control group, an n of 11 chose the plane voucher, bearing no statistical significance (p = .763). No confounding variable was identified, with age being the closest to having a statistical significance (p = .174).

On the other hand, a majority of participants reported as engaging in the moral licensing effect as related to their SDCs (three out of five), both in-domain and cross-domain. More strikingly perhaps, *all* participants reported as engaging in the positive behavioural spillover effect, citing their need for consistency across sustainable consumption areas. The three participants that did report engaging in moral licensing *all* emphasised the bigger role that the positive behavioural spillover effect played in their consumption behaviour instead. They explained that the two co-existed, with the moral licensing effect enabling some small 'cheats' in their broader attempt at living a consistently sustainable lifestyle.

Part B's findings also highlighted that all participants related differing levels of comfort, pleasure, necessity, and availability to various consumption areas. For example, whilst Participant 3 and 5 talked about the difficulties in giving up animal flesh, Participant 4 explained

that it had been very easy for them to become a vegetarian. Participant 1 explained that they sometimes needed to take the plane out of necessity, whilst Participant 3 described their lifestyle as completely feasible with only train rides. This, logically, also meant that the effort of *giving up* a given unsustainable consumption habit represented a different cost from one participant to the next. This 'giving up' cost was accompanied by other types of costs for SDCs- namely financial costs, as well as the social and cultural costs of eating, all highly subjective depending on individuals' experiences and needs. This finding highly corroborated one of Truelove et al.'s arguments related to the importance of costs attached to individuals engaging in sustainable consumption.

Learnings around the subjective nature of costs in sustainable consumption choices further explain the limited reliability and validity Tasks 1 and 2 had. Indeed, it revealed that not all five participants attached high costs to both SDCs and to traveling sustainability- as a matter of fact, only one participant did. In addition to this, discussions around the 'feel-good' effect highlighted more limitations. Firstly, a time element to the 'feel-good' effect of making a 'good' sustainable choice, with its dampening over time rather than being a sustained feeling. This meant that, unlike perhaps other areas of morality, measuring the moral licensing effect through a cross-sectional experiment may not be appropriate. Secondly, mixed messages were conveyed by respondents as to the role of social considerations. For some participants, being around like-minded individuals triggered the feel-good effect, whilst for others, the opposite was true. Logically, designing a reliable instrument to instigate the feel-good effect would require taking these differences into account. Lastly and perhaps most importantly, the same participants who reported as engaging in the moral licensing effect, revealed how Task 1's feel-good effect rather pushed them to appear consistent than triggering a moral licensing effect. This apparent paradox points to how the feel-good effect may work in different ways- triggering the moral licensing effect under some conditions and the positive behavioural spillover effect in others.

Furthermore, interviews also underlined the possible relevance of mixed methods when attempting to measure the moral licensing effect related to SDCs- and to sustainable consumption more generally. All participants agreed, to different levels, that a qualitative approach to the moral licensing effect and the positive behavioural spillover effect enabled to capture complexities which a sequential behaviour paradigm didn't. Interview responses also accentuated the challenges in measuring such effects, given the social expectations around 'appearing sustainable'- such as the Hawthorne effect.

Lastly, it became apparent through challenges in Part A's screening process, as well as Part B's findings, that the concept of SDCs may be much fuzzier than first assumed. Part A and B showed that assuming for SDCs to equate a strict vegetarian, vegan, lacto-vegetarian or ovo-vegetarian diet may be unsound, as this didn't hold true for most participants. In addition, for most also, a strict separation of sustainability motivations from other motivations (animal ethics, health) was not be possible.

Conclusion and recommendations

This thesis' research revealed some mixed results. Whilst Part A did not find evidence corroborating the existence of a moral licensing effect, Part B found some. Part B also suggested the prevalence of the positive behavioural spillover effect, and its co-existence with the moral licensing effect in many cases. Furthermore, Part B highlighted the many limitations research should be cognisant of when applying the sequential behaviour paradigm design to sustainable consumption questions. Firstly, with regards to how consumption priorities are determined and screened for in participants, and subsequently how subjective costs tied to sustainable

consumption are taken into account. Secondly and more specifically, how SDCs are defined by participants.

Key recommendations for practitioners include a stronger understanding of the feel-good effect for policy design, as well as ensuring the right 'carrots' are used- by tapping into the social and cultural context of food, and by linking sustainability motivations to other motivations when designing policies around SDCs. More broadly, simply assuming for *either* the moral licensing effect *or* the positive behavioural spillover effect may be counterproductive for policymakers when it comes to sustainable consumption. In terms of future research, this thesis particularly recommends more findings bridging the gap between the moral licensing and the positive behavioural spillover effect literature, as well as to further understand the costs (and benefits) individuals associate with different consumption choices, and finally to aim for a deeper understanding of SDCs and the motivations behind them.

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Abbreviations

GHG – Greenhouse Gas.

GHGE – Greenhouse Gas Emissions.

SDCs – Sustainable Dietary Choices.

PEB – Pro-Environmental Behaviour.

1 Introduction

The urgent need to address global rising rates of GHG emissions, water and air pollution, biodiversity loss, and resource depletion, has been described at length across academic fields (Steffen et al., 2015). It has led to key political pledges by national and supranational bodies worldwide. The 2015 Paris Agreement, and its commitment to limiting rises in mean global temperatures to well below 2°C and preferably to 1.5°C, may be the most important example of this (IPCC, 2022).

Nonetheless, an important criticism of current policy efforts addressing the climate crisis has been their lack of focus on individual and household consumption, particularly in post-industrialised countries (Kalfagianni et al., 2019). This is especially alarming given the recognised importance of consumption patterns and overall lifestyle choices for sustainability efforts (IPCC, 2022). To illustrate, the technical report 1,5-degree lifestyles: targets and options for reducing lifestyle carbon footprints (Lettenmeier et al., 2019) found crucial gaps between household per-capita consumption patterns, and GHGE targets in line with the Paris Agreement. In particular, the reported concluded that households in post-industrialised countries would require an ambitious reduction in their current consumption's environmental footprint by 2050, ranging between 80 and 93M. Three consumption hotspots were identified as representing approximately 75% of households' environmental impact: nutrition (intake of all foodstuffs and beverages), housing (construction, maintenance, energy, and water use) and mobility (usage of transport equipment and services) (Lettenmeier et al., 2019).

Reducing such an environmental footprint represents a vast challenge, one that may be further hindered by the so-called rebound effect (Mont et al., 2013). The rebound effect, also sometimes known as the take-back effect, can be broadly defined as the unintended consequences of actions performed by either individuals or households to reduce their environmental footprint, leading to unrealised savings (Sorrell, 2010). In practice, this describes a two-step phenomenon. Firstly, a technological or behavioural change is made, leading to the reduction of environmental impact in a given area of consumption. Secondly, this change leads to additional consumption. This additional consumption has its own environmental footprint if this footprint outweighs the environmental impact that had first been avoided, a rebound effect is observed (Reimers et al., 2021). A more in-depth description of rebound effect terminology and methodology is offered in Chapter 2.

A well-known example of rebound effects is that related to household energy consumption. Household appliances and infrastructure with a more efficient electricity and heat consumption (a technological change) lead to a lower energy usage. This will mean a lessened environmental impact, as well as reduced monetary costs. Household income is thus freed-up, and can be re-spent on additional energy consumption, with its environmental impact (partially or fully) offsetting the benefits that had first been incurred from lower energy consumption (Sorrell & Dimitropoulos, 2008). Rebound effects for energy consumption are rather well-documented, and although their magnitude estimates vary importantly from study to study (Reimers et al., 2021), a reasonable amount of evidence points to their significance- with an effect between 10% to 30% of the original environmental benefits incurred (European Commission, 2011).

This evidence has meant that energy consumption rebound effects have been accounted for in energy policy design by some (but not many) decisionmakers. To illustrate, the UK Department for Environment, Food and Rural Affairs (DEFRA) accounted in 2010 for a 15% energy saving estimation downgrade in domestic insulation measures, to reflect the rebound effect it had identified in its commissioned study *An Assessment of the Evidence for Economy Wide Energy Savings from Improved Energy Efficiency* (Sorrell, 2007). Similarly, the Irish National Energy Efficiency

Action Plan of 2014 assumed a high rebound effect of 70% related to the so-called 'comfort-taking effect' – the phenomenon whereby households increase internal temperatures as a response to energy efficiency improvements (Vivanco et al., 2016).

1.1 Problem definition

By contrast, rebound effects in other areas of consumption have traditionally been less studied by academics, as well as less considered by policymakers (Grabs, 2015). This may be explained by the difficulties in measuring rebound effects outside of energy resources, with limitations due to inadequate data, unclear system boundaries, and uncertain causal relationships (European Commission, 2011). As such, both potential direct and indirect rebound effects in other household and individual environmental hotspots, such as nutrition or mobility, remain underexplored.

This knowledge gap does not reflect a lack of importance, though. In the area of nutrition, Lettenmeir et al. (2019) found that, out of the lifestyle changes considered for households in post-industrialised countries, switching from a meat and fish-based diet to a vegetarian or vegan one has the highest GHG emission reduction potential, with an average of 500-1500 kg CO2e saved per capita per year. Naturally, a rebound effect of the same magnitude or higher as that estimated for energy consumption (between 10% and 30%) would mean a far less important GHGE reduction potential. The consequences of not accounting for rebound effects when discussing sustainable dietary choices could thus be crucial- and seems difficult to ignore considering climate change commitments (UNEP, 2010). As per Truelove et al. (2014): "Insights about when [rebound] effects occur and the magnitude of the effects can have important implications for the design of environmental policy. Current assumptions about [rebound effects] have led to suggestions for laws and policies that may lead to counterproductive results or missed opportunities." (p. 135). Other scholars have mirrored this argument through calls to better consider research on behavioural interventions in the design of climate policies (Allcott & Mullainathan, 2010; Vandenbergh et al., 2011).

In particular, one underexplored mechanism behind potential rebound effects in dietary choices is the moral licensing effect, as theorised and explained by the psychology field (Reimers et al., 2021). The moral licensing effect theory posits that past morally good actions may liberated individuals to engage in present actions that are immoral or unethical (Merritt et al., 2010). Applied to sustainable consumption, this would entail that individuals are capable of justifying environmentally damaging actions with prior good environmental deeds. Instances of the moral licensing effect in other areas of individual decision-making are rather well documented (Effron et al., 2009; Jordan et al., 2011; Monin & Miller, 2001), typically using a so-called sequential behaviour paradigm experiment design (Mullen & Monin, 2016). This type of randomised control experiment, made up of two subsequent tasks, has shed light on the existence of the moral licensing effect in areas of morality such as egalitarianism and distributional justice.

Nonetheless, in the area of sustainable consumption – and in particular sustainable dietary choices- the literature and evidence of a moral licensing effect remains limited (examples, which will be discussed in Chapter 2, include Geng et al. (2016); Khan & Dhar (2006); Mazar & Zhong (2010); Monin & Miller (2001); Burger et al. (2022); Tiefenbeck et al. (2013)). To complicate matters further, some evidence also points to an opposite, competing theory- the positive behavioural spillover effect. The positive behavioural spillover effect, contrary to the moral licensing effect, predicts that a good environmental deed will lead to additional good environmental deeds, creating a 'virtuous circle' effect (Freedman & Fraser, 1966; Thøgersen, 1999).

Consequently, this thesis seeks to address this research gap by investigating whether a moral licensing effect for individuals engaging in sustainable dietary choices (hereafter, SDCs) can be identified. The following research problem can thus be outlined: *With regards to individuals undertaking SDCs, there is a lack of understanding as to whether a moral licensing effect, one of the possible mechanisms behind a potential rebound effect, takes place.*

1.2 Aim and Research Question

Following section 1.1, the aim of this thesis can be defined as *contributing new knowledge to the possible existence of a moral licensing effect in individuals undertaking SDCs, as well as the factors influencing this possible moral licensing effect.*

Through a mixed method research approach, the following hypothesis will be tested:

H1: A causal relationship can be identified between (i) priming an individual with a moral licensing effect related to their SDCs, and (ii) their subsequent decision, when given two consumption choices, to select the less sustainable one.

And the following research questions guided the research:

RQ1: To what kind of individual consumption behaviour do SDCs lead to?
RQ1a: Is this behaviour related to the moral licensing effect, to the behavioural spillover effect, or to both?
RQ1b: What kind of factors influence the individual consumption behaviours SDCs lead to?

RQ2: How can a possible moral licensing effect related to SDCs be measured from a research design standpoint?
RQ2a: What is the reliability and validity of a sequential behaviour paradigm as a way of measuring a possible moral licensing effect related to SDCs?

1.3 Scope and Delimitations

This thesis focuses on understanding whether a moral licensing effect caused by sustainable dietary choices (SDCs) can be identified. Its scope includes individuals whose country of origin *and/or* residence is in Europe- the reasons behind this methodological choice are further explained in section 3.2.1.1. For its Part A, consisting of quantitative methods through a quasi-experiment, a total of 101 participants were included. For its Part B, consisting of qualitative methods through semi-structured interviews, a total of 5 participants were included. In terms of temporal scope, Part A's data collection was finalised between March and April 2023, whilst Part B's data collection was finalised between April and May 2023.

Research methods used in Part A sought to replicate methods typically used in the moral licensing psychology literature hitherto- coined a sequential behaviour paradigm by Mullen and Monin (2016), and used in studies such as Geng et al. (2016); Khan & Dhar (2006); Mazar & Zhong (2010); Monin & Miller (2001); Burger et al. (2022). Though it was acknowledged a laboratory or field experiment setting would have likely allowed for a better control of experimental conditions, this thesis opted for an online survey setting, primarily due to its absence of costs and its convenience in participants' outreach and data collection.

This thesis' starting point was the investigation of rebound effects related to SDCs and one of its possible mechanisms, the moral licensing effect. The review and discussion of the positive behavioural spillover effect -as contrasted with the moral licensing effect- occurred naturally and logically throughout the research process. Nonetheless, given the disconnectedness of the

two literatures and their mixed results (Truelove et al., 2014), the hypothesis H1 and the research methods used in Part A only sought to test for the existence of a moral licensing effect, *not* the existence of a positive behavioural spillover effect. Though combining the two literatures and designing instruments which would have enabled for the testing of *both* appears to be theoretically possible, due to time considerations this option was deemed to be outside of this thesis' scope. On the other hand, the potential existence of a positive behavioural spillover effect, and its interaction with the moral licensing effect, is in part explored in RQ1 through this thesis' Part B.

This thesis chose to define sustainable dietary choices (SDCs) as, to a minimum, a diet *mostly* omitting either animal flesh or animal products altogether. This means that for a diet to be in line with this definition, it needed to be free of either animal flesh or animal products altogether at least half of the time of an individual's consumption habits. In other words, SDCs included not only a vegetarian diet (a diet without meat nor fish consumption, but which allows the consumption of dairy, eggs, and honey), a vegan diet (no meat, fish, dairy, eggs, nor honey) and 'in-between' diets (e.g., lacto-vegetarian, eating dairy products but no eggs; ovo-vegetarian, eating eggs but no dairy products). It also allowed for so-called flexitarian diets, where any of the above were followed, but only a certain amount of time of an individual's consumption habits. It was deemed that as long as a flexitarian diet was made up at least *half of the time* of a vegetarian, vegan, lacto-vegetarian or ovo-vegetarian diet, it was considered as following the definition of SDCs. This methodological choice is further explained in section 3.2.1.3., and further in section 4.2.5.

Lastly, though this thesis touches upon, through its literature review, rebound effects related to SDCs as studied in the field of microeconomics – namely through the income of substitution effect (see Chapter 2 for a further discussion) - this topic is not central to this thesis. The choice to focus on rebound effects and the moral licensing effect as studied in the psychology field, rather than questions generally discussed in the economics field, is due to the perceived bigger gap in knowledge in the psychology field, especially as it relates to SDCs.

1.4 Ethical Considerations

This thesis' research has not been funded by an external organisation, and no individual nor body was identified as being in a position to influence its analysis and subsequently its conclusions, other than the thesis supervisor.

With regards to Part A of this thesis, which consisted in a quasi-experiment, it is recognised that the use of a cover story hindered the degree of participants' voluntariness. At the same time, given the nature of the cover story and stakes behind the quasi-experiment, it seems reasonable to believe that the participants have not suffered any disadvantage or damage from their participation in this study. For both Part A and Part B of this thesis, participants' names were kept anonymous and confidential data was stored on a password-encrypted computer. Participation to both was entirely voluntary, and further individual consent was checked with participants for interviews- a consent form was emailed to all participants prior to interviews and required their signature. Their understanding of this consent form was also checked for at the beginning of every interview. This is further addressed in Chapter 3.

The research design has been reviewed against the criteria for research requiring an ethics board review at Lund University and has been found to not require a statement from the ethics committee.

1.5 Audience

This thesis aims to contribute to the growing body of knowledge related to moral licensing effects in sustainable consumption, in particular with regards to sustainable dietary choices. To reiterate the argument made in section 1.1, calls from various scholars have highlighted the importance of considering behavioural intervention research in designing climate policies. As a consequence, this thesis hopes to contribute to policymakers' better understanding of rebound effects beyond energy consumption behaviour only, focusing rather on nutrition- another crucial aspect of sustainable consumption.

1.6 Thesis Outline

Chapter 1 of this thesis has, through its introduction, hopefully provided the necessary background to the topic of rebound effects and moral licensing theory, as well as demonstrated the relevant of the topic to the overall field of sustainability. In addition, it has presented the research problem at hand, the thesis' aim, and the hypothesis H1 as well as the research questions RQ1 and RQ2 it aims to explore.

Chapter 2 presents a literature review- firstly, with a broad overview of the academic work in microeconomics related to the topic of rebound effects, and secondly, to the moral licensing effect theory (and its opposing theory of the positive behavioural spillover effect) more specifically.

Chapter 3 introduces the methodology used throughout this thesis, including the research design, the materials used, and the methods chosen.

Chapter 4 presents the main findings from the ensuing data collection, and Chapter 5 discusses these findings and their limitations. Finally, Chapter 6 shares some conclusions and recommendations for policymakers.

2 Literature Review

This literature review is divided in four parts. In the first part, it seeks to define the terms sustainability, sustainable consumption, environmental impacts and sustainable nutrition, based on the literature. In the second part, it aims to provide background knowledge on the theoretical understandings of rebound effects, both from an economics and a psychology perspective. In the third part, it summarises the available literature from both disciplines on rebound effects induced by sustainable nutritional choices specifically. In the fourth part, it delves deeper into the theoretical frameworks related to psychology research in rebound effects and specifically into the moral licensing effect.

2.1 Sustainable consumption

2.1.1 Definitions in sustainable consumption

Drawing on the Brundtland Report (1987) and on Kemp & Martens (2007), this thesis accepts *sustainability* or *sustainable development* to be broadly defined as a societal goal where "social equity, economic growth and environmental maintenance are simultaneously possible" (Du Pisani, 2006). In other words, sustainability can be viewed through four fundamental aspects, or the so-called quadruple bottom line. Firstly, its economic aspect, or the ability for sustainable development to bring about worldwide wealth. Secondly, its societal aspect, closely linked to the first one, meaning addressing global issues of health, hunger, and deprivation. Thirdly, its cultural aspect, recognising the need for sustainable development to be inclusive of local communities. In plain, sustainable development must allow groups of actors to identify actions that fit their problems for locally adapted solutions (Kemp & Martens, 2007). Lastly, its environmental aspect, or the protection of Earth's planetary boundaries (which will be further explained below).

Based on this definition of sustainability, *sustainable consumption* can thus be generally understood as consumption which must consider these four facets of sustainability, or at the very least the trade-offs that can exist amongst them (Hopwood et al., 2005). That being said, *sustainable consumption* will be used throughout this thesis as a term solely referring to consumption looking to minimise *environmental impacts*. Though the importance of the other dimensions related to sustainable consumption is acknowledged, they are not covered as part of this thesis. In addition, sustainable consumption refers to private (i.e., individual) consumption, as opposed to public or corporate consumption.

The key issues related to environmental impacts, although varied and complex, can be summarised, as per Rockström et al. (2009), as the transgression of planetary boundaries- the recognised "environmental limits within which humanity can safely operate" (Steffen et al., 2015). These – referring both to Earth's biogeochemical and biophysical features, as well as to attributes of anthropogenic change- are the issues of ocean acidification, climate change, land-system change, biosphere integrity, biochemical flows, atmospheric aerosol landing, stratospheric ozone depletion, freshwater use, and the presence of novel entities[1]. Mounting evidence is pointing in particular to the increasing level in climate change, with global average atmospheric carbon dioxide at 414.72 ppm (and 505 ppm for all GHG) in 2021 (Annual GHG Index, 2023). This appears to be causing, amongst other phenomena, higher occurrences of heatwaves (European Environment Agency, 2023; Perkins-Kirkpatrick & Lewis, 2020), extreme weather events such as heavy rainfall and droughts (Easterling et al., 2000; World Meteorological

[1] Defined as "new substances, new forms of existing substances, and modified life forms that have the potential for unwanted geophysical and/or biological effects" (Steffen et al., 2015, p. 736)

Organization (WMO), 2021), and an accelerated rate of mass loss from the Antarctic and Greenland ice sheets (NASA, 2021; Shepherd et al., 2018).

2.1.2 Addressing environmental impacts through consumption measures

Historical political pledges have been made to address these issues at the regional, national, and international level- the most significant of which may arguably be the Paris Agreement. The 2015 international treaty commits 195 parties, including major emitters such as the United States, China, and the European Union bloc, to keep the rise in mean global temperature to well below 2°C above pre-industrial levels, and preferably to 1.5°C. Parties must submit every five years their Nationally Determined Contribution (NDC) towards climate change mitigation, which includes policies and measures to be implemented (IPCC, 2022).

Nonetheless, critics have been vocal as to the limitations of current efforts and their inability so far to achieve the commitments of the 2015 Paris Agreement (den Elzen et al., 2019; UNEP, 2022). Amongst other arguments, current policymaking has been condemned for focusing all too much on production-side measures, and far too little on demand-side measures. Production-side measures, also called efficiency measures, look to address and diminish the intensity of environmental impact induced from human processes, namely through improved technology. On the other hand, demand-side measures, also called consumption measures, look to diminish the demand and need for these human processes in the first place (Kalfagianni et al., 2019; Mont et al., 2013). Most famously, Ehrlich & Holdren (1972) argued through their IPAT equation that environmental impacts could *not* be solely addressed through better efficiency gains in production processes. Put simply, they argued that environmental impact can be viewed as a function of population growth, affluence (consumption levels) and technology. As such, relying on technology to reduce environmental impacts, without taking into account neither rising demographic trends, nor increasing levels of affluence, is an incomplete strategy.

More recently, the technical report *1,5-degree lifestyles: targets and options for reducing lifestyle carbon footprints* (Lettenmeier et al., 2019) found crucial gaps between household per-capita consumption patterns, and GHG emission targets in line with the Paris Agreement. In particular, the report concluded that households in post-industrialised countries would require by 2050 an ambitious reduction of their current consumption's environmental footprint, ranging between 80 and 93%. Three consumption hotspots were identified as representing approximately 75% of households' environmental impact: nutrition (intake of all foodstuffs and beverages), which will be the focus of this thesis; housing (construction, maintenance, energy, and water use) and mobility (usage of transport equipment and services) (Lettenmeier et al., 2019).

Following this, the report proposes an array of 'lifestyle options' based on these three environmental hotspots, which would enable individual consumption choices to be on par with 2°C and 1.5°C targets by 2030 and 2050[2]. The notion of lifestyle choices as a means of addressing overtly damaging consumption has also been suggested by other authors. For example, Kalfagianni et al. (2019) propose the concept of sustainable consumption corridors- the space between minimum and maximum consumption standards, which exerts an acceptable amount of pressure on Earth's planetary boundaries.

[2] Although it recognises that all the proposed options would not, by themselves, fully address the lifestyle targets required for the 2050 Paris Agreement pledges, and that additional efforts would be required.

2.1.3 Sustainable consumption in nutrition

Looking into sustainable lifestyle options for nutrition or dietary choices specifically, extensive literature across disciplines has shown the environmental impact of consuming animal products. Lettenmeier et al. (2019) find that vegetarian and vegan diets represent some of the most impactful sustainable lifestyle options, with the potential of reducing on average between 500 and 1500 CO_2e kg per individual per year. Across all countries studied- Finland, Japan, China, Brazil, India- meat remained the constant 'heavy weight' in terms of carbon footprint[3].

A large number of academic studies confirm the environmental impacts of meat, or animal flesh- in particular cows'. The high levels of nitrous oxide (N_2O) and methane (CH_4) released from enteric fermentation, a characteristic of ruminants such as cows, makes cow meat and dairy products (such as milk and cheese) particularly impactful in terms of GHG emissions (Carlsson-Kanyama & González, 2009; Stehfest et al., 2009; Steinfeld, 2006; Tukker et al., 2010). Similarly, an important consensus across the literature highlights issues of high energy requirements and land use for meat production of both beef and pork (Berners-Lee et al., 2012; McMichael et al., 2007). Lastly, although the poultry industry is usually recognised as having a lower GHG impact relative to other types of meat (Carlsson-Kanyama & González, 2009; Nijdam et al., 2012), important issues related to energy intensity, land use, eutrophication and acidification subsist- notably during the feed production phase (Leinonen & Kyriazakis, 2016; Pelletier, 2008).

Consumption of blue foods (fish and seafood) is less straightforward, with environmental impact varying consequently from species to species. To illustrate, Gephart et al. (2021) found a whooping 19.44 kg of GHG emissions per kilogram of edible lobster, versus 3.88 kg for wild herring and sardines. Nonetheless, the overall environmental impact of ecosystem destruction and biodiversity loss in wild fishing, and the GHG emissions of fish feed production and fuel use in aquacultures has been well documented (Hornborg & Smith, 2020; Willett et al., 2019).

To summarise, although the impacts of animal product consumption vary both in terms of environmental issue and magnitude, choosing to omit either animal flesh (vegetarianism) or both animal flesh and any other animal products (veganism) from one's diet can be a fundamental contribution towards sustainable consumption (Foley et al., 2011)[4]. The benefits of these dietary choices, which will hereafter be referred to throughout this thesis as sustainable dietary choices (SDCs), may possibly be hindered by a possible rebound effect. Understanding whether such a rebound effect in SDCs could exist may thus reveal to be crucial in adequately directing sustainable consumption policy efforts.

2.2 Background: Literature on rebound effects

2.2.1 Rebound effects in economics

Current understandings of rebound effects have their theoretical roots in resource and energy economics (Sorrell & Dimitropoulos, 2008). Indeed, the rebound effect was first described by economist William Stanley Jevons, who observed that more efficient steam engines in 19th century Britain were leading to cheaper coal prices, ultimately increasing coal demand and thereby its consumption (Jevons, 1865). The phenomenon whereby *a technology or government policy*

[3] India did represent an exception to the rule given its large vegetarian population. Variations in regional diets also meant other differences, such as a much larger source of GHG emissions in Finland coming from dairy, whilst cereals (in particular rice) was a larger emissions hotspot for Japan, India and China.

[4] This appears to hold true even when accounting for the environmental impact of meat substitute products (Detzel et al., 2022; Nijdam et al., 2012).

increases the efficiency with which a resource is used, subsequently increase the resource's consumption due to falling costs, has since then been coined the Jevons paradox (Sorrell & Dimitropoulos, 2008). Akin to this, economist Harry Saunders argued in 1992 that, under neo-classic economic growth theory, energy efficiency improvements tend to lead to an increase in energy consumption driven by lower prices- the so-called Khazoom Brookes postulate (Saunders, 1992).

Resource and energy economics typically offer a three-way typology of rebound effects that are commonly used across academic fields (Sorrell & Dimitropoulos, 2008):

1. Direct rebound effect- an increase in consumption of a good or service is caused by its lowered cost of use.
2. Indirect rebound effect- the lower cost of a good or service leads to an increase in consumption of other goods or services.
3. Economy-wide rebound effect- the lower costs of a good or service lead to reductions in prices of other goods or services, creating new production possibilities and increasing economic growth.

Rebound effects directly tied to household consumption- the focus of this thesis- which amount to direct and indirect rebound effects, have been addressed by microeconomists since the late 20th century (Reimers et al., 2021). In particular, consumer choice theory has been widely used to explain rebound effects through the following two (co-existing) mechanisms:

A. The income effect- a decrease in a good or service's cost leads to freed-up household income.
B. The substitution effect- a decrease in a good or service's cost leads consumers to substitute relatively more expensive goods and services with this cheaper alternative.

The income and substitution effects have an important corollary. They entail that a reduction in costs is a necessary condition during the first phase of consumption, in order to lead to re-consumption. For example, if more efficient household energy appliances do *not* lead to lower costs per unit of energy consumed, then the income effect does *not* take place. No household income is freed-up, and as such no re-consumption takes place, predicts microeconomics theory.

A sizeable literature has developed using econometrics and industrial ecology research methods to measure direct and indirect rebound effects. These usually estimate the environmental benefits that were not realised, typically in a percentage form (Reimers et al., 2021). In relative terms, this means that:

$$\%Rebound\ Effect = \frac{Potential\ Environmental\ Benefits - Actual\ Environmental\ Benefits}{|\ Potential\ Environmental\ Benefits\ |} \times 100$$

(Font Vivanco et al., 2014). Household consumption behaviour is generally calculated using consumer expenditure surveys, to determine how saved costs will be re-spent. Subsequently, this re-consumption's environmental footprint is calculated, using databases based on input-output or Lifecycle Assessment (LCA) studies. From this, the 'lost' environmental benefits[5] of the initial reduction in consumption can be inferred, thus calculating the rebound effect (Hertwich, 2005).

[5] Environmental benefits or impacts can be defined and calculated in various ways: the most common remains CO_2 equivalents (CO_{2e}), but the focus may also be GHG emissions, energy usage, energy intensity, or even total material requirements (Reimers et al., 2021).

There appears to be a broad consensus in the field that rebound effects in household consumption *do* exist, although their magnitude differs importantly based on consumption area, country of study, and type of environmental impact measured. Overall, most studies have hitherto focused on post-industrialised countries' consumption practices- such as the UK, Australia, the US, or Japan (Reimers et al., 2021). To exemplify- Alfredsson (2004) finds a 20% rebound effect in CO_2 intensity in housing and a 10% one in transport for Swedish households. Chitnis & Sorrell (2015) find a rebound effect for heating and lighting reductions in UK households of up to 32%. Druckman et al. (2012) find a 7% rebound effect in GHG emissions for housing measures and a 25% one for travel in UK households but with a 'worst-case scenario' of up to 515% in backfire effect[6]. Buhl (2014) measured a 59% rebound effect for total material requirements in housing consumption, and a 130% one in transport for German households.

As previously highlighted, direct rebound effects tied to energy consumption practices remain the best understood phenomenon- as exemplified by Chitnis & Sorrell, (2015); Druckman et al., (2012); Sorrell, (2007). For a holistic perspective, the European Commission estimated that the current available literature allowed for a reasonable assumption of a 10% to 30% direct rebound effect in household energy consumption (European Commission, 2011). This has also meant that energy consumption rebound effects have been some of the only rebound effects accounted for in policy design (Vivanco et al., 2016). This is exemplified by the UK Department for Environment, Food and Rural Affairs (DEFRA) assuming in 2010 a 15% energy saving estimation downgrade in domestic insulation measures, to reflect the rebound effect it had identified in its commissioned study *An Assessment of the Evidence for Economy-Wide Energy Savings from Improved Energy Efficiency* (Sorrell, 2007). Similarly, the Irish National Energy Efficiency Action Plan of 2014 assumed a high rebound effect of 70% related to the so-called 'comfort-taking effect'- the phenomenon whereby households increase home temperatures as a response to energy efficiency improvements (Vivanco et al., 2016).

2.2.2 Rebound effects in psychology

Since the 2000s, research in psychology has also been applied to questions of consumption to explain the possible occurrence of rebound effects, taking *individuals* rather than *households* as their object of study. Two competing theories have emerged as possible mechanisms behind rebound effects- single action bias theory and moral licensing effect theory (Truelove et al., 2014).

The single-action bias theory describes the perception that a risk is reduced after a single ameliorative action is taken, even when multiple actions would be more beneficial (Weber, 1997). Though evidence of the single-action bias effect exists in the domain of sustainability in general, its applicability to sustainable consumption in particular remains vague (Truelove et al., 2014). Many instances of the single-action bias were observed amongst farmers, who, when adapting their production practices to climate change, became less likely to subsequently adopt price-based climate adaption action, such as using futures contracts (Weber, 1997).

Moral licensing effect theory posits that past morally good actions may liberate individuals to engage in present actions which are immoral or unethical (Merritt et al., 2010). Related to sustainable consumption, this would entail that individuals can justify environmental damaging actions with good environmental deeds they had previously performed.

[6] A backfire effect can be defined as a rebound effect that exceeds 100%, i.e., completely offsets the initial environmental benefit that had been accrued (Druckman et al., 2012).

Evidence of the moral licensing effect has been gathered across several contexts linked to morality- such as donations to charity, welfare, egalitarianism, and attitudes towards racism or misogyny (Blanken et al., 2015). This evidence has usually been measured by randomised psychology laboratory or field experiments, made up of two subsequent tasks. The first is commonly meant to capture the "past morally good action", the second the "immoral or unethical present moral action". This methodology has been coined a *sequential behaviour paradigm* by Mullen & Monin (2016). In their seminal article *Moral Credentials and the Expression of Prejudice* Monin & Miller (2001) tested, through three studies, the hypothesis that individuals who had previously expressed antiprejudiced attitudes were more likely to subsequently express prejudiced attitudes. Their first study found that participants who were given the opportunity to strongly disagree with sexist statements were later more likely to favour a man during a job-hiring thought-experiment. Their second study found that participants who were given the opportunity to select either a woman or an African American individual for a job-hiring thought-experiment were subsequently more likely to reject such candidates in a second job-hiring exercise. Their third study showed that participants who had been given the opportunity to establish their reputation as nonprejudiced individuals then revealed a greater willingness to express politically incorrect opinions.

Similarly, other studies have demonstrated that priming individuals to act in one direction may empower them to later act in the opposite one. Effron et al. (2009) showed that expressing a preference to vote for Barack Obama in the U.S. presidential elections licensed individuals to express a preference for Caucasian individuals during a subsequent job-hiring thought-experiment. Jordan et al. (2011) demonstrated that individuals who were tasked with recalling previous good deeds they had done were then more prone to cheating when given the opportunity, than individuals who were not tasked with recalling previous good actions. Overall, Blanken et al. (2015)'s meta-analytic review of fifty moral licensing effect studies found a Cohen's d effect size of 0.31 (with substantial variation between studies)- in other words, a psychological effect of statistical significance, but small to medium in terms of effect size. Comparable to direct and indirect rebound effects, the moral licensing literature finds evidence for both within-domain licensing (moral licensing in one moral domain or behaviour) and cross-domain licensing (moral licensing across moral domains or behaviours) (Reimers et al., 2021).

2.2.3 Rebound effects: Terminology and cross-discipline typology

Interdisciplinary research, which would consider both the economic and psychological mechanisms behind rebound effects, is recognised to be lacking in the field (Font Vivanco et al., 2022; Reimers et al., 2021). As a result, there is an apparent lack of understanding and consensus as to what the potential relationship between these economic and psychological mechanisms could be. Some sources have argued that the two are separate phenomena (Reimers et al., 2021; European Commission, 2011), whilst others have assumed that they are somewhat linked (Buhl et al., 2017; de Haan & Basler, 2015). This aspect of rebound effects and their mechanisms seems to still be poorly understood.

On the other hand, attempts have been made to differentiate between different rebound effects, based on the type of action they were first induced by. A necessary condition for any kind of rebound effect is an initial action (or set of actions) performed by an individual (or a household) which, in one way or another, reduces their environmental footprint. Let us call this Pro-Environmental Behaviour 1 – PEB1.

PEB1 may be of different kinds. For example, Reimers et al. (2021) discern between an efficiency-led PEB1 and a sufficiency-led PEB1. Here, efficiency refers to the ability to consume a good or service at the same frequency as previously, but with a lower environmental cost. Sufficiency refers to the ability to consume a good or service at a lower frequency (the

environmental cost remains the same). Going a step further, Lettenmeier et al. (2019) propose a third type of PEB1- those led by modal shifts. A modal shift is defined as a change from one consumption mode to a less carbon-intensive one.

This may be summarised with the below equation. The environmental impact of PEB1 can be viewed as a function of its environmental cost, and the frequency at which this action is undertaken.

$$Env\ impact_{PEB1} = Env\ cost\ _{PEB1} \times Frequency_{PEB1}$$

As such, an efficiency-led strategy would look to reduce $Env\ cost\ _{PEB1}$; a sufficiency-led strategy would look to reduce $Frequency$; and a modal shift-led strategy would look to find new functions for either $Env\ cost\ _{PEB1}$ and/or $Frequency$.

To illustrate, assume that a diesel-ran car used by individual 1 for their daily commute has a function in terms of its $Env\ cost$ and needed $Frequency$. An efficiency-led strategy for PEB1 would use a more efficient type of combustion gas, which would entail a lower environmental cost. A sufficiency-led strategy for PEB1 would mean reducing the frequency at which the car is used (for example, working from home twice a week). And a modal shift would mean shifting to another mode of consumption, for example taking public transports to work instead of the car. In this case, this would mean a new function for the environmental costs.

It can be said that the income and substitution effects, explained in part 2.2.1.2., could be either an efficiency or sufficiency type of PEA1 strategy. Indeed, for an action of consumption to necessarily lead to lower costs, it must either consume less resources (lower $Env\ cost$) or be performed less often (lower $Frequency$), ceteris paribus.

The same cannot be said for modal shift approaches. Hypothetically, an individual replacing all their long-distance travel by train travel may bring them higher monetary costs rather than lower ones, thus not leading to neither the income nor the substitution effect. This is highlighted by Truelove et al. (2014): "Though economics and psychology agree that prices can be expected to change behaviour […] not all […] rebound effects are necessarily just due to changes in prices." (p. 129).

Some authors (e.g., Hertwich, 2005) have used other terms instead of rebound effect, judging its definition to be too narrow – preferring instead takeback or spillover effect. This thesis assumes the following, intentionally broad definition of rebound effects: *the unintended consequences of actions performed by either individuals or households to reduce their environmental footprint, leading to unrealised savings in environmental impact* (Sorrell, 2010). This wide-ranging description is compatible with both economics and psychology mechanisms.

2.3 Existing literature on rebound effects caused by SDCs

2.3.1 Rebound effects in SDCs: Economics

Academic studies looking at rebound effects from SDCs have mostly focused on vegetarian diets- and even then, remain limited (Grabs, 2015). Findings tend to converge on the overall existence of a rebound effect explained by the income effect. This is with the exception of Tukker et al. (2010), who find no rebound effect for lessened meat consumption across the EU-27. Similar to other types of rebound effects, estimates on its *magnitude* are broad. Alfredsson (2004) calculated a dramatic 200% backfire effect for CO_2 intensity and 300% for energy use in Swedish households' SDCs, whilst Grabs (2015) found a 76-130% range for energy use and a

25-88% one for GHG emissions. Lenzen & Dey (2002) estimate a 45-50% rebound in GHG emissions and 112-123% for energy use in Australian households. More broadly, Wood et al. (2018) estimated a 5 to 25% rebound effect in GHG emissions for households within the EU-28 group, whilst Buhl (2014) found a 21-35% range for German households in total material requirements.

Interestingly, Bjelle et al. (2018) was the only identified study which estimate a rebound effect for vegetarianism going from 100% all the way to -134% - i.e., a *positive* rebound effect where more environmental impacts than intended were avoided. This study included a scenario where households consciously engaged in 'green' re-consumption with their saved costs.

Beyond methodological differences as to which environmental impacts these studies chose to focus on (CO_2 emissions, GHG emissions, energy use, total material requirements), papers also differed in how they defined SDCs. For example, Grabs looked at a strictly lacto-ovo diet, whilst Lenzen and Day simply focused on a lessened meat and fish intake. In addition, all studies investigated observed indirect rebound effects, as opposed to direct rebound effects (Reimers et al., 2021). A converging finding across papers is that the vegetarian-induced rebound effects vary based on household income- with households in the lowest income categories likely to have a much higher rebound effect than their higher income counterparts (Druckman et al., 2012; Grabs, 2015).

As highlighted in the above sections, rebound effects as explained by economics entail the *necessary condition of falling costs induced by PEB1*. As such, research in economics on possible rebound effects caused by SDCs must first observe that this mode of consumption is cheaper than an animal flesh/products-based diet. In practice, evidence as to SDCs being cheaper than a flesh-based diet seems mixed and context-dependent. Studies such as Haddad & Tanzman (2003), Pais et al. (2022), Springmann et al. (2021) observe lower food costs for vegetarians (and/or vegans). Simultaneously, others point to the opposite findings (Boehm et al., 2019; Eggestrand & Svenfelt, 2020; Guillemette & Cranfield, 2012)- or, at least, that these lower costs may be tied to demographics rather than by dietary choices (Lusk & Norwood, 2016).

Overall, the handful of studies investigating income or substitution-induced rebound effects tied to SDCs typically assume, rather than observe, lower costs linked to either a vegetarian or vegan diet. When investigating rebound effects from SDCs in Swedish households, Grabs (2015) assumes Haddad & Tanzman (2003)'s data for US households to hold equivalent for the average Swedish vegetarian diet. Similarly, Alfredsson (2004) constructs a "green food consumption" scenario based on the diet recommended by the Swedish National Food Administration for 2021- which is designed by to be 15% cheaper than a meat-based diet.

Consequently, it remains unclear whether (potential) rebound effects in SDCs can be explained by economic mechanisms: they may be in some cases and not in others.

2.3.2 Rebound effects in SDCs: Psychology

Consumption choices, including sustainable consumption choices, have increasingly become one of the areas of interest for moral licensing studies (Blanken et al., 2015). Existing studies in the field have usually made use of the aforementioned *sequential behaviour paradigm*, an experiment made up of two tasks. In Task 1 (T1), participants are randomly assigned to either a treatment or a control group. The participants in the treatment group are primed to experience the moral licensing effect, through either the recollection or the execution of a morally good action from a sustainability perspective. Participants in the control group are given an unrelated task. In Task 2 (T2), both the treatment and the control group are given a choice between a sustainable and a less sustainable option. The aim of T2 is to see whether the group subject to the moral licensing

effect will behave in a statistically different way in their sustainable choices (or lack therefore) than the control group.

In one of the first studies investigating moral licensing in consumption choices, Khan & Dhar (2006) hypothesised that individuals taking an altruistic decision would have a subsequent preference for a luxury item, versus a necessity one. They tested this with 108 university students- in T1, treatment group participants were asked to imagine they had volunteered three hours a week doing community service. Descriptions of said community service were provided, and questions were asked to participants to engage them in this hypothetical activity. Control group participants were given an unrelated activity. In T2, both groups were asked to choose between a pair of design jeans and a vacuum cleaner, with the assumption that they could afford both. They found that 57.4% of individuals in the treatment condition chose the pair of designer jeans, versus 27.7% in the control condition.

Mazar & Zhong (2010) assigned 90 students to either a treatment group, where they were tasked with shopping in a 'green' grocery store, or to a control group, where the grocery store was 'conventional' (T1). In T2, both groups were given a game to play, where certain key presses awarded participants a sum of money. The game provided a dilemma between reporting the correct answers or lying about answers to obtain more money. The authors found that participants in the treatment group earned on average 0.36$ more than those in the control group, showing a propensity to lie more. Geng et al. (2016), also making use of grocery shopping, tested in an experiment with 80 students where participants who had previously performed a pro-environmental behaviour were more likely to then have the opposite behaviour. The treatment group was tasked to complete a shopping trip made up primarily of environmentally-friendly product, whilst the conventional group was tasked with a 'conventional' shopping list (T1). Both groups were then tasked to clean a towel (T2)- as was hypothesised, participants in the treatment group used more water in performing this task than control group participants.

In a more rare example of a field experiment testing for the moral licensing effect, Tiefenbeck et al. (2013) divided a multifamily building complex in Massachusetts, USA, between a treatment group and a control one. Apartments in building 1 all belonged to the control group, those in building 3 to the treatment group, and those in building 2 were randomly assigned to either. In T1, the treatment group received weekly feedback on their water consumption for seven weeks- including tips on water conservation and their associated environmental savings. The control group received no such information. T2 consisted in measuring the two groups' behaviours when it came to their electricity consumption. The treatment group reduced its water consumption by 6%, but subsequently increased its electricity consumption by 5.6%, in line with the hypothesis that regulation information about water-saving tips (T1) would serve as a moral licensing effect primer. Indeed, the authors measured subsequent electricity usage in both groups (52), and found a higher electricity usage -i.e., a less environmentally friendly behaviour- for the treatment group.

In turn, moral licensing studies related directly to sustainable dietary choices as defined in this thesis remain greatly limited. Burger et al. (2022) tested whether past climate-friendly behaviour could decrease discomfort about ongoing problematic climate-related behaviours. Participants were presented with a list of statements about climate-relevant behaviour and asked to mark all options that applied to them. Those who had indicated that they had not travelled by airplane for personal reasons in the past two years and had simultaneously indicated that they had *not* abstained from consuming meat were distributed between a treatment and a control group. T1 for the treatment group consisted in reading statements and questions about their flight abstinence as a moral licensing effect primer, followed by statements about their meat

consumption (T2). In the control group, participants first read the statements about their meat consumption (T1), before moving on to statements about their flight abstinence (T2), thus creating no moral licensing primer. Treatment group participants reported overall a lower guilty conscience about their meat consumption than control group participants.

Methodological choices related to the design of T1 and T2 in a sequential behaviour paradigm can be summarised respectively by Figure 1 and Figure 2.

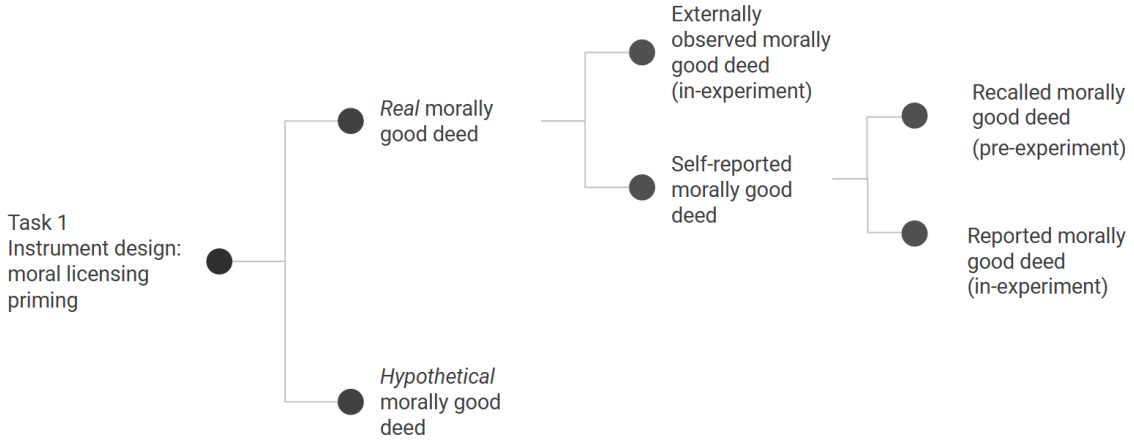

Figure 1. Summary of possible methodological choices for a 'Task 1' moral licensing priming instrument in a sequential behaviour paradigm. Author's own.

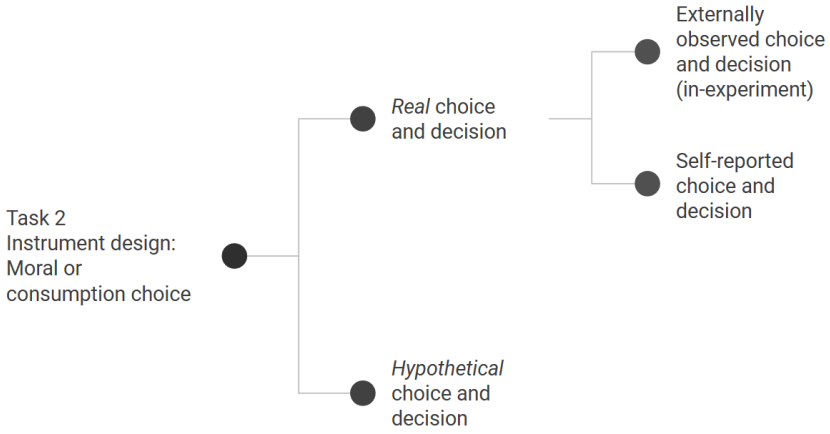

Figure 2. Summary of possible methodological for a 'Task 2' moral or consumption choice instrument in a sequential behaviour paradigm. Authors' own.

Alternative methods have also been used to measure moral licensing effects in SDCs. In particular, Dreijerink et al. (2021) investigated self-reported environmental behaviours and awareness of moral licensing effects through interviews with 26 Dutch household members. They found that most respondents disagreed with the suggestion that they would apply moral licensing after having engaged in a PEB. Interestingly, the exception to this was 5 respondents, who all provided past examples of moral licensing behaviour following a PEB related to SDCs. Respondent 15, for example, cited a first behaviour of eating vegetarian five days in a row, followed by eating chicken on day six. Another respondent explained how their vegetarian diet

eased their doubts about buying a less energy-efficient car. Nonetheless, self-reported accounts of moral licensing may be limited by important subjective biases. Indeed, it is generally argued that the moral licensing effect is an unconscious psychological process (Festinger, 1957; Khan & Dhar, 2006; Truelove et al., 2014).

After having explored the epistemic foundations of rebound effects, their understandings in the economics and psychology disciplines, and how they have applied to research on SDCs, this thesis turns to a more in-depth analysis of the theoretical frameworks behind moral licensing, and how it compares to the adverse theory of positive spillover effects.

2.4 Moral licensing: theoretical frameworks in psychological action theories

Psychological action theories, which seek an understanding for specific behavioural patterns in individuals (Peters & Dütschke, 2016) can typically be divided in two opposing categories, which can subsequently be applied to consumption choices.

2.4.1 Theories of moral consistency

The first group, *theories of moral consistency*, have an important tradition in psychology literature (Festinger, 1957; Mullen & Monin, 2016). Theories of moral consistency predict that individuals like to be and appear consistent in their moral actions- Heider's balance theory (1958) is one of the first examples of this. Balance theory posits that individuals are internally motivated to maintain their values and beliefs over time to preserve their internal psychological balance. Bem, in turn, asserted in his self-perception theory (1972) that individuals infer their own values and attitudes through observations on their own behaviour- thus an individual who had performed an initial good deed would come to see themselves as a morally good person, and reflect this in future behaviour. Freedman & Fraser (1966) demonstrated successful instances of their foot-in-the-door technique, which proposes that once an individual has been induced to comply with a small request, they are more likely to comply with a larger one.

Lastly, Festinger's cognitive dissonance theory (1957) argues that, internal consistency being paramount to an individual's self-perception, most of an individual's cognitions will be consistent with one another. Here, cognitions are defined as knowledge or beliefs about one's own behaviours and exist in clusters- only a few of these cognitions will be inconsistent with these clusters, and they will be the exception rather than the rule. This is necessary, Festinger explains, as dissonance, or the existence of non-fitting relations amongst cognitions, would lead the individual to experience psychological discomfort- due to their need for internal consistency. Individuals are motivated to not only reduce any existing dissonance and instead achieve consonance (in other terms, to create fitting relations amongst cognitions), but also actively avoid situations and information which could increase said dissonance. Festinger proposes three ways in which an individual may attempt to reduce cognitive dissonance. By changing one or more elements involved in the dissonant relation; by adding new cognitive elements that are consonant with the already existing cognition; or by decreasing the importance of the elements in the dissonant relation.

Theories of moral consistency have been the backbone to theories defending the positive behavioural spillover effect[7]. The positive behavioural spillover effect, contra the rebound

[7] The terminology on rebound effects is not consistent throughout the literature (Font Vivanco et al., 2022), and some authors have proposed that 'rebound effect' as a phenomenon is too limited to resource and energy economics (e.g., Hertwich, 2005). The proposed alternative is that rebound effects can be considered a part of the general spillover phenomenon, where

effect, predicts in sustainable consumption that one PEB will ultimately lead to another PEB, creating a domino effect. Freedman & Fraser (1966)'s *Compliance without pressure: the foot-in-the-door technique*, highlighted above, was one of the first examples of the positive behavioural spillover effect. Through a first experiment, it found that Californian housewives who had previously answered questions from a researcher about which soap they used, where subsequently more likely to accept a survey team come into their homes and go through their household products, than housewives who had had no such initial contact. The second experiment found that participants who had agreed to an initial task of either signing a petition or putting up a small sign on their lawn where subsequently much more likely to accept putting up a very large sign on their front lawn, asking drivers to operate carefully.

Related to sustainable consumption, Thøgersen (1999) conducted a telephone interview survey with a sample of 1002 Danish residents to test whether performing a PEB increased the likelihood that other PEBS were performed as well. He found that a person's participation in a recycling programme increased the likelihood that they would also change other behaviours in order to reduce the wastefulness of their consumption.

At the same time, some research on positive behavioural spillover effects has led to unconclusive results. For example, Thøgersen and Ölander (2003) investigated evidence of such an effect through a panel study consisting of three waves of interviews with Danish consumers over two years. This methodology enabled them to observe whether consumers performing PEBs in a given consumption area in point A in time were more likely to perform PEBs in another consumption area, in a later point B in time. Though they did find signs of transfer of environmentally friendly conduct between certain areas of consumption, not only did this effect turn out to be of a small size; but they also found evidence of a *negative* spillover effect (i.e., a rebound effect) in certain consumption categories. In other words, behaviours related to a rebound effect were observed, namely for behaviours related to purchasing organic food. Similarly, when looking at 77 effect sizes of a potential spillover effect from a first PEB onto a second PEB across published and unpublished academic studies, Maki et al. (2019) found three things. Firstly, that adopting a first PEB1 has an overall small, positive effect on the intention of performing the second PEB. But that conversely, a near-zero negative effect is found on the actual behaviour of performing the second PEB. In addition, no effect was found on participants levels of policy support for the second PEB.

2.4.2 Theories of moral balancing and moral regulation

Theories of *moral balancing* and *moral regulation*, on the other hand, predict that an initial behaviour will subsequently produce the opposite behaviour, in terms of its moral worth. This includes theories of the moral cleansing effect (an initial morally bad behaviour will lead to an ensuing morally good behaviour), which this thesis will not go into, and theories of the moral licensing effect (an initial morally good behaviour will lead to an ensuring morally bad behaviour).

Although moral balancing and regulation theories seemingly challenge frameworks defending moral consistency, they sometimes have common predictions (Blanken et al., 2015; Mullen & Monin, 2016; Truelove et al., 2014) In particular- cognitive dissonance theory, although arguing for internal consistency in individuals *most* of the time, can help explain why choice inconsistencies do, still, arise, and how they may lead to moral licensing effects. Indeed, consider the following scenario. Individual 1 has made the decision to consume SDCs, but subsequently also decides to travel long distances exclusively by plane. The two cognitions (actions) can be

a spillover is broadly defined as an effect of an intervention on subsequent behaviour that was not targeted by the intervention (Truelove et al., 2014). As such, a spillover effect can either be positive *or* negative.

argued to have a dissonant relation- given the obvious environmental impact of traveling by plane. As per Festinger, individual 1 then has the choice between three strategies. Firstly, changing one or more elements involved in the dissonant relation: this would mean for individual 1 to no longer travel by plane- i.e., to achieve *consistency* between the two actions. Secondly, adding new cognitive elements to decrease the level of dissonance- this could mean for example for individual 1 to purchase carbon offsets for their flights, more consonant with their motivation to consume SDCs, whilst still traveling by plane. Finally, decreasing the importance of the elements involved in the dissonant relation would mean downplaying the importance of the environmental impact of plane travel. This, in other words, arguably translates to the moral licensing effect- individual 1 would justify their actions to travel by plane through their prior environmental 'good deed' represented by SDCs.

Thus, moral licensing theory can be interpreted as one of the strategies used to reduce cognitive dissonance, explained by the psychological discomfort that cognitive dissonance is predicted to bring. This interpretation would enable us to reconcile two potential simultaneous phenomena: that individuals may overall strive for internal moral consistency, but that they also at times pursue multiple, sometimes conflicting goals. Licensing effects would as such arise through the existence of a conflict of motives in an individual (Mullen & Monin, 2016).

To further explain how the moral licensing effect operates on an individual's concept of moral self, either one of two theories are typically used (Miller & Effron, 2010). The first, the *moral credits model*, posits that moral behaviour provides one with moral credits that serve to balance out subsequent immoral behaviours, conceptualised as moral debits. Thus, immoral behaviour will be permitted, both by the self and by others, as long as it is sufficiently balanced out by moral credits accrued from past good deeds (Miller & Effron, 2010). The second, the moral credentials model, predicts that previous morally sound behaviour influences how individuals perceive their subsequent actions. In other words, individuals who establish credentials through an initial morally good deed will not view their later actions as morally bad, even if they may be objectively morally reprehensible (Merritt et al., 2010).

Miller & Effron (2010) suggest that the moral credits and moral credential models differ in two ways. Firstly, moral credits may license a bad deed and make it more permissible, but not change their meaning. A moral transgression will still be seen as a moral transgression just more acceptable once it is 'offset' by a morally laudable action. Moral credentials, on the other hand, provide license by enabling an individual's behaviour history to change the way subsequent behaviour is construed. In other words, a moral transgression may no longer be perceived as such, as long as previous good deeds have 'built up' good credentials. Secondly, the moral credits model posits a moral self-concept in equilibrium that fluctuates depending on one's history of good and bad deeds- with good actions boosting the moral self-concept, and bad ones deflating it. The moral credentials model, contra the moral credits moral, assumes no equilibrium, given that an individual's behavioural history can make a morally questionable deed seem as if it was no transgression at all.

Importantly, Miller & Effron (2010) also argue that the moral credentials and credits models need not be viewed as competing theories. They can be viewed as two independent routes to licensing, and in fact can even be operating simultaneously. This thesis will assume such a view, as the focus of its hypothesis is rather whether a moral licensing effect can be identified. Here, a moral licensing effect is broadly defined as the phenomenon whereby past morally good actions may liberate individuals to engage in present actions which are immoral or unethical. It can, as such, encompass the moral credits and/or the moral credentials theories.

2.4.3 The role of mediators

Various studies in both moral licensing and positive behavioural spillover effects highlight the role of mediator variables[8]. Within the context of sustainable consumption, two potential mediator variables are regularly discussed. Fishbach & Dhar put forward their goal regulation theory (2005), which posits that individuals take action according to the goals they hold- which oftentimes are competing or contradicting. Assuming an individual performs a PEB, they may view it in one of two ways- which consist of the mediator variables. The first is as goal progress- this PEB is evidence of having made progress towards the goal, producing a sense of achievement and fulfilment. As a result, the individual shifts their cognitive resources from the initial goal, to focus on other goals. The second is goal commitment – the PEB will motivate individuals to reduce inconsistent behaviour by inhibiting other, competing goals. As such, whether individuals will engage in the moral licensing effect, the authors argue, will depend on whether they engage in goal progress or goal commitment behaviour.

In addition, the mediator variable of environmental concern is often considered. Environmental concern, or environmental identity, can be loosely defined as individual values attaching high importance to environmental protection. For example, Meijers et al. (2019) found evidence of the moral licensing effect for individuals that had purchased products branded as 'green' – but only if they self-reported as having low environmental identity. Similarly, Garvey & Bolton (2017) identify a moral licensing effect amongst individuals tasked with purchasing an eco-product such as low-energy LED light bulbs, but only for those who had self-identified as having low environmental conscience. On the positive behavioural spillover effect side, Gneezy et al. (2011) for example conclude that individuals with a strong environmental identity are more likely to repeat their PEBs if the initial behaviour was already a difficult task. De Groot & Steg, (2008) and Joireman et al. (2010) find similar evidence.

2.4.4 Settling between the moral licensing and the positive behavioural spillover effects

To summarise, the conflicting theories of moral consistency and moral balancing and their corollaries in sustainable consumption beg the following question, best formulated by Stern (2011). "*Which of these mechanisms predominates with high-impact behaviours, and under what conditions, are fundamental research questions of obvious importance to limiting climate change*." (p. 310).

Three key theoretical frameworks may help move forward with this research gap. Firstly, Stern's Value-Belief Norm Theory (2000), which identifies four types of causal variables in environmental behaviour- attitudinal factors, external factors, personal capabilities, and habits or routine. Secondly, Schwartz' Norm Activation Theory (1977), which posits that altruistic motives are necessary for pro-environmental behaviour, given that environmental quality is a public good. Thirdly, Truelove et al. (2014)'s proposed theoretical framework. This framework posits that individuals are more or less likely to follow the moral licensing, or the positive behavioural spillover effect after an initial PEB, based on two key factors. The first relates to the *decision mode* individuals use to adopt an initial PEB. It is argued that calculation-based decisions, which involves analytic processing (such as the pros and cons of a specific PEB), do not particularly lead to either the moral licensing or the positive behavioural spillover effect. Instead, this will depend on each individual's evaluation of the costs and benefits of a particular PEB. On the other hand, affect-based decisions, which are made within the context of situational positive or negative emotions, are less deliberative. Following this logic, Truelove et al. (2014) predict that if an initial PEB was done as a reaction to a negative emotion, such as

[8] A mediator variable is a variable that lies between the cause and effect in a causal chain- in other words, it is the mechanism through which change in one variable causes change in a subsequent variable (Fritz & Lester, 2016).

guilt or fear, this could result in a subsequent moral licensing effect. This is because the initial PEB was engaged in to reduce the negative emotion- as a consequence, the motivation for adopting a subsequent PEB has disappeared. Within the realm of affect-based decision-making, the framework also identifies rule-and-role-based decisions, where the social role held by the decision-maker will elicit a rule of conduct based on social expectations. The authors hypothesise that this context can push individuals towards a positive behavioural spillover effect, seeking to portray consistency in their environmental decisions to others.

The second relates to the *causal attribution*. Truelove et al. (2014) propose that when an individual can attribute an initial PEB to an external cause, such as being coerced, forced, or paid to perform it, this will reduce their intrinsic motivation. As a consequence, the likelihood of adopting a subsequent PEB when the external motivator is no longer present decreases, leading to a moral licensing effect. On the other hand, an internal motivation ought to lead to a positive spillover effect, as the intrinsic motivation to perform a subsequent PEB act would still be present.

Lastly, this framework also highlights that the term PEB refers to an array of sustainability-oriented actions, ranging from household electricity conservation to volunteering with an environmental organisation. Crucially, this means that PEBs will vary in terms of their characteristics. In particular, they will differ in terms of the costs their represent for individuals, from the monetary investment, physical effort, to the foregone comfort or convenience. Based on this, Truelove et al. predict that an individual facing a costly subsequent PEB is more likely to use their initial behaviour, or initial PEB, to justify not performing the subsequent PEB. This would be in line with the moral licensing effect. In addition, the authors expect a higher likelihood of cross-domain moral licensing effects than in-domain moral licensing effects. This, they argue, is due to the fact that individuals tend to co-perform behaviours in similar categories as they are trying to achieve specific goals.

3 Research Design, Materials and Methods

This chapter first introduces and justifies the research design chosen to answer **H1**, **RQ1**, and **RQ2**, based on the author's worldview, past literature, as well as identified research gaps. The methods to part A and B of this thesis' research are then presented- firstly, data collection methods, followed by data analysis methods.

3.1 Research Design

A mixed method intervention design was used for this thesis- specifically, an embedded explanatory sequential core intervention design (Sandelowski, 1996). This design begun with a quasi-experiment, i.e., quantitative research, followed by qualitative research, to support the interpretation of the results (Creswell, 2014). The reasons behind this design choice were threefold.

Firstly, the author of this thesis adopts a postpositivist worldview, whereby it is assumed that causes probably determine effects or outcomes, and that research aims to identify and assess these causes (Creswell, 2014). As such, a quantitative approach was preferred to initially test H1. Secondly, as discussed in section 2.2.2.2, quantitative approaches have predominantly been used in psychology literature to show the occurrence of a moral licensing effect.

On the other hand, as section 2.3.2.1 has highlighted, little research in the fields of moral licensing related specifically to SDCs has been done overall. Integrating a qualitative strand after the quasi-experiment was thought to enable further understanding of the results, how the instruments used performed, and how context of the quasi-experiment may have influenced outcomes (Sandelowski, 1996), as related to RQ2. In addition, new insights about the nature of a potential moral licensing effect related to SDCs (or lack thereof) were hoped to be uncovered through the open-ended questioning approach that qualitative research methods enable- as related to RQ1. Overall, integrating qualitative and quantitative approaches for this under-studied topic seemed promising in yielding additional insights beyond what just one approach would provide (Creswell, 2014).

This thesis' research was thus divided into two parts. Part A- a quantitative approach with a quasi-experiment, and Part B- a qualitative approach with semi-structured interviews.

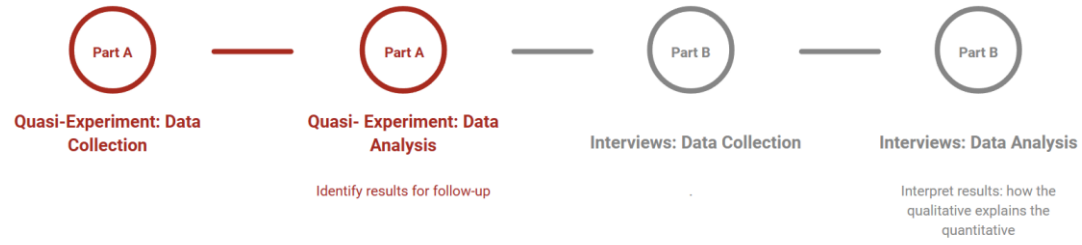

Figure 3. Research design summary for an embedded explanatory sequential core intervention design, as adapted from Creswell (2014) and Sandelowski (1996).

3.2 Research Methods

3.2.1 Part A: Online Quasi-Experiment

Research methods used in Part A sought to replicate methods typically used in the moral licensing psychology literature hitherto- as per Geng et al. (2016); Khan & Dhar (2006); Mazar & Zhong (2010); Monin & Miller (2001); Burger et al. (2022); Tiefenbeck et al. (2013). These have usually been made up of randomised experiments in a laboratory or field setting, composed of two subsequent tasks- coined a sequential behaviour paradigm by Mullen and Monin (2016).

As such, Part A consisted in a quasi-experiment using an online survey setting. The design for this internet survey was elaborated through the software Qualtrics, and opened from the 6th of March to the 5th of April, making it an online longitudinal survey. It was acknowledged that a laboratory or field experiment setting would have most likely allowed for a better control of experimental conditions as well as other variables to establish potential causal relationships (Beins & McCarthy, 2018; Creswell, 2014). That being said, the rationale behind an online survey was primarily its absence of costs and its convenience in participants' outreach and data collection.

The type of experiment conducted had a between-subject or independent-measures design, where the experimental and the control group were compared to test levels of the independent variable. Overall, the experiment was of posttest-only control-group design, where, as per Campbell et al. (1963):

Group A *R*——————*X*——————*O*

Group B *R*——————————————*O*

where *X* represented an exposure of a group to an experimental variable; *O* represented an observation recorded on an instrument; the left-to-right dimension indicated the temporal order of procedures in the experiment; *R* indicated random assignment; and where the comparison groups was not equal by random assignment.

3.2.1.1 Participants

The identified population for this study was European residents and/or nationals currently undertaking SDCs. This was reflected in the quasi-experiment's Block I questions. EU-wide data on this population was found to be lacking (Europeanscientist.com) although the website Meat Atlas (2014) estimates the number of vegetarians and vegans in Europe between 2% and 10% of the overall population- estimated at 445.8 million for 2022. In other words, the identified population had a broad range- between 8.936 and 44.58 million individuals.

The power analysis ran for sample size determination was based on Blanken et al. 's estimation, grounded in a meta-literature review of the moral licensing effect, of a Cohen's d effect size of .031 (2015). Assuming a two-tailed alpha = .05 and beta = .20, a sample size was estimated using the G*Power software program (Faul et al., 2009). In line with Blanken et al.'s recommendations, a sample size of 330 participants (165 in each group) was estimated.

The sampling design used for Part A used a multistage procedure, whereby participants were recruited through e-mails and messages on social media which targeted communities and associations with interests in SDCs and sustainability overall, as well as through the author's personal network. The selection process used was a convenience sample, where participants were chosen based on convenience and availability. This had an important implication for the generalisation of this study's results: Part A may have been subject to nonsampling errors, or in

other words a nonrepresentative sample may have been used as part of this study, meaning that members of the population were systematically excluded from participation (Beins & McCarthy, 2018).

The consequences of this are further discussed in section 5.2. No stratification of the population was conducted prior to selecting the sample, given its breadth. The survey administration was done in three waves, with the initial outreach to potential participants done on the 7th of March 2023. Two follow-up administrations were done- a week and a half after the first one, and then about two weeks after that.

3.2.1.2 Variables

The independent variable in the quasi-experiment related to part (i) of the hypothesis H1 – a causal relationship can be identified between (i) priming individual with a moral licensing effect related to their SDCs, and (ii) individuals' subsequent consumption decision, when given two choices, to select the less sustainable one. In other words, the independent variable, which was systematically manipulated during the quasi-experiment, was the presence of a moral licensing effect primer in individuals undertaking SDCs. As this variable was created based on the pre-existing characteristics of the participants (their undertaking of SDCs, as screened for in Block I- see section 3.2.1.4), this independent variable could also be described as a subject variable.

The dependent variable in the quasi-experiment related to part (ii) of the hypothesis H1- a causal relationship can be identified between (i) priming individuals with a moral licensing effect related to their SDCs; and (ii) individuals' subsequent consumption decision, when given two choices, to select the less sustainable one. In other words, the dependent variable, or the criterion variable presumed to be influenced by the independent variable, was the subsequent decision an individual makes between two consumption choices, one being less sustainable than the other.

Other identified variables were participants' demographics- in particular age, gender, country of origin and of residence. These, alongside the type of SDCs undertaken (vegetarianism, veganism, other) and underlying motivations (sustainability alongside other motivations or sustainability alone) were seen as potential cofounding variables. Other variables may contribute noise to the study design, such as the setting in which participants underwent the quasi-experiment in. For example, whether a given participant was in a private or public space throughout the quasi-experiment may have influenced the results. Participating in the survey alongside peers could have exacerbated expectations or social pressure, for instance. For these reasons, as mentioned above, a laboratory or field setting would have enabled to better control for some of these variables, or at least to identify them more precisely. As a result, a certain level of noise was expected given the survey setting of this quasi-experiment.

3.2.1.3 Procedure

A sample of the quasi-experiment, alongside the instruments used in Block II and III, is available in Annex A.

Given existing evidence of moral licensing effect occurrences unravelling at the unconscious level, rather than being conscious processes by individuals (Khan & Dhar, 2006; Uhlmann & Cohen, 2007), a cover story was drafted. The quasi-experiment was presented to participants as a survey looking to measure levels of awareness amongst individuals following SDCs. The word 'awareness' was chosen specifically as being able to be interpreted by respondents as one of two things. Either as 'awareness of the sustainability impact of one's diet' (seemingly referring to Task 1 given to the treatment group), or overall 'cognitive awareness', for tasks such as reading a text or looking at images (seemingly referring to Task 1 given to the control group). Given the

low emotional stakes of the quasi-experiment, a debriefing was not deemed necessary as a follow-up with participants. This was corroborated by pilot test participants.

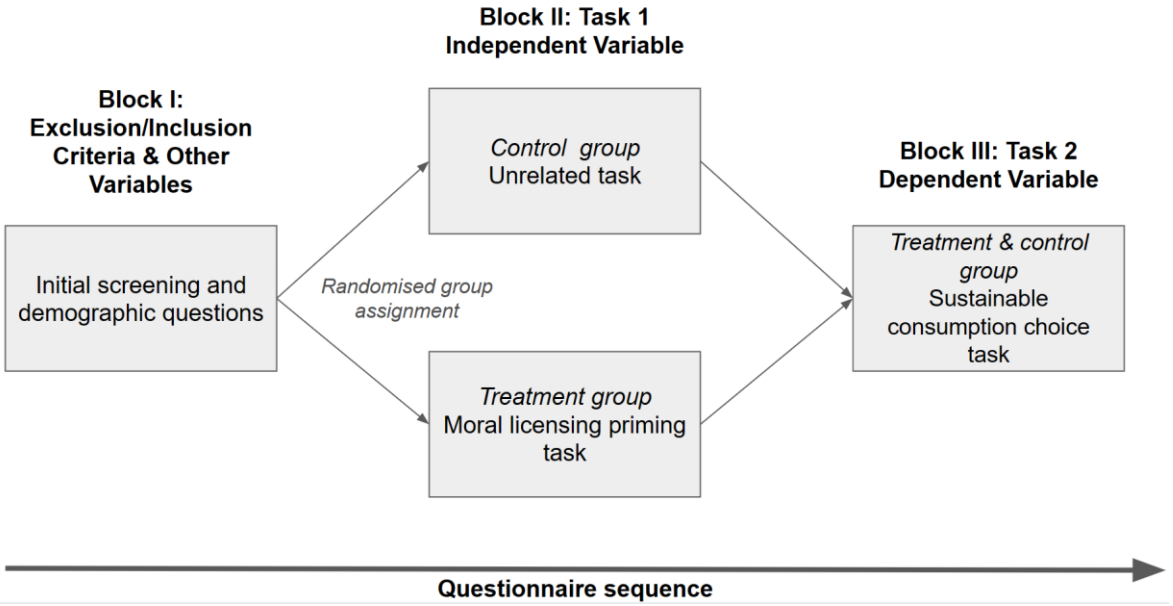

Figure 4. Diagram of the quasi-experiment's procedure in Part A. Authors' own.

The survey was made up of three question blocks. Block I related to the inclusion and exclusion criteria for the quasi-experiment, as well as the confounding variables identified in section 3.2.1.2. It consisted of five sociodemographic questions (age, occupation, gender, country of origin and country of residence), as well as three questions to further determine the participant's SDCs. The five sociodemographic questions were designed based on Hughes et al.(2022)*'s Guide for researchers when using inclusive demographic questions for surveys: Improved and updated questions.* As such, the aim of Block I was threefold. Firstly, it served to better identify potential noise and cofounding variables. Secondly, it served to uncover further potential patterns in participants' behaviour, which may then be discussed in Part B of this research (semi-structured interviews). Thirdly, it served to screen out participants on the basis of the following inclusion and exclusion criteria:

-Participants had to be 18. Though financial independence varies from individual to individual, it was assumed that consumption choices may be freely made by individuals with full access to their monetary resources.

-Participants had to be English-speaking, given the quasi-experiment's given language.

-Participants' country of origin *and/or* residence had to be in Europe. The reason for this related to the design of the instrument in Task 2, as is discussed below.

-Participants had to undertake SDCs as part of their *daily* dietary consumption choices. Indeed, this thesis intended to investigate potential moral licensing effects amongst individuals undertaking SDCs as per the definition given in Chapter 1- SDCs are daily consumption choices. This was in contrast to studies looking to investigate moral licensing effects amongst individuals who undertake SDCs as part of the experiment[9], but not in their daily, "real life" choices. In

[9] For example, Carrico et al. (2018) investigate the presence of either a positive or negative environmental spillover in individuals reducing their read meat consumption over multiple days. Recruited participants were deemed eligible if they reported four or more servings of red meat in an average week. 66% of the sample were then randomly assigned to a treatment group, where they were asked to limit their red meat consumption to one serving over a 1-week period. With this

addition, a methodological choice had to be made when it came to so-called 'flexitarians'- individuals that *mostly* undertake SDCs but may sometimes make exceptions. This thesis assumed flexitarians to be eligible participants for this quasi-experiment, equivalent to vegetarians, vegans, ovo-vegetarians and lacto-vegetarians. The reason for this methodological choice was two-fold. Firstly, some research suggests that a number of self-reported vegetarians and vegans may still occasionally eat or purchase animal flesh/products (Dietz et al., 1995; Haddad & Tanzman, 2003). Secondly, feedback from both pilot test participants and first-wave respondents suggested that various individuals felt motivated by sustainability concerns and had done substantial changes to their diets consequently, *although* these changes were not always entirely strict. As such, this thesis adopted the view that a flexitarian who follows SDCs at least half of the time can be considered to undertake SDCs. This was reflected in the screening question "Would you describe your dietary choices as strict?", where the exclusion criterion was determined as a participant selecting the answer: "No, I would say that the dietary choices I have described make up less than 50% of my consumption habits".

-One of the main motivations behind the participants' dietary choices had to be sustainability. An important screening change related to this criterion was made throughout the survey administration. During the survey's first wave, the screening question related to this criterion was designed to exclude any candidate who answered that sustainability was not *the* main motivation behind their dietary choices. The assumption behind this was that most participants would have one principal motivation behind their dietary choices, and possibly one or various secondary ones- of lesser importance. Informal feedback from various candidates questioned this assumption, as it highlighted that many regarded various of the motivations behind their dietary choices – sustainability, animal rights, ethics, health, other- to all be equally as important and could not 'pick just one'. Following this and for the second wave of the survey administration, the screening question was thus changed to exclude candidates who reported that sustainability was not *one of the* main motivations behind their dietary choices.

Block II consisted in Task 1 of the quasi-experiment, which was related to the independent variable. This concerned part (i) of our hypothesis H1- a causal relationship can be identified between *(i) priming individual with a moral licensing effect related to their SDCs*, and (ii) individuals' subsequent consumption decision, when given two choices, to select the less sustainable one. Participants were randomly assigned to either the treatment or the control group via Qualtrics' *Randomizer* function, once they had answered all questions from Block I without being screened out. To minimise risks of experimenter bias, the experimenter (author of this thesis) was blind to all participants' study conditions.

The treatment group for Task 1 was exposed to the moral licensing primer. The instrument devised for the moral licensing priming was this thesis' own, drawing from past articles. As per Blanken et al. (2015), "…the independent variable should consist of [either intended or real] good behavior or the recall thereof." (p. 543). As this thesis looked to measure the potential moral licensing effect of SDCs, the moral licensing priming instrument had to relate to these SDCs. As such, the morally good deed in this case was *real*. Given the nature of SDCs as everyday consumption choices, being able to externally observe individuals' daily dietary choices through an experiment would have required a field or laboratory setting with specific conditions. The quasi-experiment in Part A, given its internet survey setting, had to rely on self-reported accounts of vegetarianism, veganism and flexitarianism. It was, however, acknowledged that self-reported data is often criticised for its limited reliability and limited insights their provide into real behaviour (for example – Webb et al., 2003; Krampf, 1993). Lastly, this thesis' instrument looked at a recall of past good behaviour- seeking to *remind* participants of the

T1, individuals in the treatment group were not making sustainable dietary choices in their everyday life, but as part of this experiment.

sustainability benefits of their ongoing SDCs. This was deemed more beneficial than asking participants to report their morally good deeds, for example through a nutritional diary, as was done for example by Hofmann et al. (2014). This was judged to be more time consuming and mentally demanding for participants, potentially affecting the number of candidates per experimental group.

Participants were given two short texts to read about the environmental benefits of their SDCs, taken from newspaper and academic sources. Each text was accompanied by colourful pictures of nature, and key words were highlighted in bold (e.g., "It takes about 31.5 Kilowatt-Hours of energy to produce one kilo of beef"). Participants were then asked follow-up questions about the content they had just read, aimed at reiterating once again the environmental benefits of their SDCs, without any real substantial difference between the answer they gave. For example, the first text participants were given to read was followed by the question "Were you aware of the fact that your diet saves between 500 and 1500 kg of CO2e per year compared to a 'traditional diet'?". Participants could select as an answer either 'Yes – I knew avoiding animal flesh and/or products played a fundamental role in me having a sustainable lifestyle', 'No- I knew avoiding animal flesh and/or products was important, but I did not know it was one of the most important things I could do for a sustainable lifestyle' or write in their own answer. Following this, participants were made to select within a list which sustainability benefit in their diet was the most significant and meaningful to them. Lastly, participants were asked to choose, amongst a list of positively worded statements, the one which captured their feelings about their SDCs the most- such as "I feel proud of my dietary choices", and "I feel excited about the positive environmental impact myself and other vegetarians/vegans are making". These tasks were meant to *remind* participants of the environmental benefits of their SDCs and specifically to the one they felt the closest to.

The control group for Task 1, on the other hand, was given an unrelated task to the moral licensing primer. Participants were asked to read a short text about Hungarian photographer Robert Capa, followed by some questions related to what they had just read, as well as their overall interest in photography. Finally, they were asked to play a short 'spot the seven differences' game between two pictures. This, again, followed the experiment procedure designed by previous papers testing for moral licensing- such as Burger et al., 2022; Geng et al., 2016; Zhang et al., 2020, and first proposed by Tory Higgins et al. (1977).

Block III consisted in Task 2, which was then related to the dependent variable, and "…should measure actual or hypothetical behavior of the participants" (Blanken et al., 2015). Both the treatment and the control group were given the same task- crucially, the purpose of the quasi-experiment was to see whether the two groups behaved significantly differently. This concerned part (ii) of our hypothesis H1 – a causal relationship can be identified between (i) priming individual with a moral licensing effect related to their SDCs, and *(ii) individuals' subsequent consumption decision, when given two choices, to select the less sustainable one.* The instrument designed to measure this potential "unethical behaviour" -or, within the context of sustainable consumption, this "unsustainable consumption choice"- was this thesis' own and sought to replicate instruments from past literature.

The instrument designed for Task 2 invited participants to choose between the chance to win either of the following prizes. The first- the unethical choice, or the unsustainable consumption choice, was a gift voucher for an airline travel company. The second- the ethical choice, or the sustainable consumption choice, was a gift voucher for a train travel company. This consumption choice between airplane and train travel was chosen based on Lettenmeier et al. (2019)'s list of low-carbon lifestyle options. Amongst environmental hotspots, the report highlights mobility and specifically train travel instead of airplane travel. Indeed, it finds for example that a 75% reduction of domestic and international flight consumption for a Finnish

individual would lead to an approximate 200 $kgCO_2e$ reduction per capita, per year (Lettenmeier et al., 2019). This sustainable consumption choice was judged to be well-suited for the conditions of this thesis' experiment. Other considered options were the choice between a voucher for a more sustainable supermarket chain and a less sustainable supermarket chain. But given the wish to keep the population broad (to a European level, as to maximise participation rates) and the existence of important regional differences amongst food retailers, this option was set aside. Another considered option was the consumption choice between two clothing items- a mass-produced one and a second-hand one. But considering specific individual fashion preferences, in particular amongst genders, this was considered as an instrument choice potentially less reliable for participants in Task 2. This reasoning was corroborated by participants in the pilot test, who also expressed that choice between air and plane travel appeared best suited for the instrument's design. Due to national and regional differences in key train operators, a European-wide train travel distributor was chosen for Task 2. As such, it was hypothesised that allowing for participants with no ties to Europe in the quasi-experiment (neither nationals nor residents) would mean less interest in this choice, creating threats to concurrent validity. In accordance, the population for this quasi-experiment was determined as European individuals undertaking SDCS: in other words, individuals with either their country of origin *and/or* their country of residence being in Europe.

In addition to the consumption choice at hand, the format of Task 2 was chosen from Figure 3 based on the following reasoning. The evidence for the moral licensing effect being an unconscious process (Khan & Dhar, 2006; Uhlmann & Cohen, 2007), it was judged more desirable to construct, if possible, an instrument which led to a *real* choice and a *real* decision, in order to capture participants' on-the-spot behaviour. In addition, given the limitations of self-reporting, it was again judged desirable to opt for in-experiment choice-making, rather than asking participants for accounts of instances where they had to make such decisions. With this in mind, the instrument designed for Task 2 thus invited participants to make a *real*, *in-experiment* decision between two consumption choices with different sustainability profiles.

3.2.1.4 Pilot Testing

The quasi-experiment was initially tested with an N of 5, where participants first underwent the experiment, and were then told the real purpose of the experiment, as well as the use of the cover story. All were assigned the experimental group, as to understand their experiences of the moral licensing priming task. Their feedback was then individually discussed. Firstly, all agreed that the experiment's length, a little less than 10 minutes, did not induce participant fatigue. Secondly, their experiences of instruments in Task 1 and Task 2 were discussed, and in particular their thoughts on content validity (do the items measure the content they were intended to measure?). A majority (3/5) of the participants felt that Task 1 successfully reminded them of the environmental benefits in their diets, providing good moral licensing priming conditions. The other two participants were unsure of the effects of Task 1 on them, raising some reservations on construct validity. All participants felt that Task 2 was a good measure of a sustainable consumption choice, although one participant pointed out that whether one would choose a train voucher over a plan voucher may vary importantly based on individual circumstances, such as expatriates living long distances from their home country.

Additionally, three participants felt that the way questions related to SDCs in Block I were potentially problematic. Firstly, all three participants were hesitant as to how to classify themselves: they rarely ate animal flesh but made exceptions from time to time. Secondly, they thought the screening question inquiring how strict their dietary choices were could potentially induce feelings of guilt, as sustainability-driven vegetarians and vegans might have felt like 'they could always do more'. These two comments were taken into account in the instruments' design. As highlighted in 3.2.1.4, flexitarians were deemed eligible to participate in the experiment. The

questions were also reformulated, as to diminish potential feelings of guilt- the opposite effect to what the experiment sought to stimulate in individuals. These comments were also identified as an important theme for Part B of this thesis' semi-structured interviews.

3.2.1.5 Validity and Reliability

Looking back on previous literature, there is little evidence of the reliability and validity of past instrument used as a moral licensing primer or to measure a sustainable consumption choice. An exception to this is Khan and Dhar (2006)'s reliability test of tasking participants with an environmental deed as a moral licensing priming task. They found a high degree of reliability in terms of coefficient alpha (Cronbach's $\alpha = .84$).

Based on this and on the fact that the instruments developed for this thesis' quasi-experiment are the authors' own, it can be said that both the reliability and the validity for H1's methodology remained ambiguous. This is accounted for in Chapter 5's discussion. In addition, a classification of the different types of threats to an experiment's internal and external validity, devised by Creswell (2014), was also considered. It was deemed that none of the threats listed for internal validity (such as history – because time passes during an experiment, events can occur that unduly influence its outcome; or maturation- participants in an experiment may change throughout) are of particularly high risk for this experiment. On the other hand, it was determined that the quasi-experiment's settings (given its nature as an internet survey) meant threats for external validity were higher. As mentioned above, one example would be the conditions in which participants go through the quasi-experiment (alongside peers or in private).

The aim of Part B was two-fold. Firstly, as highlighted in section 3.1., additional context was sought to better understand the results obtained in Part A, and thus to answer RQ2. Secondly, a qualitative approach was being used to obtain further context on a possible moral licensing effect- or to the contrary, on a possible behavioural spillover effect- for individuals undertaking SDCs, and thus to answer RQ1.

Online interviews with participants to Part A's quasi-experiment were conducted over the communications platform Zoom, using both audio and video. The format used was semi-structured, following an interview protocol but still allowing for flexibility based on the respondent's responses. A short online presentation was prepared beforehand and shown to respondents as a visual aid to help explain the real aim of the quasi-experiment, the logic behind methodological choices, as well as the use of a cover story. Participation in this study was entirely voluntary, and interviews were conducted with individuals' prior consent, given over email based on a consent form. Their understanding of this consent form was also checked for at the beginning of every interview. A sample of the consent form, of the online presentation and of the interview protocol are attached in the Annex.

The interview protocol was divided in three overarching themes. The first, addressing RQ1, related to respondents' views on the existence of a moral licensing effect, as well as of a positive behavioural spillover effect (questions Q2 to Q5). The second, addressing RQ2, related to respondents' views on the experiment's methodological choices, and in particular the reliability of Task 1 and Task 2, as well as the results obtained (questions Q1 and Q6 to Q10). The third related to respondents' views on motivations behind SDCs as well as their strictness (questions Q11 and Q12), and addressed additional learnings and challenges obtained from Part A's quasi-experiment.

The interview protocol's content, as well as the code built for data analysis (see section 3.3.2) were informed by Truelove et al. (2014)'s framework. This explains why interview respondents were not only asked about their experiences of the moral licensing effect, but *also* of the positive

behavioural spillover effect. Although Part A tested for a moral licensing effect specifically, it is assumed that any given PEB could subsequently lead to *either* the moral licensing effect or the positive behavioural spillover effect. As such, it was expected that some of Part A's participants could have experienced a positive behavioural spillover effect, as opposed to a moral licensing one. In addition, methodological choices typically made to test for a positive behavioural spillover effect (as described in section 2.4.4) have tended to be somewhat similar to that of the moral licensing effect literature. Although not usually making use of a sequential behaviour paradigm, papers investigating a positive behavioural spillover effect are likely to make use of an initial PEB task to research whether individuals may follow up with a second PEB. Consequently, investigating interview respondents' thoughts on both the moral licensing and the positive behavioural spillover effect was deemed sound.

A reminder of the moral licensing priming task, Task 1 (Block II), was also quickly reviewed with respondents, with main key messages, visual cues and questions summarised. The presentation to get respondents up to speed on Part A's quasi-experiment was designed in such a way that it initially did not disclose the results to the respondents. This was done to get respondents' intuitive thoughts on the quasi-experiment's methodology, as well as on potential results. The results were ultimately disclosed to the respondents and their reactions were captured.

Interview sampling was informed by Part A. Respondents were chosen based on the inclusion criteria that they had been part of the treatment group in Part A, as to capture their experiences of the moral licensing primer instrument designed for Task 1. Participants being of female gender, of a student occupation, and/or whose country of residence was Sweden were prioritised, given that these sociodemographic characteristics made up a majority of Part A's participants (see part 4.1.1). At the same time, perspectives from other sociodemographic groups were also sought after. In the end, five respondents were interviewed- their information is summarised in Table 1.

Identifier	Gender	Occupation	Age	Country of residence	Country of origin
Participant 1	Female	University Student	25	Sweden	China
Participant 2	Female	University Student	30	Sweden	Canada
Participant 3	Male	Higher education	26	United Kingdom	France
Participant 4	Female	Retired	60	United Kingdom	France
Participant 5	Male	University Student	28	Sweden	United States

Table 1. Summary of respondents interviewed for Part B. Author's own.

A focus group was considered as an alternative for data collection in Part B. However, due to the close link suggested in the literature between moral licensing effects and behavioural expectations individuals may sense from their social surroundings (e.g., Khan & Dhar, 2007), it

was deemed that individual interviews would enable participants to express themselves more candidly.

Qualitative validity was addressed through two procedures. Firstly through member checking: Part B's findings were taken back to two participants (participants 2 and 3) to check whether they felt accurate (Creswell, 2014). This was done through unstructured 10-minute follow-up interviews over the communication platform Zoom. The findings from Chapter 4 were shared with participants prior to this follow-up interview (over email), as well as orally throughout the interview. The interviews were kept unstructured in their format in order to encourage participants to express themselves freely and fluidly. Secondly, some time was spent disseminating the bias the thesis author brings to Part B. Namely, the following elements of the author's background were identified as having -most likely- shaped the interpretations of the findings for Part B. The author's Western European origins, with a food culture heavily based around animal products, was deemed to have likely made the author more receptive to interview participants' accounts of pleasure and comfort when describing animal product consumption. The author's socio-economic background, of middle-upper class with good purchasing power, was deemed to have likely made the author more receptive to interview participants' accounts of pleasure and comfort when discussing overall consumption patterns, and the difficulty in giving these up. Lastly, a "backyard" research to reflect on the relationship between the thesis author and Part B's participants highlighted the close personal connections to four out of the five participants. This connection could have reasonably influenced both the participants and the thesis author throughout the interview process, in unconscious attempts to find more consensus with one another. These biases are also highlighted in the limitations discussion, in Chapter 5.

Drawing from Gibbs' (2007) definition of qualitative reliability- indicating that the researcher's approach is consistent across different research and among different projects- it was deemed that this did not need addressing as part of a master's thesis.

3.3 Methods for Data Analysis

3.3.1 Part A: Quasi-Experiment

Qualtrics' Data Analysis function was used for Part A's descriptive statistics, followed by SPSS 29 for statistical tests. First, the causal relationship tested for in H1 was investigated, followed by testing for confounding variables. With regards to testing H1, a Pearson's chi-square test of independence was conducted, given the categorical nature of the dependent and independent variable. A Pearson's chi-square test of independence (χ^2) looks to determine whether there is a significant relationship between two categorical variables, where it is assumed that the observations are independent from one another, that the sample size is sufficiently large, and that frequencies will at least be equal to 5 or higher (MarkSirkin, 2006). The following formula is employed:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where O is the observed frequency, and E is the expected frequency. No further statistical analysis tests were performed to test for H1 given the lack of significance found from the descriptive statistics alongside the initial Pearson's chi-square test. In addition, it was deemed that a Chi-square goodness of fit test was not necessary to the statistical analysis, given the nature of the sample as a convenience sample.

Following this, a Student's independent two-sample *t*-test was conducted to compare the experimental and control group's age means in continuous values. A Mann-Whitney U test was also conducted for median age comparison in ordinal values, by age groups, followed by a multivariable binary logistic regression to control for the influence of age on the dependent and independent variables' relationship. In addition, chi-square tests of independence and multivariable binary logistic regressions were run to address the other possible confounding variables of gender, occupation, country of origin and residence. Answers to Block questions I, which had been designed to be answered with an open-text format, were then grouped based on group analysis for a better overall data analysis.

The Student's independent two-sample *t*-test (*t*) uses parametric testing to evaluate whether two groups' means differ from each other, and carries the following assumptions. The observations are independent from one another; data in each group is obtained via a random sample from the population; data in each group is normally distributed; data values are continuous; and the variances for the two groups are equal (MarkSirkin, 2006). The following formula is employed:

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where $\bar{x}_1$ is the sample mean for the first group, $\bar{x}_2$ is the sample mean for the second group, μ_1 is the mean for the first group, μ_2 is the mean for the second group, n_1 is the sample size for the sample mean in the first group, n_2 is the sample size for the sample mean in the second group, s_1^2 is the variance for the first sample, and s_2^2 is the variance for the second sample.

The Mann-Whitney U test (*U*) uses nonparametric testing to evaluate whether two groups' medians differ from each other and carries the following assumptions. The observations are independent from one another; data values are continuous; unlike the Student's *t*-test, however, data in each group does not need to be normally distributed (MarkSirkin, 2006). The following formula is employed:

U is the smallest of U_a and U_b, where:

$$U_a = n_a n_b + \frac{n_a(n_a + 1)}{2} - \sum R_a$$

$$U_b = n_a n_b + \frac{n_b(n_b + 1)}{2} - \sum R_b$$

n_a is the size of the first sample, n_b is the size of the second sample, R_a is the rank of the first sample size, and R_b is the rank of the second sample size.

A multivariable binary logistic regression is an analysis estimating the relationship between various explanatory variables and a single output binary variable, fitting the dependent variable used in Part A. Multivariable binary logistic regression assumes that observations are independent from one another; no outliers exist; no multicollinearity between two or more explanatory variables exists; and that the relationship between the explanatory variables and the dependent is linear (MarkSirkin, 2006). The following equation is employed:

$$\log[\pi(i)] = \left(\frac{\pi_i}{1-\pi_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

Where X_1, X_2,… are the X_n are the predictors in the multivariable model, $\pi(i)$ is a binary independent variable with two categories, and the β_n coefficient represents the amount of change in the logit (log-odds) per one-unit change in X_n.

Given the inconsistencies in respondents' answers related to the nature and strictness of their SDCs (as reported in section 4.1.1), no testing was made of the potential influence of dietary choices on participants' behaviour in the quasi-experiment.

When testing for confounding variables, respondents' countries of residence and origin were grouped together according to broad geographical regions, to increase sample numbers. The groups resulted in "Western Europe"-which was made up of Germany, Austria, the United Kingdom, France, Switzerland, the Netherlands, Belgium, Spain, and Luxembourg-, "Nordics" -which was made up of Sweden, Denmark and Iceland-, "Central and Eastern Europe" -which was made up of Poland and Lithuania-, and "Other" -made up of countries outside of Europe, the US, Canada, Israel, Mozambique, Australia, Egypt, Mexico, Argentina, South Africa, India, and China.

For the Mann-Whitney U test, age variables were grouped in categories 18-24, 25-34, 35-44, 45-54.

3.3.2 Part B: Semi-structured interviews

In Part B, a code was built abductively, informed by Part A's results, as well as Truelove et al.'s framework (2014). Interviews' data was transcribed and analysed through Nvivo plus.

Table 2 below summarises the themes build through abductive coding.

Theme	Description	Related hypothesis or research question(s)
Moral licensing effect	Respondents' personal observations of the moral licensing effect, either in others or in themselves	RQ1
Positive behavioural spillover effect	Respondents' personal observations of the positive behavioural spillover effect, either in others or in themselves	RQ1
Subcode: social positive behavioural spillover effect	Respondents' personal observations of the positive behavioural spillover effect as a causal link from their own PEBs to influencing others around them in performing more PEBs	RQ1
Consumption patterns	Respondents' self-reported consumption patterns, based on elements of comfort, pleasure, availability and necessity	RQ1

Costs of SDCs	Costs respondents associate with SDCs.	RQ1
Subcode: Inconvenience costs of SDCs	Costs respondents associated SDCS with in terms pleasure, comfort, availability and/or necessity	RQ1
Subcode: Financial costs of SDCs	Costs respondents associated with the additional economic expenses of having SDCs	RQ1
Subcode: Social and cultural costs of SDCs	Costs respondents associated with having SDCs, as related to their social and cultural context	RQ1
'Feel-good' effect	Respondents' personal experiences with a 'feel-good' effect related to their SDCs, which is expected to act as a moral licensing primer	RQ1; RQ2
Quasi-experiment experience	Respondents' general experience of Part A's quasi-experiment, including the use of a cover story	RQ2
Task 1 experience	Respondents' experience of Task 1 and their opinion on whether it fulfilled its function as a moral licensing primer	RQ2
Task 2 experience	Respondents' experience of Task 2 and their opinion on whether it accurately measured a sustainable consumption decision pattern from them.	RQ2
Personal definitions of SDCs	Respondents' views on whether SDCs (in particular their own) must be a strict concept or whether exceptions are possible	Additional learnings and challenges from Part A; RQ1
Motivations related to SDCs	Respondents' personal main motivations for engaging in SDCs	Additional learnings and challenges from Part A; RQ1

Table 2. Themes built through abductive coding for Part B's qualitative analysis. Authors' own.

4 Findings and Results

4.1 Part A: Quasi-Experiment

4.1.1 Descriptive Statistics

One hundred and one participants were recruited for this quasi-experiment under online survey format. Participant's assignment to either the treatment group (n = 52) or the control group (n = 49) was done at random through Qualtrics' Randomizer function. The quasi-experiment showed that within the treatment group, an n of 13 chose the Ryanair voucher, whilst an n of 39 selected the Trainline voucher. Within the control group, an n of 11 chose the Ryanair voucher, whilst an n of 38 chose the Trainline voucher. The Ryanair voucher choosers represented a slightly higher proportion of the overall treatment group (25.0%) compared to that of the Ryanair choosers in the control group (22.4%). In other words, at this stage virtually no difference was found in terms of how the treatment and the control group behaved. In total, 77 out of the 101 participants selected the Trainline voucher, and 24 selected the Ryanair voucher.

Twenty-five of the participants were male, and 75 were female, making the latter a high majority. A higher proportion of treatment group participants were female at 78.8% (n = 41) than for control group participants where the proportion was 69.4% (n = 34). The opposite was true for male participants, which were of a higher proportion in the control group at 28.6% (n = 14) than within the treatment group at 21.2% (n = 11). Only one participant reported as non-binary, within the control group.

The average age for participants was 29.09 (SD = 6.86). Treatment group participants were a little older (M = 29.88, SD = 7.78) than control group participants (M = 28.04, SD = 5.16). Grouping participants by age category (18-24; 25-34; 35-44; 45-54) revealed that whilst the 25-34 age category made up the highest proportion for both groups, it was comparatively bigger in the control group at 61.2% (n = 30), than in the treatment group at 44.2% (n = 23). By contrast, the 35-44 age category was more important in the treatment group at 23.1% (n = 12) than in the control group at 6.1% (n = 3).

In terms of country of origin, a majority of participants were from Sweden (n = 22), followed by Germany (n = 18), France (n = 14), and the United Kingdom (n = 12). When grouping countries, unsurprisingly Western Europe dominated both the treatment group at 55.8% (n = 29) and the control group at 51% (n = 25). All other participants' countries of origin were in low numbers ($n \leq 5$). In terms of country of residence, Sweden was again the highest represented country (n = 54), followed by the United Kingdom (n = 19), and Germany (n = 6). When grouping countries, Nordics was found in the highest proportion for both the treatment group at 59.6% (n = 31) and for the control group at 53.1% (n = 26), followed by Western Europe, and then Other.

A large majority of respondents were students in either primary or higher education (n = 54), followed by higher education employees (n = 7), healthcare professionals (n = 6), and government and public administration employees (n = 6). All other professional categories were in low numbers ($n \leq 5$).

Questions related to the nature of SDCs led to less clear answers. Most participants self-reported as being vegetarian (n = 60), followed by vegans (n = 15), ovo-vegetarians (n = 5), and lacto-vegetarians (n = 3). A high number of respondents selected the option 'other' (n = 18), which required to described diet specificities in a text box. Collected responses were all various

iterations of flexitarianism, with sample answers including: "pescatarian sometimes"; "flexitarian"; meat once per month"; "almost exclusively cook vegetarian but eat meat out". Nonetheless, when asked whether their diet was strict or not, a majority of self-reported vegetarians answered that their diet was not always strict (n = 38), as opposed to those that said it was (n = 22). The same was observed with self-reported vegans (n = 10 answered not strict versus n = 4 answered strict), as well as ovo-vegetarians (n = 4 answered not strict versus n =1 answered strict). In total, a higher number of participants reported their diet as not strict (n = 69), than those that reported their diet as strict (n = 32). In other words, it was not only respondents who self-reported as flexitarians that described their SDCs as non-strict; a majority of self-identifying vegetarians, vegans, and ovo-vegetarians also described their SDCs as non-strict.

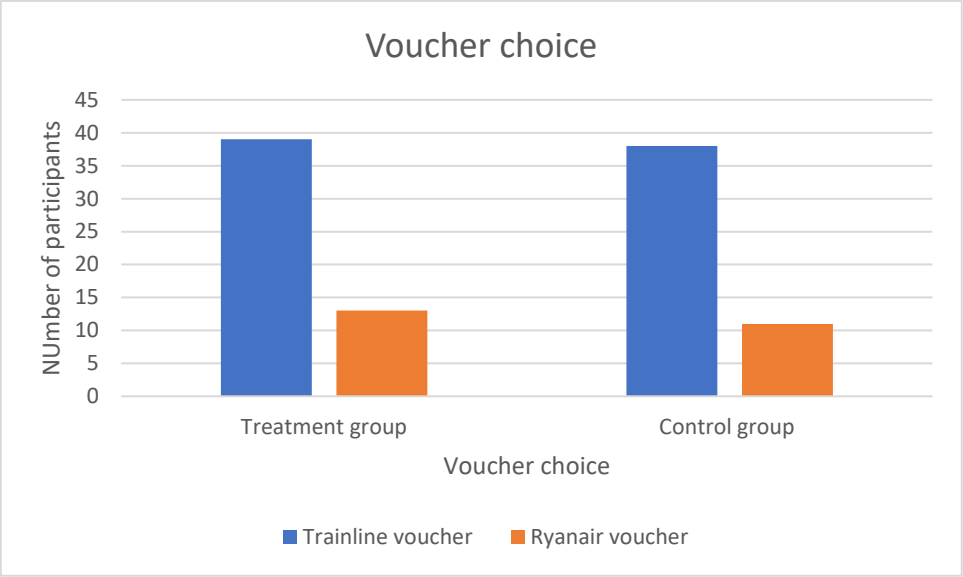

Figure 5. Treatment and control group's voucher choices. Authors' own.

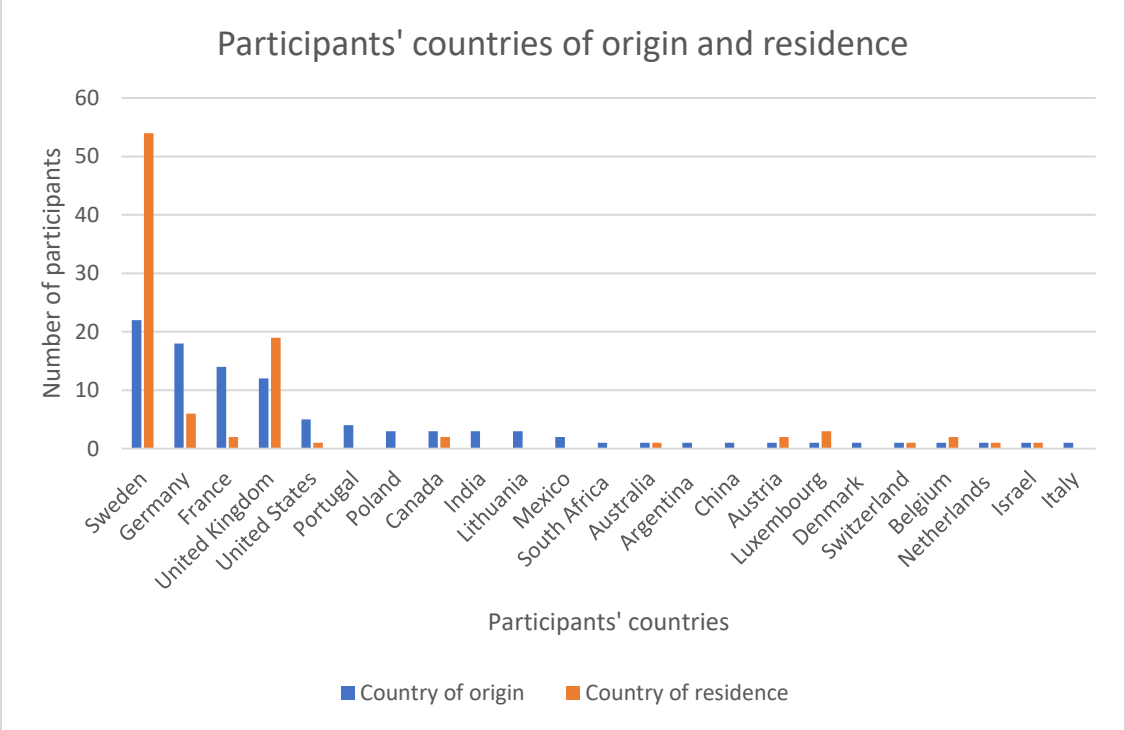

Figure 6. Countries of residence and origin of Part A's participants. Authors' own.

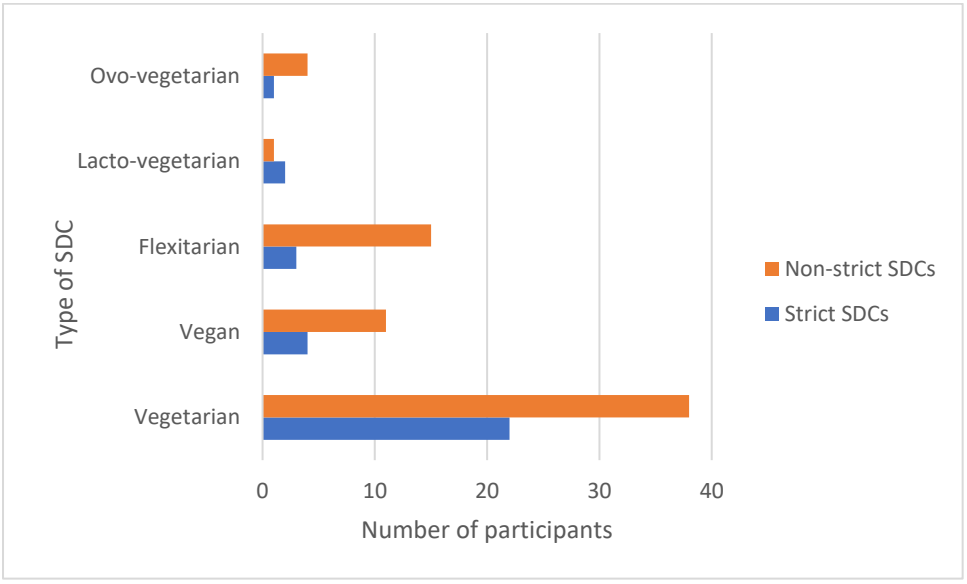

Figure 7. Infographic of Part A's participants' self-reported type of SDCs, combined with whether these SDCs are strict or not. Authors' own.

It is also worth noting the high number of screened-out candidates that did not meet the inclusion and exclusion criteria to be participants for this quasi-experiment. Seven respondents were screened out for selecting that they primarily consumed animal flesh and/or products. Eleven respondents were screened out for reporting that their SDCs made up less than 50% of their diet. Sixty-five respondents were screened out for reporting that sustainability was not one of their primary reasons for their dietary choices. A high number of screened-out respondents selected animal rights and ethics instead as their primary reason for their dietary choices (n = 53). In addition, a number of screened-out respondents selected health as their primary reason

for dietary choices (n = 12). These two groups were made up of self-reported vegetarians and vegans to almost an equal amount.

As discussed in section 3.2.1.3, an important change was made in the exclusion and inclusion screening criteria throughout the quasi-experiment's roll-out. During the survey administration's first wave, the exclusion criterion stated that candidates' main motivation behind their dietary choices could *only* be sustainability. During the survey administration's second wave and based on candidates' feedback that various motivations could be equally as important, this was changed to an inclusion criterion that *one* of the candidates' main motivations behind their dietary choices had to be sustainability, alongside other potential main motivations. The potential consequences of this methodological change are discussed in Chapter 4.

The findings from sections 4.1.1 and 4.1.2 can be found in the Annex. The treatment variable was coded as the variable Moral_Licensing. The treatment group represents the group that has undergone the moral licensing primer ("Moral_Licensing – Yes"); the control group represents the group that has not undergone the moral licensing primer ("Moral_Licensing – No").

4.1.2 Statistical Tests

As expected from the descriptive statistics, no statistically significant difference was found between the treatment group and the control group's behaviour when it came to voucher selection (p = .763).

With regards to confounding variables, age was first analysed. The Student's t-test showed no statistically significant difference between the treatment and the control group (p = .174). Following this, the logistic regression showed a non-statistically significant relationship between voucher selection and participants' age *and* group belonging (treatment or control) (p = .515). By testing the scenario where the treatment and control group would have been the same age through a logistic regression, a jump in p was found from .702 to .515. Lastly, grouping participants by age category for the Mann-Whitney U test showed no statistically significant difference between the two groups (p = .98). Gender was analysed second, with statistically significant effect found for it as a confounding variable (p = .382). Thirdly, no statistically significant effect was found for occupation as a confounding variable (p = .694). Fourthly, no statistically significant effect was found for country of origin as a confounding variable (p = .613), nor for country of residence (p = .692).

4.2 Part B: Semi-structured interviews

4.2.1 Moral licensing: General experiences

After being explained what the moral licensing effect was, three out of the five interview participants recognised some patterns in their own behaviour, albeit in varying consumption areas. All three recognised a level of in-domain moral licensing. Participant 2 identified their diet as mostly vegan, but "will cave […] and eat chocolate and ice cream and some other non-vegan things sometimes." They would justify these exceptions by telling themselves "I barely do it. […] A little bit is so much better than eating non-vegan all the time. So, I tell myself I've kind of done my part: it's okay to do it a little." Participant 3 and 5 identified their diet as being mostly vegetarian, but using these efforts as a license to themselves whenever they made exceptions. "I think I feel less bad eating the little meat that I do because for the most part, I don't eat meat." (Participant 5). Participant 3 also identified using their diet to license foregoing other sustainability aspects, such as food provenance: "Sometimes I found myself buying stuff that maybe wasn't seasonal, or not coming directly from the country I live in and telling myself oh it's fine because I've made an effort in other areas."

Differences in consumption areas come through with cross-domain moral licensing. Participant 2 noted that they use their diet to license water consumption use: "[My child] takes really long showers and I'm like, well, we live in this really small house. And I make efforts with other things." Participant 3 recognised "I've always read that streaming is not good for the environment. I've actually never dug any deeper. […] I've almost decided to turn a blind eye to it. I feel like there are so many areas of my life where I feel I make efforts, so for this one, I stop at the headlines." Participant 5 explained that they used their diet to license their high usage of the plane and the car: "My transportation footprint is high, but my consumption footprint is really low. I don't really buy clothing, I wear the same things, and I don't really eat that much meat and I try to make my diet sustainable, I think. So, I think that's where moral licensing is the most obvious in my life." For cross-moral licensing, it is interesting to note that all three participants identified their SDCs alongside *other* of their sustainability efforts as a way of licensing unsustainable consumption habits. For example, using public transport (Participant 2), or buying second-hand clothes (Participant 3 and 5) were some of the sustainable consumption habits recognised as used alongside SDCs to moral license less sustainable behaviours. In other words, all three participants appeared to view their sustainable habits as a sort of *package* of efforts and did not compartmentalise them when licensing their unsustainable behaviours.

On the other hand, two out of the five interview participants observed no instances of moral licensing in their own behaviour (Participant 1: "So, I will not be calculating how much emissions I save by having a vegan diet and then comparing how much emissions I make by flying once. I don't think in that way."). That being said, they did recognise *inconsistencies* in different areas of consumption in their lives, with some being less sustainable than others. Participant 1 observed for example that "I used to care a lot about avoiding plastic packaging in the things I buy, and now I don't care about it that much." Participant 4 noted that they would oftentimes shop on e-retailing platforms such as Amazon, despite being aware of their environmental footprint. Neither participant explained these inconsistencies in their consumption behaviour through moral licensing, though. Rather, they mentioned the importance of awareness fatigue, as well as the lack of available alternatives. Both of these themes are explored in section 4.2.3.

Lastly, most participants were more prudent in discussing moral licensing in *other* individuals, finding it easier to describe their own behaviours. This sentence by Participant 3 perhaps best captures the common sentiment: "I'm not in people's heads. So, I don't really know what motivations they have". Nonetheless, three out of the five participants pointed out instances of moral licensing they had observed in others. "Someone told me that they chose to eat meat on their birthday, to reward themselves for not eating meat the whole year." (Participant 1). Not related to SDCs, but rather to transportation: "I've got friends who fly. When I ask them why they do it, they say -oh, but I haven't flown in two years. So, I think people give themselves reasons." (Participant 4).

4.2.2 Positive behavioural spillover effect: General experiences

Whilst observations of moral licensing varied across interview participants, reports of the positive behavioural spillover effect were strikingly consistent. All participants described the positive behavioural spillover effect as having an important, if not dominant, role in their consumption patterns. All described their need for consistency across sustainable consumption areas: "I think in myself, I want to do good things in all aspects possible." (Participant 1). "In my case, it's an effort in all the different areas of my life, to become more sustainable." (Participant 3). "I've always questioned all aspects of my lifestyle." (Participant 4). It was apparent that, in all the participants' narratives, the initial decision to undertake SDCs had been part of a broader journey towards a more sustainable consumption lifestyle- or, in some cases, the very starting point. "When I had the realisation and raised awareness about my diet, I think

it raised awareness about my other consumptions. And so, for instance, I decreased my meat consumption at the same time as I decreased taking the plane." (Participant 3). "I started the vegan diet because I wanted to be healthier, but then I learned about the environmental impact and all the animal suffering and stuff. That made me more conscious about consuming animal products in clothing and other things, and that made me care about the environment more, and I tried to reduce my waste, and finally I got into studying the environment." (Participant 1). Motivations behinds SDCs other than sustainability became apparent in a number of participants- this theme is explored in section 4.2.5.

In addition, the three participants who had simultaneously recognised patterns of moral licensing as well as positive behavioural spillover in their consumption behaviour were asked to describe how they thought the two could co-exist. Both Participant 2 and 3 identified a clear dominance in the positive behavioural spillover effect, with certain 'cheats' in moral licensing: "I think they work together. […]. There's like a general curve upwards, but you dip along the way. I guess this moral license serves to cheat sometimes on my sustainable lifestyle." (Participant 2). "I think for me it's more of a good cycle, so [the two effects] complement each other. So I think, oh, this is bad, this is bad, this is bad, and you try to decrease [your unsustainable habits]. But on some occasions, I do indulge in moral licensing.". Participant 4 was a little more nuanced, using the term "bargaining": "I think there is a constant balance [between the two], and it's a little bit of both."

Finally, a theme arose for two out of the five interview participants, who highlighted a 'social' positive behavioural spillover effect related to their SDCs. In other words, they noted how their reduction in animal product consumption had encouraged those around them to do the same. "I see that my parents will eat a vegetarian meal more often than they used to, or my girlfriend. Because they see me doing it." (Participant 5). "Through my changing diet […], actually my mum started changing her diet a bit, being aware of, like, it's good to eat less meat and those sorts of things." (Participant 3).

4.2.3 Consumption patterns

As described in section 4.2.1, all participants pointed to *some* or *various* areas in their consumption habits which they identified as less sustainable than the rest -whether they attributed this to moral licensing or not. When looking into these less sustainable areas (and excluding in-domain moral licensing from SDCs), these all varied from participant to participant. Participant 1 highlighted their propensity to use unsustainable packaging; Participant 2 described unsustainable water consumption behaviours; Participant 3 mentioned using e-commerce platforms such as Amazon; Participant 4 recalled their important internet streaming consumption; and Participant 5 discussed their high transportation footprint. In other words, no recognisable unsustainable consumption patterns were found.

Inquiring on the reasons behind these unsustainable consumption patterns highlighted multiple themes. Perhaps unsurprisingly, comfort and pleasure, and their trade-off with sustainability, was highlighted by the three participants who self-reported moral licensing. When asked why they engaged in unsustainable behaviour, Participant 2 responded: "I really like chocolate. And eating ice cream from time to time. There are some things where it's hard to give up. And [my child] genuinely enjoys long showers. So yeah, I think there's nothing beyond kind of a selfish desire to have these things. Like feel-good stuff". Participant 5 explained: "And that's where the bargaining really comes in with the moral licensing, I think, where you're like, okay, well, look, I really love salmon, but I haven't had salmon in months." When discussing transportation consumption choices, he also laid out: "Well, this summer, we're going to Rome together with my brother. And we're going to fly because we don't have that much time. And it's so much more convenient."

Interestingly, at least three participants alluded to a hierarchy of their own consumption, differentiating between consumption choices stemming from only pleasure or comfort and those stemming from what they defined as pure necessity. This arose when discussing transportation consumption choices 'in real life'. Participant 3 felt strongly about never choosing to take the plane over the train for their own pleasure and comfort. But they highlighted: "So there are scenarios where I could consider taking the plane, maybe if I was offered a really good job on the other side of the world or something like that." Participant 1, who did not identify moral licensing in their behaviour (and who originated from China) explained: "But also there are some priorities: if I have to fly to visit my family, to go home, that kind of thing, I would choose not to feel bad or question this." Participant 2 (who originated from Canada): "I don't think it represents the norm because I don't fly, but if I got the real chance to get a big discount to go see my family [by plane travel to Canada], I think it's an anomaly for me to choose that mode of transport, but I would do it."
It seemed that in certain situations of *perceived necessity*, a given consumption choice suddenly became acceptable to participants.

The theme of lacking alternatives to unsustainable options was also pointed out by almost all participants. "But within the sort of realm of activities [of internet streaming], I don't really know an alternative. Whereas I found the train to be generally in my daily life a useful alternative to the plane. But this hasn't been the case with streaming." (Participant 3). "If I want to buy a screwdriver, you can't find one anywhere here in my village. So, I would have to travel 60 miles in my van and back to go buy a screwdriver, park my car, and so on. Or I can order it on Amazon. So, there's no realistic alternative to Amazon." (Participant 4).

All in all, different areas of consumption seemed to tie into differing levels of comfort, pleasure, necessity, and availability. This, logically, also meant that the effort of *giving up* an unsustainable consumption habit represented a different cost from one participant to the next. This type of cost – a function of reducing comfort, pleasure, necessity, and available choice- is defined as an *inconvenience cost* by this thesis. Inconvenience costs are further explored in section 4.2.5.

Finally, the theme of fatigue was also highlighted by a majority participants, who described the difficulties in approaching sustainable consumption as a whole- i.e., paying attention to all the areas of their lifestyle. Participant 1 noted this to be the main reason for the inconsistencies in the sustainability of their lifestyle. "I think for myself, I definitely feel that I used to care a lot about plastic packaging of the things I buy, and now I think I don't care about it that much. […] I'm tired of thinking about it all the time. And there's like very little that I can do, it's a lot of effort, and I don't have the energy to deal with it. It's kind of like fatigue, to almost care about everything." Participant 3 corroborated this feeling: "There are so many areas of my life where I feel I make efforts, sometimes I get this feeling that, okay, but what can we actually do? Is there anything we can do that is not unsustainable?"

4.2.4 Costs of SDCs

As highlighted in section 4.2.3, it became apparent that the various interview respondents attached different inconvenience costs to different consumption areas, based on varying levels of comfort, pleasure, necessity and availability. This, logically, applied to how respondents perceived SDCs costs, as well as transportation costs. Respondent 3 and 5, both vegetarians, attached a higher cost than others to the habit of giving up animal flesh: "I would for sure still eat beef if it was compatible with the environment." (Respondent 3); "[…] I really love salmon, but I haven't had salmon in months. That's a sacrifice." (Respondent 5). This contrasted with Respondent 4, for example: "But yeah, definitely not a very big deal. It's not a being deal becoming a vegetarian or being vegetarian". Crucially, all three participants who self-reported moral licensing through their SDCs (Participants 2,3, and 5) also described the pleasure tied to

them consuming either animal flesh or animal products. This, logically, appeared to create a higher cost in undertaking SDCs for Participants 2, 3, and 5, than for Participants 1 and 4, who did not discuss such themes of pleasure related to animal flesh or products.

Related to the inconvenience costs of sustainable transportation, here represented by preferring train travel to plane travel, the theme of pleasure was not discussed by any participants, but rather the themes of necessity and available alternatives. Respondent 5, for example, explained: "I think I fly a lot more than the average person, especially now because I'm here [in Sweden] and I go home [to the US] a lot." Respondent 1 and 2, whose country of origin was also on a different continent, noted that they choose to sometimes fly home for convenience purposes. This highly contrasts to Respondent 3, for example, who compared their inconvenience cost for giving up internet streaming with that of giving up plane travel: "It's just I can perfectly conceive of a world in which I wouldn't ever take the plane again. Whereas I think it's much more difficult to think of a world in which, for instance, I wouldn't stream football games. I think it's a lot more important as well to my well-being and those sorts of things."

In addition to inconvenience costs, two participants touched upon the topic of the financial costs related to SDCs, showing a mixed picture. Both highlighted that SDCs could in fact be cheaper than traditional dietary choices, but that this depended on whether meat alternatives were being purchased. "It can be [more expensive], but it can also be cheaper. When I had more money, we would eat more meat alternatives and the more expensive things. Now that I'm more financially struggling, it's a lot more vegetables, potatoes." (Respondent 2). "Though I'm not saying being a vegetarian is more expensive. On the contrary, it's not. […] Because sometimes we believe that you've got to replace meat sausages with […] fake sausages or fake bacon and all of that. But if you don't use all of those, which are made with condensed peas, then it's less expensive." (Respondent 5). Respondent 2 was the only respondent to also highlight how the financial costs of a vegan diet could play a role in their moral licensing. "Vegan chocolate is so expensive, and vegan alternatives [to sweet treats] are sometimes expensive, so it was more of a financial choice. I don't know if it was also subconsciously justified, like, oh, I pay so much for this, so now I should be able to spend a little less."

Finally, the theme of social or cultural costs of SDCs also surged amongst certain respondents- in particular Respondent 3 and 5. "I think it's one of these things where you can't completely strip people out of their context and the sort of social environment they grew up in and are embedded in." (Respondent 3). "I definitely eat meat a lot more when I'm in the United States because my parents will have me over for dinner and they'll cook, and I don't want to be like, please cook this alternative thing too." (Respondent 5). Respondent 4 corroborated: "Food is very special. Very important. And I can see it with my friends or their children when they come [to my home]."

The different types of costs associated to both SDCs and transportation can be schematised to reveal an argument already advanced by Truelove et al. (2014)'s framework- as is done in Figure 8. Participant 1 and 4, who associated low costs to both SDCs and transportation, reported as not engaging in moral licensing in any way. Participant 2 and 3, who reported some costs related to SDCs (respectively *Mid* and *High*) highlighted *some* propensity to use their SDCs to moral license, but *not* to justify their transportation behaviour (but rather other consumption choices). Finally, Participant 5, who identified both their SDC *and* their transportation costs as being high, was the only participant who recognised using their SDCs as a moral license *specifically* for their unsustainable transportation behaviour. In other words, only the combination of both high costs for both SDCs and transportation led to a report of using the latter to justify the former through moral licensing.

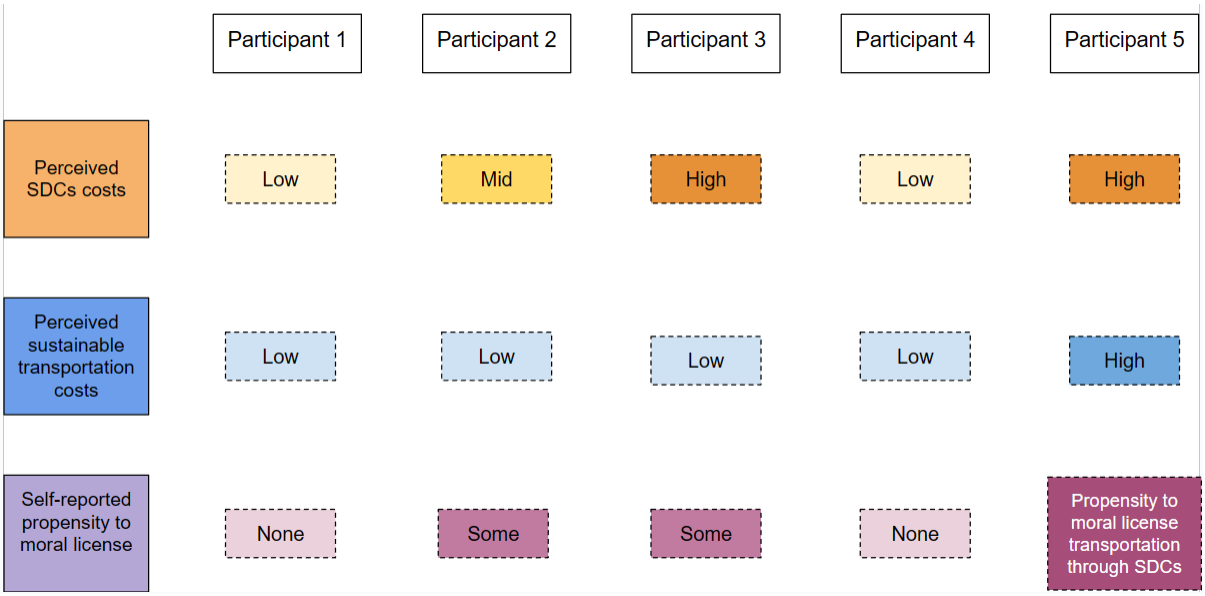

Figure 8. Diagram of Participants' perceived costs for both SDCs and transportation, as well as their self-reported propensity to moral license. Authors' own.

Participant 5's role as the 'ideal candidate' for this quasi-experiment is further explored in 4.2.6.3.

4.2.5 Nature of SDCs

Respondents were also asked whether they defined vegetarianism or veganism as a strict concept, or whether making exceptions to one's diet meant they could not define themselves as such, in their view. All participants reported that vegetarianism and veganism *ought not* to be a strict concept, and almost all noted that they were not entirely strict with their own diets. For some, this tied back to the notion of available alternatives: "For example, when I'm traveling and I can't find any vegan options, […] I will not refuse to eat the food." (Respondent 1). Respondent 2 pointed out that, although they considered themselves a vegan who sometimes made exceptions, social expectations had made them shift their identification. "No, I don't care about labels that much. […] Even though I consider myself a vegan because most of the time my dietary choices are vegan, I know some vegans get really offended is someone says they're vegan and they're not [all of the time]."

Lastly, Respondent 3 and 5, who had identified a high inconvenience and social cost to SDCs, alluded to *not* having a strict diet as a tactic in their sustainable lifestyle. Both explained that striving for complete consistency in their SDCs could lead to the reverse effect. "I did try to completely cut out [meat], so I went like one month without eating it. And then at the end of it, I relapsed, I thought, this is not worth it. And then, I had a few weeks of not caring at all about my diet until I came back to reducing it. So, I think for me it's like a balance." (Respondent 3). "I think it had something to do with if I was strictly vegetarian, I would feel more [of the moral licensing effect] than I do currently. The incremental step of the actual diet change versus the step of how I feel about the sacrifice is kind of exponential." (Respondent 5).

When asked about the reasons behind their SDCs, respondents provided an array of responses. Only Respondent 3 identified sustainability as the *only* key reason for cutting out animal flesh in their diet ("So for me it's definitely the environment. It takes precedence over any other motivation.") All others highlighted animal welfare in particular, as well as concerns over their health. Some (such as Respondent 2) explained that their primary reason had shifted over time from health and animal welfare to become sustainability. Others described that all these three

reasons "go hand in hand" (Respondent 1) and choosing just one is not feasible. Respondent 1 even described that the reasons they would pick as the main motivator behind their veganism would depend on their social environment. "It also depends on who I'm talking to and which geographical region; and then with which motivation I can resonate with them the most."

Furthermore, various respondents described the practical challenges of finding foodstuff which addressed their various motivations, often leading to trade-offs. "I think there's no option that can fulfil all the benefits I want." (Respondent 1). "Almond milk is terrible for the environment, but it's a vegan alternative. So, in those sorts of situations, I have to re-learn and re-adjust to make sure it's sustainable even though it's vegan." (Respondent 2).

Importantly, four out of the five interview respondents described the motivations behind their SDCs through a timeline narrative where their shift in dietary habits had gone hand-in-hand, either progressively or simultaneously, with a broader shift in their approach to consumption and their efforts towards sustainability. "I started with the health benefits [of veganism]. But then I learned a lot about the environmental impact and all the animal suffering and stuff. Then it made me more conscious about consuming animal products like clothing or other things, and then it made me care about the environment more, and I tried to reduce my waste, and finally I got into studying the environment." (Participant 1). As evoked in section 4.2.2, this ties into the role that SDCs have played for respondents in their broader positive behaviour spillover effect related to sustainable consumption. But it also puts sustainable consumption habits within a time perspective with a high turning point, where sustainable habits are first being adopted-followed by a phase where the novelty of these habits wears out. This is something that will be explored in the next section.

4.2.6 Methodological considerations

4.2.6.1 Task 1

There was consensus amongst interview respondents around the general experience of Part A's quasi-experiment: all had relatively positive feedback, finding it "easy to do" (Respondent 3), "interesting" (Respondent 2), and "straightforward" (Respondent 5). Related to Task 1 specifically, most respondents concurred that its design fulfilled its function as a moral licensing primer, giving them a 'feel-good' effect about their dietary choices, thus partly reinforcing the instrument's reliability. Testimonies in particular related to Khan and Dhar (2006)'s goal attainment theory, explaining that being reminded of the sustainability goals tied to their SDCs motivated them to do good. Respondent 4 highlighted: "Yeah, I mean, deforestation and intensive land use is huge. I mean, that is my justification [for SDCs]. And so, to see it spelled out like that was super, I think. Yeah, it reaffirmed why I'm doing what I'm doing." Going a step further, Respondent 3 described how such a feel-good feeling could balance out the fatigue described in section 4.2.3: "I think the main thing that I feel in these sustainable life choices sometimes is discouragement, in terms of like this doesn't matter […] I'm just so small. […] But I think [Task 1] is a reminder that actually, yes, it does matter to eat less meat. I think it actually provided the sort of boost to be like okay, yeah, then it's good to do these things."

When asked to recall a 'feel-good' feeling they had felt recently related to their SDCs, two themes emerged from participants' responses. The first related to the sense of community, or social environment. All respondents mentioned the role of individuals around them in making them feel good about the sustainability benefits of their SDCs, albeit in different ways. Respondent 1 and 4 explained the importance of sharing an experience with individuals having, or inclined to having, similar values to theirs. "I think I feel good when I get to know another person who is also a vegetarian or vegan and […] we can share meals. If we both care about the environment, then I feel more connected and then I feel better. But if I know that the other

person doesn't care about the environment, although they are vegetarian or vegan, I feel less connected with them." (Respondent 1). Respondent 4 also tied in their personal context as a gardener, and how passing down that skill was tied to their feel-good effect: "Yes, growing [vegetarian food] myself and tasting it. Unbelievable. I'm a gardener and I grew up in the countryside. I set up a lot of community gardens- what I do is garden with people. We eat together, we find things to build together." By contrast, all the other participants mentioned the role of individuals not undertaking SDCs in making them feel good about their own consumption choices. Respondent 3 and 5 mentioned that interest and admiration from non-SDC undertakers positively influenced their own motivation. "I think it was just the reaction of people […] who didn't have that diet that was kind of really affirming because it made me feel like I was doing something uniquely good. Because their reactions weren't like, oh, that's stupid. They were like, wow, yeah, I wish I could do that." (Respondent 5). Respondent 2 rather reported a comparison pattern: "I think maybe when there's a choice, like I'm at a buffet and there are meat choices and if I'm standing in the vegetarian line, I'm like, this is good because I'm not contributing to what I can see over there and what I know is a huge impact on the planet." Paradoxically, the same respondent reported that being surrounded by SDCs undertakers could have the opposite impact on them, dampening the feel-good feeling- "Also, being surrounded by other people who are vegan or vegetarian, it almost seems like the norm now."

Secondly, many respondents highlighted a decrease in the 'feel-good' element of their SDCs over time. Respondents' narratives seemed to share a normalisation over time of SDCs as a daily consumption choice, and of the sustainability benefits attached to it. "I'm having this diet for this long and I've started to not acknowledge the benefits, although logically I know that there's a lot of benefits, but after this long time then I start not to care about it anymore. (Respondent 1). "I've been a vegan/vegetarian for, like, ten years, but I'm used to it by now that I don't really think it's a source of pride." (Respondent 2). "But over time you kind of like normalise this [diet] and you become, I guess, less sensitive to the benefits. There's less excitement about it and more of a sense of doing it out of habit, which as I said can be slightly discouraging." (Respondent 3). "I think, yeah; when I first started switching to this diet […] I definitely felt like a bit of a hero complex, a little bit like, wow, I'm doing really good stuff here. [But now], being a vegetarian is just kind of normal." (Respondent 5).

In addition, three out of the five interview respondents reported the knowledge they acquired from Task 1. "Most [of the facts stated in Task 1] I hadn't read, or I didn't know so it was quite interesting. So I'd describe it as educational." (Respondent 2).

4.2.6.2 Task 2

As corroborated by the pilot test participants, the cover story used in the quasi-experiment was found to be believable by all respondents. All assumed the choice between the Trainline and Ryanair voucher to be real and chose between the two accordingly, reinforcing the instrument's content validity. At the same time, some comments shed light on the limitations the instrument presented, especially in accurately capturing a choice between two consumption options- once less sustainable, and one more so.

Firstly, Respondent 1, whose country of origin is outside of Europe, noted that they did not know what Trainline was. This may have been an issue for other quasi-experiment participants whose countries of origin were outside of Europe.

Secondly, although all participants agreed that they viewed train travel as more sustainable than plane travel, Respondent 1 also highlighted that the real sustainable consumption choice to them was to not travel at all. "My initial thoughts were, like, I don't need any of [these things]. But I

had to choose between the two options. So, then I realised, okay, I can't not choose, so I will choose the more environmentally friendly option, although I probably will not need any of these." This testimony points to the fact that respondents should have had, potentially, the choice to not choose- and this perhaps would have been the real sustainable choice, within the context of measuring consumer behaviour in an experiment.

The use of Ryanair as an airline also impacted some respondents' views of the consumption choice presented in Task 2. Respondent 2 explained: "One thing that did come up […] is that I'm not a fan of Ryanair as a company." Respondent 3 corroborated this: "For me, Ryanair is this sort of unbearably cheap airline that shouldn't be that cheap, that takes you on distances that you could easily do by train. So, I guess I associate Ryanair with over-consumerism in general as well." Choosing a different airline as part of the instrument could have impacted participants' behaviour- for example, Respondent 2 described: "I wonder if […] people's opinions and experiences towards Ryanair and Trainline might influence their reactions. Like if it was a voucher for Canada Air, […] I think I would have picked that one."

4.2.6.3 Task 1 and Task 2 as a sequential behaviour paradigm

Considering the high variability of costs associated with SDCs, Respondent 5 was identified as being the best candidate for capturing the moral licensing effect induced by SDCs through a quasi-experiment such as Part A. Indeed, Respondent 5 associated a high cost to both SDCs *and* transportation- unlike other respondents. This was confirmed by the respondent himself: "I think definitely, like I said, my consumption and diet choices help me justify maybe some of the unsustainable transport behaviour that I have." It was therefore particularly insightful to hear about the respondent's experience of Task 2, and notably his experience of the Hawthorne effect. "I think I tried to avoid the bias, but I definitely think I felt myself wanting to answer the questions in a way that would be impressive, not to you specifically, but to just kind of show, like, the best of myself the whole way through. […] I think in the end, I did choose the honest answer because I want the survey to be accurate, I guess. But I definitely struggled with the questions. Like, there was a part of me that was like, I should answer these in a way that makes me look sustainable." Respondent 5 recognised as such his conscious effort to overcome the Hawthorne effect- highlighting the possible limitations of Task 2's instrument, where other participants who were also 'prime candidates' (with a high cost associated to both SDCs and transportation) may have also been subject to the effect. Respondent 5 also recognised the pressure of being part of a community of students studying sustainability. "[…] Especially, because you guys are my peers. And not that we hold each other accountable, but we all know the most sustainable answer, I guess. So yeah; in a way there's social pressure as well".

Even more importantly, Respondent 5 suggested that the feel-good effect of Task 1, instead of acting as a moral licensing primer, gave him a slight inkling to act more consistently- although he ultimately chose the Ryanair option. "To sum it up, I think [if I had been part of the control group] I might not have had the nice sustainability benefits I contribute towards at the forefront of my brain as I did [being part of the treatment group]. -So, to clarify, Task 1 made you feel good, but that encouraged you to want to behave consistently? I know in the end you said you picked the choice that was the truest to your real behaviour. But did Task 1 push you to want to appear more consistent? -Yes, exactly. And so, it's hard to say, but I think without the primer [when encountering Task 2] I would have picked the plane option even quicker."

This feel-good feeling induced by Task 1 encouraging towards consistency rather than moral licensing behaviour was also corroborated by Participant 3. "-Actually, I think reminding me [of the sustainability benefits of SDCs], I recall it definitely had the effect of making me want to be consistent, like it just wouldn't make sense to then choose to fly, basically. -So, it really sounds like instead of triggering any kind of moral licensing effect in you, if anything this task triggered

more of a positive behavioural spillover effect in you. -Yeah, for sure." In other words- two out of the three interview participants who self-reported as moral licensing through their SDCs, felt, to varying degrees of intensity, encouraged towards moral consistency *rather* than moral balancing when exposed to a feel-good feeling in a sequential behaviour paradigm. This observation points the potential l limitations of sequential behaviour paradigms as a method to capture 'real life' moral licensing consumption behaviour. As the findings show, there may not be a translation from 'real life' moral licensing consumption behaviour to this type of experiment design. All in all, it appears that the feel-good feeling associated with a moral licensing primer *may* also exist in other circumstances- such as with positive behavioural spillover effects. This is further discussed in Chapter 5.

Respondents were also interviewed on potential alternatives to the methodological design used in Part A. Firstly, they were explained the experiment design used by Carrico et al. (2018), whereby participants in the treatment group did not undertake SDCs in 'real life', but instead were asked to forego animal flesh for a few weeks- as part of the experiment. Most respondents converged in saying that such a design would likely not capture the underlying psychological state of a 'real life' SDC undertaker- two themes emerged as to why. Many respondents related to the time element of the feel-good effect described in section 4.2.6.1. Respondents hypothesised that individuals undertaking SDCs for the 'first time' may experience a higher moral licensing priming effect. "I think there is a difference. For example, my brother who eats meat pretty much daily, it would be big deal and a sudden change to his habits, and it would feel like a big sacrifice [to be part of this experiment]. And I think, yeah, when I first started sort of switching to this diet, I definitely felt like a little bit of a hero complex or a little bit of like, wow, I'm really doing good stuff here. And I think that feeling is the primer, it's the moral licensing primer. And so, the intensity of that feeling would amplify the moral licensing effect. So, a first-time vegetarian being kind of asked to do this might have a higher moral licensing justification." (Respondent 5). Furthermore, almost all participants agreed that the experiment would be tied to a higher inconvenience cost, given that it would be *forced upon* participants. "If someone naturally chooses to be vegan or vegetarian it's probably over a process, they've probably learned about it, and they're convinced. But if someone's being forced to do it for an experiment, I mean freely, but they're still being made to do it, I think it would change things completely. […] I think you would probably get a higher moral licensing effect because they feel like they're putting in a bigger effort rather than someone who's chosen to do it naturally." (Respondent 2). This appears to substantiate one of the factors Truelove et al. (2014) had identified as key to whether the moral licensing or the positive behavioural spillover effect is triggered- *causal attribution*. Indeed, the framework proposes that when an individual can attribute an initial PEB to an external cause, such as being coerced, forced, or paid to do perform it, this will reduce their intrinsic motivation. This appears to be in line with participants' intuition on how 'first-time SDCers' would perform under the experiment.

On whenever qualitative methods and in particular interviews were an adequate way of capturing moral licensing patterns, a majority of respondents felt that they added context which sequential behaviour paradigms did not. "I think it could be quite a good complement because for instance in this interview, reflecting on it and speaking about it made me think about certain inconsistencies, that I wouldn't have had if I had to give one general answer. […] There are definitely cases, like grey areas, where it's not clear-cut. So, I think interviews are probably good to make this complexity emerge, in a methodological way." (Respondent 3). Two respondents did caution about the weight of social expectations when doing one-on-one interviews, potentially driving respondents to be less honest. "I think in a survey, there is definitely less pressure to appear sustainable. I think that would be amplified by an interview. I think out of the two, a survey is the least kind of pressure because […] it's anonymous and also just because you're doing it on your own. I think if you conducted interviews for the same purpose, people

would be more inclined to inflate their sustainability image, especially if they are physically looking at you, you know because of social cues and everything." (Participant 5).

Finally, respondents were asked how they felt about a field experiment where they would be observed performing their daily consumption decisions, in an attempt to capture a potential moral licensing and/or positive behavioural spillover effect. Most felt that, under the right circumstances, this would be the most accurate way of understanding individuals' true behaviour. "I would say that the best way is observation and seeing what people would actually do in real life, because so many things influence those decisions. [For the experiment to be accurate], I think people shouldn't get to use their moral compass too much and just behave like they usually do." (Respondent 2). At the same time, respondents disagreed over whether the presence of a researcher would lead them to behave differently. "When you know that someone is following you, you will probably watch your behaviour more." (Respondent 1). "I think you might see an initial change in behaviour, but […] I think in the end people will just revert to their behaviour that they would typically do, because the initial excitement of being observed might wear off pretty quickly. So [I think] you almost need an observer for an extended amount of time, so they start blending in with the environment. Then it just becomes part of reality: it's like filming people with a camera. The first take, they are always really nervous; because they are aware of being observed. And then by the end of the tenth day, even if they've never been on camera before, they've sort of forgotten about being on camera." (Respondent 5).

5 Discussion

Following the findings presented in Chapter 4, this section discusses these in relation to the original hypothesis H1, and the original research questions RQ1 and RQ2. This chapter firstly investigates the extent to which this thesis' findings contribute to testing H1 and answering RQ1 and RQ2, and their contribution to the existing academic knowledge on this knowledge. Secondly, it reflects on the methodological and theoretical choices made by this thesis, and the consequences on the findings' validity and reliability.

5.1 Knowledge Contribution

5.1.1 Part A: Quasi-Experiment

Findings from Part A's quasi-experiment were *not* the results predicted from moral licensing effect theory. The theory, applied to SDCs and to sustainable consumption, predicted that priming individuals with a moral licensing effect related to the benefits of their SDCs would lead them to choose the lesser sustainable consumption choice between two options. Findings from Part A showed that individuals exposed to such a primer were *not* more likely to choose the lesser sustainable consumption choice, than their counterparts who had not been exposed to such a primer.

As such, no evidence was found corroborating hypothesis **H1** *A causal relationship can be identified between (i) priming an individual with a moral licensing effect related to their SDCs, and (ii) their subsequent decision, when given two consumption choices, to select the less sustainable one.*

At the same time, no evidence was found for the *opposite* mechanism of the positive behavioural spillover effect. This thesis explicitly chose to only test for the moral licensing effect and not for the positive behavioural spillover effect, as outlined in section 1.3. Nonetheless, it could be hypothesised that individuals that had been primed with a moral licensing effect related to their SDCs would have been more likely to choose the more sustainable consumption choice subsequently, as proposed by positive behavioural spillover effect theory. But no such evidence was found, with the number of individuals choosing Trainline and Ryanair being virtually the same in Part A's treatment and control group.

This finding is in contrast with a relatively small body of literature showing the existence of a moral licensing effect in sustainable consumption specifically, as reviewed in Chapter 2 (e.g., Burger et al., 2022; Mazar & Zhong, 2010; Tiefenbeck et al., 2013). That being said, it is in line with Carrico et al. (2018)'s findings of *neither* a moral licensing *nor* a positive behavioural spillover effect when reducing participants' meat intake over the course of four weeks.

Though no confounding variable was identified as part of the quasi-experiment's results, the closest to having any statistical significance was *age*- with the Student's *t*-test showing a $p = .174$, the logistic regression showing a jump in p from .702 to .515, and the Mann Whitney U test showing a $p = .98$. This highlights a potential (but minimal) role that age could have played in the administration of the quasi-experiment, something that could be exacerbated by the dominating number of young higher education students in the experiment's sample. This is further discussed in section 5.2.

5.1.2 Part B: Semi-structured interviews

Part B of this thesis helped further explain Part A's results, as well as answer questions **RQ1** and **RQ2.**

Findings helped answer **RQ1**: *To what kind of individual consumption behaviour do SDCs lead to?*
as well as ***RQ1a****: Is this behaviour related to the moral licensing effect, to the behavioural spillover effect, or to both?*
and ***RQ1b***: *What kind of factors influence the individual consumption behaviours SDCs lead to?*
in the following ways.

Most importantly perhaps, consensus amongst participants showed a *higher* propensity *overall* towards the behavioural spillover effect than towards the moral licensing effect as related to SDCs. A majority of participants reported as engaging in the moral licensing effect as related to their SDCs, but *all* participants reported as engaging in the positive behavioural spillover effect. In addition, the three participants that did report engaging in moral licensing *all* emphasised the bigger role that the positive behavioural spillover effect played in their consumption behaviour instead. Just as crucially, these three participants explained that the two co-existed, with the moral licensing effect enabling some small 'cheats' in their broader attempt at living a consistently sustainable lifestyle. This seems to particularly resonate with cognitive dissonance theory, which argues that though individuals seek internal consistency *most* of the time, thus engaging in the positive behavioural spillover effect, inconsistencies do still naturally arise- leading individuals to engage in moral licensing to avoid cognitive dissonance (Festinger, 1957). Arguments strictly opposing the moral licensing and the positive behavioural spillover effects in a dichotomous manner seem at odd with Part B's findings.

With regards to the factors influencing the type of consumption behaviour SDCs lead to, Part B's findings highlight the highly subjective nature of consumption patterns and priorities- and as a corollary, costs. All participants pointed to different areas in their lives where they were not as sustainable as they would have liked, and this for various reasons- which had to do with their personal experiences of comfort, pleasure, necessity, and available alternatives. Through Figure 8, Part B's findings were schematised to reveal two things. Firstly, only participants who associated high costs to SDCs reported as engaging in moral licensing, and secondly, only Participant 5, who associated both high costs related to SDCs *and* sustainable transportation, reported engaging in moral licensing through their SDCs to justify their transportation behaviour. This, as discussed in section 4.2.4, strongly echoes Trulove et al.'s framework (2014) and its proposition that a second PEB representing a high cost to an individual increases their likelihood of engaging in moral licensing based on a first PEB. It also reinforces Truelove's criticism of 'PEB' as a vague term referring to an array of sustainability-oriented actions. In reality, these actions may differ importantly in terms of the costs they represent to individuals. This also ties into the observed 'implicit hierarchy of consumption' amongst various interview participants, where certain consumption choices based on pleasure or comfort were not deemed as acceptable, but the same choices based on perceived necessity justifiable. Differentiating necessity from comfort and pleasure may, again, be a highly subjective affair with inconsistent findings from individual to individual, and as such requires some thoughtful framing.

Interestingly, though, Part B's interviews go against the framework's prediction that a cross-domain moral licensing effect is overall more probable than an in-domain moral licensing effect. The reasoning by Truelove et al. was that individuals may find it easier to co-perform behaviours in similar categories, rather than in vastly different ones. Based on Participants 2, 3, and 5's testimonies, whilst cross-domain moral licensing was an occurrence for all, so was in-domain moral licensing.

Tied to consumption patterns, Part B's findings also emphasise the deeply social and cultural nature of food (perhaps unsurprisingly). From the social positive behavioural spillover effect, to the social costs of SDCs, to the importance of others' perceptions in experiencing the feel-good effect, this theme was prevalent throughout all interviews. This corroborates Truelove et al.'s proposition that rule-and-role based decisions- that is, decisions where the social role held by the decision-maker elicits a rule of conduct based on social expectations may encourage a positive behavioural spillover effect. This may be particularly relevant to SDCs and the cultural nature of food for the sample that was studied- compared to other PEBs, such as recycling.

Findings helped answer **RQ2:** *How can a possible moral licensing effect related to SDCs be measured from a research design standpoint?*

and ***RQ2a****: What is the reliability and validity of a sequential behaviour paradigm as a way of measuring a possible moral licensing effect related to SDCs?* in the following ways.

From the outset, Part B's findings shed a disappointing light on Part A's results. Indeed, a majority of participants (three out of five), all part of the treatment group, confirmed to engage in moral licensing through their SDCs. This was however not captured by the quasi-experiment, which found that treatment group participants were no more likely to engage in moral licensing when primed with a feel-good effect related to their SDCs. This poses questions as to the reliability and validity of a sequential behaviour paradigm as a methodological choice to measure a possible moral licensing effect related to SDCs.

Firstly, and related to the findings answering *RQ1b,* when designing an experiment following a sequential behaviour paradigm, it may be paramount to screen and measure candidates' consumption priorities. As was shown above in Chapter 4, assuming similar consumption priorities and thus similar costs amongst participants for a given PEB may be fallacious. As such, for a sequential behaviour paradigm to measure a moral licensing effect in the realm of SDCs with strong validity, having participants with similar cost perceptions may be paramount.

Secondly, as also described in the findings for *RQ1b*, the ideal candidate for Part A's quasi-experiment – Participant 5 – *still* alluded to a conscious effort in overcoming the Hawthorne effect when undertaking the quasi-experiment, pointing to the difficulties in measuring sustainable consumption without the weight of social expectations. Here, the social and cultural nature of food could add further weight to this issue.

Thirdly, Task 1's reliability was particularly put in question by interviewees' accounts of the feel-good effect. As discussed in section 4.2.5.1, most participants described a time element to the feel-good effect, with its dampening over time. This means that, unlike other areas of morality, measuring the moral licensing effect through a cross-sectional experiment may not be appropriate. Instead, longitudinal studies could be more reliable such cases.
In addition, discussions around the feel-good effect revealed mixed messages as to the role of social considerations- for some participants, being around like-minded individuals triggered the feel-good effect, whilst for others, the opposite was true. Logically, designing a reliable instrument to instigate the feel-good effect would require taking these differences into account. Lastly and perhaps most crucially, the same participants who reported as engaging in the moral licensing effect revealed how Task 1's feel-good effect rather pushed them to appear consistent than triggering a moral licensing effect. This apparent paradox points to how the feel-good effect may work in different ways- triggering the moral licensing effect under some conditions and the positive behavioural spillover effect in others. Understanding these mechanics may be key to Task 1's reliability.

Fourthly, participants' feedback also challenged the validity and reliability of Task 2. Here, the *comfort* and *necessity* which participants attached to choosing the train versus the plane varied importantly, emphasising once again the importance of screening candidates' consumption priorities. One way of addressing this limitation could have been, for example, to only select participants for Part A's quasi-experiment which all had the *same* country of origin and residence. Furthermore, ensuring participants all have similar perceptions of the proposed consumption options (to avoid, for example, inconsistent views of Ryanair as an airline) may also increase the reliability of a Task 2.

Lastly, Part B's findings emphasised the possible relevance of mixed methods when attempting to measure the moral licensing effect related to SDCs- and to sustainable consumption more generally. All participants agreed, to different levels, that a qualitative approach to the moral licensing effect and the positive behavioural spillover effect enabled to capture complexities which a sequential behaviour paradigm could not. Interview responses also accentuated the challenges in measuring such effects, given the social expectations around 'appearing sustainable'- such as the Hawthorne effect.

The research process and findings related to **H1**, **RQ1** and **RQ2** also revealed the methodological challenges in *defining* SDCs- both in terms of their strictness, and in terms of their separation from other motivations, such as health and animal ethics. Not only the survey administration but also Part B's findings showed that assuming for SDCs to be a strict vegetarian, vegan, lacto-vegetarian or ovo-vegetarian diet may be unsound. A strict segregation of sustainability motivations from other motivations may also not be possible; and tightly defining what SDCs are when measuring behaviours around it may be paramount to a strong methodology. This corroborates some of the previous literature suggesting that self-reported vegetarians still indulged in animal flesh from time to time (Haddad & Tanzman, 2003).

5.2 Reflections on limitations

5.2.1 Part A: Quasi-Experiment

This thesis' Part A bore some limitations related to validity and reliability that were highlighted in section 5.2. In particular, lack of evidence persists as to the reliability and validity of instruments used in sequential behaviour paradigm experiments in past literature. This, combined with the instruments for Part A's Task 1 and Task 2 being the author's own, meant ambiguity as to the reliability and validity of the quasi-experiment. In addition, the design of Task 1 and Task 2's instruments were done with nominal rather than ratio or ordinal scales, limiting statistical analysis.

Furthermore, the *N* of participants ($N = 101$), with the treatment group ($n = 52$) and the control group ($n = 49$) having a far inferior number to what the power analysis for sample size determination estimated (an *N* of 330 participants, with 165 in each group). Though the moral licensing effect, as estimated by Blanken et al., is relatively small (with a Cohen's *d* effect size of .031), these limitations naturally impact the ability for statistical generalisation of the results. It also limits understanding of other variables' potential influence on findings. For example, statistical testing highlighted a potential slight effect from age as a confounding variable. A higher *N* could have brought more clarity to these potential results. Understanding the influence that other variables and noise could have on the quasi-experiment was particularly crucial, given its survey format with limited control over the conditions in which participants took part in the quasi-experiment.

Additional confounding variables could have been taken into account- such as socioeconomic status, which from the outset could play an important role in individual consumption decisions.

Additionally, certain demographic questions, such as the occupational one, could have contained less categories, as to create bigger sample sizes. The limitations of viewing SDCs as a strict diet, and of assuming sustainability motivations can be separated from other motivations to forego animal flesh and/or products, has been discussed at length in section 5.1. Appropriate candidate screening for Part A could have refined questions related to SDCs and also increase participatory numbers. The limitations of screening candidates with the exclusion criteria of either their country of residence *and/or* their country of origin being in Europe was also discussed in section 5.1 and may also have impacted the validity of Part A's quasi-experiment. To ensure relatively similar costs related to the perceived necessity of flying across participants (as was learned in section 5.1), a population made up of individuals with the same country of origin and residence could have instead been targeted.

Lastly, the use of a convenience sample, where participants were selected based on convenience and availability, as opposed to a random sample, have key consequences for the generalisation of Part A's results. These may have been subject to nonsampling errors, or in other words a nonrepresentative sample may have been used as part of this study, meaning that members of the population were systematically excluded from participation (Beins & McCarthy, 2018).

5.2.2 Part B: Semi-structured interviews

Related to Part B, it is acknowledged that qualitative results cannot bear statistical significance and are thus not generalisable (Creswell, 2014). That being said, the aim of a mixed research design, as highlighted in section 3.1., was to bring further context to Part A's findings through RQ1 and RQ2. The low number of interview respondents ($N = 5$) also makes for an obvious limitation- saturation was not reached, and additional interviews could have brought light to more nuances in answering RQ1 and RQ2. In addition, the sample selected for interviews was relatively homogenous- with four out of five participants being currently in university education and under the age of 35. Furthermore, three of out of the five participants were part of the same Master's programme in Environmental Management and Policy as the author, creating further limitations in the 'researchers' own backyard' (Creswell, 2014). These respondents may also have had a particularly high knowledge and willingness to engage on sustainability issues, as well as the willingness to understand and discuss their own behaviour and biases.

Furthermore, the limitations of self-reported data, especially for a behavioural process that has been theorised to be unconscious, has been highlighted in section 2.3.2 of this thesis. Triangulating through a mixed method design, to include different types data, may be promising in cancelling out some of their respective weaknesses (Creswell, 2014).

Lastly, it was a purposeful design choice to thoroughly explain to interview respondents the methodological choices made in Part A's quasi-experiment; including the moral licensing and positive behavioural spillover effect theory, the use of a cover story, and the design of Task 1 and 2 (as shown in the Annex). This was done with the intention of having informed feedback from Part B's respondents on their experience of Part A's quasi-experiment. That being said, exposing respondents to the theoretical basis for the moral licensing effect as well as to past research evidence could have influenced their willingness to identify the moral licensing effect in their own consumption choices. In other words, had the interview protocol not included the explanation mentioned above, respondents might have had different responses when discussing their own consumption behaviour. This was highlighted by Respondent 2: "I mean, if it's been proven in other areas, then the experiment might have worked, right?" as well as Respondent 3: "-Do you think it actually made a difference that I explained to you the moral licensing effect and the purpose of this research beforehand? -Yeah, I think it definitely helped set the context. And as I said, without this context I probably wouldn't have thought of different possible complexities and nuances there is to it."

6 Conclusion

This thesis' aim was defined as *contributing new knowledge to the possible existence of a moral licensing effect in individuals undertaking SDCs, as well as the factors influencing this possible moral licensing effect.* This thesis' research, divided in two parts through a mixed method approach, revealed through testing H1 and answering RQ1 and RQ2 some mixed results. Firstly, no evidence was found corroborating H1. Virtually no difference was found in terms of how the treatment and the control group behaved- within the treatment group, an *n* of 13 chose the plane voucher, whilst within the control group, an *n* of 11 chose the plane voucher, bearing no statistical significance (p = .763). No confounding variable was identified, with age being the closest to having a statistical significance (p = .174). Part B, on the other hand, suggested the prevalence of the positive behavioural spillover effect, and its co-existence with the moral licensing effect in many cases (three out of five participants). The three participants that did report engaging in moral licensing *all* emphasised the bigger role that the positive behavioural spillover effect played in their consumption behaviour instead. They explained that the two co-existed, with the moral licensing effect enabling some small 'cheats' in their broader attempt at living a consistently sustainable lifestyle. Furthermore, Part B highlighted the many limitations research should be cognisant of when importing the sequential behaviour paradigm design to sustainable consumption questions. Firstly, how consumption priorities are determined and screened for in participants, and subsequently how subjective costs tied to sustainable consumption are taken into account. Secondly and more specifically, how SDCs are defined by participants.

6.1 Practical implications and recommendations for non-academic audiences

As highlighted in Chapter 2, the efforts to reflect rebound effects in policies targeting sustainable consumption have been shy so far, limited in particular to rebound effects in the energy-saving space, where most evidence has accumulated (Vivanco et al., 2016). This thesis points to the need for further research in the area of rebound effects and mechanisms related to SDCs.

Related to SDCs specifically, four practical implications and recommendations can be drawn. Firstly, that the 'feel-good' effect from eating sustainably may be instigated in different ways, and that it may lead to either the moral licensing or the positive behavioural spillover effect depending on the individual and on the circumstances. This may be particularly key to keep in mind when designing informative policy instruments. Secondly, that exposure to information can matter and may influence how individuals view their consumption patterns- all respondents reported on the facts they had learned from Part A's quasi-experiment, and the reactions it had created in them. Thirdly, the social and cultural context of food broadly should not be overlooked and could be important in influencing individuals to adopt SDCs- for example, through their friends and family. Fourthly, sustainability motivations in food may be inextricably linked to other motivations (animal ethics, health) for a high number of individuals. Keeping these 'coupled' motivations in mind could optimise nudging tactics when designing policy instruments related to sustainable consumption. It also means that consumers' interests in having access to products which 'hit' these various goals should be considered. By their own admission, individuals may sometimes have to sacrifice between one of their various motivations given the lack of product that allows them to cater to all.

More broadly, simply assuming for *either* the moral licensing effect *or* the positive behavioural spillover effect may be counterproductive for policymakers when it comes to sustainable consumption. Firstly, this thesis has shown the oftentimes highly subjective nature of consumption patterns and the costs individual attach to giving them up. This could be reflected in policy design based on demographics, or socioeconomic categories. Secondly and perhaps most importantly, many of this thesis' findings point to the need to view the moral licensing

and the positive behavioural spillover effect in co-existence, as predicted by Festinger (1957). And this may help relativise around the moral licensing effect, too. The moral licensing effect may possibly be a positive phenomenon when used as a self-preservation tactic. Indeed, individuals that aim to live an overall sustainable lifestyle consistent across consumption categories may still be cautious to not stray too far off their preferences and boundaries with inconvenience costs too high to sustain- and cause a "relapse", as described by Participant 3 with their meat-eating.

In addition, Part B showed interviewees' explicit motivation to be be sustainable 'across the board' in (almost) all consumption areas, but simultaneously experiencing fatigue from this consistency effort. This begs the question of what is reasonable for policymakers to expect from individuals in the realm of sustainable consumption. Should and can individuals be expected to change their habits across *all* environmental consumption hotspots on a voluntary basis- even given the highly variable costs which are associated to these efforts? Is absolute consistency in sustainable consumption feasible or even desirable, or are incremental steps towards it the best way to view policy design? These questions go beyond the scope of this thesis, but the following observation from Thøgersen & Ölander (2003), based on Dietz et al. (1995) may provide a good starting point. "Environmental and resource problems are the result of, and can only be solved by, collective action. Based on this premise, it seems rational to based decisions about environment-sensitive behaviours on a contribution ethics, rather than on an individual responsibility ethics. A contribution ethics allows the individual a choice of what to contribute, as long as it is a fair contribution." (p. 226).

6.2 Recommendations for future research

Future research gaps have been identified throughout this thesis, in particular in its Literature review in Chapter 2 and through its findings in Chapter 4.

The need to create a less disjointed literature between the moral licensing and the positive behavioural spillover effect is perhaps the most natural recommendation this thesis can make- given its conclusion that the two effects should not be viewed in silos. Designing methods that enable to capture both effects and reflect both literatures appears to be one of the most important efforts to advance knowledge in the area of individual sustainable consumption behaviour. As a corollary, future research seeking to make use of mixed research methods may be promising in triangulating data from either method, and has been lacking in the literature (Reimers et al., 2021). Moreover, understanding how social and psychological biases -such as the Hawthorne effect- can be best addressed in research on individual consumption behaviour could be fundamental in future research designs.

Additional research to understand the costs (and benefits) individuals associate with different consumption choices -including PEBs- appears to be crucial in understanding more about the possibility of a moral licensing effect in this space. It could also enable the understanding of how individuals 'group' together certain PEB efforts. Indeed, findings from Chapter 4 suggested that individuals engaging in cross-moral licensing tended to view their PEBs as a 'package' of efforts rather than individually. Studying the moral licensing and positive behavioural spillover effect as triggered from only one consumption category (such as SDCs) could, as such, not be the most appropriate methodological approach.

The financial costs of SDCs were alluded to by two participants. At this stage, there is mixed evidence and perceptions that seem to exist as to whether SDCs lead to higher or lower costs- and whether this differs between different types of SDCs. Further research in this area could help better uncover the other potential mechanism for a rebound effect tied to SDCs, the income effect.

Related to Truelove et al.'s theoretical framework, whilst this thesis found promising evidence corroborating its arguments on costs as well as rule-and-role based decisions, the role of individuals' decision mode was less explored. Research focusing on whether individuals engage in analytic processing or affect-based decisions, as hypothesised by Truelove et al., when engaging in a possible moral licensing effect (or positive behavioural spillover effect), could be a promising way to continue applying this framework.

The role of mediators takes a large place in the moral licensing effect literature, especially in the sustainable consumption one. The role of environmental concern as a mediator, as highlighted in section 2.4.3, may be less interesting related to SDCs -by definition, wouldn't all sustainability-motivated vegetarians, vegans and others have environmental concern in mind? Further research on Fishbach & Dhar's goal regulation theory (2005), and whether reminding individuals of their goals tied to SDCs could push them towards consistency, might be more promising.

Another interesting area for future research could be to explore the relevance of single action bias as the potential mechanism behind rebound effects in sustainable consumption. Hitherto, most research in this space has focused on moral licensing effects, but it may well be that other mechanisms related to psychological states exist. Here, again, qualitative research may be of value to further uncover knowledge.

More broadly, conducting interdisciplinary research taking into account both the psychological and the economic theories seeking to explain the rebound effect has, hithertho, been rare (Reimers et al., 2021). Such an endeavour could help understand the potential links between the income, substitution, and moral licensing effect- in SDCs but also throughout sustainable consumption behaviour.

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Appendix

Block I questions

Sustainability-oriented vegetarians and vegans: assessing awareness

*Thank you for taking the time to participate in this survey, which is part of a **Master's research study** looking to measure **levels of awareness amongst individuals with vegetarian and vegan habits** at the International Institute for Industrial and Environmental Economics (IIIEE) at **Lund University**, Sweden!

You are eligible to participate if you are at least 18 years old, are proficient in English, and have either/or vegetarian/vegan dietary habits for sustainability reasons. Your participation is completely voluntary and you have the right to withdraw at any time. Your data and responses will be kept entirely anonymous and confidential, and will be used for research as a part of this Masters thesis project.

The survey will take approximately **5 minutes** to complete. Please answer as intuitively and honestly as possible for the best scientific quality.

Please select "Agree" if you consent that you:
- are above the age of 18
- understand the purpose of this survey and how your responses will be used
- want to participate in the survey

◯ I agree

◯ I do not agree

Next page ›

*How would you best describe your dietary choices?

- ◯ Vegetarian: no animal flesh (beef, pork, chicken, lamb, fish, seafood...) consumption
- ◯ Ovo-vegetarian: no animal flesh nor dairy (milk, yogurt, butter, cheese...) consumption
- ◯ Lacto-vegetarian: no animal flesh nor eggs consumption
- ◯ Vegan: no animal flesh nor animal products consumption (eggs, milk, yogurt, butter, cheese, honey in some cases)
- ◯ Other: please describe _____
- ◯ I am not any of the above as I predominantly consume animal flesh and/or animal products

*Would you describe your dietary choices as strict?

- ◯ Yes, I am a strict vegetarian/vegan/other and do not make exceptions to my diet
- ◯ Yes, I am mostly a vegetarian/vegan/other, although I sometimes make exceptions to my diet. Please estimate how often you make exceptions and what for (animal flesh, dairy...): _____
- ◯ No, I would say that the dietary choices I have described make up less than 50% of my consumption habits

*What is the primary motivation behind your dietary choices? You may select multiple answers.

- ☐ I am primarily motivated by reasons related to sustainability
- ☐ I am primarily motivated by reasons related to health
- ☐ I am primarily motivated by reasons related to animal rights and ethics
- ☐ I am primarily motivated by other reasons (please specify) _____

Next page >

*How would you best describe your gender?

- ◯ Male
- ◯ Female
- ◯ Non-binary
- ◯ Prefer not to say
- ◯ Prefer to self-describe (please specify) _____

*Please indicate your age.

_____

*Which of the following category best describes your current occupation?

◯ Student (primary education, higher education)	◯ Not employed	◯ Retired	◯ Employed in higher education
◯ Employed in primary education	◯ Agriculture, forestry, fishing, hunting	◯ Arts, entertainment, broadcasting, recreation	◯ Finance and insurance
◯ Business services	◯ Government and public administration	◯ Healthcare	◯ Hotel and food services
◯ Legal services	◯ Manufacturing	◯ Military	◯ Real estate
◯ Religious	◯ Telecommunications	◯ Transportation and warehousing	◯ Technology and software
◯ Utilities	◯ Retail	◯ Wholesale	◯ Other (please specify) _____

*Please indicate your country of origin.

*Please indicate your current country of residence.

Next page >

Block II questions – Treatment group

Please read the following text.

Taken and adapted from The Guardian, 31st of May 2018: **Avoiding meat and dairy is 'single biggest way' to reduce your impact on Earth**

Avoiding meat and dairy products is the single biggest way to reduce your environmental impact on the planet, according to Oxford University scientists.The new research shows that without meat and dairy consumption, global farmland use could be reduced by more than 75% – an area equivalent to the US, China, the European Union and Australia combined –and still feed the world. Loss of wild areas to agriculture is the leading cause of the current mass extinction of wildlife. The new analysis shows that while meat and dairy provide just 18% of calories and 37% of protein, it uses the vast majority – 83% – of farmland and produces 60% of agriculture's greenhouse gas emissions. **Adopting a vegetarian or vegan diet enables you to save between 500 to 1500 kg of CO2e per year compared to a 'traditional' diet, making it a crucial decision in adopting a sustainable lifestyle.**

Were you aware of the fact that your diet saves you between 500 and 1500 kg of COe per year compared to a 'traditional' diet?

- ○ Yes - I knew avoiding animal flesh and/or products played a fundamental role in me having a sustainable lifestyle
- ○ No - I knew avoiding animal flesh and/or products was important, but I did not know it was one of the most important things I could do for a sustainable lifestyle
- ○ Other

Please read the following text.

Taken and adapted from The Humane League, 4th of November 2021: 14 reasons why cutting down on animal products is the best thing we can do for the planet

Overall, the process of raising and killing animals for meat is much more carbon-intensive than just growing and harvesting plants for food. Joseph Poore, Director of Research for Food Sustainability Analytics, explains: "**Converting grass into (meat) is like converting coal to energy**. It comes with an immense cost in emissions." In fact, producing **plant-based meat emits up to 90% fewer greenhouse gases** than producing conventional meat. Just one plant-based meal can save the same amount of carbon emissions it takes to drive a car across the United States.

This proves to be true at every step of the value chain, too: livestock digestion and waste is not only responsible for **32% of human-caused methane emissions**, which is 80 times more potent at trapping heat in the atmosphere than carbon dioxide. It is also responsible for **2/3 of human-caused nitrous oxide emissions**, which remains in the atmosphere about 100 years before natural processes can break it down, and is 300 times more powerful at driving the greenhouse effect than carbon dioxide. Lastly, meat requires a lot of processing before it is suitable for human consumption. **It takes about 31.5 kilowatt-hours of energy to produce one kilo of beef— a little under the amount of energy your fridge uses to run for a whole month.**

Were you aware of the substantial reduction in greenhouse gases such as nitrous oxide and methane that you are having as a result of your dietary choices?

- ○ Yes - I knew that, by cutting out animal flesh and/or products, I was having a profound impact on the nitrous oxide and methane emissions related to my lifestyle
- ○ No - I did not know that my dietary choices were having such a positive impact on my personal carbon footprint
- ○ Other

*

Which of the following aspects related to sustainability is most important to you as part of your dietary choices? You may only select one option.

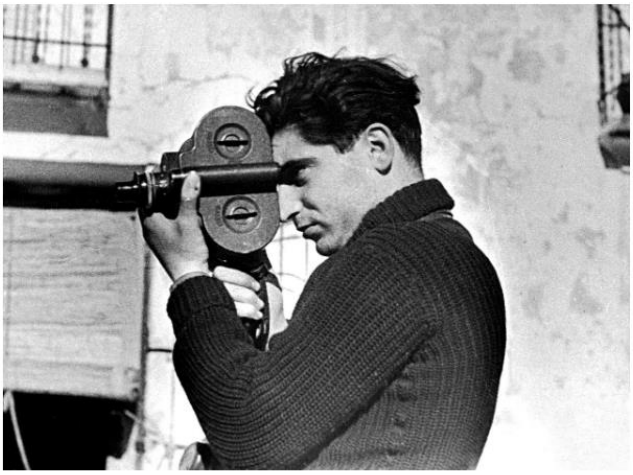
- ○ Fighting against deforestation and intensive land use
- ○ Opting for much more energy-efficient dietary choices than animal production
- ○ Drastically lowering my greenhouse gas emissions
- ○ Having a significantly better water footprint by cutting down on animal flesh/products
- ○ Other: please specify _____

*Which of the following statements best describes how you feel about the positive environmental impact you are having through your dietary choices? You can select multiple options.

- [ ] I feel proud of my dietary choices
- [ ] My dietary choices have required a change in my lifestyle, but this has been manageable
- [ ] I feel happy to contribute to a sustainable lifestyle, even though it has meant cutting down on certain foods, which has been challenging at times
- [ ] I feel excited about the positive environmental impact myself and other vegetarians/vegans are making
- [ ] I feel like more individuals should adopt a vegetarian/vegan lifestyle, given the important environmental benefits associated with it
- [ ] I believe that a key aspect of sustainable living now and in the future has to do with dietary choices and with cutting down on animal flesh/products

Block II questions – Control group

Please read the following text attentively.



Robert Capa is a name that has for many years been synonymous with war photography. Born in Hungary in 1913, Capa was forced to leave his native country after his involvement in anti-government protests. He tried to find work as a freelance journalist. When World War II broke out, Capa was in New York, but he was soon back in Europe covering the war for Life magazine. Some of his most famous work was created on 6th June 1944 when he swam ashore with the first

assault on Omaha Beach in the D-Day invasion of Normandy. It was the images from these frames that inspired the visual style of Steven Spielberg's Oscar winning movie ‘Saving Private Ryan’.

Capa was friend to many of Hollywood’s directors, actors and actresses. In 1943 he fell in love with the wife of actor John Austin. His affair with her lasted until the end of the war and became the subject of his war memoirs. He was at one time lover to actress Ingrid Bergman. Their relationship finally ended in 1946 when he refused to settle in Hollywood and went off to Turkey, where he passed away.

Q9

What was Capa's country of origin?

Q10

Which famous actress was Capa once a lover to?

- ○ Ingrid Bergman
- ○ Audrey Hepburn
- ○ Grace Kelly

Q11

Which movie did Capa’s famous World War II photography inspire?

Q12 *

How many lines were there in the two paragraphs about Capa's life story?

- ○ 11
- ○ 18
- ○ 25

Q27 *

Why did Capa have to leave his native country?

Q28 *

Which country did Capa end up passing away in?

- ○ Lithuania
- ○ Turkey
- ○ Japan

On a scale from 1 (extremely uninterested) to 100 (extremely interested), how would you rate your interest for photography as an art form in general?

Level of interest in photography

0 100

*Please look at the following pictures. At first glance (i.e., do not spend more than 1 to 2 minutes on this task), how many differences can you spot between the two images?

Block III questions

Q16 ✶

Thank you for taking the time to answer this survey on vegan and vegetarian awareness!

Two participants will be randomly selected to win one of the two below **prizes** as a thank you. Please indicate your preference.

trainline

€ 50 Trainline voucher ○

RYANAIR

€50 Ryanair voucher ○

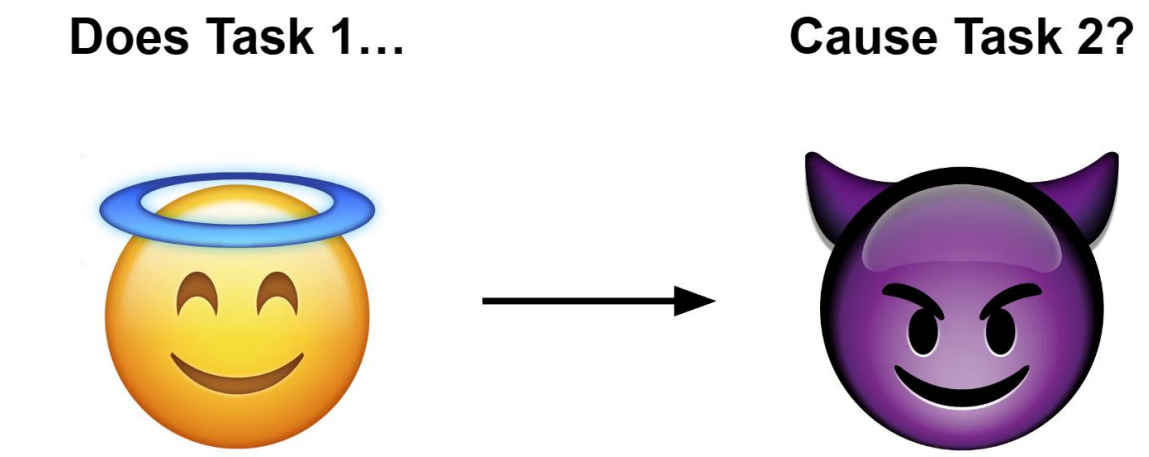
Please enter your email address (or another form of contact detail) if you wish to be contacted should you be drawn as the winner of one of the two survey prizes.

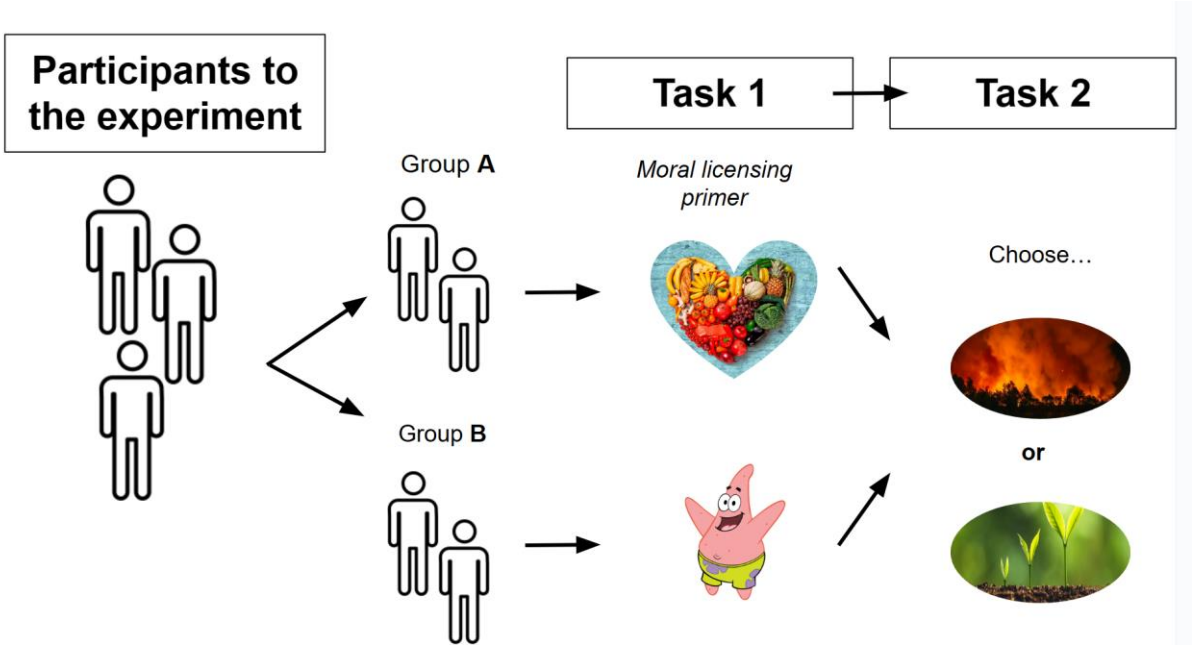
Please note that this step is entirely voluntary, and that your contact details will be solely used for the purpose of contacting you should you be drawn as one of the winners. All contact details will be permanently deleted once two prize winners have been selected, and will not be used in any other way.

Online presentation for interview respondents

Moral licensing effect

When individuals feel legitimate in performing a *bad* deed because they previously performed a *good* deed





Interview protocol

Introduction	
	Introduce the researcher and the purpose of the interview.
	Confirm that the participant has reviewed and signed the consent form sent over email. Follow-up to see whether they have any

	questions.
	Confirm that the participant's audio and video can be recorded.
	Ask for the participant's name, age, country of origin and residence, and occupation.
Opening questions	
	Confirm that the participant was part of the quasi-experiment, and that they were part of the experimental group.
Respondent's views on Part A's design and results.	Q1: participant's general experience of the quasi-experiment and how they would describe it in a few words
	Introduce the participant to the survey's real aim, use of a cover story and to the concept of the moral licensing effect (use presentation as visual aid).
Content questions	
Respondent's general views on the moral licensing effect in SDCs versus the positive behavioural spillover effect.	Q2: Participant's thoughts on whether the moral licensing effect does occur in individuals undertaking SDCs- either themselves or around them. →Follow-up if yes: Ask for examples, and if about themselves, ask about the thought process that goes through their head.
	Quickly present the adverse theory of positive behavioural spillover effect.
Respondent's general views on the moral licensing effect in SDCs versus the positive behavioural spillover effect.	Q3: Participant's thoughts on whether the positive behavioural spillover effect does occur in individuals undertaking SDCs- either themselves or around them.

	→Follow-up if yes: Ask for examples, and if about themselves, ask about the thought process that goes through their head.
Respondent's general views on the moral licensing effect in SDCs versus the positive behavioural spillover effect.	Q4: Participants' thoughts on whether the two effects can co-exist, or whether one takes precedence over the other.
Respondent's general views on the moral licensing effect in SDCs versus the positive behavioural spillover effect.	Q5: Participants' thoughts on whether either of the two effects (or both) exist in sustainable consumption in general. Prompt: Whether there are specific types of sustainable consumption choices that lead to either one or the other (cost, time duration, frequency)
	Introduce the participant to general methodology used in experimental psychology to test for the moral licensing effect, followed by the methodological choices for the Part A quasi-experiment.
Respondent's views on Part A's design and results.	Q6: Participant's thoughts on the quasi-experiment and participants' intuitive guess as to its results.
Respondent's views on Part A's design and results.	Q7: Participant's thoughts on whether the methodology used in the moral licensing literature and in experimental psychology is an accurate way of measuring individual's underlying psychological states when it comes to SDCs. →Follow-up: present a few alternative methodological choices and their trade-offs, and whether
	Go through a quick visual reminder for Task 1's instrument and explanation of the term 'moral licensing primer'.
Respondent's view on Part A's design and results.	Q8: Participant's thoughts on Task 1 as an instrument and whether it accurately fulfils the function of moral licensing primer. →Follow-up: participant's experiences that made them feel good about their dietary choices, i.e., that could have acted as a primer for a potential moral licensing effect.

	Go through a quick visual reminder for Task 2's instrument.
Respondent's views on Part A's design and results	Q9: Participants' thoughts on Task 2 as an instrument to measure a sustainable consumption choice. →Follow-up: Participants' thoughts on alternative consumption choices that would have been interesting to explore. →Follow-up: Participants' thoughts on the cover story and its quality, as well as risks of a Hawthorne effect.
	Disclose quasi-experiment's results to participant.
Respondent's views on Part A's design and results	Q10: Participants' thoughts on why the quasi-experiment did not confirm H1 (use previous answers as prompts).
Respondent's views on motivations and specificities of SDCs	Q11: Participants' thoughts on whether SDCs are motivated solely by sustainability, or by multiple reasons. →Follow-up if multiple reasons: can these motivations be sometimes competing, and does one take precedence over the other?
	Q12: Participants' thoughts on whether vegetarianism or veganism is a strict concept, and how to differentiate between flexitarianism and other types of SDCs. →Follow-up: Participants' thoughts on whether the type of SDCs influences whether an individual is subject to the moral licensing or positive behavioural spillover effect
Closing remarks	
	Wrap up the interview, ask participant whether they have any question and thank them for their time.

Consent form sent prior to interviews

Please have a read through this consent form. **If you agree with the conditions outlined below, please provide your written consent by responding to this email with "I agree to this consent form", signed by your full name.**

Consent Form

This form is to ensure that you have been given all the information about this ongoing master's thesis research project and to give you the opportunity to confirm that you are willing to take part in this research.

Please read the following attentively:

1. I have been familiarised with the thesis project, I have had the possibility to ask questions and I have received satisfactory answers to my questions.
2. As a research participant, I am aware of my right to refuse to answer a question, cease or withdraw my participation at any time.
3. As a research participant, I am aware of my right to gain access to my own personal data, request its correction or deletion or limitation to processing of data, as well as file a complaint about the way my personal data is used.
4. I give my consent that the interview can be audio-recorded- for the private use of the researcher for note-taking purposes.
5. I give my consent to be reported anonymously – only being identified by sociodemographic characteristics such as my gender, my age, my occupation, country of origin or residence, but never by my full name.
6. I give my consent that the content of my interview can be transcribed, analysed, and published in research outputs for this thesis project.
7. I give my consent for the data collected from interviews to be stored on secured university servers for 10 years, in line with Lund University guidelines.

Should you have any questions, please contact Inès Paumier-Bianco (Msc Candidate in Environmental Management & Policy, IIIEE, Lund University) at this email address or on +352661122595.

Descriptive statistics and analysis of the relationship between the independent and dependent variable

Moral_Licensing * Voucher Crosstabulation

			Voucher		
			€ 50 Trainline voucher	€50 Ryanair voucher	Total
Moral_Licensing	No	Count	38	11	49
		% within Moral_Licensing	77.6%	22.4%	100.0%
	Yes	Count	39	13	52
		% within Moral_Licensing	75.0%	25.0%	100.0%
Total		Count	77	24	101
		% within Moral_Licensing	76.2%	23.8%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.091[a]	1	.763		
Continuity Correction[b]	.005	1	.946		
Likelihood Ratio	.091	1	.763		
Fisher's Exact Test				.818	.474
N of Valid Cases	101				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.64.

b. Computed only for a 2x2 table

Descriptive statistics and analysis for age as a confounding variable

Group Statistics

	Moral_Licensing	N	Mean	Std. Deviation	Std. Error Mean
Age	No	49	28.04	5.616	.802
	Yes	52	29.88	7.788	1.080

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Age	Equal variances assumed	7.869	.006	-1.358	99	.089	.178	-1.844	1.358	-4.539	.851
	Equal variances not assumed			-1.370	92.794	.087	.174	-1.844	1.345	-4.516	.828

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Moral_Licensing	.181	.473	.146	1	.702	1.198
	Age	-.023	.036	.423	1	.515	.977
	Constant	-.586	1.055	.309	1	.578	.556

a. Variable(s) entered on step 1: Moral_Licensing, Age.

Moral_Licensing * Age_groups Crosstabulation

			Age_groups				
			18-24	25-34	35-44	45-54	Total
Moral_Licensing	No	Count	14	30	3	2	49
		% within Moral_Licensing	28.6%	61.2%	6.1%	4.1%	100.0%
	Yes	Count	13	23	12	4	52
		% within Moral_Licensing	25.0%	44.2%	23.1%	7.7%	100.0%
Total		Count	27	53	15	6	101
		% within Moral_Licensing	26.7%	52.5%	14.9%	5.9%	100.0%

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Age_groups is the same across categories of Moral_Licensing.	Independent-Samples Mann-Whitney U Test	.098	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

Descriptive statistics and analysis for gender as a confounding variable

Moral_Licensing * Q4 Crosstabulation

			Q4			
			Female	Male	Non-binary	Total
Moral_Licensing	No	Count	34	14	1	49
		% within Moral_Licensing	69.4%	28.6%	2.0%	100.0%
	Yes	Count	41	11	0	52
		% within Moral_Licensing	78.8%	21.2%	0.0%	100.0%
Total		Count	75	25	1	101
		% within Moral_Licensing	74.3%	24.8%	1.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	1.926[a]	2	.382	.422
Likelihood Ratio	2.312	2	.315	.422
Fisher-Freeman-Halton Exact Test	1.862			.363
N of Valid Cases	101			

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .49.

Descriptive statistics and analysis for occupation as a confounding variable

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.805[a]	15	.694
Likelihood Ratio	14.809	15	.465
N of Valid Cases	101		

a. 30 cells (93.8%) have expected count less than 5. The minimum expected count is .49.

Moral_Licensing * Occupation Crosstabulation

Count

		Occupation						
		Arts, entertainment, broadcasting, recreation	Business services	Civil society/NGO	Employed in higher education	Employed in primary education	Government and public administration	Healthcare
Moral_Licensing	No	1	0	2	4	0	3	5
	Yes	3	3	1	3	1	3	1
Total		4	3	3	7	1	6	6

Legal services	Manufacturing	Not employed	Other	Retail	Student (primary education, higher education)	Technology and software	Tourism	Wholesale	Total
1	1	1	1	1	26	2	1	0	49
0	0	1	2	2	28	2	1	1	52
1	1	2	3	3	54	4	2	1	101

Descriptive statistics and analysis for country of origin as a confounding variable

Moral_Licensing * Country_origin Crosstabulation

			Country_origin				
			Central and Eastern Europe	Nordics	Other	Western Europe	Total
Moral_Licensing	No	Count	2	11	11	25	49
		% within Moral_Licensing	4.1%	22.4%	22.4%	51.0%	100.0%
	Yes	Count	4	12	7	29	52
		% within Moral_Licensing	7.7%	23.1%	13.5%	55.8%	100.0%
Total		Count	6	23	18	54	101
		% within Moral_Licensing	5.9%	22.8%	17.8%	53.5%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.808[a]	3	.613
Likelihood Ratio	1.827	3	.609
N of Valid Cases	101		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.91.

Descriptive statistics and analysis for country of residence as a confounding variable

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.736[a]	2	.692
Likelihood Ratio	.737	2	.692
N of Valid Cases	101		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.40.

Moral_Licensing * Country_residence Crosstabulation

			Country_residence			
			Nordics	Other	Western Europe	Total
Moral_Licensing	No	Count	26	3	20	49
		% within Moral_Licensing	53.1%	6.1%	40.8%	100.0%
	Yes	Count	31	4	17	52
		% within Moral_Licensing	59.6%	7.7%	32.7%	100.0%
Total		Count	57	7	37	101
		% within Moral_Licensing	56.4%	6.9%	36.6%	100.0%

Descriptive statistics for type and strictness of SDCs

Self-reported diet	Strict SDCs	Non-strict SDCs	Grand Total
Vegetarian	22	38	60
Vegan	4	11	15
Flexitarian	3	15	18
Lacto-vegetarian	2	1	3
Ovo-vegetarian	1	4	5
Grand Total	**32**	**69**	**101**