This thesis has been submitted in fulfilment of the requirements for a postgraduate degree (e.g. PhD, MPhil, DClinPsychol) at the University of Edinburgh. Please note the following terms and conditions of use:

- This work is protected by copyright and other intellectual property rights, which are retained by the thesis author, unless otherwise stated.
- A copy can be downloaded for personal non-commercial research or study, without prior permission or charge.
- This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the author.
- The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the author.
- When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given.
Navigating expectations for sustainable product design: a discursive psychology analysis of designers’ accounts

Liz Cooper

THE UNIVERSITY of EDINBURGH

Doctor of Philosophy
The University of Edinburgh
2022
Abstract

Sustainable design is vital to achieving sustainable development. It is commonly argued that designers should ensure more sustainable design decisions are made, based on environmental values, and should take responsibility for the sustainability of product outcomes. In this thesis, I treat decision-making, personal values, and responsibility as psychological concepts, thus examining the setting of sustainable design through a psychological lens. I argue that the ways these concepts are talked about in design literature construct expectations regarding how designers should act. However, there is ambiguity in this literature regarding what the designer’s role is expected to be. There is a great deal of prescriptive literature providing tools to advise designers on how to make more sustainable design decisions. Yet there is debate regarding how decisions are or should be made, who makes design decisions related to sustainability, and who is responsible for how sustainable product outcomes are. How these concepts are theorised in design, and how practitioner guidance on decision-making in sustainable design is framed by campaign groups, is likely to influence how design is done in practice. There is therefore a need to find out how designers are navigating expectations that they should be doing more sustainable design. There is a key gap in empirical literature of gathering and analysing designers’ accounts of how decision-making, values, and responsibility come into their work from their own perspectives.

To start to fill this gap, I collected instances of interactional talk involving product designers’ verbal accounts in two different contexts in 2020. I carried out sixteen semi-structured interviews with an international sample of sustainability-focused product designers, asking questions about decision-making, values, and responsibility in specific recent design projects. I selected seven recordings of panel discussions at design conferences with a focus on sustainability from YouTube, based on their relevance to the concepts of decision-making, values, and responsibility. These two types of data allow the identification of similarities in ways of talking to others about the same topics in both private and public settings. I analysed extracts of the verbal data using discursive psychology, a method that has been specifically developed to analyse interactions, treating talk as action, and commonly seeking to respecify how
psychological concepts are understood. In the thesis, I present my analysis of how decision-making, values, and responsibility related to sustainability are constructed and managed in the designers’ accounts. This enables insights into how designers navigate the expectations that they should be making more sustainable design decisions.

My analysis shows: 1) The designers manage the delicateness of decision-making, values, and responsibility in design in different ways. For example, participants either reject or orient to expectations regarding how design decision-making should be done, often contradicting themselves. Participants orient to the idea of values influencing their decisions but focus on explaining where values came from rather than how they influence. They negotiate expectations of responsibility by either deflecting or assuming it, depending on the framing of questions asked. 2) Participants take opportunities to portray their identities as sustainability-focused designers, depicting longstanding commitment. 3) When the designers portray a lack of agency to make sustainability-relevant design decisions, they then claim agency through focusing on their role in influencing and ‘pushing’ others. Thus, the complexity for designers of managing expectations, personal commitment, and limited agency related to making products more sustainable in professional settings is portrayed.

The practical and theoretical contributions of these findings are provided, outlining how authors and practitioners who seek to make design more sustainable should carefully consider the expectations built into the way they frame their arguments and advice. Overall, this thesis demonstrates the usefulness of interdisciplinary research for providing novel insights, through examining sustainable design using a contemporary, qualitative method from psychology.

**Keywords:** Sustainable design; product designers; discursive psychology; agency; decision-making; personal values; responsibility; identity.
Lay Summary

<table>
<thead>
<tr>
<th>Name of student:</th>
<th>Liz Cooper</th>
<th>UUN</th>
<th>S1937123</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree sought:</td>
<td>PhD Psychology</td>
<td>No. of words in the main text of thesis:</td>
<td>81,172</td>
</tr>
<tr>
<td>Title of thesis:</td>
<td>Navigating expectations for sustainable product design: a discursive psychology analysis of designers’ accounts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This thesis is based on an analysis of how product designers talk about their work and roles with regards to environmental sustainability in interviews and at conferences. A qualitative method, discursive psychology, is used to analyse the conversations between product designers and the interviewer, and between product designers and others speaking at conferences. The focus of the analysis is on three concepts that are widely talked about in sustainable design: decision-making, personal values, and responsibility. Sustainable design theorists, educators and campaigners often argue that designers should make more sustainable decisions, such as choosing materials that will have less impact on the environment. Many also argue that designers and other people doing design should use their personal values (such as sustainability values) to inform their decision-making. Finally, there is much debate on whether designers can be held responsible for how sustainable products are, or whether other stakeholders are responsible. I argue that these theories and discourses on sustainability in design place a lot of expectations on designers – that they should make more sustainable decisions and take responsibility for sustainability in their work. In this thesis I examine how designers manage such expectations when they are made apparent by interviewers, and how they manage the concepts of decision-making, values, and responsibility in the ways they talk about their work. In the analysis, I find that the designers portray decision-making in design as delicate, in terms of how decisions are made, who makes them, and who takes responsibility. I find that the designers navigate this delicateness by finding ways to focus on their own identities and on claiming their own agency to influence others’ decisions. I make recommendations regarding which ways of conceptualising and talking about decision-making, values, and responsibility can help promote action on sustainability in design, and which can lead to inaction.
Acknowledgements

Firstly, I acknowledge the vital contribution of the participants who made time to talk to me about their work. I would like to thank my supervisors, Sue Widdicombe (Psychology) and Craig Martin (Design), and all other colleagues and peers who provided guidance and support in carrying out and writing up this research project. I would also like to thank the various editors and anonymous reviewers at different academic journals who gave feedback on the draft articles that make up the analysis chapters of this thesis. I acknowledge the University of Edinburgh for funding this research through a Principal’s Career Development Scholarship. Finally, I thank our cat, Yoda, who has kept me company while working at home during a pandemic.
Contents

Chapter 1  Introduction – why undertake a psychological study of sustainable design? ................................................................. 1

Chapter 2  Assumptions inferred from the literature on sustainable design.. 9
  2.1 What is the designer’s role? ................................................................. 11
  2.2 Decision-making in design................................................................. 13
  2.3 Values in design............................................................................... 28
  2.4 Responsibility in design................................................................... 36
  2.5 Summary - how assumptions in the literature construct expectations ....... 42

Chapter 3  Research design and methods................................................. 45
  3.1 Why discursive psychology?............................................................... 45
  3.2 Data collection methods ................................................................... 48
  3.3 Research ethics .................................................................................. 57
  3.4 Analytical procedure.......................................................................... 59
  3.5 Ensuring quality and transparency...................................................... 66
  3.6 Positionality and my insider status..................................................... 69

Chapter 4  Managing the delicateness of decision-making in sustainable design: a discursive psychology analysis of designers’ accounts................. 73
  4.1 Abstract ............................................................................................ 73
  4.2 Introduction ........................................................................................ 74
  4.3 Contrasting perspectives on decision-making in design......................... 75
  4.4 Methods............................................................................................. 80
  4.5 Analysis ............................................................................................. 81
  4.6 Discussion ......................................................................................... 92
  4.7 Conclusion ........................................................................................ 96

Chapter 5  Doing commitment and identity work in talk about values in sustainable product design......................................................... 99
  5.1 Abstract ............................................................................................ 99
  5.2 Introduction ........................................................................................ 100
  5.3 Values theory..................................................................................... 101
  5.4 Empirical studies of values in design .................................................. 102
  5.5 Reconceptualising values in design..................................................... 104
Chapter 6  Trying to pin down who is responsible: different ways responsibility for sustainability is managed in conversations with product designers .......................................................... 123
6.1 Abstract .......................................................................................................................... 123
6.2 Introduction ...................................................................................................................... 124
6.3 Methods .......................................................................................................................... 128
6.4 Analysis ............................................................................................................................ 130
6.5 Discussion ......................................................................................................................... 143
6.6 Conclusion ........................................................................................................................ 146

Chapter 7  ‘Pushing’ for sustainability: a discursive analysis of how product designers navigate accountability for design decisions ......................................................... 149
7.1 Abstract .......................................................................................................................... 149
7.2 Introduction ...................................................................................................................... 150
7.3 Assumptions about the role of designers in making products more sustainable .......................................................................................................................... 151
7.4 Methods .......................................................................................................................... 153
7.5 Analysis ............................................................................................................................ 155
7.6 Discussion ......................................................................................................................... 170
7.7 Conclusion ........................................................................................................................ 172

Chapter 8  Discussion: inferences and implications of the findings ...................... 173
8.1 Summary of findings ....................................................................................................... 174
8.2 Cross-cutting inferences from findings .......................................................................... 175
8.3 Generalisability and application of findings ................................................................... 188
8.4 Contributions to sustainable design research and practice ........................................... 189
8.5 Contributions to discursive psychology ......................................................................... 196
8.6 Evaluation of the research ............................................................................................. 202
8.7 Conclusion ......................................................................................................................... 204

References ........................................................................................................................... 206
Appendices

8.8 Appendix A – Participant information sheet ............................................. 238
8.9 Appendix B – Summary of findings for participants .................................. 239
Chapter 1  Introduction – why undertake a psychological study of sustainable design?

It is commonly argued by both academic authors and by sustainability advocacy organisations that designers can play a key role in shifting to a more sustainable, circular economy by creating more sustainable products (Andrews, 2015; Grace, 2017). This thesis explores how product designers are navigating being increasingly held to account for their roles in making products more sustainable. Sustainable design matters since we are facing an environmental crisis which has, in part, been fuelled by overproduction and overconsumption of goods. Sustainability is often defined in terms of three interlinked pillars – environmental, social, and economic (Purvis et al., 2019), but a tendency to focus on the environmental dimension is reflected in the dictionary definition of ‘avoidance of the depletion of natural resources in order to maintain an ecological balance’ (Oxford English Dictionary, 2022). It is now widely accepted that climate change is human induced, causing widespread destruction to people and nature, and that we are not doing enough to mitigate or adapt (IPCC, 2022). Humans are consuming resources beyond the planet’s capacity for generating them (United Nations Environment Programme, 2017). It is often argued that the design profession, through its role in creating more and more new things which are made by manipulating and using the earth's resources, has made a significant contribution to this crisis (Chan, 2018; Papanek, 1985). Design therefore has an important role to play in achieving United Nations Sustainable Development Goal 12 - Sustainable Consumption and Production (United Nations, 2016). This goal includes targets of achieving sustainable management and efficient use of natural resources, and substantially reducing waste through prevention, reduction, recycling, and reuse, by 2030 (United Nations, 2016).

However, if we look at products available on the market today, we see that most do not appear to be designed with sustainability in mind (Dalhammar et al., 2022; Whiteley, 1998). We see low quality, an abundance of plastic in components and packaging, and many new versions of things that people already own, encouraging consumers to upgrade for a new style. Indeed, many products are deliberately designed to become obsolete after a few years, so that companies can keep selling
Navigating expectations for sustainable product design: a DP analysis

more (Andrews, 2015). Consumers have become accustomed to having new things, and many goods are cheap to replace due to use of cheap labour and materials.

Many designers have indeed recognised the need to design things in more sustainable ways, considering resource use, product longevity, and what happens when things are disposed of (G. Clark et al., 2009; Keitsch, 2012; Wever & Vogtländer, 2014). These designers have formed a sustainable design movement which has developed in several stages since the mid twentieth century. For example, Papanek (1985) famously called for designers to consider their moral responsibility and social responsibility in an age of mass production and increased waste.

However, with increasing economic prosperity in many parts of the world, mass manufacturing and increasingly sophisticated advertising techniques, consumption of material things continued to grow rapidly, and sustainable design still found itself in the margins of design culture (Keitsch, 2012; Papanek, 1985). In the 1990s, a new wave of green and eco design adopted and developed quantitative tools based on those used in the environmental sciences, such as Life Cycle Assessments, which seek to help identify and measure impacts occurring at different stages of product development, use, and disposal (Keitsch, 2012; Morris et al., 2007). Then, the idea of three pillars of sustainability was adopted in product development, incorporating environmental, social and economic goals (G. Clark et al., 2009). The social aspect includes consideration of workers in supply chains and also needs of specific user groups such as people with disabilities. More recently, the focus is on achieving a circular economy, where all resources are cycled back into new products or the biosphere without harming the environment (Bocken et al., 2016; Ellen MacArthur Foundation and IDEO, 2018). The circular economy concept considers full product life cycles, interactions between the life cycles of different products, and designing out the concept of waste, with a particular focus on business models and global system change (Hollander et al., 2017). As part of the circular economy movement, the concept of circular design has been developed (Hollander et al., 2017). Through these various sustainable design movements, the focus has shifted from purely looking at environmental impacts, to a wider definition of sustainability, and from a product focus, to a systems focus.

Practically, achieving more sustainable design is commonly framed as requiring better design decision-making (Arroyo, 2014; Buchert et al., 2015; Hallstedt, 2017).
Decisions made at the design stage can determine what sorts of impacts designed artifacts will have throughout their lifecycles (Diaz et al., 2021; Tischner, 2001). Materials chosen may be from renewable or finite sources. They may be recyclable or biodegradable or may end up in landfill or the oceans. Products may be designed to be disposable or to last a long time. They may be designed to be energy efficient or not, or for easy repair and remanufacture, or may involve materials being fused together in a way that makes them impossible to separate and reuse. Products and their production processes may release microplastics or harmful chemicals into soil and water. Social implications of design choices can be felt across the globe. For example, if materials chosen can only be sourced from regions where exploitation of workers is common, or if handling of chosen materials is toxic for workers. Given the wide-ranging possible impacts, considering the sustainability consequences of design decisions requires being able to synthesise a large amount of information from different sources and make trade-offs. For example, a choice may need to be made between eventual biodegradability of materials and pollution involved in growing, manufacturing, and transporting such materials.

Given this complexity, there is a great deal of guidance on design decision-making, including on how to make more sustainable design decisions, to take into account the lifecycle impacts of products and materials. Two further concepts commonly feature in literature on sustainable design, which relate to decision-making. Firstly, the notion of personal values in design is prevalent. A movement called Design for Values proposes that focusing on people’s values enables ethics to be integrated into the design process, assuming that asking people to identify and discuss what they value in relation to a product will inevitably include consideration of ethical aspects (van den Hoven et al., 2015). In this literature, sustainability is framed as an ethical, values-driven issue. Secondly, the concept of responsibility also features prominently, and there is a great deal of debate on who is responsible for product sustainability. The use of these three connected concepts (decision-making, values, and responsibility) makes sense for the context of sustainable design, since we might theorise that taking responsibility for and valuing the natural environment can help designers make more sustainable decisions. In this thesis, I treat decision-making, values, and responsibility as psychological constructs. That is, I examine
Navigating expectations for sustainable product design: a DP analysis

them in terms of how people construe what they are and conceptualise how they work.

In the design literature, there is a great deal of theorising and debate regarding the practical application of decision-making, values, and responsibility in professional design settings. The ways designers are held to account regarding decision-making, values, and responsibility are often ambiguous and construct assumptions about what actions designers should take with regards to sustainability. A lot of guidance has been produced advising designers on particular methods for making design decisions, yet there is also debate regarding whether designers indeed are the ones make key design decisions. On the one hand, designers themselves are commonly conceptualised as the key decision-makers regarding product outcomes (Coles & Norman, 2005; Dwarakanath & Wallace, 1995; Fairs, 2019; Hazelrigg, 1998; Herrmann & Schmidt, 2002), and the ones who should take responsibility for how sustainable products are (Fahlquist et al., 2014; Köhler, 2013; Melles et al., 2011; Owens, 2006; Papanek, 1985). Literature on values in sustainable design includes various ways of conceptualising the designer’s role, again often portraying the designer as powerful. These include positioning the designer as actively designing for the value of sustainability to ensure fewer negative environmental impacts (Wever & Vogtländer, 2014), and as taking on the task of identifying, collating and interpreting different stakeholders’ values, including those related to sustainability (van de Poel, 2015b; Winkler & Spiekermann, 2018). On the other hand, there is also recognition that designers often lack decision-making power when working alongside other stakeholders (Richardson, 1993; Woodhouse & Patton, 2004) and so can’t necessarily be held individually responsible for how sustainable products are (Devon & van de Poel, 2004; Johnson & Wetmore, 2007; Swierstra & Jelsma, 2006).

How designers manage such expectations regarding what they should do may either help or hinder the goal of sustainable design. For example, if expectations of designers’ ability to make key decisions are treated as unrealistic by designers, they may cause stress and hinder action. Alternatively, calls for designers to take more responsibility may provide motivation to take more action.

However, there is a gap in the design literature regarding how designers conceptualise decision-making, values, and responsibility related to sustainability in design. Understanding how designers are reacting to assumptions about how they
should act can give insights into designers’ perspectives on their roles in sustainable production. In this thesis, I analyse how sustainability-focused product designers navigate assumptions regarding decision-making, values, and responsibility in their professional roles. How designers manage assumptions can be seen in the ways they talk when they are held accountable for their work, as they may agree or disagree with what is expected of them, or they may portray themselves as living up expectations, or may deflect them. I therefore use discursive psychology (DP), an approach that facilitates the identification of what people are doing in their talk, to analyse product designers’ verbal accounts of their work. This enables the identification of patterns in ways expectations regarding designers’ roles and actions are oriented to and managed with regards to sustainability in design.

This combination of method and context represents a new interdisciplinary approach to studying sustainable design, by using a DP lens. It is widely asserted that interdisciplinary approaches are needed to collaboratively solve global challenges (Brown et al., 2019), such as the challenge of how to achieve sustainable production and consumption. The theoretical and practical insights arising from this thesis are primarily aimed at scholars and practitioners working on sustainable design, since the analysis provides greater understanding of how the designers studied are managing assumptions that are common in design literature, education, and practice. Nevertheless, the contributions for the field of DP are also outlined. The findings may also be of interest to scholars in other disciplines, including business ethics and sustainability studies.

Three research questions are answered in this thesis. These questions allow the analysis to focus on how designers navigate being held to account and manage assumptions about how they should make decisions, the role of values in decision-making, and who should be responsible for sustainability outcomes. The research questions are as follows:

1. **How do sustainability-focused product designers account for what design decisions are and how they are made?**

2. **How do designers construct the significance and role of personal values in sustainable product design?**
3. How is the notion of responsibility for sustainability practically managed in talk by product designers?

The rest of this thesis contains seven further chapters. In chapter 2, I review the three areas of focus, decision-making, values, and responsibility, in terms of the ways they are commonly conceptualised in design. In short, decision-making is typically conceptualised as an action designers take that should involve particular processes and skills; personal values are assumed to feature as criteria that help guide this action; and designers are often expected to take responsibility for the consequences of such actions. I consider in more detail how the ways these aspects of the designer’s role are conceptualised construct assumptions of how designers should act. In chapter 3 I explain the research design and methods, justifying why the data collection and analysis approaches used are appropriate for answering the research questions. I give detail of the analytical procedure used and explain how ethical and quality issues have been considered.

In chapters 4-7, I analyse how the conceptualisations identified in chapter 2 are practically managed by designers in the ways they give accounts of their work. These four analysis chapters are presented in the format of journal articles, targeted to specific disciplines to demonstrate how insights from DP can make useful contributions to literature on design, science and technology studies, and sustainable production literature. Chapter 4 is an analysis of accounts of decision-making in sustainable design, which shows how participants orient to expectations of how design decisions should be made, giving accounts of rational methods, but then ‘confessing’ to intuition in the end. This analysis also finds participants expanding the idea of what can be counted as design decisions, by describing influencing others as their key decision regarding sustainability. Chapter 5 examines accounts of personal values in design, finding that participants acknowledge and agree with the

---

1 Given that the analysis and findings chapters are formatted as journal articles, as recommended by the University psychology subject area, these also include short literature, methods, and discussion sections for each topic, which may mean there is some repetition of aspects of other chapters of the thesis. This is common in theses that include chapters in journal article format, as each analysis chapter is presented as a whole that is understandable in its own right (Mason & Merga, 2018). Nevertheless, effort has been made to reduce repetition across the whole thesis and to cross-reference.
Introduction – why undertake a psychological study of sustainable design?

expectation that their sustainability values influence their design decisions, but focusing their accounts on explaining where their values came from, thereby doing identity work. In chapter 6, in analysing talk about responsibility for sustainability in design, I find that the specific wording of questions about responsibility is associated with whether participants assume or deflect responsibility. In chapter 7, I provide an analysis of an additional pattern noticed in the data, the portrayal of influencing (‘pushing’) for sustainability, used as a way to claim agency despite claiming a lack of decision-making power regarding how sustainable products are.

In chapter 8, an extended discussion is presented which draws together the findings from the four analysis chapters and also identifies cross-cutting themes that can be inferred from the findings on the identity of being a sustainability-focused designer. I outline how these findings extend literature in design and psychology and also consider practical insights for sustainable design. I discuss how the findings show how participants portray and manage the delicateness of the three psychological concepts in different ways, thus contributing knowledge on how decision-making, values, and responsibility in sustainable design are conceptualised by designers themselves. I also discuss how doing identity work is a common theme, with the designers finding ways to portray themselves as the kinds of people who care about and take action on sustainability. A contribution is thus made to a new and emerging body of literature on designers’ identities. Practical suggestions (taking into account questions of generalisability of DP findings) on how different actors in the sustainable design movement can make their guidance more reflective of designers’ own conceptualisations of their work and roles are provided, in order to help achieve more action on product sustainability.
Chapter 2  Assumptions inferred from the literature on sustainable design

In this chapter, I show how the sustainable design literature constructs various assumptions about how designers should play a key role in achieving more sustainable products. I propose that there are three key questions that are relevant to understanding whether designers will work to make products more sustainable. Firstly, are designers able to make products more sustainable, and if so, how? Secondly, are designers personally motivated to make products more sustainable? Thirdly, are designers held accountable if they do so or not? These questions illustrate why there is a focus on the three concepts of decision-making, values, and responsibility in the sustainable design literature.

The first question deals with designers’ agency to make decisions, and how they make design decisions. The extent to which designers have agency to make design decisions is widely discussed in the theoretical literature, and the question remains contested (Woodhouse & Patton, 2004). Different methods for design decision-making are advocated, drawing on either rationality or creativity (Chasanidou et al., 2015; Liedtka, 2013; Romli et al., 2015; M. Wang et al., 2017). How the literature on decision-making in design makes normative assumptions about designers is discussed in section 2.3.

The second question on designers’ personal motivation is covered in the literature by the idea of people having personal values which influence design decisions to reflect particular priorities. The notion of sustainability values features prominently in literature on values in design (Vermaas et al., 2014). It is thus theorised that designers who want to make products more sustainable will possess sustainability values and will draw on these to make more sustainable decisions. The assumptions inherent in the different ways values in design are treated in the literature are discussed in section 2.4.

The third question about designers’ accountability is discussed in a large body of theoretical work on responsibility in design, including responsibility for product sustainability. Prominent design authors argue that designers should be held responsible for how sustainable products are (Owens, 2006; Papanek, 1985). Others argue that designers cannot be held responsible for product outcomes due to lack of
Navigating expectations for sustainable product design: a DP analysis

individual decision-making power (Devon & van de Poel, 2004; Johnson & Wetmore, 2007; Swierstra & Jelsma, 2006). The assumptions this theoretical debate constructs about designers are presented in section 2.5.

Given these normative and sometimes contested assumptions about how sustainable design should be done, in this chapter, I provide a detailed review of theoretical, prescriptive, and empirical literature on decision-making, values, and responsibility in design. I identify and discuss the assumptions, ambiguities, and gaps in empirical study. On decision-making, there is a large amount of literature on different approaches to making design decisions. For some approaches, most of the literature is prescriptive, and for others there is a body of empirical work. On values, there is again prescriptive and empirical literature, of a smaller quantity. On responsibility, most literature is theoretical, with a very small number of empirical studies. While I examine the three aspects separately in this literature review in order to provide clarity on what is currently known and theorised about each one, it is important to reiterate that they are conceptually linked.

The associations between decision-making, values, and responsibility are made in psychological and philosophical literature, as well as in the design literature. In psychological theory, people's values are considered to influence their decisions (Bagozzi et al., 2013; Rokeach, 1973). In philosophical literature on responsibility, people are assumed to take responsibility either in a forward-looking manner in the ways they make decisions, or retrospectively for decisions made (Fahlquist et al., 2014; Watson, 1996). The idea of agency also conceptually links decision-making, values, and responsibility. It is commonly argued in psychological literature that agency is needed for someone to be able to take responsibility for their actions (Martin et al., 2003). Psychologist Osman (2014) also links values to agency in decision-making by arguing that people who are motivated by particular personal values often proactively focus on what decisions they can control. She argues that people focus on instances in which they do have agency, and then take responsibility for these decisions. Therefore, it is clearly appropriate for the sustainable design literature to focus on values and responsibility as relevant to whether sustainable design decisions are made. Yet there is an opportunity to explore the use and management of these concepts in sustainable design further.
2.1 What is the designer’s role?

In order to consider the designer’s role in making products more sustainable, it is useful to briefly outline what a professional design role may practically entail, according to the literature. Designers work in a wide range of sectors, designing physical things such as products, buildings, and clothing (D. Wang & Ilhan, 2009), and/or designing services, systems, and policies (Segelström, 2013). Design is about coming up with an idea and a plan for producing something (Buchanan, 1992). Design may generate a radical, new concept, or plans may be closely modelled on things that already exist (van Gorp & van de Poel, 2008). In this thesis I focus on product design, which is also sometimes referred to as industrial design. Two different approaches to doing product design feature in the literature: engineering design and creative design (Kim & Lee, 2010). These two approaches advocate different design methods, and so the assumptions about the designer’s role are different.

Engineering design is described as being built on science, mathematical calculations, rationality and objectivity (Morris et al., 2007; Reimann & Schilke, 2011). The aim is to reach optimum solutions which meet agreed criteria (Buchanan, 1992; Durham, 2006; Morris et al., 2007; Reimann & Schilke, 2011). Engineering design is often described as involving distinct stages: identification of problem or need; concept design – generating ideas; evaluation and selection of preferred or optimum option; embodiment design – fleshing out and prototyping; detail design – finalising (Devon & van de Poel, 2004; Fosmire, 2017; Sridhar, 2007; van de Poel, 2001). Science-based methods typically come into play in the evaluation and selection phases, including mathematical models and decision-support tools (discussed further in section 2.3.2). Designers doing sustainability-focused engineering design are therefore expected to use mathematical calculations to determine which design options are more environmentally friendly in a rational manner.

In contrast, creative craft or art-based design is described as embracing creativity, intuition, inspiration, imagination, style and subjectivity (Crilly, 2015; Cross, 1997). Creative design has widely adopted ‘design thinking’ methods, which focus on taking into account different stakeholder needs, and include several stages such as reframing a design problem, stakeholder engagement, generating the widest
Navigating expectations for sustainable product design: a DP analysis

possible range of ideas, experimentation and prototyping (Buchanan, 1992; Cross, 2001a; Geissdoerfer et al., 2016; Morris et al., 2007; Penty, 2019; Reimann & Schilke, 2011). These approaches conceptualise design problems as messy, requiring openness, intuition, and reflexivity (Cross, 2001a). There is a lot of focus on understanding stakeholders’ or users’ requirements, for example through interviews or observation (Fosmire, 2017). When doing sustainability-focused design using a creative, design thinking approach, designers are thus expected to demonstrate an ability to come up with creative solutions that represent new ways of embedding environmental considerations and an ability to pay attention to the views of other stakeholders.

Despite sometimes being presented theoretically as opposing approaches, both models of how design should be done propose that the process should be iterative, involving several rounds of idea generation and assessment, either individually or collaboratively (Inoue et al., 2012; Schöggl et al., 2017). Furthermore, both creative design and engineering design are likely to be involved within the design of one product. They may be carried out by different people, for example creative designers may outline a design concept which is then passed on to engineering designers for realisation. There may be iteration between the two: creative designers may work with design engineers for mathematical calculations, and design engineers may work with artistic designers for drawings and concepts. Or indeed, the same person may carry out both creative and engineering design within the same project. Therefore, designers may face contrasting (and perhaps sometimes contradictory) expectations regarding being scientific or artistic in their work.

Having established what professional product designers are generally expected to do, I now consider how the literature on decision-making, values, and responsibility constructs specific normative assumptions about designers’ roles and actions in sustainable design, starting with decision-making.
2.2 Decision-making in design

Decision-making is widely considered to be the key action or process that determines how sustainable products are. According to Devon and Van de Poel (2004), the most important decisions regarding ethical costs and benefits of products are made during the design process. Sustainability is a key ethical issue at stake. Decisions made at the conceptual or early design stage of products are particularly important, as they are estimated to determine more than eighty per cent of the entire lifecycle environmental impacts of a product (Diaz et al., 2021; Tischner, 2001). Literature on decision-making in design includes both theoretical and empirical work. There is a theoretical debate on the extent to which designers have agency to make design decisions. Literature on how to make decisions is largely prescriptive. This prescriptive literature advocates either a rational, science-based approach or a creative, intuitive approach. Empirical studies of design processes seek to identify decision-making either done by an individual designer or negotiated among team members. In this section I consider each of these areas of literature in turn, in terms of how common assumptions inherent in this literature frame the designer's role regarding sustainability. Some of this literature specifically focuses on decision-making related to sustainability, but it is also worth examining literature on design decision-making in general, since designers working on sustainable design will also be influenced by broader ideas about how design should be done.

2.2.1 The debate on designers’ agency to make more sustainable decisions

In design literature, there is extensive debate regarding whether designers possess the agency needed to make design decisions or ensure their decisions are put into practice, given the many stakeholders involved. Agency is commonly defined in psychology as the capacity for action (Osman, 2014). Martin et al. (2003) propose that having agency means having the freedom to make decisions. Some authors assume designers have a lot of creative control over the design process, and so can decide how sustainable a product will be, whereas others argue designers work in very controlled environments (Feng & Feenberg, 2008). There is therefore disagreement over whether designers typically have power to make important design decisions.
Many authors argue that the contexts in which professional designers work do not typically enable agency to make important design decisions. Designers’ agency is said to be limited by both the rigidity of design briefs and the multistakeholder character of how design is usually done in industry. A design brief, typically written by managers or clients, includes project objectives such as functionality, and detail on customers, context, budget and timeframe (Ryd, 2004). How sustainable a design is will be influenced by whether the design brief included sustainability objectives from the outset, and how rigid it is in terms of whether sustainability factors can be added by a designer. Indeed, Zannier et al. (2007) found that the more structured a design brief is, the less a designer considers different options. Relatedly, Van de Poel and Verbeek (2006) argue that when there are more unknowns and more complexity in a design brief, the designer faces fewer constraints and has more agency to propose new solutions. Whether a designer has the agency to make more sustainable design decisions is therefore likely to vary across different projects.

There is a great deal of literature discussing how the position of a designer among other stakeholders affects how much agency they have. In industry settings, most designers are reported to work collaboratively, needing to come to a consensus with or satisfy the requirements of a wide range of stakeholders such as clients, other designers, technicians, regulators, managers and users (Devon & van de Poel, 2004; Feng & Feenberg, 2008; Pedgley, 2009; Russ, 2018; van de Poel, 2001; Woodhouse & Patton, 2004). According to Sridhar (2007), products are often designed by groups of experts, which may include product designers, mechanical engineers, materials specialists, electrical engineers and management. Design activities may be divided into sub tasks which different designers work on separately, and then combine together, either within a company or across multiple companies, referred to as a design chain (Choi et al., 2005; Chu et al., 2013; Jin & Danesh, 2006; Twigg, 1998). It is recognised that due to these multiple design actors, communication and collaboration on design can be challenging, and decision-making in the design chain may be centralised or distributed (Chu et al., 2013). Van de Poel and Verbeek (2006) suggest that the attitudes of different stakeholders involved in design influence how much agency designers have to propose a focus on sustainability. The concept of relational agency has been applied to design settings, to describe the temporary joining together of the individual motives and resources of
How the uses of key psychological concepts construct different expectations
different stakeholders involved in product development through collaboration (Kinti &
Pouloudi, 2019). Stakeholders have less individual agency than when working
individually, but still have agency as a group. Therefore, designers’ individual agency
is not only affected by the number of different stakeholders involved, but also by the
attitudes of and relationships with other stakeholders.

Furthermore, there is a suggestion from some authors working in science and
technology studies that the nature of designing itself, which involves manipulating
material things, means that agency is shared between designers and material
artefacts. Actor Network Theory proposes that interactions occur between humans
and non-human actors (Latour, 1992). There is debate on whether designers are
able to act intentionally, or whether materials and objects also speak back to the
designer and so also somehow actively contribute to design outcomes themselves
(Tholander et al., 2012). According to this perspective, designers do not actively
control design outcomes, but they somehow happen through a creative process.
There is also a theory that products and materials are embedded with agency or
scripts by designers, which then influence user behaviour, including influencing
users to take up more sustainable behaviours such as reducing energy use or
recycling (Babri et al., 2022; Verbeek, 2005; Yaneva, 2009). The focus on this thesis,
however, is on designers’ negotiation of agency, and not on how design decisions
may influence the agency of product users.

In contrast to the arguments about designers lacking agency, other authors imply
that designers are able to actively lead the way in making products more
sustainable. For example, Chick and Micklethwaite (2011) discuss how ‘designers
can drive the sustainability agenda’. This framing can also be found in campaigns
and communication by sustainability organisations. For example, an Ellen MacArthur
Foundation summit in 2019 included a session entitled ‘Why designers are key to
achieving a circular economy’ (Ellen MacArthur Foundation, 2020). Ellen MacArthur
is quoted in the prominent design website Dezeen as saying architects and
designers are "absolutely vital" in the shift to a circular economy’ (Fairs, 2019).
These framings position designers as powerful and important.

This complex picture of factors affecting how much influence a designer can have
over product decisions leads us to consider how designers themselves make sense
Navigating expectations for sustainable product design: a DP analysis

of their roles in decision-making. We could speculate that if a designer who wants to do something about sustainability does not consider themselves to be in such a decision-making position, they might experience stress or frustration due to expectations that they should make more sustainable decisions. Or instead, a designer who is less motivated about sustainability may draw on structural arguments to avoid seeking to embed sustainability in their work, such as by claiming that sustainability is not part of their role or responsibilities, and instead falls to a client or a manager. Indeed, Owens (2006) asserts that designers are likely to claim that the restrictions of their roles make them immune from considering ethical issues such as sustainability. However, these remain theoretical speculations. There is a gap in this literature in terms of empirically studying designers’ perspectives on their agency in decision-making with regards to sustainability in specific projects.

I now turn to different perspectives on how design decisions are made or should be made, bearing in mind the debate on agency and the social nature of design. I propose that there are three different ways in which design decision-making has been conceptualised in design literature - rational, intuitive, and interactional. These conceptualisations involve different theoretical standpoints and empirical methods. It is worth considering these three different conceptualisations in terms of what they tell us about design decision-making and how they frame the designer’s role in sustainability. We will see that in some of this literature, the complexity of designers’ agency in decision-making is acknowledged, but often it is not, and designers are assumed to be decision-makers in a non-complex way.

2.2.2 Rational design decision-making

Most academic publications gathered from searching for literature on decision-making in design promote a cognitive, rational model of decision-making, reflecting an engineering design approach (Inoue et al., 2012; Jin & Danesh, 2006; K. Lewis & Mistree, 1998). Indeed, engineering design in itself has been defined as a being based on decision-making, involving managing uncertainty and risk (Fuente et al., 2017; Hazelrigg, 1998). This model of design decision-making resonates with classic decision theory in psychology, which frames decision-making as taking place as a conscious process in the mind, involving knowing what a range of options is, knowing criteria to judge these options against, and making a rational judgement on
which option best matches the criteria (Tversky & Kahneman, 1981). The focus is on how designers make decisions between options, based on set criteria. Being a designer is framed as requiring a logical, systematic approach.

In order to help designers choose between options, a vast array of decision support tools are offered (Hazelrigg, 1998; Jin & Danesh, 2006). These tools offer to support designers and engineers to choose between design concepts or to make more specific decisions within a design concept, such as what material to use. Decision-support tools aim to help manage large amounts of data from diverse sources and are said to offer an efficient way to complete complex calculations relating to large, unstructured problems (Kapelan et al., 2005). Proponents of these tools argue they are useful for avoiding falling back on intuition to solve complex problems (Kiker et al., 2005). Thus, intuition is seen as problematic. The basic idea is to identify the design objectives and assess how well different design options will contribute to these design objectives, through assigning numerical values based on available data, probabilities of outcomes and risks, either manually on paper or using a computer programme (Hatamura, 2006; Jin & Danesh, 2006). Aspects of sustainability, if considered a priority in the design brief, are treated as criteria alongside other goals. For example, there might be a criterion relating to how much energy the product will use, or on recyclability. Design objectives can be competing, such as minimising weight and maximising strength of a bicycle frame (Jin & Danesh, 2006), or to give a sustainability-related example, comparing the environmental benefits of recycled plastics versus the better mouldability of new plastic. These models of design decision-making position the designer as someone who is aware of a list of criteria for a product, who gathers a large amount of complex information about how different options may meet different criteria, and rationally makes a decision by weighing up each option in turn. If sustainability features prominently enough in the design criteria, an optimum, sustainable solution ought to be found, according to these methods.

These decision support tools vary in their complexity and their mathematical foundations. The simplest tools are checklists, whereas more complex ones take the form of spreadsheets, and others are presented as complete software packages (MacAskill & Guthrie, 2013). The most commonly documented tools in the literature
are called multi-criteria decision analysis (MCDA) tools or multi-criteria evaluation tools. Classic versions of MCDA include Multi-Attribute Utility Theory, where decisions must be made between different design options based on the utility of the options, and the Analytical Hierarchy Process which uses pairwise comparisons between all options, to derive ratio scales allowing numeric comparison with the overall goal (Gervásio & Simões da Silva, 2012; Kiker et al., 2005; Smith & Ruiz-mercado, 2014; Steele et al., 2009). Some tools focus on assisting with decisions about materials selection, such as Pugh’s matrix which compares lists of material properties against requirements, or weighting factors (Sridhar, 2007). Design professionals therefore have a wide choice of types of tools to use for different design decisions.

MCDA tools also vary in the extent to which their outputs guide decisions, either giving a ranking of options, an optimal decision, or acceptable and unacceptable options (Kiker et al., 2005). Different methods may give different solutions to the same decision problem. This is why Zavadskas et al. (2016) propose simply using more than one and integrating the results for decision-making. Van de Poel (2015a) similarly suggests using a combination of cost-benefit analysis (translating all benefits into monetary value), direct trade-offs (trading off a loss for one criterion for a gain in another), maximin (selecting the option that scores best on its lowest scoring value), and satisficing (accepting any option that is good enough, in that it meets defined thresholds). Wang et al. (2017) argue that combining two MCDA methods will eliminate subjectivity in the decision-making. Here, subjectivity is treated as bias, or unscientific thinking, and thus is considered to be a bad thing. However, given that tools often give a variety of results, a choice may still need to be made by a designer. This aspect of making a final judgement based on the outputs of decision support tools, which may indeed involve subjectivity (in the sense of human involvement in making a judgement), is not clearly addressed in the literature. While it may seem that designers can simply use MCDA tools to ensure good (and so more sustainable) decision-making, it is clear that they may also need to make judgements about the criteria, which tools to use, and which option to select in the end based on the outputs of tools used.
It is unclear to what extent designers use decision support tools in practice in professional settings. Literature on MCDA tools focuses on illustrating how they can be used in particular design cases, and on recommendations for improving their technical functionality, by advocating alternative mathematical approaches or combining several approaches (Kiker et al., 2005; Romli et al., 2015; Silva et al., 2009; Smith & Ruiz-mercado, 2014). There is an absence of detailed reviews of whether or how people use these tools in practice across different industry contexts.

One claim about their use is provided by Zavadskas et al. (2016) who carried out a literature review of MCDA tools used in civil engineering, claiming increasing use of hybrid methods (where several mathematical approaches are combined). However, this is a review of published papers about the use of MCDA tools by researchers in particular case studies and/or discussion of the merits of particular methods. This does not therefore tell us whether such tools are often used in industry. Indeed Schöggl et al. (2017) and Silva et al. (2009) have concluded that they are not widely used. Specially concerning the example of materials selection, it has been reported that MCDA tools are not often used, but instead informal research via reference books or internet sites is used to inform materials choices (Khatib, 2016; Sridhar, 2007). There is not yet therefore enough knowledge of the extent to which, and specifically how, these sorts of tools are used to achieve more sustainable design outcomes in industry. Furthermore, Dwarakanath and Wallace (1995) have argued that decision support tools have in general failed to improve design outcomes in practice, arguing that they do not reflect how design decision-making is done (their findings are discussed in more detail in section 2.3.3). However, this is a historic study, and so further research is needed to find out the extent to which decision support tools are deemed effective industry settings.

Some authors have criticised the MCDA literature for typically framing design decision-making as an individual activity, whereas in practice many stakeholders may be involved. Such authors have considered how to reconcile the involvement of multiple stakeholders with an attempt at achieving an objective decision (Jowitt, 2004; Kapelan et al., 2005; Kiker et al., 2005; Schöggl et al., 2017; Thomson et al., 2009). To tackle the challenges of making design decisions collectively, further tools and approaches are proposed. For example, Jin and Dinesh (2006) propose a method for aggregating stakeholder objectives using decision-theory.
Navigating expectations for sustainable product design: a DP analysis

(2005) suggest using decision-support tools in contexts such as consensus conferences, focus groups and electronic meetings. However, Hurley et al. (2008) reviewed numerous tools that propose to take into account stakeholder views in design decisions, concluding that the tools were still too rigid to take into account varied viewpoints. She argued that people regularly gain new information and so update or change their views, which is difficult to take into account in a decision support tool. Again, it is unclear to what extent these collaborative tools have been used in professional settings to try to design more sustainable products.

To sum up, the rational conceptualisation of design decision-making highlights the complexity of factors involved and the breadth of knowledge needed to make informed design decisions. However, there are several assumptions in this conceptualisation of decision-making that are problematic. The focus on how to decide between known options ignores arguments that design options can be endless and not well-defined (Hazelrigg, 1998). Specifically regarding sustainable decisions, many have questioned whether sustainable design can be reduced to criteria and rules in one tool, since sustainability includes so many aspects and issues (Fenner et al., 2014; Kapelan et al., 2005; Schöggl et al., 2017). It may be unrealistic to assume that designers possess the necessary scientific and mathematical skills and mindset. The assumption that subjectivity can be eliminated is also unrealistic. Ways in which decisions and criteria are framed by people involved will affect the outcomes, and so a truly objective solution cannot be reached (Smith & Ruiz-mercado, 2014; Steele et al., 2009; Tversky & Kahneman, 1981).

There is an opportunity to explore how designers respond to these normative assumptions about rational decision-making when they reflect on their approach to their work.

2.2.3 Intuitive design decision-making

In contrast to the rational approach, an alternative conceptualisation of decision-making in design is focused on intuition as part of a creative process (Ball et al., 2001). Intuition in the design process has been both recommended as an appropriate way of doing design, for example as part of a ‘design thinking’ approach (Cross, 2001b; Geissdoerfer et al., 2016) and observed in empirical studies (Schon, 2008).
How the uses of key psychological concepts construct different expectations

Design thinking is widely described as being an approach to design that involves both defining and solving a problem in a creative and iterative manner, with a focus on stakeholder engagement, understanding user needs, and extensive ideation (Buchanan, 1992, 2019; Buhl et al., 2019; Chasanidou et al., 2015; Liedtka, 2015). However, it is also commonly claimed that there is no single agreed definition of what design thinking is (Chasanidou et al., 2015; Liedtka, 2013). In design thinking literature, the term problem-solving is typically used instead of decision-making, since creative design is considered to be about finding new solutions that don’t yet exist, rather than choosing between known options, as in the science-based methods (Ball et al., 2001). A designer may still be doing an activity that involves making a recognisable decision, such as choosing materials, but this is typically conceptualised as part of problem-solving and finding a solution. The problem may be what materials to use, perhaps with regards to both function and sustainability (out of a vast number in existence), rather than a choice between a set range of materials.

Numerous tools and techniques are advocated for helping define and solve design problems in creative ways, often collaboratively through stakeholder workshops, such as collaborative mind-mapping, visualisation and rapid prototyping (Geissdoerfer et al., 2016; Liedtka, 2015). Such techniques seek to enable visualisation of possible solutions, experimentation, and iteration before settling on a final concept (Buhl et al., 2019; Liedtka, 2015). Decision support tools are rejected in this model of design as they are seen to limit experimentation and creativity (Skogstad & Leifer, 2011). Instead, decisions are said to be made by doing design, including the many visual and tactile aspects such as sketching and prototyping (Gumienny et al., 2011) as well as the interplay between the visual and the verbal (Jacobsen et al., 2016). Design thinking methods are widely advocated as being useful for achieving sustainability aims, due to their focus on taking into account different stakeholder perspectives (Buhl et al., 2019). For example, seeking to understand how people might use a product may help lead to less waste, due to a product being better adapted for its purpose and so used for longer.

Despite the preference for talking about problem-solving over decision-making, several authors advocate design thinking as useful for helping people make better
Navigating expectations for sustainable product design: a DP analysis

decisions. Chasanidou et al. (2015) argue that design thinking methods can be used to facilitate collaborative decision making in design projects. However, their advice focuses on using design thinking tools and techniques to identify the perspectives of stakeholders, rather than on how to make a decision based on these. Similarly, Clark and Smith (2008) propose that design thinking tools are useful for helping business make a wide range of decisions, providing advice on how to use various tools to help explore and narrow down options, yet not on making the final decision. Liedtka (2015) proposes that design thinking methods can help reduce individual decision-maker biases. She found that solutions typically proposed in psychology for reducing individual cognitive biases are similar to the design thinking methods, such as gathering lots of information and working in teams. However, in focusing on reducing bias, it seems there is a desire to achieve a more objective result (like with engineering design decision support tools) rather than on embracing intuition in a creative process. Owen (2007) suggests that if design thinking is successful, decisions in effect make themselves, since designers work on several viable solutions at once, and then combine the best bits of each, to reach a final, optimum solution. But again, it is not clear how a designer will know how and when a final decision has been made or a solution reached (for example, on which are the best elements to use from each design).

There is limited empirical literature that explicitly focuses on understanding the role of intuition and creativity in decision-making in design. This is perhaps due to the difficulty of being able to report or observe intuition and creativity, which are more nebulous than the actions of comparing options against criteria (involved in the rational approach to design decision-making). Intuition does however feature in the findings of some observation studies of designers. A common method used to understand the design process is protocol studies, which usually involve observing a designer working to a particular design brief in a laboratory setting while verbalising their thought processes (Cross, 2001a; Oxman, 1995). The idea is to get at what designers are thinking when doing their design work, which may enable access to hidden processes and possibly the role of intuition (Cross, 2001a). Participants are usually video recorded, and researchers analyse the video recordings and transcripts. One example of a protocol study that specifically sought to understand decision-making in design was carried out by Akin and Lin (1995). They coded
transcripts from a protocol session for activities including drawing, listening, talking, and writing, and found that design decisions often took place when the three different activities of ‘drawing, examining and thinking’ were occurring at the same time. This suggests that multimodal activity enables decisions to be intuitively reached. However, they also note the difficulty in identifying when decisions were being made based on what the designer said. Sometimes the participant was explicit about making decisions, for example saying, 'I’ve decided that…', whereas other times the researchers needed to make an appropriate judgement about what constituted a decision based on what was said (Akin & Lin, 1995). It is perhaps due to this difficulty in identifying when decisions are being made, which is labour intensive and requires qualitative analysis skills, that there is only limited research on decision-making involving observation of a designer at work.

A second example of a protocol study of decision-making in design that also provides findings on intuition was carried out by Dwarakanth and Wallace (1995), involving engineering designers working on a design brief and ‘thinking aloud’. Based on an analysis of both explicit and implicit decisions related to the product, the study provides several useful insights. The researchers found that designers undertook a lot of experimentation and exploration immediately before making an explicit decision. Making a decision either involved establishing and comparing alternatives or coming up with and immediately evaluating a single option as to whether it was suitable. The former reflects the engineering design model of decision-making, rather than the intuitive conceptualisation. The latter goes against both the engineering design principle of carefully comparing options, and the design thinking principle of extensive ideation. This second approach resonates with findings from several other protocol studies that have concluded that designers often fixate on one solution early on (sometimes referred to as a ‘creative leap’), and so limit their consideration of other possible solutions (Cross, 2001a). However, for Cross (2001a), this is not necessarily a bad thing, as it could represent an experienced designer rapidly and efficiently making an intuitive judgement that leads to an appropriate solution. Dwarakanath and Wallace (1995) also found that designers often forgot the criteria they had previously identified, and often repeated the same explorations. Furthermore, the criteria for design decisions were found to evolve and change during the design process (Dwarakanath & Wallace, 1995). While this is only
Navigating expectations for sustainable product design: a DP analysis

one study and so should not be generalised, these findings suggest that a messy, creative, iterative design process was at play in this case, rather than an organised, rational, engineering design approach.

More recently, Almendra and Christiaans (2010) carried out a protocol study of decision-making in design, involving industrial design students working in groups on a design brief. The researchers report how the participants worked to generate multiple ideas and then decided on the best-fit solution using the information available. However, in order to gain insights specifically on decision-making, this time, participants were asked to specifically verbalise their decisions, the reasons behind them, and the goals related to their decisions. Thus, what the participants spoke about was heavily influenced by the researchers. They broadly concluded that the act of designing itself could be framed as a decision-making process (Almendra & Christiaans, 2010). In terms of research methods for studying decision-making, seems there is a choice to be made by researchers between steering participants to focus directly on reporting how they make decisions, and understanding that the data is thus co-constructed between researchers and participants, or seeking to avoid influencing what participants say, and risking not obtaining such in-depth insights specifically related to decision-making.

To sum up, design thinking theory is useful in demonstrating that design decision-making can be hidden and intuitive within a creative process. According to this conceptualisation, designers should be familiar with a range of tools and techniques that promote creativity and stakeholder engagement. Designers are not expected to focus explicitly on decision-making, but on finding solutions, or indeed letting solutions emerge. Protocol studies show how the design process can involve different activities being carried out simultaneously, and how solutions to design problems can be found through doing design, without necessarily being aware of how design decisions were made.

However, there are several limitations of this approach, both in terms of the preference for conceptualising decision-making as embedded in problem-solving, and in the method. The focus on describing what the designers do as problem-solving reflects design thinking theory but does not necessarily reflect how designers themselves conceptualise what they are doing. Designers may indeed consider their
roles to involve making decisions (for example, we have seen above that in Akin and Lin's (1995) protocol study, the designers explicitly said they had made a decision). Rather than applying the theory of design as problem solving onto designers, it is also important to find out how designers conceptualise the actions involved in design. In terms of the popular protocol studies method used in observation work, the expectation that designers should be able to accurately articulate the design process they are using in almost real time is problematic. Indeed ‘thinking aloud’ methods are criticised for being unable to accurately reflect participants’ thoughts, and it is also argued that being asked to talk out loud will influence the design work (Dorst, 1995; Lloyd et al., 1995). The assumption that intuitive aspects of design can be made accessible in conscious thought and then in talk through ‘thinking aloud’ also seems contradictory (since the idea of intuition in theory involves feelings rather than thoughts). Furthermore, the laboratory settings most of these studies take place in are also criticised for not reflecting how a designer would work to a brief in a naturalistic setting (Dorst, 1995; Lloyd et al., 1995). Protocol studies should therefore be taken as constructions of particular versions of design process in particular settings, rather than as generalisable to other situations. Finally, there is a gap regarding understanding the relevance of intuition in design decision-making specifically with regards to sustainability.

2.2.4 Design decision-making in interactions

Increasingly, and in contrast to the design methods discussed above, there is research that conceptualises decision-making as taking place in interactions. Design decisions are viewed as being made collaboratively among team members or stakeholders through discussion and negotiation, without necessarily assuming strong individual agency of designers. This conceptualisation is supported by a body of empirical literature based on observation, typically of design meetings. Video or audio recordings and transcripts are analysed, considering verbal and sometimes also multi-modal aspects of behaviour and communication.

Several studies on decision-making have been carried out using the same dataset from the 7th Design Thinking Research Symposium, which consisted of two meetings between different types of product designers talking about the design of a particular product, and two between an architect and clients discussing possible design options.
Navigating expectations for sustainable product design: a DP analysis

(J. A. McDonnell & Lloyd, 2009; J. McDonnell & Lloyd, 2009). For example, McDonnell (2009), in analysing the architect meetings, drawing on the discourse analysis methods of Fairclough (2001), highlights how one party gains support for a design decision they are proposing by invoking the expert knowledge of the other party, resulting in joint agreement. Luck (2009) uses a conversation analysis (CA) approach to demonstrate how a design concept was produced in the design meetings. She highlights how a design solution is agreed through negotiation, description of the solution, and displaying ownership of the concept. The use of ‘produced’ rather than decided implies that design work was being done directly in the meeting, with the final design concept was arrived at collaboratively, rather than previously identified options being presented and decided. Arıkoglu, Blanco and Pourroy (2009) highlight from their analysis of the product design meetings how sketches can sometimes crystallise decisions within a group, through making them clear and concrete, and so able to be committed to. It is also recognised that group decision-making in meetings may prove challenging. Luck (2013), for example, finds numerous ambiguities and misunderstandings in different types of meetings held among a multidisciplinary design team.

Other studies of design meeting interactions have found that decisions may not be made in the meetings themselves but are made later. Oak (2009) found that the talk in design meetings is often vague and ambiguous, and that utterances are used to put off a decision into the future. But she also found that meeting minutes are sometimes used to frame something that was discussed as a decision that was made. McDonnell (2010) has also studied how design decisions are sometimes not made in meetings, reporting that they are deliberately put off through vagueness and hesitation. Finally, design meetings have been found to be used to convince other stakeholders of decisions already made beforehand. For example, McDonell and Lloyd (2014), based on a seven-year ethnographic study, found that architects work to justify design decisions they have already made to clients in meetings by drawing on and highlighting their designer expertise. They conclude that more research is needed on how design decisions are made and how they are justified to different audiences.
These observation studies usefully show that various different strategies are used in interactions in design meetings to reach joint decisions, convince others of decisions made, or to put off decision-making. Decision-making in design involving social settings therefore appears to be complex, involving negotiation and persuasion. However, there are some challenges associated with seeking to study how design decisions are made using observation of interactions. Several studies involving observing meetings in other contexts beyond design have highlighted that it can be difficult to identify whether a decision has been made, or how it was made (Boden, 1994; Halvorsen & Sarangi, 2015; Mehan, 1983). Studying decision-making in naturalistic settings may allow noticing of the incremental steps made towards a decision through interactional sequences, yet the final decision itself may be invisible (Halvorsen, 2013). The focus on meetings as the site of interactions presents some limitations. As highlighted by Halvorsen and Sarangi (2015), and as seen in the findings of some of the design studies discussed above, meetings may operate simply as rituals for reporting and exchanging information among colleagues, rather than as occasions for decision-making actions. Aspects of the team decision-making are also likely to take place outside of meetings, for example in the design studio, in corridors between meetings, in office chat, or in emails. And of course, individual designers may have made some design decisions privately before meetings occurred. Therefore, meetings can only give insights into some aspects of decision-making at particular stages of projects. These limitations point to an opportunity to use other methods alongside observation of meetings, such as asking design stakeholders to give retrospective accounts of decision-making in particular projects.

2.2.5 Summary

In considering decision-making in design, we have seen that there is much theory on how design decisions (related to sustainability and in general) are made or should be made, either through rationally weighing up options, intuitively within a creative process, or interactionally through discussion. In the first two, designers are typically portrayed as possessing agency to make decisions, and requiring either scientific or creative skills, whereas in the third, designers are one stakeholder among many involved in decision-making, requiring negotiation skills.
I have also noted that there are challenges associated with all three conceptualisations of design decision-making, and so an opportunity to complement existing work with analysis of designers’ own perspectives on how design decisions are made. This would provide insights into how designers portray the processes involved in design decision-making, in relation to assumptions that decisions may either involve individual designer agency to make rational or intuitive decisions, or negotiation with other stakeholders.

2.3 Values in design

I now turn to the notion of values, which is widely associated with design decision-making. The topic of values has become a prominent focus in design literature in the 21st century. In psychological theory, values are defined as things people deem to be of worth (Rokeach, 1973). The values people hold are widely conceptualised as influencing decisions people make (Osman, 2014; S. H. Schwartz et al., 2012). Therefore, in the design literature there is an assumption that what matters personally to people involved in product development will or should influence design decisions. In the literature on values in design, some researchers focus on empirically identifying designers’ values and how they are used or made relevant in the design process. Other literature is prescriptive. Authors advise on how designers can ensure that different stakeholders’ values are taken into account in design decisions. For example, a compilation of resources has been produced for teaching designers to identify and use both their own values and those of stakeholders (VASE: Value Sensitive Design in Higher Education, 2022). Values may be relevant whether design decisions are made using tools that seek rationality, intuitively as part of a creative design process, or interactionally through talk among stakeholders.

In this section, I first expand on the different ways in which values are theoretically considered relevant to design. I then review literature on designers’ values and on stakeholder values in design.

2.3.1 How values are relevant to design

Focusing on values in design is advocated as a way of understanding how ethical issue are taken into account in the design process, with environmental sustainability being treated as a key ethical issue (van den Hoven et al., 2015). While the literature
focuses on the idea of values as moral priorities, the sorts of values that may be relevant to design decisions may be moral or practical. Moral values that may be relevant in design decision-making include environmental sustainability, equality, fairness and honesty. (Hedlund-de Witt et al., 2014; Jordan & Kristjánsson, 2017; Ku & Zaroff, 2014; Wong, 2021). Practical values in design may relate to product use, such as simplicity and quality, and of course aesthetic values such as form and beauty (Lloyd, 2009; Manders-Huits, 2011; van den Hoven et al., 2015). There is also a common argument in the science and technology studies literature that values can be embedded into objects, to in turn influence users' behaviour (Latour, 1992; Lilley & Lofthouse, 2010) (as in the Actor Network Theory mentioned in section 2.2.1). For example, designing a smartphone based on the value of recyclability, by making it easy to dismantle component parts into materials categories, may influence users to make the effort to recycle at the product's end of life.

Different people involved in design may have different sets of personal values. It is widely considered that people have particular personal values that remain relatively stable over time (Blasi, 2005; Boer & Boehnke, 2016; Hitlin, 2011). Thus, design stakeholders who value the environment may maintain sustainability as a priority value across different projects and throughout their careers. Hitlin (2011) suggests that values symbolically work to ensure a coherent moral self across different social identities and contexts, and, relatedly, Bagozzi et al. (2013) assert that acting in line with one’s moral values is associated with emotional wellbeing. Having stable values is therefore thought to be useful in maintaining a coherent sense of self identity, and to achieve emotional wellbeing.

However, it is theorised that how people’s values are operationalised is context-specific, with different values being activated in different situations (Osman, 2014). An individual who reports strongly valuing nature may find this value competing with other values, such as thrift or safety. For example, someone who considers themselves to value sustainability may have decided to use disposable facemasks during the recent coronavirus pandemic due to higher cost and possible reduced effectiveness of reusable, environmentally friendly options. A designer who usually prioritises environmental sustainability may sometimes prioritise other values such as aesthetics or accessibility for users.
Navigating expectations for sustainable product design: a DP analysis

There may also be values clashes among values expressed by different stakeholders involved in design (van de Poel, 2015a; van Gorp & van de Poel, 2008). For example, some stakeholders may wish to prioritise the value of environmental sustainability, while others prefer to prioritise valuing affordability for consumers. It is proposed that in such cases designers need to make choices that involve disregarding some values (van Gorp & van de Poel, 2008).

In terms of how values influence decisions, there is an ongoing debate regarding whether values typically inform behaviour in a rational way, involving moral reasoning, or in an intuitive and emotional way, with rational explanations being constructed after decisions are made (Avramova & Inbar, 2013; Haidt, 2001; Maibom, 2010; Monin et al., 2007). Thus, in everyday design work, designers may or may not be conscious of their values and the role they play in their work. Furthermore, designers may hold particular values, but these may not be activated or acted on in their design work simply due to habit or convenience of behaviours that do not reflect their priority values (Linder et al., 2021). Indeed, people are commonly found to report holding strong sustainability values but not always acting on them, representing a values-behaviour gap (Kennedy et al., 2009). For example, people may report caring deeply about the environment but regularly using single use coffee cups due to convenience or habit. Thus, designers reporting that they hold strong sustainability values may not reflect these values in their design decisions. For example, they may continue to select non-recyclable plastics or toxic bonding agents.

A lot of literature on values in design is normative, providing arguments and guidance on how values should be taken into account. A prominent movement called Design for Values focuses on how values can be actively used in design decision-making (van den Hoven et al., 2015). Design for Values is pitched as a more appropriate and effective way of embedding ethics into everyday design and engineering, than the traditional engineering ethics approach. Engineering ethics historically focused on solving explicit ethical dilemmas in largescale projects, such as deciding between following corporate orders or whistleblowing about potential disasters such as building or bridge collapse, plane crashes, fuel tank explosions or chemical leaks, using traditional normative ethics theory (Johnson & Wetmore, 2007;
Zeidler, 1990). In contrast, focusing on values is supposed to engender a more nuanced and reflective way of taking into account values all design decisions (Bero & Kuhlman, 2011; Johnson & Wetmore, 2007; M. S. Pritchard, 2001). The idea is that values can be actively identified and actively used as criteria to inform design decision-making.

### 2.3.2 Designers’ values

It is argued by several authors that designers should reflect on their own personal moral values related to sustainability and draw on these in their decision-making (Chan, 2018; Cummings, 2006). Several authors have sought to empirically study what values designers have and how they influence their design decisions.

A common approach to finding out what values designers have and use in their work involves simply asking them directly. Mate (2006), for example, carried out interviews with interior designers, in which he asked them about their values in relation to materials selection decisions. He categorised the designers into champions, conformists and challengers based on the varying strengths of their sustainability values and concluded that having sustainability values was not necessarily translated into more sustainable design decision-making. Similarly, Trimingham (2009) sought to identify the values used by student designers’ working to a brief, using observation with concurrent verbalisation, plus retrospective interviews to ask directly about what values were used in their decision-making. She produced a schema of different types of values held and used by the student designers. For example, based on an interview quote in which a participant says, ‘we kind of design the ideas of how we want it to look, then take a range of materials, try to analyse them – which one is best’ the author concludes that they put the value of aesthetics before appropriateness (Trimingham, 2009, p. 225). The findings suggest that the designers were grappling with values clashes when making design decisions.

However, in the approach taken in these interview studies, we can see a number of assumptions. Firstly, the researchers interpret what the designers say as reflecting what kinds of people they actually are (that is, how ethical they are in their approach to sustainability in design). The influence of the interview questions and contexts on participants’ responses is not taken into account. Secondly, in their interview responses, the participants do not always explicitly talk about values. Instead, as
seen in the quote above from Trimingham’s (2009) study, the researchers use their own interpretation to decide what values are being alluded to, and to produce categorisations of values used.

A different way of seeking to identify what values designers draw on in their work involves observing design meetings. This allows researchers to explore whether and how participants draw on the concept of values in collaborative design decision-making. In contrast to the studies above that involve directly asking people about their values in contrived settings, these observation studies provide insights into what naturally occurs in everyday design settings. For example, Lloyd (2009) analyses how values are used in architects’ meetings. He describes a discussion about the colour of a roof and reports that one participant suggests it would be nice to have a different colour roof to the one next door. He quotes another participant as saying ‘I think it’ll speak for itself in terms of the relationship to the trees in the background’ (Lloyd, 2009, p. 159) The author concludes from this that the design solution (making the roof green) combines the values of usability and environment. Thus, the author codes the conversations in terms of what they reveal about values. Studying the details of talk in design meetings in this way provides insights into how different values may be being taken into account in collaborative design decision-making.

Le Dantec and Do (2009) similarly conclude that values inform decisions between design solutions. They analyse the same meetings as Lloyd (2009) using grounded theory coding to identify ‘language and concepts that express values’ (Le Dantec & Do, 2009, p. 119). They identify values such as aesthetics, uniqueness, purity, and form. In particular, they conclude that values are transferred between speakers through negotiation in interactional talk. The designers are not only seen to be using values to justify their decisions or suggestions but are seen to be influencing and other stakeholders to take on similar values. This study gives useful insights to support the proposal made by Boenink and Kudina (2020) that values are living and dynamic. Thus, decision-making in collaborative settings can involve using the notion of values to convince others to support a particular solution.

Le Bail et al. (2020) also coded transcripts of design meetings at a student workshop for what they interpreted as values. Using their coding of different values, they
How the uses of key psychological concepts construct different expectations

deduced were being referred to in the talk (such as ecology, freedom, equity), they identified value conflicts between team members (for example, economy versus ecology). However, in this case, the researchers concluded that discussion and negotiation did not lead to resolution of the value conflicts, as participants were not willing to abandon their own prioritised values.

These studies show that the notion of values is located in interactions. That is, what values are used in design and how they are used can be identified by looking closely at interactional talk in design settings. However, in these observation studies on values in design, in the data analysed, participants themselves do not generally directly talk about the concept of values. Instead, researchers are interpreting where and how values are being made relevant in the discussions and negotiations. There is therefore an opportunity to also examine how the notion of values is used in interactions in which participants explicitly talk about the role of values in design.

2.3.3 Stakeholder values

In the normative Design for Values literature, specific guidance has been devised on how to identify and take into account different stakeholders’ values. There is an assumption that designers should seek to understand the priorities of different stakeholders and make decisions that reflect these.

The most prominent method advocated in the literature is Value Sensitive Design (VSD) (Davis & Nathan, 2015; Devon & van de Poel, 2004; van de Poel, 2015b). VSD recognises the social process of design and design decision-making, rather than focusing on individuals making ethical decisions alone (Devon & van de Poel, 2004). Thus, acknowledging the likelihood of there being competing values among and between stakeholders (such as aesthetics versus sustainability), VSD proposes a way of taking people’s values into account over three stages. Stage one involves identifying stakeholders’ (including designers’) values, usually through facilitated discussion with them on what values are relevant to them and what these values mean (Davis & Nathan, 2015). Methods such as guided brainstorming, semi-structured interviews, focus groups, and values scenarios are used to identify what values people consider relevant to a particular design project (Winkler & Spiekermann, 2018). In some uses of the method, a list of values considered likely to
be the most relevant to design is specified at the outset, that people can choose from. The list of twelve human values commonly specified, includes environmental sustainability, alongside wellbeing, privacy, safety, democracy, and human rights (Albrechtslund, 2007; Cummings, 2006). Next, there are efforts to understand how stakeholders perceive the values as relevant to the particular project using varied methods including surveys, interviews, and observation (for example, about people’s experiences and wishes). Finally, once specific design options have been produced, they are analysed in relation to the values identified (Albrechtslund, 2007; Cummings, 2006; Reijers & Gordijn, 2019). Using VSD should in theory help ascertain the extent to which stakeholders prioritise sustainability in a project, and which other values trump sustainability in particular instances. Using VSD does not therefore guarantee a more ethical outcome, as different stakeholders will prioritise different moral and non-moral values in a project. It does, however, appear to provide a way to ensure that different values are considered and discussed, which may lead to greater prioritisation of issues such as sustainability due to there being an explicit opportunity to argue the case for them.

Case studies of VSD being used in particular contexts by researchers have been published, although more commonly based on digital design than the design of physical products. However, in these case studies, the methods used to identify values in VSD processes are not usually reported in detail (Cummings, 2006; Winkler & Spiekermann, 2018), making it difficult to assess the assumptions and interpretations involved, and the effectiveness of particular approaches. Borning and Muller (2012) and Boenink and Kudina (2020) assert that authors writing about VSD often do not acknowledge the extent to which they have interpreted what participants have said, in applying their own terminologies to come up with lists of priority values. Kroes and Van de Poel (2014) discuss the challenges of measuring and using people’s values, concluding that this is very problematic, for example, due to challenges of how we can know we are measuring what we think we are measuring, that is how we can know we understand a value in the same way as other stakeholders. In the end they propose that designers and design teams need to make ‘value judgements’ about what constitute the values at stake (Kroes & van de Poel, 2014, p. 23). Several authors have criticised the lack of clear guidance in the VSD methodology on how to deal with values conflicts (Kozlovski, 2022; Manders-
Huits, 2011). There is an opportunity for further empirical study of VSD processes, to observe specifically how values are conceptualised and identified by facilitators, researchers, and different stakeholders involved, and how conflicts are discussed.

VSD is not the only way that researchers have sought to identify stakeholder values in design. Less formal methods have also been used. For example, Shilton (2018) carried out participant observation of information technology designers working together on a particular project. She first gave talks on the concept of values, and then asked the designers to reflect on what values were relevant to the project, and what values other stakeholders might prioritise, in group discussion and research interviews. Shilton (2018) took the approach of seeking to ‘surface’ designers’ values through asking them to reflect on them. Seeking to ‘surface’ people’s values, which are seen as naturally hidden, is a common approach in business ethics research, involving asking connected probing questions about what is important to them in different situations (Bourne & Jenkins, 2005; Trocchia et al., 2007). Inspired by Schön’s work on reflection in design (1988), Shilton (2018, p. 265) proposes getting participants to consider values as ‘things to think with’. However, she reported getting the designers to reflect on values as challenging. The participants reported difficulty in thinking in terms of values, and in trying to imagine the values of other stakeholders. This study highlights the complexity of values in design since a researcher or facilitator might conceptualise values in a different way to designers.

2.3.4 Summary

In this section, we have seen that there are different ways in which the topic of values in design is theorised and studied. The notion of values in design is conceptualised as a way of ensuring more ethical design outcomes, by ensuring design decisions reflect stakeholder values. Environmental sustainability is commonly framed as a key moral value.

Normative literature on values in design proposes that designers should be aware of and able to articulate their personal values and should be drawing on these in design decision-making. In the context of sustainable design, designers are assumed to possess and be driven by sustainability values, which are to be weighed up against other moral and non-moral values in each design project. In some cases, designers
are expected to also take into account the values of other stakeholders in a project. Methods such as VSD offer a way of doing this. However, there is a risk when using VSD of a lead designer or researcher relying too heavily on their own conceptualisations and judgements of what values are and where they are relevant, when interpreting what other stakeholders say about values.

Empirical studies on values in design have sought to identify designers’ values and which are used in their design work by directly asking them about their values. Design meetings have been observed to interpret whether and how values are implicitly being made relevant in design decision-making. However, both approaches rely on researchers applying their own interpretations of what values are and how they can be categorised. Seeking to accurately identify others’ values based on what they say presents an epistemological challenge. That is, in doing so, an assumption is being made that what people say about values reflects an inner reality of what they actually value. Rather than trying to find out a reality of what values designers possess and use, we can examine designers’ talk about values to see how they use the notion, and how they manage assumptions about how they should be drawing on values in their decisions.

2.4 Responsibility in design

According to psychologists Bagozzi et al. (2013), taking into account values leads to morally responsible decisions. I now turn to the concept of responsibility, and review how responsibility fits with the idea of design decision-making. Responsibility for product sustainability is widely discussed in design literature. The notion of responsibility is used in various ways. Responsibility is conceptualised at organisation or profession level, and at individual level. For example, the concepts of responsible design, responsible innovation and responsible business are widely used by organisations, and typically relate to environmental and social impacts (Business in the Community, 2021; Lettis et al., 2018; University of the Arts, London, 2021; van de Poel & Sand, 2018). These concepts portray responsibility as an outcome of how people involved in an organisation or profession behave collectively. Yet when responsibility is attributed to a collection of professions and stakeholders through the use of terms such as responsible design, it is difficult to be specific about what the states or actions of being responsible or taking responsibility mean.
Instead, when focusing on responsibility at the level of individuals, we can consider how different framings and different assumptions about responsibility for sustainability in the context of design may influence how design decisions are made and accounted for. I therefore focus on reviewing how responsibility relating to individuals in design is theorised in design literature.

In this section, I review different ways responsibility is conceptualised in theoretical design literature, to understand what normative assumptions are constructed about designers. I first consider the different meanings of responsibility, and then focus on two common framings used in relation to sustainable design – holding designers responsible and expecting designers to feel responsible. Although there is a lack of empirical research on responsibility in design, I consider two interview studies which give some initial evidence on how designers use different framings of responsibility to portray their responsibility for wider ethical issues such as sustainability in different ways.

### 2.4.1 Meanings of responsibility

It is widely asserted that there is often a lack of clarity regarding what responsibility means in ordinary use in different contexts (Albin, 2018; Robinson & Smith, 2012), including in design (Burget et al., 2017; Fry, 2004; van de Poel & Sand, 2018), since the term is used in different ways. Indeed, there is no single definition or use of the concept of responsibility. The dictionary definitions of responsibility include an accountability framing (‘having a duty to deal with something’; ‘being accountable or to blame for something’), a virtue framing (‘a moral obligation to behave correctly’) and an agency framing (‘the opportunity or ability to act independently and take decisions without authorisation’) (Oxford English Dictionary, 2021). These definitions treat responsibility as tied to a person who has made or will make decisions.

Responsibility is also categorised into two framings by philosophers, involving either accountability (relating to norms and promises) or virtue (based on character and feelings) (Watson, 1996). A person can therefore be said to be responsible either based on accountability associated with holding a particular role, such as a job, or through actively taking responsibility (van de Poel & Sand, 2018; Widell, 2012). The implication is that if someone is held responsible for something, they may be more likely to make good decisions. If someone feels responsible, this may influence them
to make more moral decisions (Williams, 2008). However, the variety of ways the concept of responsibility can be used and understood may lead to a lack of clarity of expectations in professional settings. For example, an individual being told they are responsible for a particular project or issue may wonder if they are being asked to behave in a morally correct manner or are being blamed for something.

In theoretical literature on responsibility for sustainability for design, I note that both the accountability framing and the virtue framing are widely discussed. It is useful to consider what assumptions these different ways of thinking about responsibility are constructing about designers. In the sections below, I examine firstly the idea of responsibility as a duty (holding designers responsible) and then the idea of responsibility as a virtue (designers feeling responsible).

### 2.4.2 Holding designers responsible

There is disagreement in the literature regarding whether designers can or should be held responsible for wider design impacts, such as those related to sustainability, when they are not formal responsibilities of their role. This literature is normative, rather than empirical. In some cases, responsibility for designing in a sustainable way is formally part of a designer’s role, and thus holding designers responsible for sustainability impacts of products may be considered reasonable. There is sometimes a code of conduct or sustainability strategy that helps guide design decisions in a top-down manner (Fry, 2004). A client may require a designer to ensure sustainability is taken into account in design decisions. However, in many instances sustainability will not be a formal duty in a designer’s job description, especially in cases where companies or clients do not have prominent sustainable design objectives.

Authors who argue for morally responsible designers, that is, that designers should be held morally responsible for the environmental impacts of products they play a part in producing, frame responsibility as a consequence of having taken on a design role (Owens, 2006; Papanek, 1985). Johnson and Wetmore (2007), for example, propose that the fact that designers make the design decisions means they can be held responsible for product impacts. There is a lack of research on how designers
respond to this assumption, both about their agency to make key decisions and their associated responsibility.

In contrast, other authors argue that designers often lack the agency to be able to be held responsible for design impacts (van de Poel, 2001). It is recognised that designers and engineers are required to balance requirements from a wide range of stakeholders (as we have seen when discussing designers’ roles in decision-making in section 2.3.1). These may include clients, managers, professional codes of conduct, regulation (for example, on consumer rights, health and safety or environmental issues), along with costs, technical feasibility, design aesthetics, and potentially also the designers’ own moral values (Fry, 2004; Johnson & Wetmore, 2007; Owens, 2006; van de Poel, 2001). Some authors argue that due to their lack of individual agency to make design decisions, designers should not be held individually responsible, but instead responsibility should be shared among all stakeholders (Fahlquist, 2009; Fahlquist et al., 2014; Swierstra & Jelsma, 2006). Some suggest that every actor involved should take some individual moral responsibility for their role in design decisions (Johnson & Wetmore, 2007; van de Poel, 2001). However, if responsibility is shared among many stakeholders, the ‘problem of many hands’ may occur, where no one takes responsibility for any particular design decision and its ethical consequences (Devon & van de Poel, 2004; Fahlquist et al., 2014; van de Poel, 2001). Owens (2006), for example, suggests that designers may try to minimise their personal responsibility by deferring to collective responsibility.

According to these arguments about agency, designers should not be assumed to be individually responsible for how sustainable products are. This perspective on responsibility could be used by designers to justify not taking action on wider ethical issues, if no one is holding them accountable. Indeed, in a small-scale interview study by van der Burg and van Gorp (2005), used as a case study within a theoretical paper, the authors found that designers working on a lightweight truck trailer claimed they did not propose safety improvements to clients, arguing that traffic safety was not part of their responsibility, and that the clients had not requested them. The authors disagree with the designers’ interpretation of responsibility here, and with the fact that they transferred responsibility to the clients.
Navigating expectations for sustainable product design: a DP analysis

While this study was not about how designers negotiated responsibility for sustainability, it was about responsibility for an ethical, societal issue, and so it is possible that designers may sometimes negotiate responsibility in similar ways for sustainability.

As well as agency, awareness of possible consequences is theorised as being needed in order to hold someone responsible (Alfano, 2015; Jones et al., 2017). Today, most designers are likely to be aware of at least some of the possible negative future environmental impacts of products they are involved in designing. However, some long-term impacts of products are likely to be difficult to predict (Allenby et al., 2017; Jones et al., 2017), so designers may not have enough knowledge of future consequences of their decisions to be held responsible for them (Fahlquist et al., 2014). For example, it could be argued that a designer could be held responsible for choosing to design single-use plastic items, knowing the effects of plastic pollution on oceans and wildlife, but perhaps could not be held responsible for as yet unknown long-term consequences of microplastic particles on human health. This argument that a designer can only be held responsible for the impacts of their work if they were fully aware of the consequences might be used by designers to deflect accountability in some situations.

2.4.3 Expecting designers to feel responsible

As we have seen in the definitions at the start of this section, responsibility can also be framed as a virtue, related to feelings and character. In this personal framing of responsibility, the assumption is that if someone feels responsible in a situation, they may be more likely to behave in a virtuous way. Many authors advocate that designers should feel responsible for the sustainability-related impacts of their design work (Cook, 2008; Fry, 2004; Köhler, 2013; Owens, 2006). These authors suggest that if designers feel responsible, this feeling will encourage them to make more sustainable design decisions. In situations where designers do not have power to make final design decisions, in this normative literature, the argument is that feeling morally responsible can encourage them to attempt to influence others’ decisions. For example, some authors argue that designers should highlight negative environmental impacts of products they are designing to decision-makers such as clients (Fry, 2004; van de Poel & Verbeek, 2006). Thus, expecting designers to feel
responsible for sustainability impacts of their design work may lead to them taking additional action to try to ensure more sustainable decisions.

Indeed, in a small-scale interview study described by Swierstra and Jelsma (2006), engineers are reported as saying they have limited agency to influence client decisions related to social responsibility, but nevertheless they actively propose more sustainable solutions (in this case biodegradable plastics). Swierstra and Jelsma (2006) use this empirical example to support their argument that there are ways to overcome structural constraints on acting responsibly, that is, by feeling responsible and in turn seeking to influence others. However, since there is a lack of empirical literature on how designers themselves conceptualise feeling responsible for sustainability, there might also be situations in which feeling responsible for sustainability, or being expected to feel responsible, is associated with frustration due to a lack of agency, and so a lack of action.

2.4.4 Summary

Responsibility is highly relevant to decision-making in sustainable design, yet the concept is used in several different ways, which could result in confusion for designers and other design stakeholders. Two key contrasting types of responsibility are commonly theorised in design literature regarding sustainability impacts of design, the notion of holding designers responsible for their actions and the idea of designers feeling responsible. Despite much normative literature discussing the extent to which designers should be held or should feel responsible for sustainability impacts of products, there is a distinct gap in empirical research regarding how designers relate to and manage assumptions about responsibility in design. There is thus an opportunity to conduct empirical research on how designers themselves construct responsibility for sustainability in design and how they navigate different assumptions about their responsibility.
2.5 Summary - how assumptions in the literature construct expectations

In this review of the literature, we have seen that better decision-making, using values, and taking responsibility are widely discussed as being key aspects of achieving good design, and more sustainable design. While the three concepts are linked, they are often treated separately in the design literature. I have shown in this review that there are various key assumptions inherent in the ways decision-making, values, and responsibility are portrayed in the literature on sustainability in design. Here I summarise how these assumptions construct particular expectations regarding how designers should act. This represents a new way of looking at the literature on these three concepts.

This literature review has found that designers are positioned as accountable for how sustainable products are in several ways. Designers are commonly conceptualised as active decision-makers by many authors and sustainability campaign organisations. The contrasting idea that designers lack power in decision-making, since decisions are likely to be made through negotiation among stakeholders rather than by individual designers, is less developed in the literature on sustainable design. Thus, the expectation of designers being active and powerful dominates. Designers are advised and expected to make more sustainable design decisions either by rationally weighing up options against criteria, or by following a creative problem-solving process, with the former advice being more prominent in sustainable design guidance. In other cases, design decision-making is conceptualised as taking place in interactions, and so designers may need to be able to successfully communicate and negotiate verbally.

This review has also found that many authors argue that personal values should be used to drive design decision-making. Sustainability-focused designers are expected to draw on personal values related to sustainability. Designers may also be required to identify and take into account other stakeholders’ values, and various methods are proposed for doing this, most notably VSD. Such methods imply that a rational, considered approach to design decision-making is expected.

Finally, in making more sustainable decisions, based on sustainability values, this review has shown that designers are widely expected to take responsibility and feel
How the uses of key psychological concepts construct different expectations

responsible for how sustainable products are. However, these assumption about designers’ responsibility are contested, based on the idea that designers often lack decision-making power and full awareness of potential future consequences, and so cannot be held responsible.

There are numerous possible effects of these various inferred expectations on designers. There is a risk of confusion due to the contrasting rational and intuitive perspectives on how design decision-making should be done, the different ways of conceptualising the notion of values in design, and the different framings of responsibility. Expecting designers, even those who are personally committed to prioritising sustainability, to play a key role in achieving sustainable design despite structural limitations could lead to pressure, stress, and frustration, which could potentially limit action taken. Or, holding designers to account to play a key role may encourage determination and additional action.

I have found that there is a significant gap in the literature regarding how designers themselves conceptualise their actions and how they negotiate and manage the assumptions about how they should do their design work. In the next chapter, I explain how examining designers’ accounts of their work can enable us to see how they are navigating these various assumptions and expectations regarding decision-making in sustainable design. I then provide a detailed description and justification of the methods I used to gather and analyse designers’ accounts of their work related to sustainability.
Chapter 3  Research design and methods

In this chapter, I explain my research design and methods. In the previous chapter, I established that there is a gap in the literature regarding how designers conceptualise decision-making, values, and responsibility from their own perspectives. Here, I argue that looking in detail at how designers talk about their work is an appropriate way to see how they account for their actions, when facing different assumptions and expectations. I introduce discursive psychology (DP) as the appropriate way of analysing designers’ accounts of their work. I then provide detail of the methods I used to collect designers’ accounts of their work and to analyse the data using DP. I describe pilot research undertaken to help verify my intended approach, then outline the two data collection methods used, including ethical considerations. I then explain the analytical procedure used, and describe how I managed quality, transparency, and my positionality as a researcher who is also a sustainability practitioner.

3.1 Why discursive psychology?

The research seeks to answer three key questions, which all relate to how product designers conceptualise what they do. Analysing interactional accounts to answer these questions also enables insights into how designers navigate normative assumptions regarding how they should be embedding sustainability in their work. RQ1: How do sustainability-focused product designers construct what design decisions are and how they are made? RQ2: How do designers construct the significance and role of personal values in sustainable product design? RQ3: How is the notion of responsibility for sustainability practically managed in talk by product designers? In order to study how designers construct meaning and manage possible normative assumptions about how they should act, we can examine what they do when held accountable for their actions, by being asked to produce accounts of what they do as designers. Attention can be paid to the ways they construct and deliver such accounts.

In this study, I am specifically interested in how designers account for decision-making, the role of values in decision-making, and responsibility. These psychological concepts are often treated as representations of cognitive processes and mental states, which can be accessed by asking people about them (Wiggins,
Navigating expectations for sustainable product design: a DP analysis

2017). But instead, DP provides a way of paying attention to how psychological constructs are used and managed in specific contexts in different ways for specific purposes (Edwards, 1999). DP, is a method that has been developed in recent decades to analyse psychological constructs as social, discursive practices, through studying talk as action (Wiggins, 2020). For example, much prior DP research has focused on reframing how the psychological concept of attitudes is understood, shifting from the idea of attitudes as consistent cognitive mental states, to attitudes as constructed in particular ways in particular contexts (Tileaga & Stokoe, 2015). In DP, talk is viewed as both constructed, using available vocabulary and concepts, and constructive, building versions of reality using accounts and descriptions (Weatherall, 2015; Wiggins, 2017). DP research therefore follows a social constructionist epistemology, meaning what participants say is understood as socially constructed in a particular time and place, for a specific purpose, rather than reflecting an underlying reality (Weinberg, 2020). Interactions can be assessed in terms of the specific ways the talk is constructed and what is accomplished.

Using a DP approach to analyse designers’ accounts of their work, we can see they negotiate and account for their actions in the ways they talk. While DP has typically examined psychological concepts in terms of how they are being alluded to or performed in interactional talk, in this study, I focus on how they are constructed when the specific concepts of decision-making, values, and responsibility are explicitly being talked about, where designers are directly asked about them. In this way, we can pay attention to how designers construe decision-making in their work when held to account for their actions. DP analysis seeks to avoid preconceptions about what people might say or do in their talk, and so analysing talk about design decision-making isn’t about finding out whether designers report their decision-making as rational and consciously considered, intuitive, or taking place through negotiation. Instead, the analysis is data-driven, to see what patterns can be seen in what designers do when they talk about decision-making (and these may relate to theoretical assumptions about design decision-making or not). Rather than theoretically debating whether designers possess agency in decision-making, using DP we can study whether and how designers portray or claim agency (Widdicombe & Marinho, 2021) in the ways they talk about decision-making. We can study how designers construct the concept of personal values, and how they negotiate the
relationship between the notions of values and decision-making. We can examine how designers construct and manage responsibility for sustainability in design, to see how accountability for decision-making is practically negotiated. Additionally, since DP seeks to be a data driven approach, phenomena related to additional or alternative topics or aspects of accounting for design work may be noticed in the analysis and also become a focus of the thesis.

There is already a lot of design research that involves observing everyday talk. For example, conversation analysis (CA), a method related to DP, but which has a more technical focus on linguistic features and is interested in interaction per se, has become increasingly popular in the twenty-first century in design studies. As discussed in section 2.2.4, CA has been used to study observation of communication and negotiation in design meetings and collaborative design studio work (Luck, 2012; Oak, 2011). However, observing and analysing meeting talk does not necessarily involve interactions in which designers are being directly held to account for their work. In this thesis, the data sources involve designers being directly asked to produce retrospective accounts of their work, which involves reflecting back on their actions. Asking for accounts is particularly appropriate for the design context and is unlikely to be treated as unusual by participants, as reflection on how design work was done and on the outcomes is a common feature of design education and practice (Lousberg et al., 2020; Schon, 2008; Tracey & Hutchinson, 2013). Asking for reflective accounts is good for getting people to construct meaning about their work and justify what they did.

DP is a psychological method of analysis since it treats talk as action, and so gives insights into how people behave. Taking a psychological approach to design work is not new (see design research methods inspired by cognitive psychology discussed in section 2.2.3 (Cross, 2001a; Liedtka, 2015)), but DP has not yet been used to study design. Neither DP nor CA approaches have to date been used in published research that specifically focuses on sustainable design, despite the usefulness of discursive methods for understanding how behaviours related to destruction or protection of the environment are justified or hindered (Kurz & Prosser, 2021). For example, Kurz et al. (2005) show how people use different discursive strategies to construct barriers to engaging in more sustainable behaviours, such as saving water.
This thesis adds a focus on sustainable design to this growing body of discursive work on environmental sustainability across different disciplines. Specifically, this thesis demonstrates that DP provides an empirical way of analysing how assumptions about decision-making, personal values, and responsibility are managed in designers’ accounts of sustainable design.

### 3.2 Data collection methods

I used two data collection methods to gather designers’ accounts of their work related to sustainability, conducting semi-structured interviews, and gathering videos of conference panel discussions. The interviews are co-created data, generated collaboratively between researcher and participant, and the panel discussion videos are naturally occurring data. Details of the procedures used to collect data using these two methods are provided below.

#### 3.2.1 Method 1 – semi-structured interviews

#### 3.2.1.1 Rationale

Semi-structured interviews represent an obvious and appropriate way of generating designers’ accounts of their work with regards to sustainability. The use of semi-structured interviews in DP research is popular. For example, previous DP studies have analysed interviews to understand how people construct and manage identities or negotiate dilemmas (Kirkwood, 2012; McLean, 2012; Rapley, 2015; Widdicombe, 2017). Potter and Wetherell (1987) highlight the usefulness of being able to ask a range of people about the same issues using interviews, and then to compare what happens in the talk. While other qualitative methods focus on analysing interview responses, using DP to analyse interviews means treating the interviews as interactions. Analysis seeks to identify patterns in the interactions between interviewer and interviewee, rather than only in what participants report (Rapley, 2012; Wiggins, 2017).

However, it is worth acknowledging that the use of interviews in a DP research project has been criticised by some authors. Researchers who carry out interviews as part of DP work are criticised for driving talk to reflect their own social science-oriented interests, rather than analysing talk that takes place in real-world settings, and for not always including the interview questions in the analysis (Potter & Hepburn, 2005, 2012). In this study, using interviews is justified since the focus is
Research design and methods

deliberately not on routine everyday talk that takes place in the course of a design project, but on reflective accounts which directly elicit and encourage talk that will specifically relate to common assumptions about the ways designers should act with regards to sustainability.

3.2.1.2 Pilot research
Between December 2019 and March 2020, I carried out a pilot interview study. There were two reasons for doing some pilot research. First, to test the interview method in terms of what sorts of questions to ask about design decision-making, values, and responsibility. Second, to help decide which types of designers to focus on, since design is carried out in a broad range of professions. At this stage, I was considering both product designers and those involved in large-scale construction and built environment design.

I identified participants for the pilot study through my existing networks and through searching for design agencies and relevant companies in and near Edinburgh. I carried out informal interviews with ten people: seven involved in product design, and three involved in design of the built environment. Four conversations took place face-to-face, and six via the internet. Six contacts were based in Edinburgh, one in London, two in the Netherlands and one in Ireland. During these discussions, I explained my project aims, asked for people’s views on the research, and asked detailed questions about how decisions were made in their professions, especially related to improving sustainability outcomes. These verbal discussions were not audio recorded, since this preliminary research had not undergone ethics clearance for formal data to be collected, but notes were made.

Based on the findings of the pilot study, I made the following conclusions. Firstly, focusing on product design rather than the built environment would be more appropriate for the research aims, since the product designer participants discussed opportunities to influence design outcomes to be more environmentally sustainable, whereas the built environment designers discussed the restrictive influence of standards and standardisation on their decision-making, and also long project timelines. Secondly, I concluded that asking interviewees to give an account of decision-making in a specific project of their choice would provide more specific insights than asking about their decision-making in a more general way.
3.2.1.3 Interview schedule

I put together an interview schedule to guide the conversations. Designers would be asked to give an account of a recent design project of their choice which was related to sustainability. The interview schedule included questions related to informed consent (see section 3.3 on ethics for more detail), and then questions about what decisions were made, how they were made, whether and how values influenced, and who was responsible. To make sure my questions were likely to be understood, I gained feedback on them from other researchers, and considered whether I would be able to answer the questions myself when thinking of a specific design project I had been involved in. The interview schedule can be found below in table 1.

Table 1: Interview schedule

<table>
<thead>
<tr>
<th>Greetings/checking sound etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thank you for agreeing to take part in this interview for my PhD research. My research is about how decision-making is done in sustainable product design, and about who is involved in making design decisions. I’m interested in hearing about your experiences of decision-making in sustainable design, either in terms of decisions you have made alone, or with other people. As stated in the info sheet you received by email, this conversation is confidential, and anything you say will be kept anonymous. This might take around 45 minutes, but it depends on how much detail you wish to provide. Do you have any questions before we start?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are you ok to proceed and for me to start recording our conversation? If yes, start recording on Teams and also backup recording via browser.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I need to ask you a few questions to get your consent to participating in the research.</td>
</tr>
<tr>
<td>- Have you read and understood the participant information sheet?</td>
</tr>
<tr>
<td>- Have you got permission from your employer or manager to take part in this interview, if relevant?</td>
</tr>
<tr>
<td>- Are you happy for the recording to be analysed for research purposes, and for anonymised quotes to be used in publications?</td>
</tr>
<tr>
<td>- Are you ok with the anonymised transcript of our conversation being stored by the UK Data Service (or an equivalent) to potentially be used by other researchers in future?</td>
</tr>
</tbody>
</table>

Hopefully you will feel comfortable having this conversation, but of course you can stop the interview at any time or choose not to respond to particular questions. You can also let me know within two weeks of today if you would like to withdraw anything you have said.

If using Teams: If it’s helpful, please do share any images/sketches or documents that relate to our discussion today, you can share your screen using the button at the bottom or send things in the chat.

OK so now I will begin the interview. First, I have a few quick background questions to get started:
3.2.1.4 Participants

Sixteen designers took part in interviews which were conducted from July to October 2020, producing eight hours and nine minutes of data. Participants were recruited primarily by contacting suitable members of a sustainable design LinkedIn group by direct message. Requests were sent to group members with LinkedIn profiles in English and who described themselves as product or industrial designers involved in sustainability in some way. Sixty-six group members were directly messaged on LinkedIn in June and July 2020, leading to fifteen eventually taking part in interviews. One further participant was recruited through a message sent to a design email list. For a study focusing on discourse in interactional talk, this size of sample is widely considered to be appropriate if patterns of discursive practices are found which respond to the research questions (Potter & Wetherell, 1987; Wiggins, 2017). Designers who accepted to take part were sent a participant information sheet, which explained the research aims, procedure, and ethical considerations (see appendix A).
Navigating expectations for sustainable product design: a DP analysis

The fact that all interviews needed to be online given the social distancing requirements in place due to the pandemic, enabled participants to be based anywhere in the world, which led to an international sample of designers. I sought designers working in professional settings, rather than student designers, in order to get insights related to being an established designer and working with other stakeholders. Table 2 shows the variety of locations, contexts, and products talked about. Basic demographic data on location and sex was noted to give a sense of the variety. However, I acknowledge that the majority of patients came from ‘Western’ cultures, and all were required to speak English, so there are large parts of the world not present at all in the sample, which is too small to permit a lot of variation. Demographic differences are not a focus of the analysis. That is, the research does not aim to draw conclusions about differences between particular groups.

Table 2: Interview participants

<table>
<thead>
<tr>
<th>Location</th>
<th>Sex</th>
<th>Type of project talked about</th>
<th>Product type</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>M</td>
<td>Professional - in-house</td>
<td>Trestle table</td>
<td>73:23</td>
</tr>
<tr>
<td>India</td>
<td>M</td>
<td>Professional - in-house</td>
<td>Ceiling fan packaging</td>
<td>48:02</td>
</tr>
<tr>
<td>US/Netherlands</td>
<td>F</td>
<td>Professional - in-house</td>
<td>Suitcases</td>
<td>45:43</td>
</tr>
<tr>
<td>Argentina/Italy</td>
<td>M</td>
<td>Professional - independent</td>
<td>Coffee table</td>
<td>65:53</td>
</tr>
<tr>
<td>UK</td>
<td>F</td>
<td>Internship</td>
<td>Child's bike</td>
<td>41:25</td>
</tr>
<tr>
<td>UK</td>
<td>F</td>
<td>Student project plus previous work in industry</td>
<td>Cycling backpack</td>
<td>39:20</td>
</tr>
<tr>
<td>France</td>
<td>F</td>
<td>Student project plus previous work in industry</td>
<td>Architectural outdoor space</td>
<td>42:29</td>
</tr>
<tr>
<td>Netherlands/Brazil</td>
<td>F</td>
<td>Student project plus previous work in industry</td>
<td>Plant sensor</td>
<td>29:30</td>
</tr>
<tr>
<td>US</td>
<td>M</td>
<td>Professional - design agency</td>
<td>Shoe packaging</td>
<td>29:28</td>
</tr>
<tr>
<td>Spain</td>
<td>M</td>
<td>Design competition</td>
<td>Compost bin</td>
<td>54:13</td>
</tr>
<tr>
<td>Brazil</td>
<td>M</td>
<td>Professional - independent</td>
<td>Facemask</td>
<td>39:07</td>
</tr>
<tr>
<td>UK</td>
<td>M</td>
<td>Professional - in-house</td>
<td>Electric vehicle charge point</td>
<td>37:00</td>
</tr>
</tbody>
</table>
3.2.1.5 Procedure
I carried out the interviews using Microsoft Teams video call software. The potential challenge of building a rapport in a virtual conversation is a possible disadvantage over in-person interviews. However, I did not sense any uncomfortableness or difficulty in achieving a flowing conversation. Indeed, recent research has found no differences in quality of rapport in video call interviews compared to in-person ones (Jenner & Myers, 2019). My prior contact with participants by email also helped build some familiarity.

Interviews lasted an average of forty-five minutes (ranging from twenty-nine to seventy-three minutes). I had memorised the key questions from my interview guide but, as expected, depending on how each participant responded to early questions about the product they wished to talk about, I also asked further probing questions, and adapted the order and phrasing of the planned interview questions to suit the conversations. Asking the questions in slightly different ways happened naturally according to the flow of the conversation, and in the end proved interesting in the analysis, since attention could be paid to how slightly different question formulations were met with different response types. Once I felt the interview had covered the key topics of interest, and when I sensed the conversations coming to a natural end, I asked participants if there was anything else they wanted to share related to the topics covered. The aim of this was to ensure participants had a chance to finish their accounts in their own way. This often led to additional talk, which allowed participants to either reiterate points made, expand on previous topics, or introduce new ones.

3.2.1.6 Overcoming challenges
Some initial difficulties in recruiting interview participants were encountered. I originally tried directly contacting eleven design companies by email to try to recruit participants, but this yielded no response. Sharing a call for participants via fifteen
relevant email lists and social media networks only yielded one volunteer participant. I then tried contacting individual members of a LinkedIn sustainable design group by direct message, which proved an effective way of recruiting participants.

Some challenges were experienced in conducting the interviews. Firstly, despite being invited to participate based on their professional experience, some participants started off talking about student design projects they had worked on, usually at postgraduate level. It seemed that this preference was related to having more control over design decisions as a student, compared to reported reduced control in professional settings. However, each of these participants did also talk about their professional design experience later on in the interviews in order to make comparisons with their student design experiences, which led to interesting data.

Secondly, many of the participants were not native English speakers, and while most spoke English fluently, a couple expressed concerns about their ability to express themselves clearly in the interviews. The different levels of language skill in the end did not prove a challenge for the analysis, and I sought to reassure these participants before and during the interview that they were communicating clearly and that their effort to speak in my native language and their contributions were greatly appreciated.

Finally, a few practical interruptions were experienced, given that participants were mostly taking part in video calls in their own homes. For example, a few times participants had to answer the phone or door, or in one case a participant’s child interrupted the interview to say hello to me. Yet these did not have a negative effect on the research, they merely reflect the real-life settings of the conversations, perhaps making the interviews less ‘contrived’.

3.2.2 Method 2 – videos of sustainable design conferences

3.2.2.1 Rationale
Alongside the interviews, I used a second method for collecting designers’ accounts of their work - recordings of design conference panel discussions. Through attending online conferences as part of my broader research, I had noticed that designers also give accounts of their work when speaking in panel discussions about sustainable design. I found that many conference recordings were available on YouTube, in which designers talked about aspects of decision-making, values, or responsibility.
Collecting designers’ talk about their work in a public setting, in front of an audience of peers, enables comparison with the designers’ accounts produced in private interviews, to see if any patterns occur across the two contexts.

This form of data is naturally occurring, thereby satisfying CA and DP scholars who argue that naturally occurring data is the most appropriate to analyse. However, Goodman and Speer (2015) argue that we should not uphold a dichotomy between naturalistic and contrived data, but that instead any data could be considered either natural or contrived depending on the approach of the researcher. For example, if interviews carried out either by a different researcher or for a different purpose are later used in a DP analysis, they may then be considered naturalistic. Alternatively, the same person could chair a conference event in one setting, asking questions to panel members, and in another setting ask similar questions for a research interview. In the analysis chapters of this thesis, the blurring of researcher-influenced and naturalistic data can be seen in the similarities of patterns of talk and discursive strategies found in both research interviews and conference discussions. In short, I propose that both of the data types represent useful ways of collecting designers’ accounts of their actions, and the ways they add meanings to their roles.

3.2.2.2 Sampling
Suitable high-profile design conferences and events were identified based on my existing knowledge and networks, and through additional internet searches. I searched for sustainable design and circular design events, either that had taken place as standalone conferences, at location-based design weeks or within general design conferences. My criteria for selecting events as potential data were that events focused on sustainable design; that they featured interactional talk including with designers; that recordings were publicly available; and that they had taken place in the last two years.

Initially, twenty videos of events from 2019 and 2020 were selected, primarily from YouTube, in which designers were being asked questions by an interviewer or panel chair and/or by audience members. Audio from these was recorded using Otter.ai via an internet browser, which automatically produces a rough transcript. Through both watching the videos, and reading the transcripts, I selected seven videos (adding up to just under four hours) to be part of the final dataset. The videos of panel
discussions at design conferences were selected after most of the interviews had already taken place, therefore it was possible to identify relevant extracts that would complement the interview data. The sampling strategy for choosing videos was therefore purposive and selective, since I was seeking videos that may link to discursive practices seen in the interview transcripts. Anonymised descriptions of the videos collated are presented in table 3.

**Table 3: Design conference panel discussion videos**

<table>
<thead>
<tr>
<th>Description</th>
<th>Date</th>
<th>Video length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 An online event focusing on circular design, hosted by a chairperson asking questions to a panel of four designers and company representatives. The chairperson also read out some questions from an online audience for the panel. Part of a series of online events.</td>
<td>Sep 2020</td>
<td>57:06</td>
</tr>
<tr>
<td>2 An online event focusing on circular design, hosted by a chairperson asking questions to a panel of four designers. The online audience comment throughout in a shared chat panel, and some of the panel sometimes pick up on points raised by the audience in this chat. Part of a design festival.</td>
<td>Sep 2020</td>
<td>45:53</td>
</tr>
<tr>
<td>3 An in-person event at a large conference focusing on the role of designers in the circular economy. A chairperson asks questions to three panel members who are either designers or work in leadership roles in design. There is no audience interaction.</td>
<td>Jan 2020</td>
<td>23:56</td>
</tr>
<tr>
<td>4 An online event focusing on circular design in different parts of the world. A chairperson asks questions to a panel of three designers and design leaders. The chairperson also reads out some questions from an online audience for the panel. Part of a series of online events.</td>
<td>Mar 2020</td>
<td>47:42</td>
</tr>
<tr>
<td>5 An online event at a large online conference focusing on designers’ responsibility regarding sustainability. A panel of five designers and company representatives respond to questions from a chairperson. The chairperson also reads out some questions from the online audience which have been typed in a chat window.</td>
<td>Nov 2020</td>
<td>19:12</td>
</tr>
<tr>
<td>6 An online event at a large online conference focusing designers’ responsibility regarding sustainability. A panel of four designers and company representatives first deliver short presentations, and then respond to questions from a chairperson. The chairperson also reads out some questions from the online audience which have been typed in a chat window.</td>
<td>Nov 2020</td>
<td>32:58</td>
</tr>
<tr>
<td>7 An in-person event at a large conference focusing on the sustainable design. A chairperson asks questions to two panel members, who are both designers. There is no audience interaction.</td>
<td>Feb 2020</td>
<td>51:22</td>
</tr>
</tbody>
</table>
3.3 Research ethics

Ethical issues related to this research were considered in relation to the British Psychological Society Code of Human Research Ethics (2018) and the University of Edinburgh’s online training for researchers on Research Ethics and Integrity. Ethics approval from the School of Philosophy, Psychology and Language Sciences Research Ethics Committee was gained on 29th May 2020 for the semi-structured interview method, with submission number 324-1920. This approval was updated on 9th February 2021 to include the second data collection method, the use of publicly available videos. Since this research is not on a sensitive topic and so does not present any direct risk of harm to participants, the main ethical issues related to consent, confidentiality and anonymity, and data security. Advice on data security using specific online technologies was gained from the University’s Information Services department, and a data management plan was produced before commencing data collection.

Informed consent was gained from interview participants using a participant information sheet and a verbal discussion to check understanding. The information sheet (see appendix A) was sent to participants by email a few days before the agreed interview time, and participants were invited to ask any clarification questions either by email or at the start of the interview. The information sheets briefly explained the nature and focus of the research, that identifiable data would be kept confidential, and that data would be anonymised before being shared with others or used for publication. Participants were also verbally informed at the start of the interviews that they could choose not to answer any of the interview questions, could stop the interview at any time, and could request any of the interview recording be deleted and not used in the research within two weeks of the interview data. Verbal consent was collected before each interview began, by asking the following questions: Have you read and understood the participant information sheet? Have you got permission from your employer or manager to take part in this interview, if relevant? Are you happy for the recording to be analysed for research purposes, and for anonymised quotes to be used in publications? Are you ok with the anonymised transcript of our conversation being stored by the UK Data Service/equivalent to potentially be used by other researchers in future? At this stage, any questions
Navigating expectations for sustainable product design: a DP analysis

participants had about what they were consenting to were answered. Participants were informed that they did not need to agree to the data being stored on the UK Data Service or equivalent in order to proceed, if they preferred for the data not to be shared with other researchers.

Consent was not needed to use the publicly available event videos according to the British Psychological Society Ethics Guidelines (2018). Given that this data was publicly available on YouTube or on the websites of the organisations that had hosted the events, its use in psychological research is not considered to present significant ethical challenges (British Psychological Society, 2018). Participants in the panel discussions would have been aware of their sessions being recorded and the potential for them to be seen widely. While I could have sought consent from event organisers and those speaking out of courtesy, I chose not to for two reasons. Firstly, the content of the discussions was not sensitive in nature. Secondly, it would likely have proven difficult to track down all speakers from the panel discussions, which would have delayed the research project timeline. Nevertheless, since speakers at the conferences would not have expected their talk to feature in academic research, in order to reduce the likelihood of individuals featuring in the videos being identified within this research, efforts have been made to anonymise the panel discussion data. This has been done by removing any names of people, products or organisations, and not including the transcripts of this data on the UK Data Service research data repository where the interview transcripts are now held.

Several measures were taken to ensure confidentiality, anonymity, and security of data throughout the project. Identifiable details (names and email addresses) of potential and actual participants were collated in a spreadsheet securely stored on the university server, and a separate anonymised participants list was created for daily use. Raw video data, in which participants are visibly identifiable, has not been shared with anyone. Transcripts were anonymised at the time of transcription, removing any names of people, organisations, and products. All data and documentation produced during the project has been securely stored in a private folder on the university server.

A summary of research findings has been prepared (see appendix B) to be shared with all interview participants, providing an opportunity to understand how their talk
was interpreted and to request any clarifications. However, no commitment has been made to modify my findings and conclusions if participants were to request changes.

3.4 Analytical procedure

3.4.1 Transcription and preliminary analysis

In total, from the two data collection methods, I compiled over twelve hours of interactional verbal data to analyse. I first produced words-only transcripts of all of the data for preliminary analysis, amounting to 286 pages of interview transcripts, and 78 pages of event video transcripts. I initially watched the videos of the interviews and panel discussions, to see if there were any visual aspects that would be worth analysing alongside the audio. Since the videos are of people sitting down and having conversations, I concluded that seeking to analyse multimodal aspects of the interactions (such as gestures or facial expressions) would not provide significantly more valuable insights for my research questions than only analysing the audio.

During the preliminary analysis stage, I sought to undertake unmotivated looking, as advocated by Sacks in early work on analysing conversations (O'Reilly et al., 2020; Silverman, 1998), to see what aspects of the data seemed interesting, rather than looking for phenomena that related directly to my research questions. I slowly read through each transcript, underlining things that stood out as in some way interesting or unusual, and noting in the margins anything I noticed that appeared to be interesting in the way questions were asked or responded to and I noted where I saw patterns in ways of talking across the data sources. This was a slow process over many weeks, due to the large volume of data and the need to examine the transcripts carefully and repeatedly. During this stage, I also imported the transcripts into Nvivo and categorised extracts based on question types or particular linguistic features to help sort the data for easy access and to see how many examples of different patterns I had found across the dataset.

The most notable finding from this preliminary analysis was of the phenomenon of participants talking about ‘pushing’. This did not relate directly to any of my three research questions or to the literature but was so prominent across both types of data that I decided to add a fourth area of focus. Across the dataset, ‘pushing’ or ‘push’ are used more than fifty times in eight interviews (in both in-house design and
designer-client contexts), and feature in four out of the seven sustainable design conference videos analysed. I noticed that rather than directly answering my questions about the products, some participants were providing accounts of doing ‘pushing for sustainability’, thereby focusing on the effort they made rather than on the products. This portrayal of influencing others therefore became a fourth area of focus for the detailed analysis.

In the next stage of analysis, I began to look at the data by topic, to start to see which phenomena might provide insights related to my research questions. Based on the preliminary analysis, I now had four topics to analyse in more detail: pushing, decision-making, values, and responsibility. When looking at talk about decision-making, I noticed a few different phenomena. I noted frequent portrayal of the questions being difficult to answer, and participants giving accounts that didn’t directly answer the questions. In other cases, I saw detailed accounts of how decisions were made but there appeared to be contradictions in these accounts. In talk about values, I particularly noticed a pattern in participants giving explanations of where their values came from. For responsibility, what was most striking was the diversity of ways of asking questions about responsibility, and how small differences in the questions were seemingly met with different types of answers. I was not yet seeking to find final answers to the specific research questions of how these psychological concepts are constructed and negotiated in accounts of design, but to notice what patterns were occurring in the ways they were being talked about.

Once I had got a good sense of the data, based on the words-only transcripts, I selected extracts to transcribe in more detail using Jefferson (2004) notations, as is standard in DP analysis (see table 4 for a guide to transcription symbols used). These notations provide information on extra details such as whether particular words were said more loudly or more quietly than surrounding talk, pitch changes, and pauses. These features can give insights into what people are accomplishing in the ways they talk (explained further in section 3.4.2).

**Table 4: Transcription symbols (Wiggins, 2017, adapted from Jefferson, 2004)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(.)</td>
<td>A micro-pause around one tenth of a second</td>
</tr>
<tr>
<td>(1.2)</td>
<td>A pause or silence, measured in seconds and tenths of seconds</td>
</tr>
</tbody>
</table>
I transcribed all extracts that contained interesting phenomena that appeared to relate to either ‘pushing’, decision-making, values, or responsibility in some way. In total, I transcribed seventy-two extracts using Jefferson notations, covering twenty-three pages. For the pushing analysis, I selected nineteen extracts where participants were either talking about pushing or portraying effort in another way. I also selected eight extracts where participants were talking about the consequences of this pushing or effort. Extracts on pushing came from both the interviews and the panel discussions. I carefully examined each of the twenty-seven extracts multiple
times, making notes on actions, features, devices, and sequences, noticing more detail each time.

The selection of extracts to transcribe using Jefferson notations related to decision-making was largely based on the questions asked in interviews, to gather responses to questions on what decisions were, and how they were made. I selected four extracts where participants were asked to tell me about some of the decisions they made in a project, and five extracts where participants were giving accounts of how decisions were made. These extracts tended to be quite lengthy accounts, and so I selected a smaller number of extracts than for the other topics, and these were only from interviews, not panel discussions. Many of the interview transcripts not selected for detailed analysis on decision-making involved participants being asked about design decision-making and then providing accounts that did not relate to decision-making (thereby demonstrating rejection of the questions).

For the values topic, I was interested in the difference between how the interviewers constructed the concept of values, and how interviewees responded to this with their own interests. I selected five extracts where participants were asked whether their values influenced their design work. I also selected thirteen extracts where participants were giving accounts of values or related concepts unprompted. These were from both interviews and panel discussions.

For responsibility, the variety of questions asked was larger. From the interview data only, I selected two extracts where participants were asked who took responsibility for sustainability in the project, five extracts where participants were asked who is responsible for sustainability in their work, six extracts where participants were asked if they personally felt responsible for sustainability in their work, and five where participants talked generally about responsibility in design.

3.4.2 Detailed analysis

My approach to analysing the selected extracts was based on the guidance given by Wiggins (2017) in her textbook on how to conduct DP research. As noted by Goffman (1981), aspects often unconsidered in other analytical approaches, such as tone of voice and pauses, can be doing important work. In her detailed guide to doing a DP project, Wiggins (2017) provides examples of technical devices and
features that have been identified by DP and CA researchers, which might be noticed in talk, and analysed in terms of what they are accomplishing in a particular context. These include reported speech, pronoun shifts, hedging, extreme case formulations, changes in footing, etcetera. See table 5 for some examples and brief explanations based on Wiggins (2017). I kept these features in mind while carefully examining the transcripts, as well as noticing and noting down anything else that seemed interesting.

Table 5: Relevant linguistic devices that may be noticed in the data

<table>
<thead>
<tr>
<th>Examples of technical devices, from Wiggins (2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronoun and footing shifts</td>
</tr>
<tr>
<td>Pauses</td>
</tr>
<tr>
<td>Hedging</td>
</tr>
<tr>
<td>Extreme Case Formulation</td>
</tr>
<tr>
<td>Minimisation</td>
</tr>
<tr>
<td>Lists and contrasts</td>
</tr>
<tr>
<td>Disclaimers</td>
</tr>
<tr>
<td>Metaphors</td>
</tr>
<tr>
<td>Reported speech</td>
</tr>
<tr>
<td>Script formulation</td>
</tr>
<tr>
<td>Modal verbs</td>
</tr>
<tr>
<td>Stake inoculation</td>
</tr>
<tr>
<td>Category entitlement</td>
</tr>
<tr>
<td>Narrative structure</td>
</tr>
</tbody>
</table>
Navigating expectations for sustainable product design: a DP analysis

Since using a DP approach means treating the interviews as interactions that are co-constructed between interviewer and interviewee (N. Cooper & Burnett, 2006; O’Reilly et al., 2020; Potter & Wetherell, 1987; Rapley, 2012; Wooffitt & Widdicombe, 2006), I sought to equally focus on the questions as well as the responses and to examine them as sequences of talk. Questions and answers are described as a form of adjacency pair, a term coined by Sacks (Goffman, 1981), which describes a sequence of two turns in a conversation, where the first leads to the second. The answers can only be understood in the context of the questions. The sequencing of questions and answers was also noted as relevant where participants were seen to be not answering the question, but instead shifting talk to something else.

While carrying out the analysis, I was also regularly reflecting on how to achieve a data-driven approach to the analysis, despite having chosen the topics of decision-making, values, and responsibility based on the design literature and my professional interests. For example, for the topic of values, while initially it was easy to pick out extracts where the term values was uttered, I also identified sequences of talk where the term was not used but similar actions were being accomplished as in talk about values, relating to identity. Many of the interview participants talked about their values and/or responsibility spontaneously, without me needing to bring up the topic myself, which indicates the relevance of examining this topic in the context of designers reflecting on their work. On pushing, I also made sure to look broadly at the different ways pushing and related actions were talked about, and what was being achieved by this. Once I had identified the most interesting patterns of phenomena to focus on, I checked back to make sure there were further instances of them in the wider dataset. This detailed analysis was an iterative process over many months. While I worked on each of the four topics separately and in turn, I frequently returned to a previous topic to amend or add something I had noticed while looking at the data in a different way.

In undertaking the analysis, I sought to be sensitive to the contexts in which the talk had taken place. In research interviews, there is a tacit expectation that participants will provide answers to the questions and may seek to provide useful insights to researchers (Rapley, 2012). That talk in interviews is tailored to the interview setting does not represent a problem with analysing interviews, but instead reminds us of
the importance of recognising the situated context of the talk in the way it is analysed (Kent, 2015). In this project, the interview participants had been made aware in advance that the topic of interest was decision-making in design and that they would be asked questions about decision-making in a project. Some participants may therefore have thought about what sorts of accounts they might give in advance of the interview. The interviews, being in a private setting between just two people (apart from one case where a young daughter was present for a few minutes), provided a context where the participant was encouraged to talk in detail about themselves. The interview data therefore provides insights into how accounts are constructed of design work in research interviews, rather than representing accounts of what actually happened. The conference panel discussions featured invited experts on sustainable design. The participants were encouraged to justify their decisions and actions to an audience of professionals. There may have been a sense of pressure to present oneself as a convincing expert with the right sorts of values. This data therefore provides insights into how the designers account for their actions in a public way, in front of peers. Nevertheless, despite the differences of context, I noticed many similarities in ways of talking about the designers’ role in the panel discussions and the interviews, suggesting commonalities in ways of accounting for doing sustainable design whether privately or publicly, when talking to others who are presumed to also support the goal of sustainability.

3.4.3 Writing up the analysis

Writing up a DP analysis involves presenting selected extracts of data to readers that show clear instances of patterns noticed. The extracts are accompanied by written analysis that highlights the actions being accomplished in the data, and how. Features are pointed out that may not be immediately apparent when simply reading through the data extracts. The inclusion of extracts of the data itself alongside the written analysis of it allows readers to see how interpretations and conclusions were reached, and to judge for themselves if they agree that the analysis is directly based on the data and is convincing (Wiggins, 2017).

Several iterations of each of the four analysis chapters of this thesis were written over approximately a year and a half. Selecting the final extracts to present and writing up the analysis of them into a coherent narrative was an iterative process,
Navigating expectations for sustainable product design: a DP analysis

involving swopping, cutting down or extending some of the extracts, and refining the written analysis over time (Potter & Wetherell, 1987; Wiggins, 2017). The activity of writing itself was part of the process of deciding which interactional patterns to focus on and which data extracts to present, based on what might provide the most insightful contributions. Writing and analysis work were thus intertwined, rather than separate. I aimed to order my analyses around actions, and initially wanted to present at least two extracts to demonstrate each key pattern noticed. However, in several cases I decided in the end to only include one extract for one pattern, in order to fit within word limits for journals targeted by each analysis chapter, and in order to be able to include analysis of an additional pattern. In each case, I sought to choose the extracts that most clearly demonstrated the pattern.

3.5 Ensuring quality and transparency

I took several steps to seek quality and transparency in the research. Firstly, I sought to ensure the quality of the research by producing an appropriate dataset. I decided to stop undertaking interviews after sixteen, based on both a sense from early reading of transcripts that I was noticing interesting patterns in the interactions from which enough rich and relevant insights could be gained, and also based on practical considerations of time available and the number of willing volunteers. Qualitative researchers often determine an appropriate sample size based on the principle of saturation, that is, reaching a point where no significant new insights are noticed in additional data collected. Yet O’Reilly et al. (2020) suggest this approach is not necessarily appropriate for DP, since the intention is not to try to collect all possible insights that may answer a research question, but to achieve a strong sample which leads to useful insights.

In considering the quality of the findings that have resulted from the analysis, the criteria used for most qualitative research methods may not be entirely appropriate. It is widely accepted that the quality of qualitative research should be judged using different criteria than the validity and reliability checks typically required of quantitative research. In contrast to checking validity and reliability, as is common for quantitative analysis, Lincoln and Guba (1985) famously proposed evaluating the trustworthiness of qualitative research using four criteria: credibility (how congruent are the findings with reality), transferability (can the findings likely be transferred to
another context), dependability (consistency), and confirmability (findings must be based on participants’ data not influenced by researcher assumptions or bias).

However, not all of these criteria are appropriate for a DP study. For instance, when treating talk as constructed, there is no intention of making claims about the findings reflecting reality or an external truth, as implied in the principle of credibility. Instead for DP research, assessing the quality of a piece of research is about how plausible the findings are for the specific data analysed (O’Reilly et al., 2020). It has been argued that the quality of DP research should be assessed regarding how justifiable the analysis is in terms of it being grounded in the data (Wiggins, 2017).

Specific advice for ensuring a DP analysis is justifiable in the data has been offered by Antaki et al. (2003) and by O’Reilly et al. (2020). O’Reilly et al. (2020) advise that DP researchers make their epistemological and ontological assumptions explicit; ensure analysis reflects the constructed nature of talk; and be transparent about the data and analysis. I have taken this advice into account in this thesis in the following ways. I have made my epistemological and ontological assumptions explicit in this chapter and have reflected these in the writing of the thesis overall. I have taken care to analyse the data and discuss findings in ways that reflect the constructed nature of talk, rather than making claims about what designers might do, think, or feel in reality. I have sought to be transparent about the data I am analysing, by providing a detailed account of data collection and analysis and including selected data extracts in my analysis write-ups.

Antaki et al. (2003) highlight potential pitfalls in doing discourse analysis. These are over-analysis through summary; under-analysis through taking sides; under-analysis through over-quotation or isolated quotation; avoiding the circular identification of discourses and mental constructs; avoiding false survey; avoiding simply spotting features and devices. I have taken this advice into account when undertaking and reviewing my analysis. I have sought to focus my analysis on actions being accomplished in talk, and how particular features and devices are used to bring these off. I have also sought to identify deviant cases, that is, extracts of interactional talk that don’t reflect a pattern found, as advised by Wiggins (2017), and what these mean for my conclusions. Usually, when deviant cases were found, I noticed that
there were differences in the talk that occurred beforehand that led to a different phenomenon occurring.

As well as carefully checking and rechecking my own work for analytical rigour based on the above advice, I have also sought analytical insights on my data from other DP/CA researchers. I have taken advice from my PhD supervisors and from journal reviewers on my analysis. I have gained further assurance on the quality and appropriateness of my DP analysis by presenting extracts of the data to other researchers at data sessions. Data sessions are a common way of gaining analytical input from other researchers in DP/CA work, where researchers each individually make observations on the data, and then discuss their analysis in a group (Wiggins, 2017). For this project, transcripts of nine extracts of data were presented at the SEDIT (Scottish Ethnomethodology, Discourse, Interaction & Talk) group organised by colleagues at the University of Edinburgh, on four occasions in 2020-21 (once for each of the four analysis topics). Video and audio were not shared at these data sessions since they took place online, given the pandemic, and sharing such data online to a group may present privacy risks for participants (for example, other researchers in the data sessions could have been attending in a public place and so other people present could have overheard). For the most part, these data sessions provided corroboration of my interpretations of the data, and in some cases additional features were noticed by others which were used to modify or add to my analysis. Practising doing DP analysis of other people’s data at these sessions and listening to DP and CA research talks at seminars and conferences have also enabled me to gain confidence in my own analytical approach. I have also presented my analysis of ‘pushing’ for sustainability at two academic conferences, one with a sustainable design audience (Product Lifetimes and the Environment, May 2021) and one with a social psychology audience (British Psychological Association Social Psychology Section, August 2021). Undertaking these presentations helped me develop a sense of how to clearly articulate my findings and conclusions different disciplinary audiences.

To ensure transparency as far as possible, in addition to the inclusion of anonymised data extracts in write-ups, full words-only transcripts of the interviews, plus the Jefferson transcriptions of selected interview extracts, can also be found on the UK
Research design and methods

Data Service (L. Cooper, 2021), accessible to registered researchers. Given the large amount of data (309 pages in total), there may be small mistakes in the basic transcripts. The Jefferson transcriptions, while done more slowly and carefully, represent my best efforts to capture how things were said talk, having made choices about which pauses to transcribe, whether there was a ‘smiley voice’ etcetera. Nevertheless, I hope making these transcripts available provides a useful opportunity to check the data if desired, or to use the data for further research or analysis practice.

3.6 Positionality and my insider status

Another way of trying to ensure quality and transparency in qualitative research relates to being open about one’s positionality. In qualitative research more broadly, it is commonly accepted that reflecting on one’s own background, interests, and perspectives and how these are influencing the research undertaken is necessary for transparency. There has been some criticism of the trend in including such reflections in a write-up of DP research specifically, with authors noting that the reflections represent constructions of identity in themselves (O’Reilly et al., 2020). DP analysis aims to be data driven. However, the idea for this research was based on professional and personal interest as a sustainability practitioner. I propose it is therefore worthwhile to share my reflections on positionality, for readers to interpret alongside the analysis and conclusions as they wish.

Before working on this PhD project, I worked for over ten years in roles related to environmental and human rights impacts of products, in non-governmental organisations internationally and in the UK university sector. I have previously studied design, sustainable development, and international development at higher education level. This professional and personal motivation to focus on these topics will have influenced both my decisions in planning and carrying out the research, how I communicated with participants, and how interview participants responded to me. It will also have influenced the way I carried out the analysis, in terms of what I noticed, what I chose to focus on, and how I have written up my findings. While I did not engage in discussion with potential participants about my background beforehand, given that most recruitment took place via LinkedIn, participants were
Navigating expectations for sustainable product design: a DP analysis

able to see a summary of my career path and that I had previously worked on product sustainability, rather than being an ‘outsider’ researcher.

The influence of an interviewer’s positionality becomes visible when looking at the details of the interaction (Tracy & Robles, 2010). In the interview data, in numerous instances participants introduce terms that are somewhat technical, such as circular economy or circular design, or refer to an organisation or academic author working in this area (for example, the Ellen MacArthur Foundation, interview 3, or the design researcher Manzini, interview 10). Participants also mention technical sustainable design concepts such as humane design and cradle to cradle (interview 13). In such instances, we see participants talk as if the interviewer’s knowledge or understanding is assumed. As the interviewer, I do not seek further explanation, as these aspects do indeed represent shared knowledge. Due to this, the interview transcripts can be treated as examples of talk among peers who have knowledge of sustainable design and production. Of course, the interviews should also be treated as talk in the context of a research interview with the expectations and power relations (for example, as noted previously, participants may seek to provide a useful account for a researcher, given that the interviewer leads the conversation (Rapley, 2012)). In the transcripts we therefore see a mix of speaking from the formal positions of interviewer and interviewee and of orienting less formally to shared interests and agenda regarding sustainability.

My insider status and knowledge are beneficial in analysing the dataset as a whole. I do not claim that this research is purely data-led, based only on unmotivated looking and bringing a blank slate perspective to collecting and analysing data, as is commonly advocated for CA or DP research (Silverman, 1998; Wiggins, 2017). The analysis was driven by the desire to answer the specific research questions, based on the literature, as well as allowing the analysis to be steered by unexpected phenomena in the data. When analysing either type of data, I have been able to take into account contextual knowledge such as on design methods or regarding typical organisational approaches to sustainability strategies. Being familiar with the sorts of workplace settings and situations the participants talk about enabled me to quickly understand the accounts on a surface level, and to focus more on what I notice is interesting about the ways in which they are constructed. This has been visible when
Research design and methods

presenting extracts at data sessions with other researchers, where colleagues who are new to the dataset often need time to understand the content and terminology of extracts, before being able to look beyond this to the interactional details. My background knowledge of sustainable design and sustainable business also allows me to identify implications of the research findings in ways that may have practical relevance for the sustainable design community.

To sum up, this chapter has explained and justified my research design and methods. The following four chapters of this thesis consist of DP analyses on decision-making, personal values, responsibility, and influencing for sustainability. These are written as journal articles for different disciplinary audiences (namely design studies; science and technology studies; design and responsible business; and sustainable production) with the aim of showing how a DP approach can provide useful insights to those working on and in sustainable design and production.
Managing the delicateness of decision-making in sustainable design: a discursive psychology analysis of designers’ accounts

This chapter presents an analysis of how designers talk about design decision-making. It is targeted to a design journal which publishes work on the design process. In the article, I outline assumptions in the literature about how designers make decisions. I then analyse how designers portray design decision-making when reflecting back on their work. We see that giving an account of design decision-making, whether regarding decisions in general or specifically ones related to product sustainability, is depicted as problematic in various ways. We see how the designers describe their decision-making processes by either orienting to common advice on how to make decisions, or by refuting the idea that it is possible to describe a decision.

4.1 Abstract

A great deal of literature on sustainable design advises on how to make more sustainable design decisions, often reflecting rational decision theory. Yet there is limited research on designers’ perspectives on decision-making for sustainability. In this study, discursive psychology is used to analyse how product designers produce interview accounts of decision-making. This study finds: 1) Being asked to give an account of what design decisions were made is treated as difficult in terms of being able to describe decision-making as an identifiable action. 2) Participants who are asked what they made design decisions about focus on the need to inform and influence other decision-makers regarding sustainability. 3) Being asked how decisions were made is met with constructions of rational decision-making which are then undermined through ‘confession’ of intuition. These findings contribute firstly to understanding of decision-making in design in general, by showing that decision-making is a construct that can be used to account for a process that may involve various actions. Expecting designers to describe decisions as identifiable actions is thus portrayed as difficult. They contribute secondly to understanding of decision-making in sustainable design specifically, in showing that decisions about
Navigating expectations for sustainable product design: a DP analysis

sustainability are portrayed as made by other stakeholders, who the designers seek to inform and influence. Implications for adapting guidance on sustainable design decision-making to reflect designers’ conceptualisations of decision-making both in terms of process and roles are discussed.

Keywords: Design decision-making; sustainable design; interviews; discursive psychology; intuition; rationality.

4.2 Introduction

Many sustainability and circular economy organisations focus on design decisions as being key to product sustainability (Chick & Micklethwaite, 2011; Fairs, 2019; Haug, 2017; O. Pritchard, 2013). The act of decision-making is therefore highlighted as an important activity for designers. It is commonly argued that the most important decisions related to product sustainability are made during the design process (Devon & van de Poel, 2004). In design literature, decisions are talked about in terms of criteria and choices. For example, designers may take into account sustainability criteria such as longevity, repairability, and supply chain impacts when choosing concepts, materials and assembly methods. Such design decisions are typically made within the constraints of a design brief, either set by clients or internally in a company (Ryd, 2004).

There is a substantial amount of literature providing guidance on how to make more sustainable design decisions (MacAskill & Guthrie, 2013). Most of this guidance takes an engineering design perspective, based on rational decision theory (Faber & Rackwitz, 2004; Schöggl et al., 2017). There is also some guidance on sustainable design decision-making from a creative design perspective (Buhl et al., 2019; Gould et al., 2019). Observation studies, for example by Cross (2001a) and Akin and Lin (1995), have sought to understand design decision-making through asking designers to ‘think aloud’ while doing design. However, there is limited literature examining designers’ own perspectives on design decision-making. Understanding how designers conceptualise decision-making in sustainable design in particular can give insights into how to make sustainable design guidance more appropriate. In this study, designers’ accounts of decision-making in sustainable design projects are analysed to identify how the designers themselves characterise design decision-making when reflecting on their work.
4.3 Contrasting perspectives on decision-making in design

Different perspectives on how design decisions should be made have emerged and have been subject to much theoretical debate over several decades. While there is unlikely to be such a dichotomy in professional design practice, two contrasting approaches can be identified from the literature. On the one hand, a rational, science-based approach generally advocates a linear design process and the use of decision-support tools (Cross, 2001b; Hazelrigg, 1998). On the other hand, a creative approach embraces intuition and subjectivity as part of the design process (Buchanan, 1992; Cross, 1997). Both perspectives traditionally position the designer as central to design decision-making, although there is increasing recognition of design being a social process, involving extensive collaboration and negotiation among many stakeholders (Devon & van de Poel, 2004; Woodhouse & Patton, 2004). Both literatures include a growing focus on sustainability in design. In reviewing these literatures, we can better understand the assumptions made about the designer’s actions related to decision-making and see how expectations are inferred regarding the designer’s role in sustainability.

There is a vast body of literature based on a scientific, engineering design perspective, which proposes decision-making in design should be explicit and rational. Design decision-making is framed by engineering design authors as involving identifying options and weighing them up against criteria, often using mathematical formulae (Hatamura, 2006; Jin & Danesh, 2006; Kiker et al., 2005; Schöggl et al., 2017). This reflects classic decision theory which advocates identifying all alternative options and then selecting the optimal one (Kalantari, 2010). Numerous Multi-Criteria Decision Analysis (MCDA) tools are offered that claim to help designers or design teams make better, or often more sustainable, design decisions. Such tools offer mathematical ways of making comparisons between and ranking options against criteria (Kiker et al., 2005). These can be in the form of computer software or more simple mathematical exercises that can be completed manually (MacAskill & Guthrie, 2013). Most of the literature on MCDA tools in design focuses on explaining how the tools can be used in particular cases and on recommendations for improving their technical functionality. Within these tools, there is an assumption that designers are aware of the point at which they need to make a decision, are able to identify the options, and simply need assistance...
in comparing options against known criteria in an objective way, that is, by being based on transparent comparisons of data and removing human subjective judgement (Fuente et al., 2017). Yet this goal of objectivity is criticised for ignoring the inevitable human involvement in the way decisions and criteria are framed by people involved, and in the choice of MCDA method (Smith & Ruiz-mercado, 2014; Steele et al., 2009; Tversky & Kahneman, 1981).

Lots of sustainable design tools are concerned with decisions about materials. For example, the MCDA tool Pugh’s matrix compares lists of material properties against requirements and aims to help designers decide what materials to use in a product (Sridhar, 2007). Campaign organisations have also produced guidance on sustainable design decision-making. For example, the Circular Design Guide by the Ellen MacArthur Foundation provides guidance on material selection, which involves researching the impacts of different materials and answering a range of questions in order to make an informed decision (Ellen MacArthur Foundation and IDEO, 2018). However, it has been suggested that in reality materials are selected in less formal ways, based on prior experience and knowledge, and possibly aided by informal internet research (Khatib, 2016; Sridhar, 2007). MCDA tools in general are criticised for being overly complex and time-consuming to use (Schöggl et al., 2017; Silva et al., 2009). There is currently a lack of research on understanding the extent to which MCDA type tools are used in sustainable design in industry settings. There is thus an opportunity to explore the extent to which designers themselves report using formal, rational decision-making methods in practice when asked to reflect on their design methods.

There is also a large amount of theoretical literature promoting the appropriateness of creativity and intuition in the design process (Cross, 2001b; Plessner et al., 2011; Schon, 2008; van de Poel, 2015a). For example, the ‘design thinking’ approach is widely advocated, which encourages designers to follow iterative processes involving extensive ideation and prototyping, with a focus on stakeholder engagement and teamwork, in order to solve design problems (Geissdoerfer et al., 2016). Design thinking methods are widely advocated as being useful for achieving sustainability aims, due to their focus on taking into account different stakeholder perspectives in creative ways (Buhl et al., 2019). In creative design, the language of
Managing the delicateness of decision-making in sustainable design

problem-solving is typically chosen over decision-making, since, in this paradigm, design is considered to be about finding new solutions that don’t yet exist, rather than choosing between known options, as in the science-based methods (Ball et al., 2001). Problems are said to be solved through doing design, including the many visual and tactile aspects such as sketching and prototyping (Gumienny et al., 2011) as well as the interplay between the visual and the verbal (Jacobsen et al., 2016).

Nevertheless, some authors have explicitly used the term decision-making when theorising about design thinking, despite the primary focus on problem-solving (Buhl et al., 2019; Gould et al., 2019; Liedtka, 2015). In this literature, the designer is clearly positioned as the one making the decisions, despite there being a focus on stakeholder engagement and collaboration in design thinking methods. For example, Buhl et al. (2019) frame the designer as deciding what stakeholder feedback to use and how. Yet the authors focus more on advising the designer on how to gather perspectives to inform decisions, than on the act of making a decision. Other authors propose more specific methods for decision-making based on design thinking methods. For example, Gould et al. (2019) propose combining design thinking methods with decision support tools for sustainable design. This would involve combining a creative, exploratory approach to design with a rational decision-making method that assumes clear decision points can be identified and that seeks objectivity in decision-making. Relatedly, Liedtka (2015) proposes that design thinking, through its focus on openness, visualisation, and collaboration, can help reduce cognitive biases in design decision-making. Again, there is an attempt to be objective, through reducing biases, albeit through using a creative method. Thus the interplay between objectivity and intuition is complex.

### 4.3.1 Articulating decision-making in design

Given the extensive theory on how design decisions should be made, some authors have sought to study how they are actually made, often through asking designers to articulate them. Two methods have been used in which participants are asked to articulate what they are doing while designing, including decision-making. The first approach to observing the design process is protocol studies, where designers are asked to work to a design brief in a laboratory setting, and to simultaneously talk out loud about what they are doing and thinking (called ‘thinking aloud’) (Cross, 2001a;
Navigating expectations for sustainable product design: a DP analysis

Oxman, 1995). The ‘thinking aloud’ method reflects a cognitive perspective on design, and so designers may be expected to talk about deciding or choosing as mental processes, which might involve other mental processes such as imagining, evaluating and perceiving (Cross, 2001a; Dorst & Dijkhuis, 1995; Oxman, 1995).

Several historic protocol studies produced findings on how decisions are embedded within a creative design process. For example, Akin and Lin (1995) identified novel design decisions as associated with multimodal design activity, being more common when someone was drawing, examining, and thinking at same time. In other cases, design teams are observed working to a brief. Cross (1997) found that a ‘creative leap’ occurred among a design team, indicating a solution was suddenly found. Findings from such protocol studies imply that decision-making in design is done creatively and/or intuitively in the cases studied. However, protocol studies are criticised by some authors since the context of taking part in a laboratory study will influence how participants report what they are thinking, and may influence the design work itself (Dorst, 1995; Lloyd et al., 1995).

Given the difficulty of expecting designers to report what decisions they are making and how in real-time, the second approach involves asking designers to talk about decision-making in design retrospectively, through interviews. Again, the context of taking part in an interview study will influence what participants say (Rapley, 2015), but the retrospective approach gives space and time to the designers to construct their own accounts of decision-making in a project more holistically. However, there has only been limited research involving explicitly asking designers to give accounts of decision-making in specific design projects. One example comes from the designer and researcher Pedgley (2009) who completed interviews with product designers, plus a reflective diary of his own design practice, to try to understand design decision-making with regards to materials choices. The analysis focused on how designers carefully balance stakeholder requirements (for example, those of clients or manufacturers) with their own expertise. Another interview study by Surma-aho et al (2019), focused on empathy among designers. The analysis focused on how different types of empathy were associated with different design priorities. In the extracts presented, the participants talk explicitly about how empathising with users influences their decision-making. In both studies, what participants said is reported as if it reflects what actually happened in the design process. The nature of reflective
accounts as constructive and constructed within a specific interactional context (Rapley, 2012) was not considered.

Additionally, some studies have sought to identify how design decisions are made interactionally in design meetings. Analysing videos and transcripts of such meetings to understand the social aspect of design has become a popular method (Luck, 2012; J. A. McDonnell & Lloyd, 2009). Some of these studies have produced findings about particular aspects of decision-making, such as persuading or convincing others, where designers and other stakeholders are seen to be discussing design options collectively (Le Dantec & Do, 2009; J. A. McDonnell & Lloyd, 2009; Oak, 2011). This body of work gives insights into the need for designers to develop negotiation skills as well as creative and/or scientific design skills. Yet this approach can only give insights into decision-making in meetings, and not into decisions that take place in the design studio or elsewhere. There is therefore still a need to gather designers’ insights and perspectives on decision-making that takes place in different stages of the design process.

To sum up, in the normative literature on design decision-making, there is a tendency to frame designers as decision-makers, while acknowledging the collaborative nature of design. The engineering design perspective assumes that clear decision points are known and that decisions can be made rationally. The creative design perspective appears to treat some decisions as consciously made, drawing on design experience and stakeholder views, and others as embedded within the creative process of doing design. This literature overall focuses much more on how decisions are made or should be made, rather than on what decisions are made in design. There has only been limited research to date that seeks designers’ own accounts of design decision-making across a project. There is therefore an opportunity to take a more detailed approach to analysing how designers construe what decisions are made and how they are made in particular projects. In focusing such a study on sustainable design specifically, there is an opportunity to provide new insights to help improve guidance on sustainable design decision-making, to in turn achieve more sustainable products. In this study I analyse designers’ accounts of design decision-making related to sustainability to answer the
question: How do sustainability-focused product designers account for what design decisions are and how they are made?

4.4 Methods

A discursive psychology (DP) approach has been taken to analyse designers’ accounts of decision-making in sustainable design. DP offers a method for analysing talk as actions, and often leads to a respecifying of how psychological concepts are viewed (Edwards, 1999; Potter & Wetherell, 1987). Since decision-making is a psychological construct, it can be studied using DP in terms of how it is construed by designers in the ways they talk about it (rather than seeking to access what happens in people’s minds). When designers are asked to give accounts of decision-making, different questions about decision-making are likely to be met with different ways of accounting for and justifying the design process. Thus, rather than only analysing the content of what designers report, their accounts of the design process can be analysed in terms of how they are constructed in the interactional contexts of specific questions asked (Wiggins, 2017). DP has not been commonly used to look at design contexts before, although the closely related approach of conversation analysis which seeks to understand the nature of interactions per se, has recently become a more popular method to study observations of design practices (Luck, 2012).

Designers’ accounts of sustainable design projects were collected using semi-structured interviews, as part of a wider project on psychology and design. Although there are various critiques of the use of interviews in DP research as opposed to naturalistic data (Potter & Hepburn, 2012), the focus on this research of designer’s own accounts of projects they have worked on lends itself well to interviews, which invite reflective conversation on design practice. Reflection on past work is commonly advocated in design education and practice (Schon, 2008), and so designers are likely to be familiar and comfortable with producing detailed accounts of how they carried out their work. Potential participants were contacted via a design email list and a sustainable design group on LinkedIn. Sixteen product designers were recruited to take part in semi-structured video call interviews carried out by the author between July and October 2020 (see page 52 for participant details). Interviews lasted an average of forty-five minutes. Designers were told in advance that they would be asked to give an account of a recent design project of their
choice. Participants were asked to tell the interviewer about some of the decisions made in the project and then to explain how a particular decision had been made. University research ethics committee approval (School of Philosophy, Psychology and Language Sciences Research Ethics Committee, approval number 324-1920) was given before commencing data collection. This confirmed that appropriate measures were taken to ensure informed consent (using participant information sheets and both email and verbal confirmation), anonymity, and data security in line with British Psychological Society ethics guidelines (British Psychological Society, 2018).

Basic words-only transcripts of the full dataset were produced. Anonymised transcriptions can be found on the UK Data Service (L. Cooper, 2021). Analysis involved several iterations of looking closely at the full corpus of data, making notes on patterns of actions, devices, and sequences related to accounting for design decisions. The context of taking part in an interview and the framing of questions were important aspects of the analysis (N. Cooper & Burnett, 2006; Rapley, 2012; Wooffitt & Widdicombe, 2006). Attention was paid to how differences in question wordings were associated with different types of responses. Nine lengthy extracts (one to three pages each) where decision-making was discussed were selected for detailed transcription using Jefferson (2004) notations (see page 60 for a guide to transcription symbols), for further in-depth analysis. Patterns were identified regarding 1) different ways being asked to identify specific decisions was treated as problematic, and 2) contradictions in ways of describing how design decisions were made. Three extracts were presented at a data session with other researchers, who noticed similar phenomena, providing confidence that the analysis is rigorous and justifiable. Four short extracts have been selected for inclusion in this article, which represent clear examples of the patterns of phenomena identified across the wider corpus of extracts analysed.

4.5 Analysis
The analysis is structured in two parts, with two extracts presented on the topic of identifying what design decisions were made, and two on the topic of describing how design decisions were made.
4.5.1 What were the design decisions?

Here I examine two extracts in which participants indicate that questions about what decisions were made are problematic, since the participants do not report specific decisions. Extract 1 comes from early on in an interview with a designer talking about a trestle table he designed for a university client.

Extract 1, from interview 1 – trestle table

1. I and then=

2. =this might be a little bit (.5) more tricky but could
3. you <briefly> (.7) >tell me about some of< the decisions
4. that you made so we=

5. =we can go into more detail afterwards but but what were
6. the particular decisions that you had to make in
7. designing this (.4) product

8. P1 (2.8) erm (1.9) well decisions yeah (huhuh)

9. i think designing is always decision-making [erm
10. I [yeah]

11. P1 the whole time (.5) erm (1.9) i mean at the=

12. =at the end of the day you have a (1.2) you have a
13. certain erm er there was maybe like a vague idea by
14. the university what they wanted and then (.3) it's
15. (1.0) our role as designers to give this idea (1.4)
16. erm

17. a form basically to to (.3)

18. I yep

19. P1 bring it into being (.7) and erm (.5) so (.4) decision
20. making i would say is erm (1.8)

21. erm (1.0)

22. well i mean there are there are lots of lots of tiny
23. tiny decisions erm at th- i mean at the very beginning
24. erm you you develop maybe a erm a rather abstract idea
Managing the delicateness of decision-making in sustainable design

of of how something could be and then through a iterative process of erm model making and sketching (.5) you erm (.6) you=

eyeah you develop this idea but it's erm (.4) oftentimes not so much that you (1.5) erm (1.0) only decide how things should be but (.4) that you erm do something and then the the thing that is in front of you (.5) maybe a drawing or a a model (.6) erm (.4) er speaks back to you=

and erm >in a way< erm s:o (.6) it's erm and then then of course you react to it and e:rm and so (.5) there are hundreds of of decisions detailed decisions

The interviewer’s (I) question is prefaced with ‘this might be a little bit more tricky’ (line 2), which establishes the request to specify decisions made as potentially difficult. This signals to the participant that they may not necessarily be expected to give a straight answer. The question is then formulated as ‘could you briefly tell me about some of the decisions you made’ (lines 3-4). This is an open question, which allows the participant to select which decisions to focus on. The use of ‘some of’ portrays a larger number of decisions certainly more than a few that the participant can select from. The question is then reformulated, as ‘what were the particular decisions that you had to make in designing this product’ (lines 5-7). This reformulation makes the request more specific, in saying ‘particular decisions’, and makes clear the interest in the specific design project, saying ‘this product’. The disclaimer that the question might be difficult, and the hesitancy in how to frame the question, indicates possible problems with expecting a clear account of decision-making.

In the designer’s (P1) response to this question there are long pauses and an elongated ‘erm’ in line 8, followed by ‘well decisions yeah’ and laughter. This both buys time before providing a response and signals that the request to identify decisions is tricky. Pauses and hedging (delaying sounds such as ‘erm’ which highlight delicateness (Wiggins, 2017)) feature regularly in the extract, which implies that the narrative is in some way difficult to construct. We therefore see that, as
indicated in the question, the designer does indeed demonstrate difficulty in formulating a response.

In the rest of the extract, the designer offers a detailed account of the design process. First, he makes a general claim: ‘I think design is always decision-making…the whole time’ (lines 9-11). This enables the participant to shift the conversation away from identifying specific decisions, as he makes the issue general by using the extreme case formulations ‘always’ and ‘the whole time’. Such extreme case formulations have been shown to be used to portray something as typical (Edwards, 2000; Pomerantz, 1986). Through this response, he indicates the difficulty of identifying a specific instance of a decision as an action. He then provides an alternative account which reframes his initial portrayal of a continual process, by describing lots of small decisions. He says, ‘lots and lots of tiny tiny decisions (lines 22-23) and ‘hundreds of of decisions detailed decisions’ (line 35). The small scale and the large volume of these decisions are highlighted through repetition. This plays down the significance of any specific decisions in the design process, by characterising the decisions as small and commonplace. The features of this response thus work to demonstrate the problems with being asked to specify decisions made.

The participant also offers an account of alternative actions in the general design process. He provides several descriptions of what design involves. The designer’s creative role is depicted in saying ‘it’s our role as designers to give this idea erm a form basically’ (lines 14-17), and then adds ‘to bring it into being’ (lines 17-19). In lines 25-28, he describes design again as a process rather than a series of decisions, this time offering a more detailed description. He says, ‘though a iterative process of erm model making and sketching you erm you yeah you develop this idea’. In lines 30-32 he reports ‘you erm do something and then the the thing that is in front of you maybe a drawing or a a model erm er speaks back to you’ and then adds in lines 33-34 ‘and then then of course you react to it’. The notions of giving a form to something and bringing it into being portray a practical process of acting and reacting to material things. The metaphor of the drawing or model ‘speaking back to you’ implies that the agency to do design work lies not only with the designer, but also within the objects themselves. This helps the participant avoid talking
Managing the delicateness of decision-making in sustainable design

specifically about specific decisions he has actively made himself. The account of alternative actions in the design process which contrast to the notion of making decisions, further portrays difficulty with the assumptions in the original question that specific decisions can be identified.

Furthermore, it is worth noting that throughout this detailed description of the design process, the designer talks about designers as a category. He uses the generalising ‘you’ pronoun (lines 12, 24, 27, 29, 30, 31, 33 35), which portrays the aspects of the design process he is describing as typical for designers. This also helps him reject the request to give an account of specific decisions he made.

Next, we turn to an extract that shows the participant indicating that the question of what decisions they had to make is problematic in a different way. In extract 2, a product designer who has been talking about designing packaging for shoes for a client, is asked to talk about some of the design decisions.

**Extract 2, from interview 9 – shoe packaging**

```
1     I    yeah (.). okay (.6) so (.3) could you tell me about
2     some of the things that you had to make design
3     decisions about
4     P9   (.3) mm (hhhh) so (.3) >i think some of the biggest
5     things< (.3) um because this company that we worked
6     with they had never (.7) done any like sustainability
7     initiative projects before (.8)
8     it was getting them familiar with the sustainable (.6)
9     materials um (.6) >you know>
```

The extract starts with an open question about design decisions. The participant (P9) is asked ‘could you tell me about some of the things you had to make design decisions about’ (lines 1-3). This is a different question to the one asked in extract 1, since rather than asking what the decisions were, the participant is asked what they were about. Nevertheless, the question clearly directly asks the participants about design decisions he had to make himself.

This question is met with pauses and hedging (‘mm’, ‘so’) in line 4 which signals difficulty in answering at first. Then, instead of providing an account of what the
decisions were, the designer then gives a response that picks up on the question of what the decisions were about. The participant first provides his response, saying ‘I think some of the biggest things…’ (lines 4-5). This focuses his account on what he assessed as important. We see that ‘decisions’ is modified to ‘things’, which enables him to talk about what the decision was about. He then provides an insertion, used to provide information needed for the subsequent claim to be understood in a particular way. In the insertion he explains that the client company had not worked on sustainable projects before (lines 5-7). The designer then identifies one of ‘the biggest things’ that a decision was made about as ‘getting them familiar with the sustainable materials’ (line 8). The designer focuses his response on an aspect important to sustainability, materials choices, thereby orienting to the broader context of the interview, despite sustainability not being in the interviewer's question. The designer thus claims that he had to make a decision about getting the client familiar with sustainable materials. This response does not give any detail about what the decision was, it only highlights this aspect as important, and portrays a challenge regarding the client being less informed about sustainable materials. It can be inferred from this response that the original question, in its focus on design decisions made by the designer, misses the important role of other stakeholders such as clients in decision-making about sustainability. The designer's role is portrayed as working to get the client familiar with more sustainable options that they could choose.

4.5.2 How were the decisions made?

In extract 1, when the participant was asked to talk about some of the decisions made, we have seen the participant talk about decisions as embedded within the design process. Thus, no specific decisions are identified. In extract 2, we have seen that when the participant is asked what he had to make decisions about, he highlighted that an important decision about sustainable materials was made not made by him. We now turn to two extracts where the interviewer asks more direct questions to try to gain more detailed accounts specifically of how design decisions were made. In extract 3, a design decision has been identified in prior talk, which is choosing between three materials. In extract 4, the account is about choosing between a large number of design concepts.
The participant in extract 3 has previously talked about a project he undertook to propose a sustainable packaging solution for a ceiling fan to the consumer goods company he works for. The focus was on using a more sustainable material, and he had briefly mentioned having considered three different material options.

**Extract 3, from interview 2 – ceiling fan packaging**

1. I: okay (.3) interesting (.6) and so you were=
2. =initially you had these three different material
3. options (1.3) how did you make the final decision (.8)
4. how did you weigh these options up
5. P2: (.6) yeah (1.0)
6. erm (.9) so (.6) in the end erm (.6) the company is
catering to the economy er sort of range=
7. =all the products are based (.3) are very economical
8. they aren’t er really into the premium segment or the
9. luxury segment so cost was always (.5) er on the back
10. of my mind that (.5) whatever we do (.5) it’s not adding
to the product as such you; know
11. I: mhm
12. P2: it might add to the marketing but we had to keep in
13. mind that the cost is one of the major factors so that
14. was the first filter (.4)
15. ((36 lines omitted where the participant describes two other
16. factors influencing the decision, the environmental
17. impact of the material and how easy it is to
18. manufacture))
19. I: and was it difficult to compare these different factors
20. and make a decision
21. P2: (1.7) er to be honest i guess erm (2.3) i could have
dealt before or you know i could have done a more (.4)
er (.4) detailed com[parison
22. I: [mhm]
Navigating expectations for sustainable product design: a DP analysis

In the opening lines, the interviewer (I) produces a summary or gist. The gist is used to selectively reproduce elements of the participant's prior talk to frame as a follow up question. The interviewer's question is prefaced with 'initially you had these three different material options' (lines 2-3), where 'three' is elongated. This prefacing works to highlight the idea of having options to decide from. The question is first framed as 'how did you make the final decision' (line 3) and then followed up with 'how did you weigh these options up' (line 4). The first question remains open to different sorts of accounts of the decision-making process, but the second question, in using the phrase 'weigh up', again makes clear the interest in involving comparing options. This gives an example of the kind of specific action that might be involved in decision-making.

The questions are responded to initially by the designer (P2) with several pauses and hedging 'yeah erm so' (lines 5-6), indicating some difficulty. And then the participant provides a detailed description of three criteria used to weigh up the material options, describing 'cost' as the 'first filter' in lines 15-16, and then adding further detailed description of environmental and practical factors (lines omitted). This provides a direct response to the question about weighing up options, by describing the criteria used. The response shows what sort of things can be said
about the specific activities involved in making a decision, that is, one can describe the criteria they chose between.

The interviewer then probes further, which might imply that the initial answer was not sufficient. She asks in lines 21-22, ‘and was it difficult to compare these different factors and make a decision’. Comparing is a classic action involved in deciding. Again, the emphasis is on weighing up the options as the way to make a decision, which steers towards a particular kind of response, and the interviewer asks for an assessment of whether this was difficult. This question is met with a long pause (1.7), indicating some possible difficulty, and then an upcoming ‘confession’ is tentatively announced by saying ‘er to be honest I guess erm’ (line 23). The ‘confession’ is then given, saying ‘I could have done a more er detailed comparison’ (lines 24-25). Here the participant is indicating recognition that the initial answer was not treated as sufficient. Analysis of interview studies has found that participants often seek to give answers based on what they think a researcher is looking for (Rapley, 2012). Therefore, by responding more directly to the interviewer’s suggestion of comparing factors in order to make a decision, the participant demonstrates conforming with the researcher’s request. The ‘confession’ continues in lines 27-28 ‘in retrospect I’m citing these options but…’ which announces an alternative account is about to be provided. The participant says, ‘when I was in the whole design process or the kind of process er ((product name)) like impressed me so much on the personal front and also the sustainability department people were like ‘wow this is really nice” (lines 28-32). This second account portrays a personal reaction of being ‘impressed’. Reported speech assessments of the product being described by colleagues as ‘really nice’, rather than focusing on providing facts or criteria for analysis. This response perhaps indicates difficulty in articulating the specific action of choosing, since this is portrayed as just based on liking one option.

The admission of having taken a decision based on a personal reaction continues, with the designer saying, ‘so I feel we were a bit biased toward towards it so that I do realise now when I look at it so we were trying to make er that option work’ (lines 34-36). The use of ‘biased’ indicates an ideal of making decisions objectively, in contrast the portrayal of actually of having made a decision based on being impressed. The phrase ‘I do realise now’ portrays reflecting back on the decision-making, and also again orients to the interviewer having indicated that the initial account given was not
Navigating expectations for sustainable product design: a DP analysis

sufficient. However, the concluding statement in lines 38-39 ‘because it was so erm sort of er it ticked all the requirements which we had’ shifts back to the idea of weighing up options, in asserting that the material nevertheless met the criteria. This works to counteract any possible inference of cutting corners and making a less effective decision based on personal reactions rather than rationally comparing options. Overall, we see the designer orient to common normative assumptions, indicated in the interview questions, of design decision-making as being a rational, explicit process, but in the end shows difficulty in describing decision-making in this way.

In the next extract, we see how a different designer also first portrays seeking to make a decision in a methodical way, and then confesses that intuition is used. This participant had previously talked about an electric vehicle charge point he had designed while working for a small design company. An informal call had been held with this participant in preliminary research, where the use of decision support tools in design had been discussed.

Extract 4, from interview 12 – electric vehicle charge point

I okay >and< could you tell me a bit about the design process and how you went about making decisions

P12 (1.2) sure erm yeah i think I think we might have touched on our last call=

I =yeah

P12 i so i really (.7) er for this (.6) i really like a >I quite like a process< called morphological analysis

I mhm

P12 (1.0) erm which is where i essentially break down e:r (.7) (.4) the functions of the product you're trying (.5) er to develop erm (.5) or you yeah >you break down er the product the product into its kind of< simplest basic functions

I mhm
Managing the delicateness of decision-making in sustainable design

P12 erm and then you can combine those to create erm (.6) concepts design concepts that you can then assess on how erm >on how good they are<

((55 lines omitted where the participant talks about some of the different options available when designing the electric vehicle charge point, and then gives detail about what the process looks like on paper, involving comparing lots of sketches in a huge table))

I yeah and so you've got you've got all these options in a big grid

P12 mhm

I >how do you actually< <then choose>

P12 (1.4) erm so it's (1.0) yeah this is one of the: e (1.2) this is maybe one of slightly controversial bits about the process is it's largely (.8) intuitive

I mhm

P12 erm or based on experience

In the initial question, the interviewer (I) asks an open question both about the design process for the project and specifically about decision-making, saying, 'can you tell me about the design process and how you went about making decisions' (lines 1-2). The initial response from the designer (P12) is hesitant, with pauses and hedging (sure erm year, line 3), before saying 'I think we might have touched on our last call' (lines 3-4), referring to the previous conversation held during pilot research. In lines 6-7, the designer begins his response by identifying a formal process for decision-making, saying, 'I really like a I quite like a process called morphological analysis' (lines 6-7). This process is described using an official name, indicating a technical, standardised approach. However, there is hesitancy around depicting using the process because the designer personally likes it, as we see a modification from 'I really like' to 'I quite like'.

The participant then gives an explanation of what morphological analysis is. This starts in lines 9-10 as a description of how the designer himself uses this process, saying 'I essentially break down er the functions'. But then 'I' switches to 'you' in the
rest of the extract, to talk about how designers in general may use the process. The use of generalising language portrays the process as a commonly accepted method. For example, he says ‘and then you can combine these to create erm concepts’ (lines 15-16). This works to make the account appear universal and typical for designers. The participant then provides a lot of further detail (in lines omitted) about how the process is done, first in describing different options when designing the electric charge point, and then in describing what the method looks like on paper. This detailed account portrays knowledge and familiarity with the process which adds credibility.

The interviewer probes further by summarising what the participant has said about the process, saying, ‘yeah and so you've got you've got all these options in a big grid’ (lines 23-24), and then asking, ‘how do you actually then choose’ (line 26). Thus, we see that the detail given so far about looking at the options and considering criteria is not taken as giving enough information on the actual process of deciding. The quantity of options is highlighted through ‘all these options’ and ‘big grid’. This question itself is very direct, and the use of ‘actually’ portrays seeking an honest response that reflects what really happened. The words ‘then choose’ are said more slowly, which works to emphasise the choosing as the important bit. In response to this direct question, we see some difficulty in continuing the narrative of the technical approach. There are first pauses and hedging (‘erm so it’s… yeah’, line 27), and then the participant adds to his account in response to the signal from the interviewer that the initial account wasn’t adequate. He gives a signal that a ‘confession’ of something different is coming, declaring, ‘this is maybe one of the controversial bits’ (line 28). The ‘confession’ that is then delivered is ‘it's largely intuitive erm or based on experience’ (lines 29-31). Decisions being made intuitively is portrayed as a possibly negative thing through the term ‘controversial’, or at least something that goes against expectations, through describing it as controversial. The modification of ‘intuitive’ to ‘based on experience’ works to counteract any possible negative connotations of intuition, by highlighting the role of the designer’s expertise in the implicit decision-making.

4.6 Discussion
In this analysis of interviews with sustainability-focused product designers, we have seen that when asked about design decision-making as an activity, decision-making
is treated in different ways depending on the question but there is difficulty in clearly describing what took place. From the analysis of the sixteen interviews, I identify the following findings. 1) Asking what decisions were made in a project is treated as problematic. The idea of identifiable decisions as specific actions is brought into question, through giving accounts of many small decisions being embedded in a creative process, and through describing design as involving alternative actions to decision-making (seen in eleven interviews). 2) The assumption, implied in asking designers about the decisions they made, that designers make key design decisions related to product sustainability is brought into question. Some designers instead claim that important design decisions were about seeking to inform and influence other stakeholders to select more sustainable options (seen in five interviews). 3) Asking how decisions were made in a project is responded to with accounts of rational decision processes, but which are then undermined with ‘confessions’ of decisions being made based on personal assessments and reactions (participants gave such contrasting accounts of the same decision process in seven interviews).

From finding 1, we can infer that talking about design decisions as specific, identifiable actions is difficult and that it is instead easier to construct a retrospective account of the overall design process in which decisions must have somehow occurred. The design process is portrayed by the designers as messy and complex, rather than involving clear decision-making based on criteria. This is in response to being asked about design decisions in a general way, rather than about design decisions specifically related to sustainability. Thus, the participants produce accounts of the process of designing in general. These designers’ accounts resonate with the idea put forward by several authors that their design practice involves intuition, embedded and embodied knowledge (Cross, 2001b; Liedtka, 2013). Empirical research based on observation of design has found collaborative decision-making to be often done intuitively rather than based on careful consideration (Lloyd & Busby, 2003) and at times to have involved what have been referred to as ‘aha’ moments (Cross, 1997). Yet the conclusion from the present analysis is not that design decisions are made intuitively, as this would involve assuming what people say reflects an underlying reality. Instead, we can conclude from these findings that decision-making is a construct that is used to make sense of a variety of actions, rather than to describe one identifiable action. Rather than treating design decision-
making as either rational, using clear criteria, or intuitive involving creativity and feelings, designers can use their accounts to portray and navigate creativity, skills, and agency in different ways when accounting for decision-making. This way of reconceptualising decision-making as constructed in talk represents a new contribution to design studies.

From finding 2, we can infer that the designers are taking opportunities to portray the limits of their individual agency over important design decisions related to sustainability. When asked what they had to make decisions about, we have seen an example of a participant claiming that he needed to make a decision about making the client aware of sustainable materials. The designer does not describe what the decision was, but describes what was important, which was to influence the clients to understand the importance of sustainable materials. The findings show designers who work in many different contexts similarly portraying sustainability-relevant decision-making as often done by other stakeholders, rather than by the designers themselves. In theoretical literature, it has been argued that the designer’s role should also include influencing other stakeholders towards sustainability, given the social nature of design (Fry, 2004; van de Poel and Verbeek, 2006). This study provides empirical evidence of sustainability-focused designers indeed portraying an aspect of their roles as involving trying to influence, in the absence of being able to decide.

From finding 3, we can infer that the participants are orienting to expectations that design decisions should be explicit and made in rational ways. These expectations are sometimes explicit in the way the interview question is asked (‘how did you weigh these options up’, extract 3). The participants knew in advance of the interview that the researcher’s primary interest was decision-making, so some may have thought about how to describe their decisions in advance. Since the participants speak as research participants, they were potentially seeking to fulfil the researcher’s needs (Rapley, 2012) by providing a detailed account of considering different options in order to make a decision. We have seen two examples of participants first constructing accounts of organised, sequential processes involving comparing options, but then undermining these accounts by ‘confessing’ contrasting accounts of making decisions based on personal impressions or intuition. The latter are
Managing the delicateness of decision-making in sustainable design

portrayed as controversial as they go against expectations of objective decision-making. This finding resonates with those of other authors who have concluded that expectations of fully rational decision-making in design are unrealistic. For example, Zannier et al. (2007) found software designers used a mixture of rational and intuitive approaches, and Guersenzvaig (2015) propose that rationality and intuition are two elements of human decision-making in design, rather than polar opposites. Looking more broadly than design, the fact that two different sorts of accounts of how the same decision was made are provided reflects research in social psychology that has found that people tend to retrospectively construct logical narratives of how and why they made decisions, after initially making them based on gut instincts (Haidt, 2001). While we cannot conclude from the analysis that the designers in fact made the decisions intuitively and then constructed a rational account for the purpose of the interviews, we can conclude that there is something tricky about trying to articulate how a decision was made. Again, this indicates that the concept of decision-making is used to bring together many different actions and processes, and so is difficult to describe as a whole.

The practical implications of these findings are as follows. Guidance on design decision-making could be adapted to reflect the language used by the designers. For example, guidance on making better design decisions could include some designers’ reflective accounts of decision-making in specific projects. This would demonstrate the complexity of talking about decision-making in design and how designers make sense of their actions by sometimes portraying rational comparing of options, sometimes portraying a creative, intuitive process, and sometimes portraying negotiating a choice with others. This could encourage further reflection on how decision-making is done in design from designers’ perspectives.

Guidance on sustainable design decision-making in particular would benefit from also reflecting the complexity in how the designers’ agency to make decisions is portrayed in their accounts. We have seen portrayal of some sort of agency over many small decisions embedded in the creative process, but not over making final decisions regarding how sustainable products are. Thus, when giving guidance on making explicit decisions that are key to sustainability, such as materials, it may resonate with designers to include advice on ways of negotiating with, persuading,
Navigating expectations for sustainable product design: a DP analysis

and influencing other stakeholders to prioritise sustainability, as well as on actions such as identifying and comparing options that may form part of deciding. Such advice may be informed by identifying successful negotiation and persuasion strategies employed in design meetings (Luck, 2009; J. A. McDonnell & Lloyd, 2009; Oak, 2011).

Overall, this study makes a methodological and theoretical contribution to design studies. The findings point to a need to respecify how the concept of decision-making is treated in design. This approach can also be taken for other psychological concepts and actions studied in design. This DP analysis demonstrates the importance of considering talk about design work as constructed and constructive (Wiggins, 2017). For studies based on interviewing designers about their work, analysis should consider both questions and responses (Rapley, 2012), and should treat accounts as constructed within their interactional contexts, to achieve different things, and manage different assumptions, rather than reflecting a reality of what took place. Using DP to analyse interactional talk provides a new direction for understanding how being held to account for one’s actions affects reflective practice in design.

Nevertheless, there are ways in which the present study could be improved. For example, the interviews could have probed more to seek extended accounts of the actions involved in decision-making. The fact that the interviews covered multiple topics as part of a wider project meant that the number of probing questions was limited. Further research could involve interviews fully dedicated to the topic of decision-making in design, with specific and consistent questions on decision-making in general, and then on decisions related to sustainability.

4.7 Conclusion

We have seen in this article that a great deal of specific guidance exists on how to make better design decisions, including more sustainable decisions. Most of this reflects rational decision theory rather than a creative or intuitive perspective on how design decision-making is done. While observation of design work has provided a range of findings indicating creativity, subjectivity, and intuition in design decision-making, there is a lack of research involving detailed analysis of designers’ own accounts of decision-making in their work. Through a DP analysis of sustainability-
Managing the delicateness of decision-making in sustainable design

focused product designers giving accounts of design decision-making, this study provides the following findings. 1) Being asked to give an account of what decisions were made in a sustainable design project is treated as difficult in terms of being able to identify specific decision points in a creative process. 2) When talking about what important decisions related to sustainability were about, participants describe influencing other decision-makers. 3) Being asked to describe how decisions were made is met with constructions of rational decision-making processes, sometimes reflecting a rational framing in the question asked, involving comparing identified options. However, this is then this is undermined through ‘confession’ of the centrality of personal reactions and assessments in design decision-making. Overall, we see difficulty in articulating both what decisions were and how they were made in a design project, but nevertheless see attempts made to construct informative accounts of decision-making and design processes, and to portray the designer’s effort in finding appropriate solutions to a sustainable design problem.

Based on the findings of this study, there is an opportunity to reconceptualise decision-making in design, as a construct used to account for various actions and processes, that is used in different ways in different situations. Practical guidance on design decision-making could be modified to more closely reflect the ways designers articulate their actions and roles, for example by including examples of designers’ accounts that portray the messiness of decision-making. For design researchers, this analysis has shown the usefulness of DP for analysing interviews as interactions and provides a different methodological direction for analysing reflective practice in design.

In this chapter, I have found that the designers portray difficulty in giving accounts of what design decisions were in a project, and of how decisions were made. The assumption inferred in the interviewer’s questions that decisions are identifiable points where conscious decision-making processes are used is questioned. These findings link to the next chapter which is about designers’ talk on personal values in their work, in that the designers also portray difficulty in identifying how values influence decisions or their design process more broadly.
Chapter 5  Doing commitment and identity work in talk about values in sustainable product design

In this chapter I provide an analysis of how participants talk about personal values in relation to their work. This chapter is formatted as a journal article targeted at a science and technology studies journal, a field in which values in design is a popular topic. However, the topic has not yet been explored from the perspective of how designers themselves characterise values in design. In the article, I outline how the notion of values is treated and studied in literature on design. Values are often presumed to be factors that influence and can be used as criteria in design decision-making. I identify that there is gap in the literature regarding asking designers whether or how values influence their work, to examine how designers themselves conceptualise and use the notion of values. In the analysis, I show that when the designers talk about values in relation to their work, they use the notion of values to portray their identities.

5.1 Abstract

Personal values are considered an important concept in design. Literature in science and technology studies and design studies treats values in several different ways. Values can be seen as personal priorities that inform, and can be used as criteria in, design decision-making. Or, values can be seen as collective, moral priorities, as seen in the body of work on Design for Values. There are attempts to advise designers on how to collate and reflect on different stakeholders’ values, using methods such as Value Sensitive Design. Yet there is a lack of research on how designers themselves use the notion of values in relation to their work. In this paper, how designers construct the role and significance of values in their work, specifically related to sustainability, is explored. Product designers’ verbal accounts of sustainability-focused projects have been collected from interviews and conference panel discussions. A discursive psychology analysis shows that when participants talk about values, they explain where their sustainability values came from. In this way the designers use the concept of values to demonstrate longevity of commitment and individuality. The findings suggest that design researchers should
Navigating expectations for sustainable product design: a DP analysis

appreciate that when designers are asked to identify their values, they may use values talk to do identity work, rather than to specify design criteria.

Keywords: Values; sustainable design; product design; decision-making; psychology of design; identity.

5.2 Introduction
The concept of values is prominent in science and technology studies and design literature. The notion of values in design has been theorised and studied in different ways. There is a common assumption that people have sets of values that influence their actions, including in the workplace (Arieli et al., 2020). Thus, there is a focus in design literature on how designers use their personal values in their design decision-making, either individually (Mate, 2006; Trimingham, 2009) or through negotiation in design meetings (Lloyd, 2009). There is a body of literature on Design for Values that advises on how designers should integrate collective moral priorities into products (Kroes & van de Poel, 2014). Specific methods have been developed to guide designers to identify and incorporate different stakeholders’ values in design decision-making, such as Value Sensitive Design (VSD) (Borning & Muller, 2012; Winkler & Spiekermann, 2018). Furthermore, values are sometimes treated as entities that can be transferred from designers into the objects they design. It is theorised that the objects can in turn influence user behaviour to reflect those values (Latour, 1992; Spahn, 2014). However, there is a gap in terms of understanding how designers themselves use the concept of values in design.

Values are considered particularly relevant in sustainable design, as valuing or caring about the environment is associated with making products more sustainable (Novak, 2014; Wever & Vogtländer, 2014). In this study, how designers talk about their values in reflective accounts of sustainable design projects is analysed to answer the question ‘how do designers construct the significance and role of personal values in sustainable product design?’. Examining how designers use the concept values when talking about their work provides a new direction for values in design literature.
Portraying commitment and individuality in accounts of values

5.3 Values theory

There are several ways in which values have been described as important for design in the literature. Firstly, it is theorised that designers’ personal values may be translated into priorities that inform their design decisions (VASE: Value Sensitive Design in Higher Education, 2022; Vermaas et al., 2014). Personal values in design can relate specifically to the design context, such as aesthetics and originality, or be broader things people care about, such as sustainability and fairness (Le Dantec & Do, 2009; Lloyd, 2009). Different values are thought to be activated in different contexts (Steg & Groot, 2012). Boenink and Kudina (2020) propose that values for designers are living, interactive and dynamic, involving a process of valuing. Thus, designers may value different aspects in different design projects. To give a simplified example, a designer who reports having both strong sustainability and aesthetics values, may in theory prioritise sustainability in one project, and aesthetics in another.

Secondly, it is widely theorised that values can be embedded in objects, and then passed on to product users. Authors in science and technology studies commonly discuss the idea that values can be transferred from designers into artefacts through design decision-making, to in turn influence users, termed affordances (Fahlquist et al., 2014; Latour, 1992; Shilton, 2018). For example, if a product is designed based on caring about recyclability, the ease of dismantling different components into different materials categories may influence a user to recycle them.

Thirdly, in prescriptive literature designers are advised to actively take into account other stakeholders’ values in design decision-making, such as users and clients. Prescriptive methods such as VSD provide ways of identifying which values stakeholders wish to prioritise in a specific project, so they can be actively reflected on and more effectively integrated into design decisions (Cummings, 2006; Davis & Nathan, 2015). The idea is that ensuring stakeholder values are incorporated will make a design outcome more ethical (Albrechtslund, 2007; Cummings, 2006). There is recognition in this literature that there may be values conflicts to resolve if different stakeholders have different priorities (Manders-Huits, 2011). These different ideas about how values can play a role in design are theoretical, and so it is useful to also
5.4 Empirical studies of values in design

Empirical studies have also examined values in design in different ways. Some studies have sought to uncover what personal values designers hold and which they prioritise in particular settings. Mate (2006), for example, carried out interviews with interior designers on their values, seeking to examine how the designers’ sustainability values influenced their materials selection decisions. The author concluded that the designers had varying strengths of sustainability values and that such values didn’t necessarily translate into more sustainable decisions. Trimmingham (2009) studied student designers’ use of values when working to a brief, using observation with concurrent verbalisation plus retrospective interviews. She produced a categorisation of different types of values the designers’ held and used, using classifications including personal, societal, and economic. These studies imply that designers may have values that vary in strength and that can be either personal or collective. However, since the researchers had the goal of finding out what values designers were using, the analysis involved interpreting what participants said in order to produce clear schemas of values. Such approaches have been criticised for not being transparent about how participants’ talk has been translated into lists of values (Boenink & Kudina, 2020; Borning & Muller, 2012). Rather than assuming that participants’ true values can be identified, we can instead conclude that values are co-constructed in the ways the designers and researchers talk about them.

In contrast, Shilton (2018) asked designers to consider more broadly what values might be relevant in a project. She carried out ethnographic participant observation research on values in design, involving giving talks on values to a group of information technology designers and then attempting to get them to reflect on and ‘surface’ the values relevant to their current design project in meetings and interviews. Inspired by Schön’s historic work on reflective practice (1988), she proposes getting participants to consider values as ‘things to think with’ (Shilton, 2018, p. 265). She asked them to think about both what values might be embedded in the product, and to imagine what values different stakeholders might possess. However, she reports that this proved too complex. It is possible that some of the
specific methods for identifying stakeholder values advocated in VSD may have facilitated this task. Nevertheless, any resulting list of values would again have been co-constructed by the researcher and participants, through the ways values were talked about, rather than reflecting any fixed reality of what values are relevant.

An additional way of looking at values in design involves observing design meetings to identify how values are made relevant in everyday settings. In these studies, participants are not directed by researchers to focus on values, and do not typically use the term values in the meeting talk. Instead, authors use the concept in their analysis to make sense of what is taking place. For example, Lloyd (2009) analysed how values are used in architects’ meetings. He describes a discussion about the colour of a roof and reports that one participant suggests it would be nice to have a different colour roof to the one next door. He quotes another participant as saying, ‘I think it’ll speak for itself in terms of the relationship to the trees in the background’ (Lloyd, 2009, p. 159). The author concludes from this that the design solution (making the roof green) combines the values of usability and environment. Le Dantec and Do (2009) analyse the same meetings as Lloyd (2009) using grounded theory coding to identify ‘language and concepts that express values’ (Le Dantec & Do, 2009, p. 119). They identify values such as aesthetics, uniqueness, purity, and form and conclude that such values are transferred between speakers through negotiation in interactional talk. In another study, Le Bail et al. (2020) coded transcripts of design meetings at a student workshop for values. Using their coding of different values, they deduced were being referred to in the talk (such as ecology, freedom, equity), they identified value conflicts between team members (for example, economy versus ecology) and concluded that such conflicts are not usually resolved through discussion. Such studies have provided useful findings regarding how values are evoked, negotiated, and transferred in talk about design. However, since the concept of values is not directly discussed in the meetings, it is the researchers who interpret where and how values are being made relevant, not the designers. These researchers therefore produce a variety of interpretations of what values are used in specific design settings.

From a brief review of the literature, we have seen that there are various different ways in which the notion of values has been conceptualised in design. Values are
Navigating expectations for sustainable product design: a DP analysis

theorised as variable across settings, and able to be passed onto objects and users. Designers are encouraged to undertake work to identify different stakeholders’ values to inform design decisions. Authors of empirical studies have taken different approaches to identifying and categorising values used in design, often selecting aspects of what participants say and interpreting particular utterances as values. The notion of values is used in different ways by different researchers, and participants talk about values in different ways in different contexts, sometimes expressing difficulty in doing so. There is a gap in the literature regarding empirically studying how designers themselves conceptualise values in design.

5.5 Reconceptualising values in design

In order to examine how designers use the notion of values in the ways they talk about design, it makes sense to collect accounts about values in design work. Interviewing designers directly about values in their work, building on the aforementioned work done by Tringham (2009) and Shilton (2018), offers a way of gathering detailed, reflective accounts. Since the literature indicates that the ways values are talked about are likely to be context specific and variable, asking designers to talk about values in relation to a specific design project makes sense. Another context where designers produce reflective accounts of projects they have worked on is design conferences. Design conference panel discussions often involve a chairperson asking questions to designers about their personal philosophy that informs their work. This sort of reflecting back on one’s work is widely advocated as a useful practice for understanding and improving one’s approach to design (Schon, 2008). Reflection gives designers space to consider, make sense of, and construct meaning through personal narratives, away from everyday work.

Yet in order to focus on how the designers themselves conceptualise values, there is a need to analyse designers’ verbal accounts of their values and priorities in their work in a different way. Rather than seeking to interpret lists and categories of values evoked, we can examine how the use of the concept of values in the way designers talk is action oriented in specific social settings. That is, we can see what the designers are doing or accomplishing in the ways they talk about values in design. Discursive psychology (DP) offers a way of analysing psychological concepts as constructed and action-oriented in interactional talk (Edwards, 2012; Wiggins,
Portraying commitment and individuality in accounts of values

2017), based directly on the details and nuances of what people say, how they say it, and the sequences of talk (Edwards, 2012; Huma et al., 2020). Previous DP work has reconceptualised the concept of attitudes, questioning the assumption that they are stable entities, and instead proposes a focus on how attitudes are constructed in specific contexts and for what ends (Huma et al., 2020; Wiggins, 2015). While there is no DP work on values to date, the concept of values can be treated in the same way, as constructed in talk, rather than reflecting inner states (Wiggins, 2017). This type of analysis can help us see if the notion of values can also be reconceptualised. In analysing how designers construct their accounts, we can see what actions they are accomplishing in the way they invoke, give meaning, and conceptualise the notion of values, and for what ends.

5.6 Methods

Data were collected as part of a broader project, which explores product design decision-making, values, and responsibility related to sustainability. Two data collection methods were used to gather designers’ reflective accounts, producing over twelve hours of recorded verbal data. Firstly, sixteen product designers involved in sustainable design were recruited via LinkedIn and a design email list to take part in semi-structured video call interviews carried out by the author between July and October 2020 (see page 52 for participant details). Secondly, seven videos of interviews and panel discussions at recent high-profile UK and international sustainable design conferences were selected from YouTube, based on the relevance of discussions to designers’ roles and decision-making (see page 56 for details of the conferences). Collecting two types of account data allows for comparison between a private and public setting, and between data co-constructed with the researcher, and naturally occurring data. University research ethics committee approval was given (School of Philosophy, Psychology and Language Sciences Research Ethics Committee, approval number 324-1920) before commencing data collection, covering informed consent, anonymity, and data security in line with British Psychological Society ethics guidelines (British Psychological Society, 2018).

The interview sample is international, although only those with relevant LinkedIn profiles in English were approached, predominantly based on their membership of a
Navigating expectations for sustainable product design: a DP analysis

sustainable design LinkedIn group. Interviews lasted roughly forty-five minutes. Designers were told in advance that they would be asked to give accounts of recent design projects of their choice. Products talked about included suitcases, yoga equipment, packaging, and an electric vehicle charge point. The interview guide (see page 50) included a question about whether participants thought their values had influenced their design decisions, plus follow-up probes. In practice, different questions were asked about values depending on prior talk (for example, some participants brought up the topic of values spontaneously). Twelve participants were asked whether their values influenced their design work (seeking accounts of the significance of values), and four were asked how their values influence their design work (seeking accounts of the role of values).

In terms of analytic procedure, basic words-only transcripts of the full corpus of data were first produced. Preliminary analysis involved looking closely at the transcripts to identify similarities of features (such as pauses before responding or making before and after comparisons) and actions (such as differentiating oneself from other designers). Extracts where participants talked about values and related terms were explicitly talked about, plus extracts where the notion of values was alluded to, were reviewed across the whole dataset. Initially, it was difficult to identify what was being achieved in the talk about values. In asking the interviewees whether or how their values influenced their design work, the expectation might be that they would explain what their values were (presumably related to sustainability, given the context of the study) and how they influenced their work. However, only two participants provided descriptions of what some of their values were. Instead, a recurring phenomenon was noticed of interview participants providing narratives of where their values came from. A similar phenomenon was also seen in one of the conference panel discussions.

Nineteen extracts featuring the patterns noticed were selected for detailed transcription using Jefferson (2004) notations (see page 60) (17 from the interviews, 2 from the conferences, ranging from half a page to two and a half pages per extract). Anonymised transcriptions can be found on the UK Data Service (L. Cooper, 2021). Detailed analysis of the nineteen extracts involved several iterations of looking closely at the data, and making notes on patterns of actions, devices, and
Portraying commitment and individuality in accounts of values

sequences. The focus was on identifying what the participants were accomplishing in the ways they used the term values, and related notions, paying attention to the sequencing of questions and responses (Cooper & Burnett, 2006; Rapley, 2012; Wooffitt & Widdicombe, 2006). I took the time to focus on what participants were doing through providing these narratives about the origins of values when asked about whether or how their values influenced their work. I found that ten participants were portraying longstanding and deep commitment to sustainability, and twelve participants were portraying themselves as different from other designers, due to their focus on sustainability. Towards the end of the detailed analysis stage, two extracts were presented at a data session with other DP and conversation analysis (CA) researchers, who noticed similar phenomena, providing confidence in the justifiability and quality of the analysis in line with DP criteria (Antaki et al., 2003; O’Reilly et al., 2020). In the next section, four selected extracts of data are presented that provide clear examples of three patterns found in how participants use the concept of values when giving accounts of taking into account sustainability in product design.

5.7 Analysis

In this section, I present three extracts from the interviews, which show how participants respond when asked whether or how their values inform their design work. I then present a fourth extract from a conference panel discussion, which shows how a designer responds to being asked why he has focused on sustainability in his design work.

In extract 1, from interview 9, the product designer (P9) is asked whether his own values influence him bringing sustainability into his design work.

Extract 1, from interview 9 – shoe packaging

1 I and so (.9) in terms of bringing sustainability to
2 this <project (.4)
3 P9 mm

4 I (.5) would you say that (.6) that your own values
5 influence this (.7) and your <design work>
6 P9 [oh yeah] (.9) or at least (1.0)
at least the values that I've learned (.3) to design
with (.4) erm (.6) I: I was originally in school as a
sustainable materials engineer and then I switched to
design (.3)

I [right

P9 [so I've kind of] always had that in the back of my
mind >which I'm sure is more influential I mean< (.5) a
lot of designers will kind of bring sustainability on
<as a second thought>

I [yeah

P9 [but my] process has always been to think about that
first just because that's how my education led me (.5)
to

u:m and I think that might have been why I was valuable
in that project is (.3) it's kind of ingrained in my
design process

The interviewer (I) first establishes the context of the question as related to
sustainability, saying, 'and so in terms of bringing sustainability to this project' (lines
1-2). 'This project' refers to a footwear packaging project the participant has been
talking about. A direct question is then asked in lines 4-5 which is 'would you say that
your own values influence this and your design work'. There are two things we can
note about this question. Firstly, despite the initial focus on the specific project, in
this question we see a more general framing, using the present tense 'influence this'
and the expansion to 'and your design work' (line 5). This expansion allows the
participant to not have to focus his response on 'this' specific project. Secondly,
there is caution indicated in the way the question is said, seen in the multiple pauses
and the tentative seeking of the participant's hypothetical opinion 'would you say
that' (line 4) on whether these values inform his design practices.

There are two linked phenomena seen in the first part of the response. Firstly, the
participant shifts the talk to where the values came from. He initially provides a clear
agreement, responding 'oh yeah' (line 6), but then modifies the interviewer's term
'your own values' to 'or at least...at least the values that I've learned' (lines 6-7). This
shifts the emphasis onto the idea of learning values, which is treated as a significant distinction. Secondly, the participant uses an account of learning to portray himself as different from other designers, thereby doing identity work. In lines 8-9, the participant reports, ‘I was originally in school as a sustainable materials engineer and then I switched to design’. This works to depict himself as not just someone who has studied design, but who also has the particularity of having studied sustainable materials engineering beforehand. The designer invokes being a member of the category of ‘sustainable materials engineer’. A lot of analysis has been done of how categories are used in interaction, termed Membership Categorisation Analysis, building on original work by Harvey Sacks (Housley & Fitzgerald, 2015). Claiming to be a member of a particular group infers particular category bound attributes (Housley & Fitzgerald, 2015). Claiming being ‘a sustainable materials engineer’ implies category bound knowledge about environmentally friendly materials that is likely to be beyond the knowledge of a typical designer.

This phenomenon of the designer portraying himself as different from others is also seen later in the extract, where the participant makes a contrast between him and other designers. He says, ‘a lot of designers will kind of bring sustainability on as a second thought’ (lines 13-15). This contrasts with ‘my process has always been to think about that first just because that’s how my education led me to’ (lines 17-19). The description of considering sustainability ‘as a second thought’ portrays other designers as prioritising sustainability less than him. The claim that his ‘process has always been to think about that first’ again portrays his commitment to considering sustainability as consistent over time, through the use of ‘always’. Thus, the designer portrays himself as different from others due to considering sustainability from the outset.

The third key phenomenon seen in this extract relates to how the participant accounts for how his values play a role in his design work. Building on the previous claim of ‘my process has always been to think about that first’ (lines 17-18), the designer continues with ‘so I’ve kind of always had that in the back of my mind which I’m sure is more influential’ (lines 12-13). Here the use of ‘always’ again is used to claim longevity of thinking about sustainability. However, this claim is tentatively produced. The phrase ‘kind of’ is hedging, which is often used to suggest uncertainty
Navigating expectations for sustainable product design: a DP analysis

(Jalilifar & Alavi, 2011), and ‘had that’ is vague about what is being talked about. ‘In the back of my mind’ portrays the notion of valuing sustainability as playing some role in his thinking, but not as at the forefront of his mind. The claim about how the values influence his work lacks specifics. The designer depicts that he assumes his sustainability values must somehow influence his design, through the expression ‘which I’m sure is more influential’. But this portrays not knowing how this happens. This phenomenon is again seen in lines 21-22, where the participant offers a further report of how the reportedly learnt value of sustainability affects his design work, saying ‘it’s kind of ingrained in my design process’. Again, this is tentative (through the use of ‘kind of’) and portrays the values as somehow being a key part of his design work (‘ingrained’). Values are depicted as having a natural rather than conscious influence.

In extract 2, a designer (P8) is asked a similar question about whether she thinks her personal values influenced her decision to use recycled plastic in a particular product. We again see a response that focuses on where values came from, again associating learning with values.

**Extract 2, from interview 8 – plant sensor**

1 I and so (.6) i'm interested to hear whether you think
2 yo::ur (.3) your <personal values> influenced that

3 P8 (1.8) yeah i think they hundred per cent influenced
4 beca::use (.9) to be very honest as a designer i was
5 not taught to think too much about sustaina[↑bility

6 I [right]

7 P8 i was taught to design products=

8 I =okay=

9 P8 =and how to study human behaviour with products and how
to design with technology (.8) er and sustainability
10 was something i knew about but i didn't practice (.7)
11 up until two thousand eighteen when i learned about the
12 climate crisis a:nd (.7) e:rm
Portraying commitment and individuality in accounts of values

so from then on my values changed (.8) before i was only focused on internet of things and designing for therapy and for children with autism and solving their needs through technology and data collection (.7)

erm but once i found out about plastic pollution and everything like related to climate crisis then i incorporate that a hundred percent in all the projects that i (.8) designed from then

I okay

P8 because there's no going back on knowing and

I yeah

P8 once you know about it then i think that (.7) yeah i couldn't er turn my back so every time i have a project i bring that

I (1.2) yeah=

P8 =consideration always er sustainability first

The interviewer (I) first asks, ‘and so I’m interested to hear whether you think your personal values influenced that’ (lines 1-2). ‘And so’ is a preface that is used to shift the topic, while providing the impression of continuity with the talk on a specific design decision previously talked about, which was the decision to propose using recycled plastic. After a delay (1.8 pause, line 3) perhaps indicating some difficulty, the participant provides a strong affirmative response, saying ‘yeah I think they hundred per cent influenced’ (line 3). ‘Hundred per cent’ is an extreme case formulation since it invokes maximal properties. According to Pomerantz (1986), one way extreme case formulations are used is to portray something as normal and ordinary. Thus here, the participant may be portraying the notion of personal values influencing design decisions as normal and typical.

Straight after the strong agreement, the designer then provides an account of where her sustainability values came from. Like in extract 1, the participant uses the notion of values as an opportunity to talk about her identity. First, her response focuses on
Navigating expectations for sustainable product design: a DP analysis

her formal education. She says, ‘to be very honest as a designer I was not taught to think too much about sustainability’ (lines 4-5). ‘As a designer’ makes the category of designer relevant, and so associates not being taught about sustainability with designers more broadly. The use of ‘to be very honest’ portrays frankness, indicating the ‘real story’ is about to be told. From lines 7-10 she explains what she ‘was taught’ which was ‘to design products and how to study human behaviour with products and how to design with technology’. Then, she then reports her values to have changed at a specific time due to learning more about environmental issues. She says, ‘sustainability was something I knew about but I didn't practice up until two thousand eighteen when I learned about the climate crisis and erm so from then on my values changed’ (lines 10-14). The before and after contrast, comparing before 2018 to after, adds specifics to the portrayal of being different from typical designers whose values may not have been influenced by such learning.

The participant continues her account, again picking up the before and after contrast, saying, ‘before I was only foc used on internet of things and designing for therapy and for children with autism and solving their needs through technology and data collection erm’ (lines 14-19). The use of ‘only’ here works to minimise these other concerns. The contrast is continued, ‘but once I found out about plastic pollution and everything like related to climate crisis then I incorporate that a hundred percent in all the projects that I designed from then’ (lines 19-22). The phrase ‘once I found out’ portrays a specific point of gaining knowledge which is associated with her values shift.

The designer does claim here that her sustainability values influence her design practice, in saying ‘then I incorporate that a hundred percent in all the projects that I designed from then’ (lines 20-22). The claim that she incorporates the knowledge about sustainability is given maximal properties through the extreme case formulations ‘a hundred percent' and ‘all the projects’. Again, the extreme case formulations may be portraying the claim as normal and typical, in the sense that the participant always incorporates sustainability in her work (Pomerantz, 1986). But extreme case formulations have also been shown to be used to display a stance towards something (Edwards, 2000). Therefore, this claim works to portray a very strong commitment to sustainability. However, the description of how this knowledge
(and presumably the associated values) is used is brief and vague, only indicated by saying 'I incorporate that' (line 20).

The account continues to expand on the link between knowing about sustainability and the motivation to always factor it into her work. She says in line 24 ‘there’s no going back on knowing’. She continues in lines 26-30 ‘once you know about it then I think that yeah I couldn't er turn my back so every time I have a project I bring that consideration always er sustainability first’. This portrays her commitment to sustainability, based on her knowledge, as sustained and unchangeable. The phrase ‘bring that consideration first’ is vague regarding how this happens in a design project, but nevertheless depicts a clear prioritising of sustainability. Throughout this response, we see the same three phenomenon as in extract 1. The participant focuses her response on explaining where her values came from and builds an account of not being a typical designer, but of being a designer who is consistently focused on sustainability. The claims about how values influence her design work are strong here, but lack detail, and the account involves identity work rather than an explanation of role of values in the design process.

Extract 3 is slightly different, in that the participant (P15) had already mentioned her values, and the interviewer asks her to expand on this. The interviewer asks the designer how her values inform her design work and also for an account of where the values came from (note this is the fifteenth interview, and so the phenomenon of previous interviewees focusing on explaining where values came from may have influenced this additional question).

Extract 3, from interview 15 – lamp

1 so (.5) um you mentioned your values and and finding
2 erm (.8) collaborators er that match your values (.5)
3 could you tell me a bit about how your values inform
4 your design and and maybe where this (.3) came from
5 P15 (.8) mhm (.9) e:rm (.4) ;hmm so: i'm just thinking
6 where did it come [from
7 I [yeah] (huhuh)
8 P15 haha i'm like ♪ooh dear e:rm [1.0]
Navigating expectations for sustainable product design: a DP analysis

i guess it's (1.0) been there for like (1.3) oh twenty
years or so because

I mhm

P15 when i was a child i decided to become a vegetarian and
erm (0.7) since then i've just been thinking about >you
know< nature animal people (0.7) erm (0.6) how we live
and so on and i guess it has grown with me over the
(0.4) now [decades] >in a way<

I [yeah]

P15 (0.6) um (0.5)

and (1.1) w- that is affecting how i: design and how i
approach my (.5) projects how i (.4) erm might design
my own briefs or collaborative briefs or (.3) with whom
i would (.4) want to work with

The interviewer (I) produces a gist of what the participant has previously said about values, saying 'so um you mentioned your values and and finding erm collaborators er that match your values' (lines 1-2). She then builds on this link to the prior talk of values and asks, 'could you tell me a bit about how your values inform your design and and maybe where this came from' (lines 3-4). The initial question makes the assumption that values inform design work. In this instance, the question is asking about her design work in general, rather than a specific project. Adding a second part to the question, 'where this came from' (line 4), gives the participant additional direction in terms of how to answer.

The participant first demonstrates difficulty in finding an answer in lines 5-8, through pauses, then through explaining she is 'just thinking where did it come from' which buys time by delaying the response. In line 7 the interviewer demonstrates agreement that the questions are tricky saying 'yeah' followed by laughter. Finally, in lines 9-10 the participant responds saying, 'i guess it's been there for like oh twenty years or so'. This reference to a long period of time, twenty years, establishes a claim that her interest in sustainability is longstanding. We see that the participant first addresses the second part of the question, since the response relates to where her values came from. However, the response does not provide an answer as to
where the values came from but portrays the values as longstanding. The designer thus claims an identity as a person who fundamentally cares about the environment.

Further detail is then added to the response. After a ‘mhm’ from the interviewer (line 11) which encourages continuation, the participant states ‘when I was a child I decided to become a vegetarian and erm since then I’ve just been thinking about you know nature animal people’ (lines 12-14). In this response, she does not spell out the inferred attributes made available by the category of ‘vegetarian’ but alludes to them in listing ‘nature animals people’. The interviewer does not question why this is relevant to sustainability values, indicating shared understanding that vegetarianism is commonly associated with sustainability. Reporting having made a decision to become vegetarian as a child portrays the commitment as having started a long time ago, which further builds up the claim of longevity of commitment to sustainability. The longstanding nature and depth of the commitment is further claimed through saying ‘I guess it has grown with me over the now decades in a way’ (lines 15-16). Using ‘decades’ works to portray a very long time, and ‘grown with me’ depicts her commitment as increasing over time. Throughout this account, the designer uses the notion of values to establish her personal commitment to the environment as longstanding and increasing over time.

The participant then returns to the initial part of the question, about how the values inform her design work, and offers several answers. A four-part list is given (‘and w- that is affecting (1) how I design and (2) how I approach my projects (3) how I erm might design my own briefs or collaborative briefs or (4) with whom I would want to work with’, lines 19-22). Lists are often found to be used to establish the extent or variability of something (Wiggins, 2017), and so here we see the four-part list used to claim the range and extent of the influence of the values. However, only general terms are used in this list to describe the ways her values influence these aspects of her work. Having sustainability values is simply reported as ‘affecting how I…’. As seen in the previous two extracts, accounting for how her values influence her design work is done using general terms only, despite in this case the participant having been asked how her values influenced, rather than whether they influenced.

The final extract (4) comes from a different setting, a design conference panel discussion in which a panel chair (C) is leading a panel discussion with two product
designers on a stage in front of a large audience. A designer on the panel (S1) shows some similar actions to those seen in the interview talk about values, despite the very different setting in which the account is given.

**Extract 4, from a design conference panel discussion**

1. C er wh:yy from a business point of view should you do that (1.2)
2. w- what's the game that you're helping architects build a more ecologically friendly house
3. S1 (.3) well i i ;think if we all (.2) take the positi:on (.5) that it's not our problem (.4) nothing will be done (.2)
4. ((ten lines omitted where the speaker claims that everyone knows there is a big environmental problem and states it is the duty of him and his colleagues to try to help solve it through their product design))
5. S1 so for m::e (.4) as a personal matter (.6)
6. i i grew up (.3) in the ocean (.4) i grew up surfing and i i care about it (.3)
7. and i think as [we see::e
8. C [yeah]
9. S1 (.4) this climate change and we see::e (.5) how much impact it's gonna have (.5) there'll be fewer and fewer people that will have the opportunity to experience nature and when that happens nobody will care (.4)

In this extract, the panel chair asks a very different type of question. He asks one of the designers to explain the motivation behind working on sustainable design. He says, ‘er why from a business point of view should you do that what's the game that you're helping architects build a more ecologically friendly house’ (lines 1-4). The question is phrased in two ways, first ‘why from a business point of view’ and second ‘what’s the game’. The first phrasing directs the designer to respond with a business case, alluding to expecting reasoning based on profitability. The second is unusual in
Portraying commitment and individuality in accounts of values

depicting the designer's choice to frame sustainability as a game, perhaps inviting connotations of what can be ‘won’ through strategic choices.

The designer first responds with a justification portraying the general duties of everyone to tackle shared environmental issues. He says, ‘well I think if we all take the position that it’s not our problem nothing will be done’ (lines 5-7). Using ‘we all’ and ‘our problem’ reframes the environmental problem as shared, in contrast to the panel chair’s suggestion of a business point of view.

Having first established the universality of the problem, the designer then shifts to claiming a personal justification for his decision to focus on sustainability in design. He says, 'I grew up in the ocean I grew up surfing and I care about it' (lines 13-14). In associating things he did when growing up with caring about the environment, he establishes the longstanding nature of his concerns. Describing his childhood experience of the ocean and indicating the high frequency of surfing in his childhood through the phrase ‘I grew up surfing’, portrays the designer as having an identity that is personally connected to the natural environment. We might infer that his description of growing up surfing represents an unusual childhood, and so an individuality of experience is portrayed that perhaps makes him different from other designers. Like in the interview extract examples above, we see a portrayal of longstanding commitment and a personal narrative of why he is particularly concerned, when others may not be.

The designer then takes his claim that experiencing nature leads to caring about it further, by asserting that no one will care about nature if they have not experienced it. He says in lines 15-20 ‘I think as we see this climate change and we see how much impact it's gonna have there'll be fewer and fewer people that will have the opportunity to experience nature and when that happens nobody will care’.

Experience of nature is depicted as a prerequisite for caring about nature. This assertion further reinforces the designer’s claim that his childhood experience of the ocean enables him to care particularly strongly about protecting the environment, and thus about trying to do more sustainable design.
5.8 Discussion
This DP analysis provides insights into how the sustainability-focused designers conceptualise and use the notion of values when giving accounts of their work in interviews and in a conference panel discussion. Three discursive phenomena have been identified. 1) When asked whether their values influence their work, or when asked about their motivations to do sustainable design, the participants focus on explaining where sustainability values or caring about the environment came from, to portray longevity and depth of commitment to sustainability. 2) In this talk about the origins of values the participants portray individuality, being different from others. 3) When participants talk about how their values influence their design work and design decisions, how this happens is briefly described in general terms. The role of values is portrayed as somehow automatic and hidden. Here, the inferences and implications of these three findings are considered in turn.

I first consider finding three, since the initial interest of this study was in how designers conceptualise how values influence their design work, reflecting ideas in the literature. In the interviews, while participants do claim that their values influence their design work (in agreement with the interviewer), how values influence design work is reported in vague ways using expressions such as ‘I’ve always had that in the back of my mind’ (extract 1) and ‘I bring that consideration’ (extract 2). This makes sense in the cases where the interviewer asked whether their values influenced their work, rather than how. But brief claims that values somehow automatically influence the design work are also seen when participants are asked how values influence. The fact that there is a pattern of portraying the role of values as embedded and somehow silently influencing the designers’ decisions suggests there may be something significant about this. The vagueness in describing how values may influence design work may also relate to the fact that decision-making in design is often reported as intuitive and embedded, rather than explicit (Cross, 2001). If giving an account of how design decisions were made in a project is challenging, it makes sense that describing how personal values may have influenced design decisions will also be challenging. This finding indicates that there may be difficulty associated with the idea commonly seen in the literature reviewed above that designers should be able to articulate what values are involved in design decision-making.
Indeed, findings one and two show that the designers in this study use the notion of values in a different way to what was expected, to do identity work. When values or caring about the environment is talked about, identity work is produced to warrant the values. The designers talk about values (and the related notion of caring) in ways that show the designers’ identities as being at stake when they are asked to account for their work. In finding one we see that the notion of values (or caring) is used as an opportunity to provide an expanded account that demonstrates commitment to sustainability. In both the interview and panel discussion data, designers managed their accounts of values in their work in a way that enables them to portray longstanding and deep commitment to sustainability. Across the dataset, when asked about values or motivations, participants constructed accounts of childhood experiences of caring about nature, and/or of educational experiences often at university level, which are portrayed as either shifting or consolidating values related to sustainability. Through providing these descriptions of childhood and educational experiences that contributed to personally valuing the environment, the designers accomplish portrayal of being someone who especially prioritises and is committed to the important ethical issue of sustainability. This phenomenon of using interviews or other types of accounts to do identity work is not unusual. Identity work is widely seen in interview and other account data across social sciences research (Langley & Meziani, 2020; Rapley, 2012). In design literature, Tracey and Hutchinson (2013) have argued that reflective practice provides an important means for helping develop designer identity, through interpreting and evaluating one’s work. Yet there has been a lack of research to date on how designers portray their identities through talk (Kunrath et al., 2020). The specific ways the designers shift the talk on values in design in ways that enables them to portray their identities is a new insight for design research and adds a different way of looking at the role of values in design.

Finding two highlights the pattern of participants portraying themselves as different from others due to their sustainability values, which further builds the portrayal of the designers’ identities. The designers achieve this through making contrasts with other designers in different ways. For example, in extract 1, the participant constructs an account of how specific formal education has led the participant to prioritise sustainability, in comparison with other designers who do not prioritise it. In extract 2, the participant constructs an account of how learning about sustainability outside the
formal education system led to valuing and prioritising sustainability, in contrast to what designers are taught to focus on. Education is thus portrayed as an important influence on designer identity. The phenomenon of depicting individuality and being different from others is commonly found in the ways people construct personal identities in talk across a range of contexts (Benwell & Stokoe, 2006; Tuffin, 2005). One study has found a similar pattern specifically in designers’ talk. In a study of how service designers portray their identities, Fayard et al. (2017) found that they differentiated themselves from other related professions by depicting the uniqueness of their values. In the present study, the designers are not differentiating themselves from other professions, but from other product designers. The designers highlight and reiterate their identities as designers who care about sustainability, portraying this as not the norm.

Values have been theorised as being associated with identity in general (Hitlin, 2011), and so the fact that these designers are using the notion of values to do identity work should not be surprising. Nevertheless, the link between talking about values and doing identity work is not yet present in the design literature. Literature on values in design focuses more on identifying values to be used as design priorities. Whereas emerging literature on designer identity focuses more on what skills and activities are associated with being a designer. For example, Björklund et al. (2020) found interviewees described being a designer as involving craft, exploration, innovation, and co-creation. However, there a distinct lack of research on sustainability-related identities among designers, which are particularly likely to involve personal values. This study therefore provides a novel finding regarding how designers use the notion of values to do identity work. The findings contribute to a new but growing body of research on designer identity, by showing the role of the notion of personal values in constructing identities, in particular related to sustainability.

This study makes a contribution to DP and CA literature, in beginning to reconceptualise how the concept of values is understood, since values has not yet been a topic of analysis in this literature. The analysis has shown that using DP, which is not commonly used in research on design, can provide insights into how common concepts used in design can be viewed in a different way. The study does
not claim that the findings about how the designers in the study conceptualise values are transferable to how designers talk in everyday design settings. DP research does not claim to be generalisable, but to produce findings about specific interactional contexts (Goodman, 2008; Wiggins, 2017). Nevertheless, similarities seen across the interview and conference panel data indicate that the patterns observed may be seen in other reflective accounts of values. Since talk is constructed in specific contexts, design researchers who are seeking to understand design stakeholders' values in relation to specific projects should consider that values talk can serve several interrelated functions. For example, if people are asked about their own values, participants may be seeking to portray themselves as good people who are committed to particular causes, or as people who care about many different issues. Alternatively, they may be seeking to demonstrate knowledge and alignment with company values or with the preferences of senior stakeholders. Talk about values in design cannot therefore be assumed to reflect underlying truth but will always be context specific.

This study has proposed a different way of looking at values talk in design contexts, based on a psychological perspective of talk as action, within interactional reflective accounts. However, there are several limitations that future research could seek to overcome. First, since the interviews formed part of a broader project looking at several topics, the interview questions did not probe extensively on values after the initial questions were asked. For example, participants were not asked to expand on how their values influenced their work. There is an opportunity to carry out and analyse interviews with designers that solely focus on the notion of values in design, which would give further insights into how the concept is used. This would also allow discussion of different types of values, beyond the focus on sustainability values in this study. Second, while this project draws on both interview and conference panel data, the amount of available data for the latter is limited, due to the challenge of finding such data where values and related concepts are talked about. Additional conference panel discussion data may provide further insights into how the notion of values is used in public accounts in front of peers in the design community.
5.9 Conclusion

This DP study of sustainability-focused product designers’ reflective accounts has highlighted that the notion of values is used to demonstrate longstanding and deep commitment, through focusing accounts on where sustainability values came from. The concept of values relating to the environment is used to portray individuality, being different from other designers. Values are constructed as somehow naturally influencing the designers’ approaches to their work, but these claims are brief and general.

The concept of values is therefore primarily used to perform identity work in the designers’ accounts. This insight demonstrates how DP can be used to reconceptualise how the notion of values is viewed in the context of design. The findings contribute to an emerging body of work on designer identity, in highlighting different ways the notion of values is used in identity portrayal.

In this chapter, I have found that the designers use the notion of values to portray identity, involving being committed to sustainability and in this way different from other designers. In the next chapter, I examine how the related notion of responsibility for sustainability in design is managed, in some instances to claim personal commitment, yet in others to claim a problem of agency to make decisions.
Chapter 6  Trying to pin down who is responsible: different ways responsibility for sustainability is managed in conversations with product designers

In this chapter I analyse how the designers navigate the concept of responsibility for sustainability. This chapter is targeted to a sustainable design journal. The article explains how responsibility for sustainability in design is an important topic that is commonly discussed, but literature on this topic remains theoretical. The analysis shows how responsibility can be studied empirically by examining talk about responsibility in its specific interactional context.

6.1 Abstract

Who should take responsibility for the sustainability of products is a complex question that is commonly discussed in theoretical design literature. Many authors call for designers to be responsible for the sustainability impacts of products, whereas others argue this is not appropriate given the social nature of design. Some authors highlight that there is a lack of precision in the ways responsibility in design are talked about in the literature, as there are multiple types of responsibility. Attempts have thus been made to theoretically clarify different ways of thinking about responsibility in design. Yet there is a distinct lack of empirical research on responsibility in design. There is an opportunity to study how responsibility for sustainability is conceptualised by designers themselves in the ways they talk about it in relation to their work. This interdisciplinary study uses a qualitative method from psychology, discursive psychology, to study how responsibility for sustainability is constructed and managed in accounts of sustainable design. Semi-structured interviews undertaken with product designers, who are asked different questions about responsibility, are analysed. Patterns are identified in ways different types of questions about responsibility are responded to by either deflecting or assuming responsibility. The findings have both theoretical and practical implications, in that they highlight which ways of asking about responsibility in interviews are more action-focused, which are associated with a focus on barriers to being responsible, and which are met with a focus on culpability.
6.2 Introduction
The importance of sustainable design is recognised in Sustainable Development Goal 12, aiming for sustainable consumption and production (United Nations, 2016). There are calls for more practical study of how design practice is adapting to address the challenges of sustainable production and the circular economy (Dokter et al., 2021). The psychological concept of responsibility is highly relevant to achieving sustainability, since taking responsibility is linked to taking action. In this study, how responsibility for sustainability is managed in product design settings is examined.

Being responsible for sustainability in design involves being responsible for whether a product has negative impacts on the environment. Products can be designed to be remanufactured or recycled, rather than discarded as waste at end of life (Hatcher et al., 2014). Products can be designed to be more energy efficient (Bergen et al., 2001). Manufacturing can use renewable energy and natural materials, rather than fossil fuels and hazardous materials (Tischner, 2001). There is a great deal of discussion about responsibility for sustainability in the design literature means (Albin, 2018; Robinson & Smith, 2012). Many design authors call for designers to be responsible for how sustainable products are (Chan, 2018; Cook, 2008; Fry, 2004; M. S. Pritchard, 2001), despite there being many different stakeholders involved in the design process, such as managers, clients, and technicians (Fahlquist, 2015; van de Poel et al., 2015).

The term responsibility is used in different ways, with different meanings. Responsibility is often conceptualised in the design literature as either backwards-looking accountability for actions and associated consequences, or as forwards-looking virtue (being a ‘responsible person’) (Fahlquist et al., 2014; van de Poel & Sand, 2018). There are thus different assumptions that can be inferred from this literature about how designers should act or feel, based on the different ways of construing responsibility. While there is a lot of normative literature on responsibility in design, there is a lack of empirical study. In this paper, I show a way of empirically studying responsibility in design. The findings provide insights into how designers
use different conceptualisations in different ways, making contributions to theory on responsibility and to our understanding of how we talk about responsibility.

**6.2.1 Theorising responsibility in design**

In theoretical literature on the topic of responsibility of design, authors often use the topic of sustainability to discuss different ways responsibility for the consequences of design can be thought about (Cook, 2008; Devon & van de Poel, 2004; Grunwald, 2001). There is a debate on who is responsible for the sustainability impacts of products, in terms of whether it is designers, or a combination of different stakeholders (Fahlquist, 2015; Fahlquist et al., 2014). On the one hand, some authors argue that that designers, who typically play a role in producing things that may harm the environment, should feel responsible and take responsibility for sustainability impacts by making more sustainable design decisions (Chan, 2018; Owens, 2006; Papanek, 1985; Roeser, 2012). Other authors argue that designers should highlight negative environmental impacts of products they are designing to other decision-makers such as clients (Fry, 2004; van de Poel & Verbeek, 2006). Presumably, these other stakeholders can in turn take responsibility through making decisions about whether to change the designs to reduce negative impacts. On the other hand, it is commonly argued that designers cannot be held responsible for the impacts of products, due to their lack of decision-making power when working with many other stakeholders (Swierstra & Jelsma, 2006; van de Poel et al., 2015).

Owens (2006) argues that designers often use the fact that they are not the only people making design decisions as an excuse for not taking responsibility for design impacts. Rather than absolving designers from responsibility, Fahlquist et al. (2014) suggest that the multistakeholder character of design means responsibility for sustainability in design must be partly individual and partly shared. For Van de Poel and Sand (2018), the solution to the debate on whether designers can be held responsible is to be more precise about what they are responsible for (sustainability, for example, can include a very broad set of consequences).

In this debate on whether designers are responsible for product sustainability, we see how responsibility can be talked about in different ways, constructing a variety of meanings. The notion of designers ‘being held responsible’ reflects the idea of responsibility as accountability to others. ‘Taking responsibility’ relates to actively
assuming accountability for whatever impacts occur (in the past or future). Whereas ‘feeling responsible’ reflects a virtue framing, again related to the past or the future, based on an individual’s character. These different meanings of responsibility have been recognised by some design authors who have sought to make sense of which types of responsibility are most useful in design. For example, Van de Poel and Sand (2018) discuss possible tensions between different types of responsibility if applied to a designer, eventually proposing that accountability, responsibility-as-virtue and a willingness to take responsibility are all needed for responsible innovation. Others argue that engaging in ethical reflection on responsibility as a virtue is most important for designers and engineers (Grunwald, 2001; Roeser, 2012). However, if responsibility in design is only considered in an abstract way, we are not able to gain insights into how the concept is used in practice, in relation to real design projects.

There is a distinct lack of empirical research on responsibility in design. Nevertheless, two theoretical articles on responsibility in design and engineering report the findings of small-scale empirical studies of specific design projects, providing some initial insights into how responsibility in design is negotiated in practice. Firstly, van der Burg and van Gorp (2005) make reference to an interview study in which design engineers were found to report not being responsible for the wider impacts of a truck trailer design in terms of traffic safety. The authors concluded that these designers deflected responsibility and avoided taking action based on the claim that they were not officially responsible, since the client had not asked them to consider wider impacts. They argue that such designers need to engage in more moral reflection in order to think more critically about their responsibility. In contrast, Swierstra and Jelsma (2006) describe another interview study in which participants talked about assuming responsibility for wider impacts by proposing additional sustainability considerations in an engineering project, beyond what the client had requested, despite not being held accountable for these wider impacts. However, both of these studies are only briefly referred to as evidence to support the authors’ arguments about how responsibility can be conceptualised in design. There is therefore a lack of detail of what questions the participants were asked and of how they specifically responded. There is a need for further empirical
research focusing specifically on understanding how the concept of responsibility is used in practice in relation to design.

6.2.2 How examining talk offers a way of empirically studying responsibility

Since the meanings of the term responsibility are constructed in the ways it is used in talk, closely analysing how people talk offers a way of empirically studying responsibility. Interviews offer a way of getting designers to talk explicitly about responsibility in relation to their work. Different kinds of questions about responsibility in relation to specific design projects can be asked in interviews. For example, questions might draw on the accountability framing or the virtue framing, or others. Participants may negotiate responsibility for sustainability in design in different ways in their interview accounts of their work. Discursive psychology (DP) offers a method for examining what people are doing in their talk, viewing talk as action (Potter, 2005). DP research shows how psychological constructs can be understood based on how they are practically used, managed, and negotiated in talk (Edwards, 1999; Wiggins, 2017). Thus, using a DP approach to analysing interviews with designers about the psychological construct of responsibility can enable us to reconceptualise responsibility in design, based on how it is used and managed by designers themselves. In this study, I analyse interviews with designers using DP to answer the question: How is the notion of responsibility for sustainability practically managed in talk by product designers?

DP analysis of accounts has not yet become a common method in design literature. However, using DP to analyse interview accounts has become an increasingly popular method in social sciences research (Rapley, 2015). Using DP to analyse interviews ensures that the questions are closely analysed in relation to the responses, in contrast to some approaches that only focus on participant responses (Rapley, 2015; Wooffitt & Widdicombe, 2006). Previous research has shown how accountability, which as we have seen is one way of framing responsibility, is managed in interviews. For example, LeCouteur and Oxlad (2011) used DP to analyse interviews with men who had committed domestic violence, finding that they deflected accountability by subtly portraying their female partners as having breached the moral order. Abell and Stokoe (1999) used conversation analysis (a method closely related to DP) to show how Princess Diana uses different discursive
Navigating expectations for sustainable product design: a DP analysis

devices to negotiate blame and accountability in a media interview. Lukyanova (2017) used DP to show protestors in Russia use different strategies to negotiate accountability and blame in their interview accounts. However, there has been a lack of focus in this literature to date on how the broader concept of responsibility is explicitly talked about.

6.3 Methods
This study forms part of a broader project on decision-making in sustainable product design. Semi-structured video call interviews were undertaken by the author between July and October 2020 with sixteen product designers involved in sustainable design, lasting an average of forty-five minutes. The designers were informed that they would be asked to talk about a recent design project of their choice. Participants were recruited via a sustainable design group on LinkedIn and via a design email list. Products talked about included suitcases, yoga equipment, packaging, and an electric vehicle charge point. The sample includes a mix of female and male designers at different levels of seniority working in different contexts, such as in-house designers in companies and design agencies in different parts of the world (see page 52 for participant details). However, the aim of DP research is not to identify differences across demographic factors, but to find common patterns of actions across the sample (Wiggins, 2017). University research ethics committee approval was given before commencing data collection (School of Philosophy, Psychology and Language Sciences Research Ethics Committee, approval number 324-1920). This approval ensured informed consent, anonymity, and data security were managed in line with British Psychological Society (2018) ethics guidelines.

The interview guide featured two key questions about responsibility. These were, ‘who is responsible for the sustainability of the products’ and ‘do you feel responsible for the sustainability of the products’ (see page 50 for the interview guide). The intention was to first introduce the topic of responsibility through a less direct question, which does not directly hold the participant themselves to account, and then to ask a potentially more delicate question to be asked about the designers’ feelings. However, in order to allow the conversation to unfold more naturally, the interview guide was not followed rigidly. Further different formulations of questions about responsibility were asked according to the natural flow of the conversation.
Examples of specific questions asked are included in the data extracts presented in the analysis section below.

The DP method outlined by Wiggins (2017) was used to analyse the interview data. First, basic words-only transcripts of the full corpus of data were produced. Twenty extracts where participants answered questions about responsibility were selected for detailed transcription using Jefferson (2004) notations (see page 60 for the transcription guide to symbols used). Anonymised transcriptions can be accessed via the UK Data Service (L. Cooper, 2021). Analysis involved several iterations of looking closely at these extracts and noticing actions, linguistic devices, and sequences (Wiggins, 2017). Differences in how different ways of asking about responsibility were responded to were noticed. For example, differences in types of responses were noticed when participants were asked who was responsible versus who took responsibility.

Four patterns of question-and-answer types were found, based on the questions 1) ‘who took responsibility’; 2) ‘who is responsible’ in this project; 3) ‘who is responsible’ in general; and 4) ‘do you feel responsible’. See the discussion section on page 143 for a summary of what these patterns are and how frequently they were seen.

However, the focus is not on quantification of the findings, as evidently since the same questions were not asked consistently to all of the participants. While a sample of sixteen is widely considered appropriate for DP interview research if patterns of actions can clearly be noticed (O’Reilly et al., 2020; Wiggins, 2017), the number of extracts that can be directly compared by question type is limited by the variability in ways the questions were asked in the different interviews. Nevertheless, the findings demonstrate notable similarities in the ways the designers navigate different ways of being asked about responsibility, and so satisfy the conventions of what constitutes a justifiable DP analysis.

Five extracts were selected for inclusion in this paper, representing one example for question-and-answer types 1, 3 and 4, and two examples for pattern 2, since these show different ways of working up to and justifying a similar action. These extracts have been selected since they offer clear examples of the patterns identified.
6.4 Analysis

In this section, I present examples of data and analysis showing the four question types asked and the ways they are answered.

6.4.1 Asking who took responsibility in a specific design project

Extract 1 comes from an interview with a product designer who has been talking about designing an electric vehicle charge point.

Extract 1, from interview 12 - electric vehicle charge point

1. I and (1.8) i guess (.9) for this design project (.4)
2. what were the lines of responsibility=
3. =who took responsibility for the final design
4. P12 (2.0) er so that would be my kind of <senior colleague who is our> (.4) i guess you would call him our ct↑o (.4) erm our chief technology officer=
5. =he's a: >i think he's a he's a he's a he's been an engineer for a very long ↑time (1.4)
6. he's in his late fifties erm he's kind of been part of many big projects before
7. I yeah
8. P12 he's got >a lot of experience and i think he probably holds on to a responsibility for this particular< product
9. I (.4) yeah (.5) so i guess that's responsibility fo::r if something doesn't work or if something's (.9) not quite right
10. P12 (.6) yeah
11. I but who would you say takes responsibility er building on that (.7) fo::r sustainabili__y in design (.5) or in this (.2) design
12. P12 (.4) (hhh) erm (4.2)
The original question asked by the interviewer (I) on line 2 is ‘what were the lines of responsibility’ for the project, but this is repaired in line 3 to ‘who took responsibility for the final design’. Whereas ‘lines of responsibility’ might lead to details of the company structure, this repair makes sure the question is asking for identification of a person. Since the question is about a completed project, the past tense ‘took’ is used, with the verb choice (‘to take’) indicating an active approach to responsibility. In the response there is a lot of hesitation, and we see hedging (Jalilifar & Alavi, 2011) rather than giving a firm answer. That is, the participant (P12) says, ‘that would be my kind of’ (line 4), ‘I guess you would call him’ (line 5). ‘Kind of’ and I guess’ portray some uncertainty. The response is then given identifying the ‘chief technology officer’ as having taken responsibility (line 6). Thus, we see how the question ‘who took responsibility’ is treated as difficult yet an answer is eventually given.

We then see how this person is portrayed as experienced. In lines 7-8 the participant says, ‘he’s been an engineer for a very long time’, and then get the further detail of ‘he’s in his late fifties’ (line 9) which reinforces the first claim of longevity of experience. The participant also adds ‘he’s kind of been part of many big projects before’ (lines 9-10). The use of ‘big’ portrays the projects as important, thus adding to the sense of seniority, although we still note the tentativeness in the response in the use of ‘kind of’. The portrayal of the chief technology officer being experienced is used as a way of justifying him being the one who took responsibility.
Navigating expectations for sustainable product design: a DP analysis

An explicit link is then made between this experience and responsibility, saying ‘he’s got a lot of experience and I think he probably holds on to a responsibility for this particular product’ (lines 12-14). The participant connects the notion of having experience with holding responsibility through the conjunction ‘and’. Yet again, there is still a portrayal of uncertainty in the use of ‘I think he probably…’. It is interesting to note that the format of ‘who took responsibility’ is modified in this response to ‘holds on to a responsibility’. ‘Holds on to’ gives a sense of continued responsibility, after the design project is completed. The framing of ‘a’ responsibility indicates that there may be different aspects of responsibility related to the product and also enables the participant to be tentative and not fully commit to identifying someone who is fully responsible.

The interviewer then probes further, which indicates that the answer is being treated as not adequate. Perhaps picking up on this reference to ‘a’ responsibility (line 13), the interviewer then suggests that this responsibility might be ‘for if something doesn’t work or if something’s not quite right’ (lines 15-17). This gist is used to seek confirmation of understanding. The participant provides minimal confirmation after a pause (‘yeah’ line 18). In lines 19-21, the interviewer then steers the talk towards responsibility for sustainability specifically, as the sustainability context of the interview has not yet been oriented to in the response. The interviewer asks, ‘but who would you say takes responsibility or building on that for sustainability in design or in this design’ (lines 19-21). The word ‘for’ is elongated, indicating perhaps taking some time to formulate the question, and indeed the end of the question is modified from design in general to ‘this design’. The insertion of ‘building on that’ works to portray the question as linked to the previous talk on broader responsibility, perhaps as a way of indicating that the previous response was indeed still useful for the interview. The ‘but who’ at the beginning of the question suggests that perhaps the participant is expected to identify a different person. The use of the present tense ‘takes’ is used rather than ‘took’, alongside the initial framing of ‘in design’, enables the designer to respond about his design work in general, rather than the specific project, despite the repair to the question.

This question is met with very long pauses in line 22, and then the participant says ‘yeah that’s a good one’ in line 23. This comment on the question itself enables the
response to be delayed. Making an assessment of having been asked a good question buys time to think when there is some difficulty in responding. This question about who takes responsibility for sustainability is again treated as a difficult question, like the question of who took responsibility in general.

A hesitant answer is then given, indicating a challenge in identifying of who is responsible: ‘I think probably that’s pr- that’s probably me’ (lines 23-24). Having tentatively concluded that the answer to the question is that the designer himself probably takes responsibility, he then goes on to explain why. The explanation is also tentative, framed by ‘I think erm’ (line 26) and ‘kind of’ (line 29). The reasoning given is ‘mainly because I’m the main designer working on it’ (lines 26-27) and that ‘I have quite a lot of erm I guess influence over the decisions we make’ (lines 29-30). The ‘main designer’ is a category of role, alluding to identity. Using identity categories in talk enables inferences about associated attributes (Housley & Fitzgerald, 2015). Having influence over the decisions is a category bound attribute of being the main designer. In tentatively identifying himself as probably responsible, the designer this time links responsibility with decision-making power and the action of making decisions, rather than with seniority and experience.

6.4.2 Asking who is responsible in specific contexts

Having seen difficulty in answering ‘who took responsibility’, we now examine two responses to being asked ‘who is responsible’ for sustainability in the projects and companies being talked about. We see that the designers do not give clear answers identifying who is responsible in the projects but take the opportunity to do something else. Extract 2 comes from an interview with a designer who has been talking about designing yoga accessories.

Extract 2, from interview 14 – ceiling fan packaging

1 I and given that you have that strategy and you have a
2 head of sustainability now (.8) who would you say is
3 responsible for how sustainable the products are
4 P14 (1.5) we’re trying to push that responsibility onto the
5 specific ↑teams
Navigating expectations for sustainable product design: a DP analysis

so for a long time since we're we were doing that
culture change (.5)
we took on a lot of that=
I =yeah=
P14 =onto our shoulders to make it as easy as possible=
I =yeah
P14 for the other teams (.4) and when we got to a point
where it actually put too much pressure=
=and we realised i'm not a materials developer so i can=
=there's only so much i can do you know after one point
‘it's like your responsibility’ (.6)
so when we <started e::r putting goals and targets>
I =yep
P14 er attached to a specific year that's when it it became
the responsibility to like the specific team

The question asked by the interviewer (I) in lines 2-3 is ‘who would you say is
responsible for how sustainable the products are’. But this question is prefaced with
some information that is portrayed as potentially relevant to the answer. The
interviewer makes reference to the participant’s previous talk on having a
sustainability strategy and a head of sustainability in the company, saying ‘given that
you have that strategy and you have a head of sustainability now’ (lines 1-2). The
use of ‘given that’ at the start of the question indicates the relevance of the strategy
and head to the possible answer of ‘who’. The participant could therefore give a
simple answer that the head of sustainability is responsible.

However, in lines 4-5, the question is met with a long pause (1.5), and then a
response is given which rather than identifying a particular person who is
responsible, portrays responsibility as a something that can be passed on to others.
The designer (P14) says ‘we're trying to push that responsibility onto the specific
teams’, (lines 4-5). The ‘we’ can be taken to refer to the participant and her manager,
as this extract followed prior talk where she explained they worked closely together and referred to them as ‘we’. This is an interesting response in several ways. The response implies that the participant and her manager currently hold the responsibility (although not that they ‘are’ responsible) but are ‘trying to’ pass it onto others. Talk of trying portrays difficulty and a lack of success. The verb chosen is ‘to push’ which portrays effort is needed. The proposed recipients of the responsibility are ‘specific teams’. So here the response is used to explain why the designer herself should not be the one holding responsibility, rather than identifying who ‘is’. The participant says, ‘for a long time…’ (line 6), ‘we took on a lot of that onto our shoulders to make it as easy as possible for the other teams’ (lines 8-12). The responsibility is depicted as a burden they took on, using the metaphor of it being carried on their shoulders which makes the account more vivid (Wiggins, 2017). In this part of her response the designer portrays herself and her manager as having prior responsibility for sustainability, and also depicts holding this responsibility is a burden.

In the following lines, the depiction of responsibility as something to be passed on is expanded on. In lines 12-13, the narrative shifts to a portrayal of the load having become too heavy, saying ‘we got to a point where it actually put too much pressure’. She adds some information to preface her next claim, saying, ‘and we realised I’m not a materials developer so I can’ (line 14). In lines 15-16 the participant declares ‘there’s only so much I can do you know after one point it’s like your responsibility’. ‘There’s only so much I can do’ is a common idiomatic expression used to portray having done enough. Here this depicts the point at which she stopped carrying the load of responsibility as something she didn’t have a choice about, due to not having the knowledge inferred from being a member of the category of materials developer. Her ascription of responsibility to others is portrayed using reported speech, saying ‘it’s like your responsibility’, presumably aimed at the teams she has referred to. Reported speech is commonly used to add credibility to an account, depicting something that might actually have happened (Holt & Clift, 2006). Responsibility is here portrayed as something the designer cannot hold on to and so needs others to take it on.
Navigating expectations for sustainable product design: a DP analysis

The final part of the extract identifies the concrete way in which the responsibility is allocated to teams. Here the account moves away from the metaphor of a heavy load and shifts to using business strategy language to describe the details of how the business operates. The participant reports that specific teams are allocated responsibility via ‘goals and targets…attached to a specific year’ (lines 17-19), which picks up the reference to the strategy in the original question. The extract concludes ‘that’s when it it became the responsibility to like the specific team’ (lines 19-20). This portrays a resolution to the problem, as the responsibility is portrayed as having been handed over to a team at a specific point in time and through a specific action of giving goals and targets. The attribution of responsibility is passive here, done through documents, rather than taken on through actions such as decision-making. Overall, this account rejects the idea in the question of identifying a ‘who is responsible’. The response instead focuses on explaining why the designer herself cannot be responsible, and so needs to share out the burden of responsibility to others. The portrayal of trying to attribute responsibility to teams treats responsibility as shared, which further points to there being something problematic about asking the designer to specifically identify who is responsible.

In extract 3, from an interview with a luggage designer, we also see the participant being asked who she thinks is responsible for sustainability. There are some similar features in the response.

### Extract 3, from interview 3 - suitcases

```
1   I and so who do you ‚think's responsible for (.7) the
2       sustainability=
3       =the true sustainability of the design
4   P3 (2.7) so here's where it gets very complicated becau::se
5       (.6) you know i've been in the circular economy
6       programme with the: (.3) ellen macarthur (.8)
7   I  [yep
8   P3 [foundation] and i've been in other sustainable (.6)
9       ‚conferences and they'll go >’‘oh ‚yeah we we need to
10      educate the designers< [to
```
Trying to pin down who is responsible: managing responsibility

11  I  [mhm]

12  P3  make the right decision and do’ (.2)

13  ↓’well (.4) er can i (.3) speak’ because i don't have
14  power when it comes to (.4) making a final decision

First, the question is asked by the interviewer (I) ‘and so who do you think’s responsible for the sustainability, the true sustainability of the design’ (lines 1-2). The reformulation to specify true sustainability is interesting as it suggests that there may also be disingenuous claims around product sustainability, and so the interviewer seeks the real story. In the designer’s (P3) response, the question is portrayed as very difficult from line 4, first with a long pause (2.7), and then in saying ‘so here’s where it gets very complicated…’. The participant is overtly stating that the question of who specifically is responsible is difficult to answer.

She then orients very clearly to external expectations that she as the designer should be the one who is responsible. Rather than answering the question, she explains in lines 5-12 ‘you know I've been in the circular economy programme with the Ellen MacArthur Foundation and I've been in other sustainable conferences and they'll go ‘oh yeah we we need to educate the designers to make the right decision and do’…’. In this utterance the designer is doing two things. Firstly, in citing specifically having been to Ellen MacArthur Foundation conferences, an organisation which is now widely known for its work on sustainable and circular design, and also referencing having been to ‘other sustainable conferences’, she portrays herself as actively involved in the sustainable design community. Here she is doing identity work, portraying her identity as interested in and committed to sustainable design. Secondly, she uses reported speech to portray the message she has received at these conferences, which is shown as placing expectations on ‘the designers’ to ‘make the right decision’ (line 12). The implication is that making the right decision is the action involved in being responsible (since this is a response to a question about who is responsible for sustainability). Using reported speech here both enlivens the account, since the participant speaks in a more animated way when depicting what others said, and works to make it more credible (Holt & Clift, 2006). It also has a function of enabling the next part of the response.
In the last part of the extract, the participant clearly refutes these reported expectations on designers in saying ‘well er can I speak’ because I don't have power when it comes to making a final decision’ (lines 13-14). In the first part of this utterance, she again uses reported speech to depict what sort of response she might have given at these conferences, asking if she can speak back to them. She then depicts a lack of agency to make decisions in her design work, from which we can infer that she therefore cannot be responsible for sustainability, having made clear her commitment. From the use of ‘final decision’ we can infer that perhaps she is portraying being able to make some design decisions, but not the final ones that affect the final outcome. Like in the previous extract, responsibility is treated as a specific action of making decisions. Rather than trying to identify who is responsible, as asked in the question, the response focuses on explaining why the answer is not designer herself. The claim is that the designer cannot make final decisions and thus cannot be responsible, despite her commitment to sustainability and despite common expectations of designers being key decision-makers.

6.4.3 Asking generally about who is responsible

In the next extract, we see an instance where a participant is asked in general terms about who is responsible for how sustainable products are. This question is responded to in a very different way from the question of who is responsible in a specific design project.

Extract 4, from interview 8 - plant sensor

1 I so who do you think (.8) is responsible for the sustainability of products

2 P8 (.9) the sustainability of products

3 I of products yeah

4 P8 i think that it's (.5)

5 okay obviously those that put the products out there (.5) er and i know that there is a demand for it in the part of consumers asking for it because they're consuming

6

7

8

9
Trying to pin down who is responsible: managing responsibility

The interviewer (I) asks ‘who do you think is responsible for the sustainability of products’, in lines 1-2, which seeks the participant’s opinion on responsibility for products in general. After a pause, the participant (P8) first repeats back the last part of the question ‘the sustainability of products’ which acts to seek confirmation of the question. The interviewer confirms the question by repeating back just the final part ‘of products yeah’ (line 8). This repetition shifts the topic to the product rather than to ‘who’.

The participant starts to give a direct answer to the question, saying ‘I think it’s’ (line 5) but then pauses. Despite the hesitation, she then describes the answer as obvious, saying ‘obviously those that put the products out there’. The responsibility is being attributed to any people involved in putting products on the market.

The designer continues her response by admitting that there may be others responsible. She suggests ‘the part of consumers asking for it’ (line 8). This acknowledgement of the role of consumers contradicts her initial claim that the answer is obvious. She then returns to her initial answer in saying ‘but I think the responsibility is the from those that create it in the first place’ (lines 10-11). Thus, she
dismisses her idea of consumers being responsible, in returning to the idea of the producers being responsible.

The designer then suggests ‘and then we can take individual responsibilities for the choices we make’ (lines 12-13). Using the pronoun ‘we’ makes the claim collective. This claim is clearly linking being responsible to the action of making decisions. ‘We’ here could refer to consumers, following on from the prior talk about consumers, or to the participant’s membership of the design profession. An argument against people being able to take individual responsibility is then presented, saying ‘but without the right information it’s also hard to make the correct choice’ (lines 15-17). This excuses people from being responsible since there is a claim that there is not sufficient information available to make a responsible decision. The interviewer does not ask for more specific details about this claim, and simply encourages the participant to keep talking, saying ‘mhm’ (line 14) and ‘yeah’ (line 18).

Then, after having talked through possible options, from line 19 we see a conclusion reached that identifying an individual or a specific stakeholder who is responsible is not possible. In lines 19-20 she says, ‘I think there’s a bunch of stakeholders that are responsible’ and adds in line 22 ‘(give a) responsibility to everybody’. This portrays responsibility for sustainability as shared and depicts the expectation of being able to pin down specifically who is responsible as unrealistic. If responsibility is linked to the action of decision-making, there are numerous actors who make decisions about products.

6.4.4 Asking about feeling responsible

Having seen that the questions ‘who took responsibility’ and ‘who is responsible’ are treated as difficult, we now turn to a more personal way of asking about responsibility. In extract 5, from the interviewer with the designer talking about having designed an electric vehicle charge point, the participant is directly asked if he feels responsible. In response to this question, responsibility is conceptualised in a different way.

Extract 5, from interview 12 – electric vehicle charge point
Trying to pin down who is responsible: managing responsibility

I yeah (.6) okay (h) and do you feel (.7) do you feel any personal responsibility for (.6) making the design as sustainable as possible

P12 yeah definitely yeah (.5) definitely erm (1.2) it's error (.9) it can weigh on your mind (.6)

I ok

P12 er (.2) quite a bit i think particularly if you if you maybe start to feel that (1.1) er and i've had this in other projects actually where if you started if you if you come up on a new piece of research that maybe shows that your design is not as sustainable as you thought it was (.8) erm

I [mhmm]

P12 [or] actually it's not having the [impact] you want it to have

I (.7) yeah

P12 (.8) erm then then you can actually sort of (.4)

well personally anyway i sort of start to feel a bit bad about that and you think 'is this really worth still doing (.6) er (.9) have i (.2) have i kind of spent my time well here have i made good decisions is this actually making a positive (.4) impact'

The interviewer (I) asks, 'do you feel do you feel any personal responsibility for making the design as sustainable as possible' (lines 1-3). The repetition of 'feel' emphasises this aspect of the question. The addition of 'personal' makes the request clearly about the designer himself. The participant's (P12) response is a very clear yes, without hesitation and with emphasised confirmation ('yeah definitely yeah definitely', line 4), so no difficulty is seen in providing an answer to this question. Then after some pauses and hesitation at the end of line 4, the participant continues in line 5 'it can weigh on your mind'. The 'it' presumably refers to the feeling of responsibility. This expression portrays continuing to think about how sustainable a
Navigating expectations for sustainable product design: a DP analysis

Product is over a period, in contrast to the notion of responsibility as occurring at the specific times of decisions being made, as portrayed in the previous extracts.

After some difficulty in settling on a framing of the participant’s following points (lines 7-9), we then see a hypothetical account of a situation where ‘it can weigh on your mind’. He says, ‘if you come up on a new piece of research that maybe shows that your design is not as sustainable as you thought it was erm or actually it’s not having the impact you want it to have’ (lines 9-15). Here, the designer uses the pronoun ‘you’ rather than ‘I’. The notion of responsibility weighing on your mind is thus treated as a general phenomenon that is not unique to the speaker. Here feeling responsible is treated as being culpable if something goes wrong, alluding to a moral sense of responsibility, whereas in the accounts above taking responsibility or being responsible was treated as inherent to unspecified decision-making. This idea of finding out more information about how a product could be more sustainable after having finished a design is perhaps a response to the notion in the question of ‘making the design as sustainable as possible’, which is a strong ask. The feeling itself is indeed then stated in saying ‘I sort of start to feel a bit bad’ (line 18). The use of ‘sort of’ and ‘a bit’ soften the description of feeling ‘bad’.

The extract finishes with some reported thought which is directly linked to the feeling bad. The participant reports the sorts of questions he asks himself when thinking back to the particular project. The reported thought is structured as four questions, saying, ‘and you think 1) is this really worth still doing er 2) have I have I kind of spent my time well here 3) have I made good decisions 4) is this actually making a positive impact’ (lines 19-22). We note the use of ‘you think’ at the start, which again generalises the portrayal of asking oneself questions to designers beyond the participant. Reported thought, like reported speech, is commonly used to make an account more credible, depicting it as having really happened (Haakana, 2006; Holt & Clift, 2006). The use of a four-part list of questions reflecting a common use of listing multiple related points for rhetorical effect, depicting extensiveness (Wiggins, 2017). This works to depict what feeling responsible involves, that is, reflectively questioning one’s motives, decisions, and impact, to identify culpability.
6.5 Discussion

This DP analysis of interviews with designers has identified different ways of asking about responsibility indicate different meanings, and how the expectations inherent in these meanings are practically managed in different ways by respondents to either deflect or assume responsibility. The different types of responsibility that can be applicable to design are discussed in the literature from theoretical perspectives. This study adds to this literature by demonstrating a way of empirically studying responsibility in design, by looking closely at how talk is constructed and what is being accomplished.

In this study, designers were asked four different types of questions about responsibility for sustainability (roughly ‘who took responsibility’, ‘who is responsible’, ‘who do you think is responsible in general’, and ‘do you feel responsible’). The analysis provides insights into how the designers navigate different expectations regarding responsibility for sustainability. The following patterns have been identified in the data. 1) The question ‘who took responsibility’ for sustainability in a design project is treated as difficult, and responsibility is treated as an action. Taking responsibility is associated with decision-making power (3 out of 3 times asked). 2) The question ‘who is responsible’ for sustainability in a specific design project is treated as difficult and as confrontational, also treating responsibility as linked to decision-making power. Responsibility is deflected to other stakeholders by the designers who claim they are not in a position to make the decisions (4 out of 5 times asked). 3) Questions about who is responsible for sustainability in design in general are again treated as difficult, and participants talk through the possible options, based on agency associated with different roles, openly acknowledging the difficulty (all 6 times asked). 4) The question ‘do you feel responsible’ is met with a strong ‘yes’, and a portrayal of strong personal commitment to sustainability (all 7 times asked). Some of the participants associated feeling responsible with culpability for consequences of past design work (5 out of the 7), and some used reported thought to portray what reflective questions they asked themselves when feeling responsible (3 out of the 7). To sum up, responsibility is thus either treated as an action associated with decision-making or an ongoing feeling associated with possible culpability. The different ways of conceptualising and managing responsibility often coexist within the same interview. Indeed, van de Poel and Sand (2018) argue that
multiple types of responsibility for sustainability in innovation coexist and can be combined.

I first consider what can be inferred from the findings about responsibility being treated as an action. In the responses to the questions of who took/takes responsibility, and who is responsible, responsibility is linked with making decisions. These decisions are unspecified but associated with membership of particular categories, such as chief technology officer or materials developer, when participants are asked about responsibility in a specific project. When participants are asked about responsibility in design in general, the actions of being responsible are associated with general categories such as being the people ‘who put the products out there’ (extract 4). In contrast, in the case of extract 3, the actions of being responsible are explicitly dissociated from the category of designer. This participant does make effort to depict herself as committed to sustainability and so seeking to be a responsible person (in the sense of responsibility as a virtue) but refutes that she can be responsible due to not being able to make the decisions. In talk that treats responsibility as actions, responsibility is thus associated with agency to make decisions related to sustainability, which designers may or may not have, depending on their work context. This resonates with common discussions in the literature about agency being required for designers to be responsible (Swierstra & Jelsma, 2006; van de Poel & Verbeek, 2006).

A new insight from these findings is that participants treat the question ‘who is responsible…’ for sustainability in a specific project as somehow confrontational, and as carrying the assumption that the designer perhaps should be responsible themselves. Before undertaking the interviews, it had been assumed that the more direct question ‘do you feel responsible…’ may have been treated as more delicate, but this was not the case. In responses to the question ‘who is responsible…’, we see the designers orient to wider expectations (for example, from the Ellen MacArthur Foundation conferences, claimed in extract 3) that they as designers should be the ones who are responsible. Being responsible can either relate to taking actions that one can be held accountable for or being a responsible person. This ambiguity may be affecting how the question ‘who is responsible’ is met in this dataset with accounts of seeking to be committed and responsible in a virtuous
sense, while not being able to be responsible in an action and accountability sense. This resonates with the assertion made by van de Poel and Sand (2018) that there may be conflicts between types of responsibility in an innovation context, for example, if responsibility is associated with blame as well as with being a virtuous person (van de Poel & Sand, 2018).

I now examine the findings on responsibility as a feeling. To reiterate, asking the designers whether they feel responsible is not treated as a sensitive or confrontational question, and instead the designers provide strong affirmative responses claiming that they do feel responsible. In the responses, feeling responsible is associated with backwards-looking responsibility (Fahlquist et al., 2014), and potential culpability, rather than remembering feelings at the time of doing design or making design decisions. Reflecting on one’s motives, actions and decisions is portrayed as what feeling responsible entails. This question perhaps gives the participants an opportunity to portray themselves as virtuous people focused on sustainability, and so as responsible people, since feeling responsible is portrayed as an enduring state after projects have ended, rather than momentary at the time of making a decision (Edwards, 1999). In the literature, encouraging designers to reflect on and embody responsibility as a virtue and as emotions is often recommended as a way of ensuring more ethical design decisions are made (Fahlquist, 2015; Harris, 2008; Roeser, 2012). However, in this DP analysis the notion of feeling responsible is associated with negative feelings of culpability and blame, rather than on positive character attributes.

From these findings, several implications for how to ask questions about responsibility in interviews can be identified. Interviewers should consider how the specific framings of their questions will conceptualise responsibility in different ways. The findings of this study suggest that when responsibility is treated as an action, this may be met with discussion about decision-making power. The idea of being responsible is ambiguous, and so may be treated as either accountability or virtue. When responsibility is treated as a feeling, this might be associated with possible culpability, rather than forwards-looking virtue.

However, translating these findings into generalisable conclusions about how responsibility for sustainability in design is talked about in other settings, such as
Navigating expectations for sustainable product design: a DP analysis

industry and education, is less straightforward. The findings are based on interview talk, and so are specific to this context. DP research does not seek to be generalisable, as the analysis is based on the specific interactional contexts studied (Wiggins, 2017). In order to find out how assumptions about responsibility for sustainability are managed in other settings, future research to use DP to also study other types of interactional data, such as project review meetings and strategy workshops where responsibility is explicitly talked about. This would provide insights into how assumptions about responsibility are managed in natural settings, to build on what this study has shown about managing responsibility in reflective accounts.

Nevertheless, some broad conclusions can be drawn about how responsibility in design is conceptualised across different contexts. Firstly, authors of theoretical literature on responsibility in design, which may be used in design education, should take care to consider what meanings they are constructing when discussing who is responsible or who should feel responsible, and what sorts of assumptions they are making about designers. Similarly, practitioners working on sustainable design should try to be clear about what meanings of responsibility they are constructing in the workplace. For example, is responsibility for sustainability allocated to different stakeholders based on the decisions they are able to make in their roles, or are designers and others expected to reflect on design impacts, feel responsible, and act based on those feelings? Overall, stakeholders working in sustainable design should recognise the potential ambiguity in ways responsibility is talked about and the fact that different framings can be associated with either deflecting or assuming responsibility.

6.6 Conclusion

There is a great deal of theoretical discussion about responsibility for sustainability in design and science and technology studies literature. This DP analysis of designers’ interview accounts about sustainable design has demonstrated how responsibility can be empirically studied by examining how it is constructed and managed in the ways people talk about it. In the interviews, we see that responsibility for product sustainability is asked about in four different ways, and that patterns of different types of answers are seen for each question. Some of the ways the participants talk about responsibility resonate with the existing theoretical literature on responsibility in
design. Responsibility is either conceptualised as tied up with the action of decision-making, and so may be deflected to others, or as a feeling of possible culpability, through which the designers assume responsibility. New insights are seen in the treatment of the question ‘who is responsible’ as a confrontational question, and the use of the question ‘do you feel responsible’ as a chance to portray oneself as a responsible person. There are opportunities for further study of talk about responsibility for sustainability in real-world settings, to find out how different conceptualisations of and assumptions about responsibility are managed in situ.

In this chapter, I have shown how the use of different framings of responsibility can lead to the designers either deflecting or assuming responsibility for sustainability in their work. Conceptualising responsibility as an action is associated with decision-making power, which the designers often deflect to others. Conceptualising responsibility as a feeling is associated with potential culpability for past actions, which the designers strongly assume. In the next chapter, I examine further how the designers navigate their reported limited agency to make decisions related to sustainability in their work.
Chapter 7  ‘Pushing’ for sustainability: a discursive analysis of how product designers navigate accountability for design decisions

In this chapter I analyse a phenomenon noticed in the data, which was not a focus of any of the original research questions. This phenomenon is of participants portraying effort and perseverance to push others towards sustainability. The chapter is targeted to a sustainable production journal, since it is about designers describing going beyond their design roles to seek to influence others within their organisations and projects. In the article, we see how the participants state that they don’t make the final decisions regarding how sustainable products are, thereby portraying a lack of agency. They work up depictions of how they influence others towards sustainability as a way of claiming some agency. This builds on one of the findings of chapter 4, which showed a designer claiming that he needed to make a decision about getting the client familiar with sustainable materials.

7.1 Abstract
In literature on sustainable design and circular economy, it is widely argued that making better design decisions is key to achieving more sustainable products. Therefore, various tools have been proposed to help manage the many factors involved in design decision-making for sustainability. In targeting such guidance to designers there is an assumption that designers are the ones making decisions. However, it is also recognised in the design literature that designers may not be in a position to make key design decisions, due to the multistakeholder nature of product design and development. This study examines how sustainability-focused designers negotiate this tension regarding their roles in design decision-making. Designers’ accounts of their work, in interviews and sustainable design conference panel discussions, were collected and analysed using discursive psychology. A pattern of participants working up accounts of influencing for sustainability was found. The claim of influencing others is emphasised through repetition, constructions of perseverance and force, and reported speech depicting persuading others. Thus, rather than portraying themselves as either decision-makers or powerless to make
decisions, the designers claim a third way, that of influencing decisions. The findings have implications for how the role of the designer in sustainability is conceptualised.

**Keywords:** Sustainable design; design decision-making; design role; accountability; discursive psychology; influencing.

### 7.2 Introduction

There is an increasing focus among sustainability practitioners on the importance of the role of product designers in sustainable development. It is often claimed that the majority of the environmental impacts of products throughout their lifecycle are determined in the design stage (Devon & van de Poel, 2004; Diaz et al., 2021; Tischner, 2001). This may relate to what materials are chosen, what energy sources products rely on, or how easy they are to dismantle and recycle. Academic authors therefore encourage designers to make their designs more sustainable (Charter, 1998; Chick & Micklethwaite, 2011; Fry, 2004; Haug, 2017). The circular economy campaign organisation the Ellen MacArthur Foundation provides practical guidance for designers on how to make more sustainable design decisions (Ellen MacArthur Foundation, 2020; Fairs, 2019).

However, there is ambiguity in the literature regarding whether design decisions related to sustainability are typically made by designers, by other stakeholders such as managers and clients, or through social interaction and negotiation between designers and other stakeholders (Feng & Feenberg, 2008; J. A. McDonnell & Lloyd, 2009). Whether designers are assumed to possess agency to make decisions to make products more sustainable or not matters, because how the designer’s role is talked about constructs particular expectations that designers must navigate (Neeley & Luegenbiehl, 2008). It is therefore useful to study how designers navigate the expectations they face to be accountable for how sustainable the products they design are, while not necessarily having power over final design decisions.

In this study, product designers’ accounts of sustainability-focused projects are analysed using discursive psychology (DP), which enables data-driven insights into how they portray their own roles in design decision-making. In initial analysis, a surprising pattern of designers describing the practice of ‘pushing’ for sustainability was noticed. In this article, the portrayal of ‘pushing’ and related practices is
examined in detail, leading to insights into how the designers conceptualise their roles in design decision-making.

7.3 Assumptions about the role of designers in making products more sustainable

The literature on sustainable design can be examined in terms of how it constructs different assumptions about designers’ roles. On the one hand, there is a large body of literature calling for individual designers and engineers to make sustainable and socially responsible decisions, and to be held morally responsible for the impact of products on the planet and societies (Alpern et al., 1983; Cook, 2008; Fahlquist et al., 2014; Fry, 2004; Roeser, 2012). These arguments portray designers as having the agency to make decisions and to take responsibility for them. There is also a large amount of academic literature providing tools and methods to help make more sustainable design decisions, taking into account complex, interconnected factors (such as carbon emissions, recyclability, durability, and costs) (Hallstedt, 2017; Inoue et al., 2012; Kapelan et al., 2005; M. Wang et al., 2017, 2017). Many authors explicitly propose that such tools can be used by designers or design engineers to help them make more sustainable decisions, such as choosing which materials to use (Buchert et al., 2015; Gervásio & Simões da Silva, 2012; Zhao et al., 2016). Sustainability advocacy organisations such as the Ellen MacArthur Foundation have produced programmes of education and toolkits aimed at inspiring designers to make more sustainable decisions (Ellen MacArthur Foundation, 2020, 2020; Fairs, 2019). These efforts again portray designers as key decision-makers.

On the other hand, other authors propose that designers’ agency to make decisions is likely to be limited in industry settings, due to multistakeholder and hierarchical ways of working in product design and development (Feng & Feenberg, 2008; van de Poel et al., 2015). Designers, engineers, and design engineers are found to often work collaboratively, needing to come to a consensus with or satisfy the requirements of a wide range of stakeholders such as clients, other designers, technicians, regulators, managers, and users (Devon & van de Poel, 2004; Johnson & Wetmore, 2007; Woodhouse & Patton, 2004). For example, Sridhar (2007) asserts that products are often designed by groups of experts, which may include product designers, mechanical engineers, materials specialists, electrical engineers, and
Navigating expectations for sustainable product design: a DP analysis

management. Some authors propose that if the network character of design means that designers lack agency to make decisions, they should not be held accountable for product outcomes (Devon & van de Poel, 2004).

In theory, designers’ agency in decision-making does not need to be a dichotomy between powerful or powerless. Designers working in multi-stakeholder settings may still be able to influence design decision-making, even if unable to make final decisions themselves. Empirical ethnographic studies of the design process show that design decisions are often made through social interaction and negotiation (Bucciarelli, 1994; Lloyd & Busby, 2003; Luck, 2015). Designers may thus be able to persuade other stakeholders to select more sustainable options. Several authors in design and science and technology studies advise designers that they should seek to influence design decisions to be more sustainable. Fry (2004) argues that designers have a moral responsibility to actively seek to influence design decisions made by others towards sustainable solutions. Van de Poel and Verbeek (2006) argue that designers should actively question the ethical framework embedded within client briefs.

Yet there has only to date been limited empirical research helping us understand the potential role of designers in influencing decision-making regarding making products more sustainable. Two interview studies have produced contrasting findings about whether designers or engineers were able to influence other stakeholders towards sustainability. In a small-scale study by Swierstra and Jelsma (2006), engineers were interviewed about their freedom to make ethical decisions in a project they had worked on. Despite reporting a lack of agency due to the network character of their working environment, the engineers stated that they did not feel completely powerless and reported that they actively sought to influence industry to buy into more sustainable solutions (in this case biodegradable plastics) (Swierstra & Jelsma, 2006). In contrast, Karell and Niinimaki (2020), based on analysis of interviews with fashion designers on their role in making products more sustainable, found the designers reported not making most of the decisions and having little opportunity to influence. These studies provide some initial insights into different ways designers can characterise their roles in sustainable design decision-making, as either actively seeking to influence, or unable to influence.
To build on these studies, and to conduct a more detailed analysis of how designers portray their roles in decision-making, designers’ accounts of particular design projects were collected using interviews and also from videos of design conference panel discussions. In the interviews, the designers were not directly asked about their agency or whether they sought to influence others but were asked to give accounts of decision-making in sustainable design projects (the data were collected as part of a wider project on design decision-making for sustainability). Having noticed the pattern of designers describing pushing for sustainability, the accounts were analysed to see how the designers orient to and navigate assumptions about their agency to make decisions related to sustainability.

The two studies cited above focused on what the participants said in their interviews. In the present study, attention is paid to the interactional nature of talk. When a designer is being held accountable by other speakers, through being asked direct questions about their work and actions, the actions of managing expectations and navigating assumptions can be seen in the sequential unfolding of a conversation. The accounts are analysed using DP, which provides an inductive method of studying interactional talk in detail. In DP, language is treated as constructed and constructive (Wiggins, 2017), rather than neutrally produced. Psychological concepts such as accountability and identity are treated as empirically observable in talk (Hepburn & Wiggins, 2005; Horton-Salway, 2001). Agency is also a psychological construct, which can be studied in terms of how it is constructed and negotiated in the ways people talk (Widdicombe & Marinho, 2021). DP is therefore an appropriate method for analysing how designers manage accountability for how sustainable products are through examining how they construct agency in design decision-making.

7.4 Methods
Two methods were used to collect designers’ accounts of their work related to sustainability. Firstly, sixteen product designers involved in sustainable design were recruited via a sustainable design group on LinkedIn and a design email list to take part in semi-structured video call interviews carried out by the author between July and October 2020 (see page 52 for participant details, including details of location, sex, design work context and type of product talked about). The sample includes a
Navigating expectations for sustainable product design: a DP analysis

mix of junior and more senior designers, and a balance of female and male. Interviews lasted an average of forty-five minutes. Designers were told in advance that they would be asked to give accounts of recent design projects of their choice. Most talked about products they had designed in professional settings, either in-house or for clients. Products talked about included suitcases, yoga equipment, packaging, and an electric vehicle charge point. Secondly, seven videos of interviews and panel discussions at recent high-profile sustainable design conferences and events were selected from YouTube, based on the relevance of discussions to designers’ roles and decision-making. Over twelve hours of recorded verbal data were collected in total. University research ethics committee approval was given before commencing data collection (School of Philosophy, Psychology and Language Sciences Research Ethics Committee, approval number 324-1920). This ensured appropriate measures were taken regarding informed consent, anonymity, and data security in line with British Psychological Society ethics guidelines (British Psychological Society, 2018).

In terms of analytic procedure, words-only transcripts of the full corpus of data were produced. In reading through the transcripts carefully, a recurrent pattern of designers depicting their role as involving ‘pushing’ for sustainability was noticed in both the interviews and event videos. Across the dataset, ‘pushing’ or ‘push’ are used more than fifty times in eight interviews in both in-house design and designer-client contexts, and feature in four out of the seven sustainable design conference videos analysed. This was noteworthy since participants were not asked about whether they sought to influence decisions made by others, but this phenomenon of portraying influencing others was clearly significant to the designers. Twenty-seven extracts that feature talk portraying designers’ roles as involving pushing or other actions related to influencing were selected for detailed transcription using Jefferson (2004) notations (see page 60). These notations give further details of the talk, including pauses, changes in pitch, and changes in speed. Anonymised transcriptions can be found at the UK Data Service (L. Cooper, 2021).

Detailed analysis involved looking at where the portrayal of influencing others occurs in the conversations, and what actions that surround this, to try to understand what participants are doing in their accounts. Analysis involved several iterations of
looking closely at the data, and making notes on patterns of actions, linguistic devices, and sequences. Three key analytic phenomena were identified: portraying varying agency and the action of influencing others as a way of navigating this (seen in eleven interviews and one panel discussion); depicting personal identity as motive for influencing (seen in five interviews); and portraying the consequences of influencing as also related to identity (seen in two interviews). The intention is not to assess the strength of the findings based on quantification, since the different sources are not directly comparable. For example, those who talked about independent design projects may have been less likely to talk about influencing others than those who had worked as in-house designers in large companies or in design agencies. Nevertheless, the similarities in discursive strategies used by different participants show that the phenomena identified are noteworthy. Data extracts featuring ‘pushing’ talk were presented at a data session and at two conferences where feedback from other researchers has reinforced the findings as justifiable in the data. Five extracts were selected for inclusion in this article, which represent strong examples of these three phenomena identified.

7.5 Analysis
In this section, I present data extracts and analysis of them in three sections. Firstly, I present two extracts in which designers respond to questions about where the ideas for more sustainable products came from with accounts of influencing. Secondly, I show how the designer’s role is portrayed as involving influencing others in general talk about design at a conference. Thirdly, I present two extracts that show participants talking about what resulted from their efforts to influence.

7.5.1 Where did the idea come from?
Extract 1 is taken from the beginning of an interview with a product designer who had worked for a luggage brand. Immediately before the talk presented in the extract, the participant (P3) had said that she would talk about a collection of suitcases with linings made from recycled plastic. We see that the designer builds up an account of influencing others for sustainability.

Extract 1, from interview 3 - suitcases
Navigating expectations for sustainable product design: a DP analysis

I okay and (.3) was this an <in-house idea> where did the idea come from to do this (.3) recycled (.3) material

P3 so the idea (.3) came from (.3) i guess from (.6) well first of all i always (.3) was a little (.6) eager (.3) let's say (.3) hurt by the fact that i was a product designer because (.4) i saw okay why do we need more products

I [yeah ((huhuhuh))]

P3 [in the world really]((huhuhuh))

and i'm doing this (.3) so you know i >it was always like a contradiction with (.3) my morals and (.3) my passion of <design beautiful objects> and (.6) so (.3)

i always was like okay >’can we do< something different can we change’ (.3) you know (.3) ‘our production practices’

and then (.3) er my (.4) boss (.5) she was also very or she is very (.5) into [sustainability]

I [mhm]

P3 and doing something better as well (.3)

so i guess (.2) you know with (.3) the (.3) both of us we started pushing for okay let's see what we can do (.5)

I ok=

P3 in the future for s- (.3) >you know< for luggage (.3) really (.3)

(lines omitted in which the participant talks about her boss going to a conference and meeting suppliers)

P3 and then we get to <meet the suppliers> went to the factory >you know< how they recollected (.6) the bottles and >all of this< and we kept pushin pushin (1.2) to see if for the <next collection> we could use this material (.5) instead of the regular polyester (.7)
Navigating accountability for design decisions

I yep

P3 s::o (.2) you know (.3) over the time we just (.)
decided (.6) ↑ to keep going going going of course the
prices (.7) (hh) were a little higher (hh) (.4) as
suspected (.2) £ always (.2)

P3 so we had to (.2) really like push hard

At the start of the extract, the interviewer (I) asks, ‘was this an in-house idea where
did the idea come from to do this recycled material’ (lines 1-2). This question asks for
the source of the idea. The participant initially starts to answer, repeating the
question wording, saying ‘so the idea came from I guess fr…’ (line 3). Yet there are
three fairly long pauses within this utterance, suggesting some trouble in using the
question’s formulation. The difficulty in answering portrays the source of the idea of
using more sustainable materials as somehow difficult to explain.

Instead of answering, we see a shift to talk that portrays the designer’s identity,
rather than talk about the specific product idea. Sustainability related identity is
constructed in three ways. Firstly, the participant portrays herself as sensitive to the
environmental impacts of design as a whole saying ‘I always was a little er let’s say
hurt by the fact that I was a product designer’ (lines 4-5). The use of ‘always’ depicts
this concern as longstanding, and the choice of wording ‘a little hurt’ tentatively
portrays the issue as personally affecting her. Secondly, she makes a contrast
between morals related to sustainability, and a passion for design, saying ‘it was
always like a contradiction with my morals and my passion’ (lines 9-11). Again, the
use of ‘was always’ portrays this tension as longstanding. From the term ‘morals’ we
infer that sustainability is the ethical issue, and ‘passion’ depicts a strong interest in
doing design. This contrast builds two aspects of the participant’s identity – caring
about sustainability and being passionate about design. Thirdly, she reports
questioning what can be done to overcome this tension, saying ‘can we do
something different can we change you know our production practices’. This
questioning, using reported speech, depicts the designer as seeking to find a way of making products in a different way. We infer that this different way would involve considering the moral issue of sustainability in the way products are designed. Reported speech has been shown to be used to add credibility to an account, be depicting what actually happened (Holt & Clift, 2006). The participant is therefore portraying having actually questioned her colleagues to try to change their ways of working. To sum up, this response builds up the identity of the designer as concerned about sustainability for a long time, aware of a tension between sustainability and design, and seeking to change the way the products are made. The participant then adds the claim ‘and then er my boss erm she was also very or she is very into sustainability and doing something better as well’ (lines 16-19). Here she portrays the personal concern for sustainability as being shared with her boss. Identity work is being used here by the participant to imply that the product idea came from her and her manager’s personal interests.

Once this shared sustainability-focused identity has been claimed, the participant describes what her and her manager reportedly did to try to make the luggage more sustainable. On lines 20-21 she says, ‘the both of us we started pushing for okay let's see what we can do’. We see a recurrent use of the term ‘pushing’ and the verb ‘going’ is used in a similar way. On lines 29-31 she says, ‘and we kept pushin pushin to see if for the next collection we could use this material instead of the regular polyester’. On lines 33-34 she says, ‘we just decided to keep going going going’. And on line 37 we see ‘so we had to really like push hard’. Several key features can be highlighted in these utterances. Firstly, the use of verb ‘pushing’ portrays effort and force. Secondly, the use of ‘kept’ and ‘keep’, and the repetition of the verbs ‘pushin’ and ‘goin’, depict perseverance, portraying this effort as sustained over time. Thirdly, the use of ‘push hard’ at the end of this section of talk reiterates and upgrades the need for effort and force. All of these features work to depict the designer and her manager as making significant proactive effort to influence towards more sustainable products (in this case by proposing using recycled material).

In the last part of the extract, we see a demonstration of how the influencing is done. The participant uses reported speech in the form of a three-part list, saying, ‘you have to start doing something about sustainability you have to commit to the
environment you have to change your practices’ (lines 38-41). The three parts of the list start with ‘you have to’, and each part is a general instruction relating to making design more sustainable. A three-part list is a common rhetorical tool found to be often used to try to persuade (Jefferson, 1990). Indeed, in this case, the three-part list is used to depict trying to persuade colleagues to prioritise sustainability. The use of ‘you’ without specifying who she is talking to makes the claim general and avoids accusing any specific colleagues of not focusing on sustainability. Using ‘you’ rather than ‘we’ also works to distance the designer from the company when she is highlighting its shortcomings. Again, the use of reported speech works to add authenticity and credibility to the account (Holt & Clift, 2006). The portrayal of the designer and her manager as seeking to influence others adds credibility to her previous claims of pushing and influencing. The designer is portraying herself as the sort of person who is committed to sustainability and who makes proactive effort to advise colleagues on its importance. We can infer from the response that the designer is claiming that she is not a key decision-maker and so seeks to influence those who are.

Extract 2 from early on in an interview with a product designer working who had worked for a large fitness company and provides a very similar pattern. The participant (P14) had been talking about designing a more sustainable yoga mat.

**Extract 2, from interview 14 - yoga mat**

1 I so did the idea come from you

2 P14 (.5) yes

3 I (.07) and then did you pitch that (.2) to the company <

4 or how did that 

5 P14 <yeah> <so> <um> (.6) my role >so i started out< as a

6 like a designer <and> i was always pushing for

7 sustainability

8 =like it was always super important for me

9 P14 err and >kind of like< you i love the design but

10 by creating products that are meant to be obsolete
Navigating expectations for sustainable product design: a DP analysis

within like a few months like doesn't resonate with me at all [so
I [mhm]

P14 so it's always fighting the two (1.0)

and at that time i was reporting into our creative
director and i was just telling him (.8) like 'if we
wanna be innovative' cos they were just pushing for like
this (.3) innovative story (.3) for the brand >i was
just saying< 'if we wanna be (.2) innovative (1.0) we
have to be sustainable otherwise you're just (.6) not=

=you won't be innovative' >like innovation< (.7) or
>sustainability should be the number one catalyst for
innovation< and my role was design and innovation

A similar question is asked by the interviewer (I) at the beginning as in extract 1, ‘so
did the idea come from you’ (line 1). The interviewer is again asking if the idea for a
particular sustainable product, which again involved switching to more sustainable
materials, came from the designer. In asking directly whether the idea came from
her, there is an implied assumption that it might have. This question therefore holds
the participant to account more directly than in extract 1. The response is minimal,
‘yes’ (line 2). Seeking an expansion, the interviewer then follows up with another
question, asking ‘and then did you pitch that to the company or how did that work’
(lines 3-4). This question also includes an assumption that the designer may have
directly proposed the idea to her company. A hesitant response to the question is
first given ‘yeah so um’ in line 5, followed by a pause, indicating some difficulty in
producing a direct answer to the question of whether and how she pitched the
specific idea.

In the continuation of the response, the participant produces general claims about
her actions and feelings as a designer. The participant produces the claim ‘so I
started out as a like a designer and I was always pushing for sustainability’ (lines 5-
7). Like in extract 1, the choice of term ‘pushing’ depicts effort or force, which is
different from the interviewer’s suggested framing of ‘pitching’. We see the
participant portraying her identity in several ways. Firstly, the use of ‘always pushing’
portrays regular taking action on sustainability. Secondly, this regular action is justified in saying ‘it was always super important for me’ (line 8), portraying her longstanding commitment to sustainability. Thirdly, a tension is portrayed between loving design and not being comfortable with the wastefulness of production strategies. She says, ‘I love the design but by creating products that are meant to be obsolete within like a few months doesn’t resonate with me at all’ (lines 9-12). The tension is further highlighted in a follow-up remark in line 14 ‘so it’s always fighting the two’. This depiction of a tension further works to justify why she is regularly seeking to influence others towards sustainable design. The participant thus portrays herself as committed to sustainability in design in response to being held accountable for where the idea came from.

The response concludes, like extract 1, with a section of reported speech, used as a way of depicting how the designer sought to influence others towards sustainability. The designer introduces her reported speech by saying ‘and at that time I was reporting to our creative director and I was just telling him’ (lines 15-16). This portrays her as directly giving advice to her line manager, which is characterised as a mundane or common occurrence through the use of ‘just’ (also featuring in lines 18-19 ‘I was just saying’). She reports saying to the creative director ‘if we wanna be innovative…we have to be sustainable otherwise you’re just not, you won’t be innovative’ (lines 16-21). We note that she first uses the pronoun ‘we’ in talking about wanting to be innovative and needing to be sustainable as a company. But she then switches to ‘you’ when talking of the consequences of not being sustainable (‘you just won’t be innovative’). This pronoun shift works to distance the participant from the possible lack of action from the company on sustainability, thus depicting her as not accountable for unsustainable products. This part of the response in which the designer depicts telling the creative director about the importance of sustainability could be inferred as being a response to the initial question about how she pitched the idea for more sustainable materials. However, in the identity work that prefaces the response, the designer characterises her typical actions as pushing for sustainability to seek to influence others, rather than the less forceful framing of pitching ideas. The account thus portrays the designer as navigating limited agency to make decisions herself by forcefully trying to influence her company to focus more on sustainability.
Navigating expectations for sustainable product design: a DP analysis

7.5.2 General talk about the designer’s role

In extract 3, we see a designer negotiate accountability for product sustainability in a similar way at a question-and-answer session at an online sustainable design conference. Panellists from a company that designs consumer electronics were asked to respond to a question typed in the chat window, which was paraphrased by the panel chair (C), asking who makes the design decisions, given the wide range of stakeholders involved. In contrast to the interviews, in this data, the issue of whether designers are key decision-makers or not is directly raised in the question.

Extract 3, from a design conference panel discussion

```
1  C thank ↑you there were some questions in the chat we have
2  <↑four> minutes left so i think we can maybe touch upon
3  (.1) one question that er came in from <((name))> and
4  she's saying (hh) (.2)
5  
6  it is obviously a collaborative effort to make your
7  products more sustainable and circular using various
8  models and tools (hh) but who makes the final design
9  decisions (.3)
10 
11  how much influence do designers themselves have on
12  final decision making about how sustainable the product
13  is (.5) and how< and what about its specific
14  sustainability credentials so how far does the influence
15  >of the designer< ↑reach (.4) in this (.) and (..) what
16  kind of other decision makers are (.4) part of this er
17  (.7) e::r (.5) journey to make a cir- a circular product
18  what mi- what might a designer run ↑into and what is
19  your own experience there=

20  =maybe it's <nice for> ((panel member’s name)) to start
21  with this ↓one

22  D (3.1) yeah sure e::r (.4) yeah so of course the
23  designer cannot do everything a↑lone er that that's
24  quite clear many times er you need the support from for
25  instance the the technical team so like in this case
26  in the call there is ((colleague’s name)) (hh)
```
Navigating accountability for design decisions

and then er yeah of course designers are not the one
that at the end are gonna decide er if to go with
more sustainable solution or not the the system is
quite complicated there are multiple stakeholders
involved there is an entire business involved there is
marketing involved

but what designer can do <and er> are usually quite good
at doing is inspiring the business and (.2) provide
inputs and really push for these ideas

<er and er> with the right support er erm we can see
some some some i- of these ideas coming through

>so< of course i agree that designers cannot do this
>completely alone< (.2) er but i think that the
narrative er about about these different initiatives er
the commitments and er also developing these er methods
that can clearly prove how (.2) er actually feasible it
is to design for circularity

how it is not <like magic> but it's something that we
can [↑bring

C [mhm]

D and we bring today

that that can really help (.2) in (.2) pushing this idea
harder

The question from the audience member is detailed and contains several parts. The audience member is paraphrased by the panel chair as first providing an assessment that is relevant to her question. She says ‘it is obviously a collaborative effort to make your products more sustainable and circular using various models and tools’ (lines 5-7). The use of ‘obviously’ portrays this as a shared understanding of how design is done. The reference to ‘various models and tools’ depicts the sustainable design as complex and technical, and also works to depict the questioner as knowledgeable. Asking about ‘your products’ directs the focus onto the panel members’ own ways of working. A clear question is then asked, ‘but who makes the final decisions’ (lines 7-8). The ‘but’ here links the question to the prior statement and seeks a specific
identification of who makes the decisions, despite the ‘collaborative effort’ previously referenced.

Several further questions are added. The questions first focus on the influence a designer can have over decisions. The panel chair paraphrases ‘how much influence do designers themselves have on final decision-making about how sustainable the product is’ (lines 9-11) and adds ‘so how far does the influence of the designer reach in this’ (lines 12-13). The use of ‘final’ in the first directs the focus to the final outcomes of a design process. The second question assumes that the designer has some influence but seeks clarification of how much. The next question reiterates the request to know who the decision-makers are. The question is ‘what kind of other decision-makers are part of this journey to make a circular product’ (lines 13-15). The description of a ‘journey’ portrays the effort to make a circular product as not yet achieving the desired outcomes, and so indicates some challenges. The panel chair directs the designer on the panel to answer, saying ‘maybe it’s nice for xxxx to start with this one’ (lines 18-19). This series of questions introduces the idea of designers possibly lacking agency to make the key decisions, but also asks the designer to explain how much he is accountable for product outcomes.

In his response, the designer (D) hesitates at first. There is first a pause of longer than three seconds, suggesting difficulty, and also an elongated ‘erm’ (line 20). Then the designer provides agreement with the description of design as collaborative. He says, ‘yeah so of course the designer cannot do everything alone’, with an upwards inflexion on the second syllable of alone (lines 20-21). The ‘of course’, reflecting the ‘obviously’ in the initial question, depicts this as common knowledge among those present. ‘Everything’ is an extreme case formulation, depicting the maximum (Pomerantz, 1986). We can infer from this use of ‘everything’ that there are some things the designer can do alone. He adds a claim that ‘you need the support from for instance the the technical team’ (lines 22-23). Portraying the technical team as supporting the designers constructs the designers as having more power than them, which enables the designer to claim some agency over the design process.

The designer then provides an acknowledgement that designers cannot make all the decisions. He says, ‘er yeah of course designers are not the one that at the end are gonna decide erm if to go with more sustainable solution or not’ (lines 25-27). This is
Navigating accountability for design decisions

a clear claim that designers generally lack the agency to make the key decisions, again using ‘of course’ to depict this as shared knowledge. He continues ‘the the system is quite complicated there are multiple stakeholders involved there is an entire business involved there is marketing involved’ (lines 27-30). This is presented as a three-part list, a device that is often used to portray extent and variety (Wiggins, 2017). Reflecting the assertion in the question that sustainable design is a collaborative effort, this list depicts the involvement of a wide range of people, the roles of whom are not specified, apart from marketing.

The designer then focuses on describing what designers can do, despite the many stakeholders involved. The designer provides an assessment, saying, ‘but what designer can do and er are usually quite good at doing…’ (lines 1-2). The phrases ‘can do’ and ‘usually quite good at doing’ portray the behaviours listed as characterising designers in general. The behaviours are provided in a three-part list to describe the role and ability of a designer as first ‘inspiring the business’, then to ‘provide inputs’, and then ‘really push for these ideas’ (lines 2-3). This use of a list of three here provides completeness to the claim (Jefferson, 1990). The third item on the list is emphasised through the use of ‘really’, in saying ‘really push’, depicting using strong force. So here we see ‘pushing’ explicitly suggested as an activity to enable designers to still be doing something about sustainability, when unable to make final decisions.

In the next part of the extract, the designer acknowledges again the limits to what designers can do but proposes that sustainable design is a feasible goal. He says that designers ‘of course’ (line 6) cannot achieve sustainable design ‘completely alone’ (line 7). The use of an extreme case formulation ‘completely’ (Pomerantz, 1986) emphasises that the actions of the designers are not taken fully alone, but also portrays the designers as still able to be effective to some extent when almost working alone. He then argues that sustainable design is achievable. He refers to a ‘narrative about’ ‘initiatives’, ‘commitments’ and ‘methods’ (lines 8-9) which he argues can ‘clearly prove’ (line 10) the feasibility. This comment works to demonstrate knowledge of a repertoire of pre-existing approaches to make design more sustainable and to claim this as evidence for sustainable design being possible.
He then reinforces his suggestion that providing inputs is something that designers can do, saying in lines 11-12 ‘it is not like magic but it’s something that we can bring’. ‘Not like magic’ resonates with common idiomatic expressions about waving a magic wand to achieve some sort of instant change. The inference is that the designer is claiming designers cannot wave a magic wand to make products fully sustainable (as they do not have full agency to do so) but can contribute something with the agency they do have. The use of ‘we’ in lines 12 and 15 serves to frame a category of designers with a shared interest who can play a role in providing sustainable ideas. In line 15 he upgrades the notion of something designers ‘can’ bring to something they are already doing, in saying ‘and we bring today’, moving from the theoretical talk of designers’ roles to portraying actual behaviour.

At the end of the extract, the designer reiterates the idea of pushing. He claims that the things designers can bring ‘can really help in pushing this idea harder’ (lines 16-17). This return to the notion of pushing at the end of the designer’s response portrays an ongoing need to persevere, with the inputs the designers bring enabling an increase in the force of the pushing. This extract demonstrates that when a designer is asked about accountability for design decisions, the role of designers in general is characterised as involving influencing others towards sustainability as a way of negotiating some agency despite descriptions of limits to designers’ decision-making power. The notion of pushing is used to depict the influencing as forceful and involving effort.

### 7.5.3 Consequences of influencing

In the final two extracts, we see how participants portray the consequences of their influencing work. Extract 4, which comes from the same interview as extract 2, is an account of what influencing others towards sustainability has led to. Immediately before the extract, the participant (P14) had been asked where she got her sustainability knowledge from and had explained how she had developed her sustainability knowledge during a master’s degree and had then been offered the product designer role at the large sportswear company she has been talking about. In the extract, she starts by explaining that taking the role at the big brand led her to ‘innovation’.

**Extract 4, from interview 14 – yoga mat**
Navigating accountability for design decisions

1. P14 and then that led me to innovation and then wanting to
push for sustainability so I just kept on pushing=

2. I = yeah

3. P14 > and < pushing > and < pushing internally and I kind of
became (.4) this person

4. ((lines omitted where she is talking about them
realising they needed to research the company’s
sustainability impacts and develop a sustainability
strategy))

5. P14 and then (.4) kind of naturally because (.4) I was
always such an advocate for sustainability and pushing
for that > it’s kind of like yeah < I was (.5) more or
less nominated to do that

In the first part of this extract, the participant reiterates the relevance of pushing to sustainable design. She depicts a desire to push, saying, ‘and then wanting to push for sustainability’ in lines 1-2; persistent effort undertaken in saying, ‘so I just kept on pushing’ in line 2; and perseverance, in repeating ‘pushing and pushing’ in line 4. The persistent action is thus depicted as driven by a desire to keep making an effort to influence others towards sustainability.

We then see depictions of the consequence of pushing. In lines 4-5, the participant says ‘and I kind of became this person’ following sustained pushing. Rather than reporting a change to a product as a result of pushing for sustainability, we see a depiction of the participant having somehow changed by becoming ‘this person’. What ‘this person’ might refer to is not expanded on in the following talk, so we are simply left with a tentative impression of the participant being different or perceived differently due to her pushing for sustainability.

Then, after explaining that the participant and her colleagues realised that they needed to develop a sustainability strategy for the company (lines omitted), we see pushing depicted as leading to her being nominated to take on a new role. She says, ‘and then kind of naturally because I was always such an advocate for sustainability and pushing for that it’s kind of like yeah I was more or less nominated to do that’ (lines 10-13). From the context, we can assume that ‘to do that’ refers to being in
Navigating expectations for sustainable product design: a DP analysis

charge of the company’s sustainability strategy. Using ‘kind of naturally’ (line 10) portrays this as an obvious development based on the description of her taking action to advocate and push for sustainability. However, ‘kind of’ makes the description of it being natural tentative. The designer describes herself as having been 'nominated' to take charge of the sustainability strategy. This depicts someone else has having proposed that she takes on the role based on her actions of influencing. Yet again, this is tentative, using ‘kind of like’ (line 12) and ‘more or less’ (lines 12-13). There is thus some hesitation seen in describing her own professional success. Nevertheless, the effort of influencing is portrayed as having led to being chosen to develop the sustainability strategy. In short, the consequences of pushing are depicted as related to the designer’s identity, rather than to product changes. First, an informal identity change is alluded to, and then a more explicit change of role.

The outcome of influencing for sustainability is also depicted as being an identity change in extract 5, which comes from an interview with a product designer (P2) who has talked about initiating a sustainable packaging initiative in a white goods company.

**Extract 5, from interview 2 – ceiling fan packaging**

```
1  I well (.3) i wondered if your focus on sustainability
2 had (1.5) maybe influenced people to start thinking
3 about that in the the normal product development 'that
4 you do'
5 P2 (1.4) er well (.9) it didn't trickle down to the product
6 development stage but i would say yes er it did make
7 people e::r a lot more a::ware
8 (.3) like i was labelled the [packaging guy
9 I ) [yeah (huh)]
10 P2 or the sustainability guy
11 I yeah
12 P2 s:o (.7) that itself was kind of okay for o- (.5) me
13 personally it was something okay (.3)
```
Navigating accountability for design decisions

people are taking notice of this=

I =yeah

of me but in in a way also of the project right because
[they are

I [sure]

linking me with the project [which is there<

Here, the designer is asked directly whether he had influenced people in the company towards sustainable design. This works to hold him to account for the impacts of his sustainability work. The interviewer (I) asks, 'I wondered if your focus on sustainability had maybe influenced people to start thinking about that in the the normal product development that you do’ (lines 1-4). We see the question is presented in a tentative way through the use of ‘I wondered if…’ (line 1) and ‘had maybe influenced to start thinking’ (line 2). ‘Start’ thinking indicates an assumption that impacts might be limited. The final part of the question is said in a quieter way (‘that you do’, lines 3-4). This tentativeness indicates it may be delicate to ask about whether the participant’s efforts have been successful.

The response is ‘well it didn’t trickle down to the product development stage’ (lines 5-6). This response is preceded by two long pauses and ‘er’, indicating difficulty, before admitting that the effort to influence others hadn’t brought about product changes. But the participant then picks up on the part of the question that asks whether he had influenced people to start thinking about sustainability. In lines 6-7, he continues ‘but I would say yes er it did make people er a lot more aware’. Focusing on the effect on people, rather than products, enables a positive answer to be provided regarding outcomes. That is, the outcome is people’s increased awareness of sustainability.

The response about outcomes then turns to how his colleagues’ awareness affected how he was seen. Immediately after making the claim that his efforts did make people a lot more aware, the participant says, ‘like I was labelled the packaging guy’ (line 8) and then modifies this to ‘or the sustainability guy’ (line 10). Being labelled by
colleagues in this way is depicted as an outcome of people becoming aware, through the use of ‘like’ which links the claims. The participant then provides a tentative assessment of his reaction to this labelling, saying it was ‘kind of ok for me personally’ (line 11). He goes on to explain in lines 13-18 that it was ok since people noticing his new identity would mean they would also notice the project.

7.6 Discussion
This DP study has demonstrated how analysis of sustainability-focused designers’ accounts of their work can provide insights into how they are navigating agency and accountability for design decisions. This study has found that the designers portray limits to their agency to make key decisions about sustainability but has also observed strategies through which they manage the issue of being held accountable for how sustainable products are despite these limits to their agency. The analysis identifies several specific features in the designers’ talk which help them manage accountability for how sustainable products are. In the interview data, the designers work to portray persistent effort to influence companies towards producing more sustainable products. Identity work is used to depict the designers as personally committed to sustainability, which is portrayed as a motive for their influencing work. A way of influencing is depicted through reporting conversations with colleagues in which the designers portray themselves as attempting to persuade decision-makers about the importance of sustainability. The outcomes of pushing are portrayed by two of the designers as changes to roles and identities at work, rather than product improvements. Being seen as the person who champions sustainability is used as evidence for positive outcomes of influencing, even if not much change has been achieved yet in terms of products. ‘Pushing’ is also proposed in general talk at a sustainable design conference, when a designer is directly asked about limits to decision-making power, as a key action designers can take as a way of navigating limits to their agency.

These findings provide empirical insights into the existing debate in the design and science and technology studies literature about whether designers are key decision-makers or are unable to make decisions due to the structures and hierarchies found in professional design settings (Devon & van de Poel, 2004; Feng & Feenberg, 2008). In claiming an intermediary role of influencing key design decisions, often by
‘pushing’ for sustainability, the participants find a way to conceptualise the role of the designer in a way that focuses on what they can do, rather than what they can’t. Rather than designers either possessing or lacking agency, agency is constructed in the ways they talk, through depicting influencing and persuading others, instead of deciding. The portrayal of the practice of influencing for sustainability, linked to identity, has parallels with the sustainability champion or intrapreneur concept found in business literature, which describes individuals voluntarily working to influence from within a company based on personal passion or beliefs (Andersson & Bateman, 2000; Anifowose & Ohu, 2020). The ways the designers in this study give meaning to their roles in sustainable design through claiming the actions of influencing resonate with findings about how sustainability champions act, including the actions of inspiring and persuading (Andersson & Bateman, 2000; Padovan, 2017; Willard, 2009) and persisting in the face of adversity (Howell et al., 2005). This DP research cannot claim that the designers are in fact acting like sustainability champions, since the accounts are constructed in their particular interactional contexts. Nevertheless, we can conclude that there is a pattern of designers portraying their efforts in this way in order to navigate the challenge of agency.

This study also provides new insights into how the designers use identity work in two different ways in relation to how they claim agency. Firstly, sustainability-focused identities are portrayed as the motives behind seeking to influence design decisions, which makes the accounts of the design process personal. The actions of pushing and influencing in different ways for sustainability are depicted as having been undertaken over a long period of time by some of the designers, not only in the projects described, motivated by seeking to resolve a values clash between doing design and caring about the environment. Secondly, two participants portray their identities as being changed by their influencing work, as a way of claiming some positive outcomes. There has only been limited research to date on designers’ identities (Kunrath et al., 2020), and so this study shows there are opportunities to study the different things that are accomplished by identity work in accounts of design.

As well as providing contributions to how the role of designers with regards to sustainability is conceptualised, this study makes a methodological contribution. DP
Navigating expectations for sustainable product design: a DP analysis

has not yet been commonly used to study sustainable design and production contexts, and so there is an opportunity for further research to use a DP approach to analyse how designers and other stakeholders navigate questions of agency and accountability for product outcomes in the ways they talk about their work. Since the present study is based on data collected for a wider project, the number of probing questions asked about decision-making was limited. Further studies could involve interviews that solely focus on seeking accountability for different design decisions, which may add additional insight into how agency is navigated.

7.7 Conclusion

This DP analysis of sustainability-focused designers’ accounts of their work has provided empirical insights into how the designers conceptualise their roles with regards to design decision-making. When navigating accountability for decision-making regarding sustainability, designers portray their agency to make key decisions as limited and depict navigating this limited agency through the action of influencing, involving great effort and perseverance. Personal concerns about sustainability in design are depicted as motivating the designers to influence other decision-makers. The efforts to influence are depicted as leading to identity changes for the designers. The study therefore makes contributions to literature on agency in design decision-making and on designer identity. The designers’ claims of influencing others to make more sustainable decisions resonate with the notion of a sustainability champion in business literature, which does not yet feature as a way of conceptualising the designer’s role in design and production literature.

In this chapter I have shown how there is a consistent pattern of the participants claiming agency in design decision-making through portraying ‘pushing for sustainability’. This expands the findings of the thesis to not only focus on how designers make decisions or take responsibility for them, but also on how designers claim a different role in decision-making. In the next chapter, I consider the findings from the four analysis articles in terms of what cross-cutting themes can be inferred, and how these relate to different types of literature.
Chapter 8  Discussion: inferences and implications of the findings

This thesis has explored how product designers conceptualise and manage assumptions about how decision-making is done, how personal values are taken into account, and how responsibility is understood in sustainability-focused design. I proposed that there are common expectations facing designers, coming from both sustainability advocacy organisations and from academic authors, to make design decisions that reflect sustainability values, and to take responsibility for the environmental impacts of products. In a context of increasing awareness and campaigning about environmental sustainability, designers are increasingly being held to account for how they should act and feel in order to achieve more sustainable products. Asking designers to talk about their work is an arena in which they are held to account. Designers’ accounts of their work and roles, collected using interviews and from conference panel discussions, have therefore been analysed using discursive psychology (DP). DP offers a methodological approach for noticing what people achieve in the ways they talk. Analysing how the designers answer questions and manage assumptions inherent in these questions has enabled identification of patterns in ways they manage being held accountable for their work. The detailed analysis of extracts of interactional talk shows that social interaction is highly ordered, containing patterns of sequential action, rather than being unpredictable as might be expected (Weatherall, 2015; Wiggins, 2017). This use of DP thus provides an empirical way of looking at patterns in the practical management of expectations regarding ways of doing sustainable design.

The empirical analyses relating to four topics of decision-making, values, responsibility, and influencing have been presented in the previous four chapters. In this chapter, I identify and discuss three themes that cut across the findings of the four analysis chapters. These cross-cutting themes are: managing the delicateness of talking about decision-making, values, and responsibility in sustainable design; portraying a committed identity as a sustainability-focused designer; and portraying being someone who takes action on sustainability. I then discuss the question of generalisability and application of DP findings, before outlining the implications and contributions of this research for design and for DP research. I conclude this chapter
with an evaluation of the research undertaken and some recommendations for future research.

8.1 Summary of findings

Before explaining and discussing the cross-cutting themes, it is useful to remind ourselves of the findings of the four previous chapters. In accounts of decision-making (chapter 4), the analysis found that participants manage in different ways the difficulty of articulating how design decisions are made. Some rejected the implication that specific decision points can be identified, and portrayed decisions as embedded within the design process. Others provided accounts of rationally weighing up options, thereby meeting expectations of objective decision-making in design, but then ‘confessed’ to intuition in the end. Based on these findings, it was argued that the notion of decision-making can be respecified, not as an action in itself, but as a concept that allows different ways of accounting for what one did. This makes a new contribution to the literature on design decision-making.

When talking specifically about sustainability-related decision-making in design, the analysis in chapter 4 also found that participants described a lack of power to make key sustainability-related decisions about products. We saw an example of a participant nevertheless claiming agency by portraying influencing other decision-makers as something they decided to do. Relatedly, the recurrent phenomenon of talking about influencing others, involving great effort, often described as ‘pushing for sustainability’, was noticed in the data (chapter 7). This depiction of influencing others was argued to be allowing portrayal of both commitment to and taking action on sustainability, as a way of negotiating limited agency to make final design decisions. This finding also makes a contribution to literature on decision-making and agency in design, by showing how the designers themselves find ways to manage the complexity of agency when asked to account for their actions.

When participants are asked whether their personal values informed their work, as is commonly theorised in design literature, talk of values was found to be associated with talk portraying identity (chapter 5). Stories of where values came from were offered, which represented identity work that portrayed commitment to sustainability as longstanding and deep. The strong commitment to sustainability was found to be contrasted with other designers who were not so committed, thus depicting the
individuality of the participants. When participants were asked about whether their values influenced their design work, there was agreement, but any descriptions of how this happened was found to be general. Values were portrayed as somehow naturally influencing decisions. It was argued that the notion of values in design could also be reconceptualised, to see it as being used to achieve different things in talk, rather than as a reflection of people’s inner realities. These finding make a contribution to literature on values in design and on designer identity. In short, in contrast to the portrayal in the literature of values as identifiable and able to be consciously used in design decision-making, the findings show the notion of values used in a different way, to portray commitment and individuality.

In talk about the concept of responsibility for sustainability in design, patterns in the ways different questions about responsibility were managed in different ways were found (chapter 6). Difficulty was observed in answering ‘who took responsibility’ or ‘who is responsible’ for sustainability in a particular project. In the end, these questions were found to be met with associating responsibility with seniority and decision-making power, which many of the designers claimed not to have. Responsibility was therefore associated with the action of making unspecified design decisions. In contrast, participants respond to being asked whether they personally feel responsible for how sustainable products are with strong affirmative replies without hesitation. In claiming to feel responsible, the participants portrayed themselves as good and committed people. Based on these findings, it was argued that the notion of responsibility can be understood in terms of how it is constructed and managed in different ways to either deflect or assume accountability for actions or outcomes. These findings fill a gap in the literature by showing how responsibility in design can be studied in an empirical way, to understand its practical use, to complement the large body of theoretical work on responsibility in sustainable design.

8.2 Cross-cutting inferences from findings
Three themes have been identified that cut across the findings of this study. These are: how participants manage the delicateness of being asked to talk about decision-making, values, and responsibility; how participants portray themselves as the kinds of people who are committed to sustainability; and how participants portray
themselves as the kinds of people who take action on sustainability. These themes represent ways the designers navigate assumptions regarding how they should act in their work in order to achieve more sustainable products. Participants avoid giving specific accounts of how decisions were made, how values influenced them, and who took responsibility for the decisions. Instead, through focusing their accounts on portraying their sustainability-related identities, the participants manage to still depict their personal roles in and contributions to sustainability.

8.2.1 Managing the delicateness of the psychological concepts

The first key cross-cutting theme in the findings relates to how the designers manage the assumption that they should be able to articulate how decisions were made, how values influenced decisions, and who took responsibility in particular projects. This expectation is built into in the interviews in particular, as the three concepts are directly asked about. In chapters 4 to 7, we have seen that the participants portray being asked to give accounts of these aspects of their work as difficult. Accounting for these aspects of the design process seems to be sensitive and delicate. This is perhaps surprising given the pervasiveness of theory and guidance on how to do design decision-making, taking into account values, and taking responsibility.

I will first sum up the different ways in which these concepts are treated as delicate. In chapter 4, we saw how the designers portrayed the delicateness of accounting for design decision-making. When participants were asked to talk about what decisions were made in a project, we saw avoidance of identifying and talking about specific decisions, which portrayed the request as difficult. To manage this difficulty, the participants focused on portraying design as a creative, intuitive, and perhaps mysterious process. Decision-making was depicted as hard to put into words. There was agreement with the implications in the interview questions that decisions must be being made within the design process, but what the decisions were and at what point they occurred was portrayed as difficult to articulate.

We also observed in chapter 4 that some participants did identify a specific decision to talk about, such as choosing a material or choosing between multiple design concepts. But when they were asked how the decision was made, we then saw difficulty. The difficulty is apparent in the fact that different ways of describing the decision-making process were provided in the same account. In these responses,
we first see accounts that construct rational decision-making processes, using criteria or methods for weighing up options (sometimes orienting to references to such rational methods in the questions or in prior talk). Then, at the end of these lengthy accounts, we see ‘confessions’ in which decisions are portrayed as actually having been made intuitively. The participants orient to expectations that they should be able to give a clear account of how they made a design decision, but in the end, they undermine their initial portrayal of an explicit decision-making process by claiming the final decision was made based on feelings or intuition, with this being portrayed as a negative thing.

When talking about values in design, we saw in chapter 5 that participants who are asked whether or how their values influence their design work describe how values influence their work in general terms, without any specifics. This suggests some difficulty in articulating how their values influence their work. In the data, the participants appear to embrace the idea of holding sustainability values and give detailed descriptions of where their values came from. Values are portrayed as somehow naturally influencing their design work. Talking about the origins of their values in detail works to avoid having to describe specifically how values inform design decisions.

In accounts of responsibility in design, we observed in chapter 7 that some ways of framing responsibility are treated as more delicate than others. Questions of who takes responsibility or who is responsible for sustainability of the products are treated as difficult to answer, whereas asking the designers if they feel responsible is met with strong affirmations, without difficulty. Different strategies are used, depending on the specificities of the questions, to either provide answers to who is responsible or who takes responsibility after tentatively talking through possible options, or to avoid providing a direct answer and instead explain why the designer themselves cannot be responsible.

I now consider what can be inferred from this treatment of the concepts as delicate and challenging to articulate and discuss how this theme in the findings relates to existing literature. The strategy of talking about design as a creative, intuitive process, avoiding identifying specific decision points, and without explicit awareness of how values influence, resonates with several prior studies. The participants’
descriptions of design as involving intuition and feelings resonate with the idea that
design is a creative process that may not involve rational, conscious thought. This
idea has been associated in particular with sustainable design. Friedberg and Lank
(2016) carried out a thematic analysis of interviews with designers, comparing so
called ‘green’ designers with other designers, and concluded that the green
designers more readily accepted not knowing and intuition as part of the design
process. Thus, it can be concluded that the designers in both studies portray
themselves as having carried out a creative process in which decisions occurred,
rather than as active decision-makers, consciously making decisions.

The finding that articulating the role of values in design is portrayed as difficult has
implications for the literature on values in design. The focus in much of the literature
on values in design is on how to ‘surface’ values and decide on which ones are
relevant to the design project in question (Coles & Norman, 2005; Davis & Nathan,
2015; Manders-Huits, 2011; Shilton, 2018; Trimingham, 2009). There is not sufficient
guidance on how these values should then be used in design, beyond the
assumption that values identified will be considered at the point of design choices
(Manders-Huits, 2011). In chapter 2, I highlight that some authors argue that
identifying what values are relevant to a design project using methods such as Value
Sensitive Design (VSD) may be difficult, as there may be conflicting values held by
different stakeholders (Manders-Huits, 2011; Shilton, 2018). Furthermore, we saw
that Borning and Muller (2012) and Boenink and Kudina (2020) criticise authors of
VSD literature for not providing enough detail about how they interpreted what
participants said in order to produce lists of values. These authors call for more
careful reflection on whether and how personal values can be identified (Cummings,
2006; Davis & Nathan, 2015; S. H. Schwartz et al., 2012). Yet based on my findings,
there is a further issue of whether the notion of values can be treated as clear
concept that is used and understood in a similar way in different situations. When
talking about values in their accounts of their work, the designers in the present
study use talk about values to portray their identities as committed to sustainability.
This highlights how talk is action-oriented and context specific, and so we cannot
assume that what the participants say about their values in interview settings will be
reflected in other settings in which they may talk about values. Therefore, methods
such as VSD should take into account the fact that what participants say about
values is constructed within the specific interactional context in which values are discussed and will accomplish a specific action relevant to that context.

The portrayal by some participants of intuition and feelings as somehow undermining a rational decision-making process gives some insights into how the designers are navigating different expectations of how design decisions should be made. The responses of the participants who provided initial accounts of rational decision processes involving weighing up options, resonate with the assumptions inherent in the decision support tools that are widely advocated, especially in engineering design literature, to try to achieve objectivity (Jin & Danesh, 2006; Kiker et al., 2005), as discussed in chapter 2. It is particularly interesting to recall that proponents of decision support tools in design suggest that their use helps designers avoid falling back on intuition to solve complex problems (Kiker et al., 2005). Thus, in MCDA literature, falling back on intuition is typically portrayed as a negative thing. In the data, the participants who first give an account of a rational method do indeed portray ‘falling back on’ intuition in the end. We observe that the designers depict the intuitive decision-making as something to be confessed and thus not the desirable approach, again resonating with the literature on decision support tools.

The difficulty of using a rational approach to identify a final option and so make a final decision is also acknowledged in some of the MCDA literature. As discussed in chapter 2, the decision support tools promoted to designers such as MCDA methods don’t always claim to lead to identifying one option to choose, but instead claim to help narrow down options. For example, Kiker et al. (2005) note that such tools may lead to ranking options or identifying acceptable and unacceptable options (reiterating that they are about supporting not making decisions). While there is perhaps an expectation that MCDA tools will guide the designer towards which option to choose, in the end the designer or whoever is using the tool must make a decision. This resonates with the participants’ accounts in which a rational explanation of how a decision is made is first given, followed by difficulty in articulating the act of choosing a final option, as the need for human judgement in the end is also portrayed but there is difficulty in articulating how this judgement is done. This is not to say that the participants’ accounts reflect a reality of how design decisions are made. They nevertheless show that the designers orient to expectation
that a rational method should be used, and also to the need for human judgement at the end, in the ways they construct their accounts.

The findings on how participants manage the difficulty of identifying who is responsible give insights into the variable ways designers can construct and navigate responsibility. We may consider that identifying who is responsible in a given context as a reasonable thing to be expected to do. But we can infer from the responses that the concept of responsibility for sustainability is not straightforward to articulate. Indeed, in the design literature, the question of who is responsible for the sustainability of products is contested (Fahlquist et al., 2014; van de Poel et al., 2015). The interview data shows that there are several different ways responsibility can be constructed in questions, and that these are managed differently in responses, by either talking through possible answers, deflecting responsibility to others, or assuming responsibility oneself. This resonates with the argument made by several authors in design and innovation, that the meaning of responsibility in design lacks clarity (Burget et al., 2017; Fry, 2004; van de Poel & Sand, 2018). Yet rather than trying to clarify different ways of talking about responsibility in design theoretically, we can observe how the designers themselves respond to and use different formulations of responsibility to portray either lack of power or to portray action and being a caring person.

We have seen that the designers conceptualise responsibility either as tied to the action of decision-making (with the decisions being unspecified), and so can be assumed or deflected depending on whether the participants claim to have agency to make design decisions or not. Or they conceptualise responsibility as a feeling associated with backwards-looking culpability for the environmental impacts of products they have designed. The portrayal of responsibility as associated with the action of decision-making here treats decision-making as an identifiable action. This is in contrast to the findings of chapter 4, in which the process of decision-making is portrayed as difficult to articulate and involving various actions. These two different ways of portraying design decision-making, as complex and involving various actions and intuition (chapter 4), or as identifiable actions to which responsibility is tied (chapter 6), demonstrate that the concept of decision-making is constructed
differently in different interactional contexts. There is therefore no single interpretation of what design decision-making means.

Overall, questions about what design decisions were made, how they were made, how values influenced them, and who was responsible are treated as difficult to answer. Decision-making, values, and responsibility are portrayed as not being straightforward concepts in the design context, but each comes with varied expectations that can be challenging to navigate. Despite the difficulty, the participants provide responses to the questions asked. Rapley (2012) suggests that in such cases, participants may be seeking to be ‘good participants’ and be helpful to the researcher by meeting their expectations through providing responses. The DP analysis allows us to see how the nebulousness of these concepts and expectations surrounding them are managed in the ways the designers respond.

8.2.2 Identity work – ‘the kind of person I am’

The second cross-cutting theme we see in the findings is that the participants often take the opportunity when giving their accounts of their work to portray themselves as the kind of person who cares about the environment and is committed to sustainability. This may seem like something we would expect to see, since the interview participants were selected based on their interest in sustainable design, and the conference panel discussions were also focused on sustainable design. The participants may therefore be orienting to expectations that they must be a sustainability-focused person to qualify to take part in the interviews or panel discussions. But the point here is that we notice in the data how proactively participants reiterate their sustainability-focused identity, when they are asked a question about a product or a decision rather than about themselves. In this way, the designers make their accounts personal, to portray personal meaning and influence in their work. In some instances, there is evidence that participants are doing identity work in their talk to compensate for some of the difficulty depicted in articulating actions related to decision-making, values, and responsibility, to reiterate being the right kind of people to be talking about sustainable design.

I first sum up the findings that show participants portraying themselves as committed to and caring about sustainability. This is most apparent in the analysis of talk about values and caring. We see a pattern of participants linking talk of values in design to
identity by producing detailed narratives portraying where their sustainability values came from. Through these narratives, the participants portray strong and longstanding commitment to sustainability, often referencing childhood experiences, as a feature of who they are personally. In some cases, the participants use their narratives of being committed to sustainability to make a contrast to other designers who are portrayed as not caring so much, thus depicting there being something unusual and perhaps special about their own commitment. This allows the designers to claim individuality, as being different from others. There is portrayal of an identity conflict in the participants’ talk between caring about the environment and being a designer, given the many negative environmental impacts of most products.

The portrayal of commitment to sustainability is also seen in the analysis of talk about responsibility. In particular, interview participants who are asked ‘do you feel responsible for the sustainability of the products’, or variations on this question, reply straightaway with strong affirmative answers. The question directly asks the participants about themselves, and so they are able to respond with claims about themselves and do identity work to portray the sort of person they are. The framing of responsibility as a feeling rather than as relating to action taken means the claim cannot be practically disproved by others. Claiming to feel responsible is a way of portraying being personally moved by and caring about sustainability, since ‘feeling’ responsible infers an emotional response.

I now consider how these findings relate to existing research. Research on identity in design is limited (Kunrath et al., 2020; Liu & Hinds, 2012), and so these findings add a new dimension to this emerging body of work. Several prior studies have focused on understanding identity for designers as a category of professionals. For example, Liu and Hinds (2012) sought to understand designers’ perspectives on their roles, through carrying out phenomenological interviews with industrial designers, asking them about how they viewed their profession. They found the designers drew on art, engineering, and business rhetorics, and that newer designers drew more on the art rhetoric than experienced designers, who replaced art for the business rhetoric. The engineering rhetoric remained strongest for both. Similarly, Kunrath et al. (2020) compared how designers, design professors, and managers conceptualised the role of the designer in interviews. They found that the designers conceptualised their
roles in technical terms, the professors used creative terms, and the managers favoured a business framing involving satisfying clients. These findings relate to the contrasting approaches to design discussed in chapter 2.1, of creativity versus technical engineering design. However, these studies provide insights into how designers portray their identity of being a professional designer in general, rather than in relation to specific values and priorities such as sustainability. One study by Friedberg and Lank (2016) focused specifically on identity portrayal by sustainability focused designers. Based on a thematic analysis of interviews with ‘green’ designers, they also found that participants provided narratives of personal commitment to sustainability in their work and non-work lives, concluding from this that the designers were guided by a deep ethos. My study adds to this by showing the detail of how identity work is done in talk by sustainability-focused designers, and, in particular, how the talk of the role of values in design is used to share identity narratives.

8.2.3 Identity work – ‘what I do’

Also demonstrating identity work, the third key theme derived from the findings is that participants portray not only ‘the kind of person I am’ but ‘what I do’ for sustainability. As well as constructing accounts of being someone who cares about the environment, we see portrayal of being someone who takes action about sustainability. Again, this is not only seen when participants are asked about what they do, but also when they are asked questions about products.

I will start by summarising the findings that show participants navigating agency. First, we see that the problem of not being able to make final design decisions related to sustainability is established. Then, we see that the participants highlight other ways in which they have agency. The designers refute or downplay their agency to make decisions in different ways. In some cases, participants explicitly claim they aren’t able to make final decisions related to sustainability in their roles as designers. In other cases, it is more subtle. For example, the pattern discussed in section 8.2.1 of designers portraying decisions as somehow taking place within a creative design process perhaps enables the designers to portray themselves as having less agency in decision-making than expected, since there is a portrayal of not being consciously aware of decisions being made. In the first extract presented
Navigating expectations for sustainable product design: a DP analysis

in chapter 4, the designer explicitly describes the materials as speaking back to him during the creative design process. This resonates with theory in design and science and technology studies on objects and materials also somehow possessing agency and influencing the outcome, in collaboration with the designer (Babri et al., 2022; Verbeek, 2005).

In several interviews we have seen how the participants portray themselves not as decision-makers but as pushing or influencing colleagues and clients towards more sustainable decisions (chapter 7). This enables them to claim agency in a different way in the context of not being final decision-makers. The participants are asked to talk about a particular product they designed, but instead they offer a narrative of the effort they made to try to make a product more sustainable, by influencing other decision-makers. There is portrayal of effort and perseverance and continuously taking action despite facing difficulties. We also see talk of pushing in the conference discussions, including a claim that pushing is a key aspect of a designer’s role. Conceptualising the role of a sustainability-focused designer as involving pushing is thus seen across the two different contexts of giving accounts. Portraying effort allows the designers to construct identities of being people who not only take interest in sustainability but who also do something about it, despite this being challenging. Additionally, when asked to talk about design decision-making (chapter 4), some of the participants frame the practice of influencing others to make more sustainable decisions as a design decision in itself. This reconceptualisation of what design decisions can be works to focus the account on what the designer does claim to have agency over, which is to decide to try to influence others.

In some of the accounts, the portrayal of being someone who does something about sustainability is closely linked with the portrayal of being someone who cares about sustainability. When participants expand further on what their efforts to influence others lead to, we see participants again describe their identity, rather than product achievements. There is depiction of having become a different person or being seen differently by colleagues – as the key person who focuses on sustainability in the organisation. Talking about how one’s identity has changed based on being viewed differently by others enables the participants to depict themselves as different from other colleagues. Again, this reflects other DP findings that show how people
Discussion

achieve differentiation through comparison with others (Benwell & Stokoe, 2006; Widdicombe & Wooffitt, 1990). In these instances, the comparison is not only between the participant and other designers, as seen in the discussion on identity work relating to commitment in section 8.2.2 above, but between the participant and other colleagues in the organisation. Thus, a further level of individuality and difference from others is depicted. Additionally, in the analysis of talk about values the participants also portray both caring about and taking action on sustainability. For example, there is a pattern of participants talking about deciding to become vegetarian at a young age when explaining where their values came from. The designers thus portray themselves as actively deciding to do what they can about sustainability, whether in their professional lives or personal lives, despite claimed structural barriers to making decisions about product sustainability.

I now discuss how these findings add empirical evidence to theoretical discussion of agency in design. The designers’ portrayal of lacking power to make decisions but influencing decision-makers as a way of claiming some agency resonates with actor network theory and relational agency theory in design. As discussed in chapter 2, it is widely remarked that design is not only done by designers, but among networks of many different stakeholders (Bell et al., 2011). Thus, the designers in this study claim a way of navigating agency within such networks. It has been put forward by several authors that designers have much less control over design outcomes than is commonly assumed by the general public and often by students entering design education (Bell et al., 2011; Feng & Feenberg, 2008; Richardson, 1993). This argument is supported by numerous studies based on empirical ethnographic work (Bucciarelli, 1994; Moore & Karvonen, 2008). Richardson (1993, p. 34) refers to this mismatch between students’ expectations when they begin studying design (of having control of design outcomes) and the reality of the design industry (where designers’ influence is limited) as a ‘crisis of identity’ for designers. Designers therefore need to find ways to navigate and manage the issue of agency and their identities as designers to overcome this crisis.

There is both theoretical and empirical literature on the changing role of designers, which indicate possible ways of navigating this ‘crisis of identity’ described by Richardson (1993, p. 34). Several authors have theorised how the designer’s role
should change. Press and Cooper (2017) argue that the role of the designer should expand from a focus solely on technical and aesthetic aspects, to including being an ‘active citizen’, including considering sustainability. Banerjee (2008) similarly proposes that the designer identity needs to become ‘agent of change’ for sustainability. These arguments imply that designers should actively be considering ethical issues and seeking ways to tackle them in order to bring about positive change in their places of work. As well as the present study, several recent empirical studies have indeed found evidence of designers reporting their roles as changing in these ways. Dokter et al. (2021) carried out interviews with designers on how they approach designing for a circular economy and, based on thematic coding, found that the role of the designer needs to be more strategic and collaborative in circular design. They found that designers need strong interpersonal skills to facilitate collaboration between stakeholders, and to convince clients of sustainability improvements. Similarly, Sumter et al. (2020) found that designers interviewed about their role in a circular economy reported needing to have skills to be able to engage and convince other stakeholders about more sustainable solutions. Friedberg and Lank (2016) also concluded from thematic analysis of interviews that ‘green’ designers were taking on extra roles to advocate for sustainability, such as the role of ‘catalyst’, through which they reported working to help companies change to more sustainable practices more quickly. In interviews with user experience designers working in large technological companies, Wong (2021) also found designers described how they sought to influence their organisations to take action on particular ethical issues, such as equality and diversity, as they reported not being decision-makers themselves. These studies clearly resonate with my finding that the participants portray themselves as working to influence and convince both colleagues and clients that they should be more focused on sustainability.

However, in these empirical studies, authors and participants employ fairly neutral framings of how designers work to influence others, in contrast to the more forceful depiction of pushing seen across my data. A more combative framing of how designers are working to influence other stakeholders regarding sustainability was found in an analysis of interviews with designers carried out by Liu and Hinds (2012). They found that participants described their roles as including negotiating but also at times fighting with engineers and product managers about technical and cost issues.
This description of fighting resonates more closely with the portrayal of ‘pushing’ found in my study, although it implies a two-way debate rather than one-way efforts to convince. However, it only features as a brief mention in Liu and Hinds’ (2012) paper, whereas the portrayal of pushing and effort is extensive across the present dataset. The specific framing of ‘pushing’ to demonstrate effort and perseverance being portrayed as a key part of the sustainability-focused designers’ role is therefore a new insight for this literature. The claim of the influencing work involving significant effort and force is used to depict the designers as determined and persistent.

Looking beyond design, this finding on pushing resonates with a large body of literature on the idea of an individual employee being a sustainability champion or ‘intrapreneur’, working to steer an organisation towards more sustainable practices from within (Andersson & Bateman, 2000; Padovan, 2017; Wood et al., 2016). Empirical research on sustainability champions has tended to select participants who already report to be acting as sustainability champions, to find out about their practices and motivations. For example, Howell et al., (2005) identified success factors for sustainability champions, based on a survey, as expressing enthusiasm and confidence about the suitability of the innovation, persisting under adversity, and getting the right people involved. Visser and Crane (2010) identify personal values and expertise as motivating factors for becoming a sustainability champion, based on a thematic analysis of life history interviews with sustainability managers working in different types of organisations. In contrast, in the present study, the participants were not originally characterised as sustainability champions or influencers by the researcher but were recruited based on them working on sustainable design. The depiction of champion-like practices (pushing, effort, convincing) as a way of portraying themselves doing something about sustainability despite reporting limited power to make significant decisions is an inductive, unexpected finding. The depiction of pushing and influencing therefore represents the designers’ own conceptualisation of their roles, rather than a concept introduced by the researcher at the outset.

These cross-cutting themes provide various insights for research and practice. However, given that talk is treated as constructed and context-specific in DP,
identifying what these insights are must be undertaken with caution. In the next section, I discuss the question of generalisability of DP findings, before outlining the contributions to sustainable design research and practice and to DP literature.

8.3 Generalisability and application of findings

DP researchers do not typically aim for generalisability of their findings across contexts (Goodman, 2008; Wiggins, 2017). The close analysis of a relatively small corpus of data enables findings about what participants are doing in their talk. Conclusions are drawn about patterns of discursive practices found in similar interactional contexts in the specific dataset analysed. The analysis approach treats talk as produced in context, and so we cannot assume that findings about what people do through their talk in one context can be transferred to another. This study does not therefore assume that sustainability-focused product designers talking about their work in different situations would use the discursive strategies identified in the dataset studied. If findings cannot be simply generalised to different contexts, this makes the practical application of DP research complex. Furthermore, the constructionist epistemological stance of DP makes identifying practical implications challenging, since there is no assumption that underlying reality can be known through analysis of what people say (Hepburn & Wiggins, 2007; Wiggins, 2017).

However, Goodman (2008) argues that DP researchers can sometimes describe their findings as generalisable to other contexts, and that they should not dismiss the potential practical implications of their findings. He proposes that ‘discursive findings can be seen as highlighting generalisable actions performed by a rhetorical strategy’ (Goodman, 2008, p. 268). That is, a particular discursive strategy may be used in different settings to accomplish the same thing. He uses the example of people drawing on existing prejudice to justify further prejudice, seen in different types of interactional data. He proposes that describing this finding as generalisable doesn’t mean that the discursive strategies people will use in particular situations can be predicted, but that there is evidence that a particular discursive strategy is used successfully to achieve the same end in several contexts. In the present research, patterns of ways of accounting for actions related to sustainability in design occur across different interviews and also in some conference panel discussions (for example, claiming agency through describing influencing others when asked about
decision-making, or talking about childhood experiences of nature to portray commitment to sustainability). This suggests that some of the discursive strategies identified might be also found to be successfully used in other settings where designers are accounting for their actions. The potential of discursive strategies and accomplishments being transferred across related contexts can be strengthened by comparing the findings to those of other similar studies (Goodman, 2008). However, there have not to date been other DP studies of sustainability-focused designers giving accounts of their work, to enable such comparison.

On the question of application of DP findings, Wiggins (2017, p. 223) proposes that there are three appropriate ways in which DP research can ‘encourage change’. Firstly, DP findings can challenge existing research ideas, theories, and methods. Secondly, practical insights can be gained by showing aspects of social interaction that hadn’t been noticed before using the DP lens. Thirdly, participants’ discursive practices can be translated into active strategies for how to communicate in particular settings to achieve particular aims. For example, Hepburn and Wiggins (2007) show how DP analysis of therapy sessions can identify practical strategies for more effective therapy practice. In sections 8.4 and 8.5, I discuss how this study makes contributions to sustainable design and to DP in these three ways.

8.4 Contributions to sustainable design research and practice

The findings of this study make contributions to ideas and theory in sustainable design, and to design research methods. There are also some potential practical implications for guidance on sustainable design.

8.4.1 Challenging existing design ideas and theory

This research makes a key overall contribution to how the designer’s role and actions in sustainable design are conceptualised. Current literature on sustainable design focuses on the designer’s actions, such as decision-making, using values in decision-making, and accountability for such actions through taking responsibility for decisions. Yet the challenges of expecting designers to have the power to make key design decisions is recognised in existing literature. My study shows that when designers’ accounts of such actions are analysed, we see that they portray difficulty and limits to their agency, and construct narratives about their work that make their
roles in design meaningful and personal. The designers manage the complex issue of agency in design by portraying influencing other decision-makers as a meaningful aspect of their roles. They highlight the importance of identity in sustainable design, as a further way of adding personal meaning to their efforts despite describing barriers to practical action. Since sustainable design is not yet the norm, recognising how individual sustainability-focused designers construct personal meaning and claim agency over their work to negotiate challenging working environments is important. The field of design studies can be enhanced by empirical study of the perspectives and accounts of such designers.

This thesis also makes specific theoretical contributions to how the individual but related concepts of decision-making, values, and responsibility are conceptualised in design. In chapters 4 and 7, the findings show how the designers conceptualise design decision-making in different ways, depending on the purpose or in situ action served by the characterisation of decisions. Some are depicted as embedded in a creative design process and difficult to articulate. Key sustainable design decisions are portrayed as beyond the control of the designers. But rather than assuming that the designers’ accounts indicate that the design process can be messy, iterative and complex, as argued by many authors (Cross, 1997; Feng & Feenberg, 2008), these accounts of decision-making are specific to the context in which they are produced. We cannot assume they reflect a reality of what design decision-making involves. Thus, these findings offer a way of reconceptualising what decision-making is.

Theory on design decision-making should recognise that decision-making is a construct used to portray and make sense of a wide range of actions. People may give very different accounts of decision-making in the same project when talking about it in different settings.

In chapter 5, on values in design, a specific contribution to an emerging body of literature on designer identity is made. The findings show that identity work is used to warrant the notion of values. This might not seem surprising, but it highlights a pattern in talk about values that had not previously been identified. Identity work is used to portray commitment and individuality (being different from others), and to depict some sort of personal influence over design outcomes. Describing how values influence design work is treated as difficult. Therefore, the notion of values is not
used by the participants as a way of identifying explicit criteria for decision-making, as assumed in the prescriptive and empirical literature on values in design discussed in section 2.4. Instead, the findings demonstrate the importance of paying attention to how designers use the notion of values for a different purpose, to portray identity and commitment. These findings make a contribution to knowledge on designer identity. As outlined in sections 8.2.2 and 8.2.3, literature on designer identity is limited, and focuses on whether designers identify more with a creative, engineering or managerial approach to their profession (Kunrath et al., 2020; Liu & Hinds, 2012). The finding that the notion of values is used to do identity work represents a new contribution to understanding of designers’ identity portrayal. Furthermore, viewing values as a construct that can be used in different ways in different situations represents an additional way of conceptualising values in design, alongside the literature on values as personal or societal motivators and values as embedded in objects (Kroes & van de Poel, 2014; Spahn, 2014).

In chapter 6, we have seen how the notion of responsibility can be studied in an empirical way. Most literature on responsibility in design is theoretical. Analysing interactional talk about responsibility for sustainability in design has shown how the designers navigate different questions about responsibility. The findings show how being asked about being responsible, taking responsibility, and feeling responsibility are treated differently. The theoretical contribution is not to assume that the ways of managing these questions in interviews can be transferred to other settings, for example, that being asking directly ‘who is responsible’ will be treated as confrontational in other situations (although further studies might show a similar phenomenon). Instead, the contribution is to show how the notion of responsibility in design can be reconceptualised as a construct that is used and managed in different ways in different contexts, to either assume or deflect accountability for actions or consequences. Authors advocating for responsible designers should therefore consider whether they can be more specific about what specific actions they expect designers to take, or about what they mean by responsibility in a specific context.

8.4.2 Contributions to design research methods
This study makes a contribution to design research methods, by demonstrating how DP can be useful for gaining new insights related to the design context. A
Navigating expectations for sustainable product design: a DP analysis

psychological approach can be useful for any discipline or context since psychology is about behaviour or actions. DP offers a way of specifically focusing on understanding what people do and accomplish in their talk, and so how psychological topics can be studied by looking at interactions (Potter, 2005). While we may instinctively view the way we talk as somewhat chaotic, variable, or disordered, DP shows how organised talk tends to be, through the identification of patterns in ways of talking and responding across participants, which can be surprising in terms of how much similarity we see (Wetherell, 2007). Based on how people talk about design, DP enables us to notice and identify the functions of ways of talking that may already seem familiar to us, as people who engage in interactional talk. As explained above, the findings of this study show how the psychological constructs of decision-making, values, agency, and responsibility can be reconceptualised in design, based on how designers use and manage these notions in accounts of their work. Despite extensive theory and guidance, accounting for how the concepts of decision-making, values and responsibility come into the design process in practice is not obvious. Rather than seeking to make these concepts more obvious and observable, this DP analysis shows that when studying the psychology of design, we can instead examine how their nebulousness is constructed and managed. This approach helps us appreciate some of the difficulties designers face when being held to account for their actions and understand why sustainability may not always be able to be prioritised using clear decision-making methods, despite motivation for this. While using methods and ideas from psychology is common in design research, these are usually taken from cognitive and experimental psychology (Cross, 2001a; Liedtka, 2015; Lloyd et al., 1995). Using DP offers a different way of looking at design from a psychological perspective.

Since DP is particularly useful for analysing how designers respond when held to account, it is particularly appropriate for analysing designers’ reflective accounts of their work. Accounts have an action orientation, which may involve explaining, questioning, and justifying prior actions. Reflective practice is widely advocated in design (Lousberg et al., 2020; Schon, 2008; Tracey & Hutchinson, 2013). Student and professional designers are advised to engage in reflection about their design processes, in order to interpret, evaluate, and improve their approaches to their work.
(J. McDonnell, 2016; Tracey & Hutchinson, 2013). As well as reflecting during the design process (reflection-in-action), designers are often asked to reflect back on finished projects (reflection-on-action) (Schon, 2008). DP can be applied to either type of reflective account, either through recording audio of verbal conversations, or gathering written accounts in question-and-answer format. Reflection is likely to include accounting for decisions made, thus analysing such accounts can give insights into how accountability for decisions and actions is managed in particular contexts.

Several studies have analysed student designers’ reflections on their work, focusing on understanding the usefulness and skills of reflective practice in design. For example, Tracey and Hutchinson (2013) asked students to write reflective journals over a semester about what the design role entails, their experiences as designers, and what it meant to them to be a designer. Their analysis focused on identifying how much ‘productive reflection’ different students undertook related to the different topics asked about and at different stages of their projects. They concluded that the reflective journaling helped students find ways to manage uncertainty and ambiguity in their design practices and roles. Similarly, Lousberg et al. (2020) gave student designers questionnaires to help them reflect on their work in relation to academic literature. They found that the use of questionnaires guided the students and helped improve their reflection skills over time. Again, the focus of this study was not on analysing what the students were specifically saying in their reflections in response to the questions asked, but on the effectiveness of engaging in reflective practice. The present study demonstrates that DP can provide a different way of analysing reflective accounts, to find out what actions are being accomplished through the accounts themselves, rather than viewing the accounts as instrumental in helping improve design work. Identifying what actions designers are engaging in within their accounts, whether managing expectations, portraying personal identity, denying or claiming agency, or something else, can help us better understand how they navigate the context of being a professional designer (without making any assumptions about their actual design work).

The findings of this study also make contributions to interview research methods. Interviewing designers about their work is a common method in design studies
Navigating expectations for sustainable product design: a DP analysis

(Mate, 2006; Surma-aho et al., 2019; Zannier et al., 2007), as in many social science disciplines. The analysis on responsibility for sustainability in chapter 6 offers some specific insights for how to conduct such research interviews. In the interview data, being asked who took responsibility for sustainability was treated as a difficult question, with participants eventually identifying an answer based on who had made decisions. Being asked who is responsible was treated as a difficult and also confrontational question, which was met by the designers with claims of how they lacked agency and so couldn’t be responsible. Whereas being asked whether they feel responsible was associated with more positive responses where responsibility was assumed. Some of the discursive patterns identified in this study may occur in other interviews, where some ways of asking about responsibility are met with deflection and others with assuming accountability. Design researchers using interviews should therefore be aware that the specific wording of their questions, and the sequential talk in the interaction of the interview, matter. Researchers should carefully consider how they are wording their questions, and whether they are keeping their questions consistent across participants. When analysing interviews, participants’ responses should not be taken as evidence of a phenomenon out of context but should be analysed in conjunction with the questions and surrounding talk (Potter & Hepburn, 2012; Rapley, 2012).

8.4.3 Practical implications for sustainable design

As discussed in section 8.3, the context-specific and constructed nature of interactional talk means that findings from the dataset studied cannot be generalised to other contexts. Nevertheless, it is worth highlighting the potential implications of the findings for professional design settings. The overall implication from this research relates to guidance on sustainable design. Since advising designers on how they can achieve more sustainable outcomes involves constructing expectations about what designers can or should do, authors of guidance on sustainable design should consider what assumptions they are making about designers’ roles, actions, and agency. There are two specific aspects people working on sustainable design guidance and practice could consider based on the discursive strategies identified in this study.
Firstly, guidance on how to make more sustainable design decisions, produced by academic authors or by sustainability campaign organisations such as the Ellen MacArthur Foundation, could take into account how the designers in this study conceptualise design decision-making as difficult to articulate. It is worth considering that decision-making is a construct used to describe and make sense of a process that may involve various actions, which may not be easy to specify or account for (as found in chapter 4). There may be complexity around who is undertaking such actions, and who is making a final choice, and so agency to make decisions may be tricky to negotiate (as found in chapter 7). Guidance on sustainable design decision-making could explicitly acknowledge the potential complexity and difficulty and could include some examples of designers’ reflective accounts of how such decision-making is done (which may also include reflection on values in design). This could encourage dialogue on the complexity of articulating design decision-making, to help develop more refined guidance on some of the specific actions claimed to be involved, and on ways of negotiating agency.

Secondly, since the notion of responsibility for sustainability has been found to be navigated in different ways depending on the different ways it was asked about (chapter 6), stakeholders working in design could take care when talking about and allocating responsibility in professional settings. Managers allocating responsibility should pay attention to the specific framings of responsibility they use (whether saying someone ‘is responsible’ or that they should ‘take responsibility’, for example), as these may be negotiated differently by the colleagues in question, which may lead to different actions.

Additionally, and more broadly, if the analysis and findings are read, interpreted, and discussed by designers, design educators, and sustainable design advocacy organisations, such discussion in itself may contribute to beneficial impacts for design guidance and practice. The research has highlighted some of the discursive strategies the designers use to navigate accountability for sustainability, which may not have been noticed before. Simply highlighting these may help design stakeholders reconsider some of the assumptions they hold about sustainable design and find different and more effective ways of advising on and doing sustainable design.
8.5 Contributions to discursive psychology

This research also makes contributions to the DP literature in general, beyond the context of design. Through this study, I make a general contribution to DP literature by extending to a new context, that of sustainable design, adding to an emerging body of discursive work on different aspects of sustainability (Kurz & Prosser, 2021). More specifically, the research makes contributions in terms of demonstrating how further psychological topics can be respecified, from a cognitive framing to a discursive one, adding to a body of work on identity in talk, and providing insights on how agency is negotiated in talk. These contributions are similar to some of the contributions to sustainable design outlined above. Nevertheless, I spell them out again here in order to show how the thesis findings relate to existing DP literature.

8.5.1 Respecifying further psychological topics

DP work often proposes that common topics studied in psychology can be respecified, by examining them in terms of how they are evoked, used and managed in talk (Edwards, 1999; Wiggins, 2017). Some psychological topics have been a particular focus in DP literature. Among the most prominent topics are attitudes, identity, memory, emotions, prejudice, ideology, and accountability (Huma et al., 2020; Tileaga & Stokoe, 2015). In this study, the analysis shows how decision-making, agency, values, and responsibility (a concept that is related to accountability) can also be respecified as constructed in talk rather than treated as cognitive processes or entities.

How decision-making can be respecified based on how participants talk about it has been demonstrated in chapter 4. Accounting for a decision as an identifiable action is portrayed as complex, and so participants construct what decisions are and what they involve in different ways, covering a range of actions and processes. Several conversation analysis (CA) studies have sought to observe decision-making in meetings or other encounters, from a similar perspective to DP, which also show that there is complexity in identifying decision-making. For example, Huisman (2001) identifies linguistic features that constitute decision-making in meetings in Dutch companies and concludes that what counts as a decision depends on the specific interactional context involved. Wasson (2016) shows how a decision is gradually negotiated in a meeting across 162 turns. Yet there has not been much DP or CA
work involving analysing accounts of decision-making, to understand how people account for decisions made in a particular situation and conceptualise what decision-making involves. One example comes from Ivaldi and Whitehead (2021) who interviewed walkers about the decisions they made when climbing mountains in the UK. In their DP analysis they found that the walkers portrayed others to have made questionable judgements and portrayed shared accountability for decisions. They also argue that decision-making is a socially constructed phenomenon that is negotiated and depicted in different ways in accounts. There is an opportunity for further research to examine decision-making from this DP perspective in different settings, to further reconceptualise how decision-making can be understood. Also related to decision-making, the findings from chapter 7 also show how agency can be understood as constructed and negotiated, rather than something that can be reported in terms of the extent to which it exists out there. Contributions to a body of DP literature on agency are discussed in section 8.5.3.

How the concept of values can be respecified is shown in chapter 5. The notion of values is examined in terms of how it is used, to portray identity and commitment (rather than as criteria to reflect on in decision-making). The concept of values is related to attitudes. Based on common definitions of the terms, what someone values as important will theoretically be associated with how they feel about (and so what attitude they have to) particular issues. This DP research on values therefore adds a further dimension to the existing body of DP work on attitudes. DP authors have proposed that other social psychological approaches often seek to discover underlying attitudes and question the appropriateness of this (Potter & Wetherell, 1987; Puchta & Potter, 2002). They show that analysis of interactions indicates that talk that portrays attitudes is constructed in its specific context. For example, Puchta and Potter (2002) studied market research focus groups and showed how moderators depict aspects of what participants have said as their stable opinions, removing rhetorical, context-specific aspects of the talk. Similarly, Niska and Nikander (2021) studied attitudes of older workers to delaying retirement age in interviews. Their analysis focused on identifying how particular discursive resources that depicted particular attitudes were used to undermine the political goal of delaying retirement. These studies demonstrate that attitudes can be studied in terms of how they are produced in talk and what such talk is achieving in particular
interactional settings. The findings of the present study also show that the related concept of values can be studied in this way, rather than trying to uncover what people’s underlying values are.

Turning to how responsibility can be respecified, DP work to date has treated responsibility as accountability and blame and has examined how these are constructed and managed in specific interactional settings. This work respecifies accountability as something that is constructed in talk, rather than as a concept that reflects an underlying reality. For example, LeCouteur and Oxlad (2011) studied how men in domestic violence counselling groups build a picture of the women victims being to blame. They found that the men used subtle categorisations associated with being a woman to depict the victims as having violated an accepted moral code, such as through drinking alcohol or not being at home enough. Sneijder and Te Molder (2005) studied how participants in online discussions of veganism attribute blame for dietary deficiencies to individuals’ neglectful practices, rather than to the concept of veganism. Discussion forum participants were found to be using script formulations (where something is ‘scripted’ as typical or routine, (Edwards, 1994)), such as ‘if you eat a varied diet, there shouldn’t be any problems’. The authors conclude that this enables them to combine morality with logic and attribute responsibility to individuals (Sneijder & Te Molder, 2005, p. 675).

However, notion of accountability for past actions is only one way of defining responsibility (Fahlquist et al., 2014; van de Poel & Sand, 2018). It is commonly known that there are different ways of talking about responsibility (Albin, 2018; Robinson & Smith, 2012). Yet there has not to date been research on specifically how these different ways are navigated. This detailed examination of how different formulations of questions about responsibility are managed in different ways therefore represents a new contribution to DP literature. The present study shows how responsibility can be treated as tied to the action of decision-making, or as a feeling associated with culpability. The analysis shows that responsibility as tied to deciding can be conceptualised in different ways (such as being responsible or taking responsibility). Different ways of asking about responsibility as an action are associated with responsibility either being deflecting or assumed. Despite a lack of DP work on talk about responsibility, one other DP study has also found that
responsibility is conceptualised in different ways in the same situation. In a DP study about adults with intellectual disabilities and diabetes, Rouse and Finlay (2016) found that supporters of these adults positioned them as independent and personally responsible, but also lacking independence and not responsible. They found that the people with intellectual disabilities claimed empowering identities to counteract the narrative of not being independent. Similar to the present study, personal responsibility is treated in a different way from responsibility as independent agency.

Furthermore, the way in which each of the topics in the present research have been studied differs from other DP work, since the participants were explicitly asked about them. Potter (2005, p. 741) proposes that DP treats psychological concepts and categories as ‘embedded in interaction’. In this study, the psychological topics of decision-making, values, and responsibility are brought to the forefront by directly naming and asking about them. Nevertheless, despite naming them, the ways these concepts are described portray them as embedded in the designers’ (and other stakeholders’) ways of working and challenging to clearly articulate. For example, decisions are described by some participants as embedded within a creative process, and values are depicted as somehow automatically influencing design decisions. Thus, while explicitly naming the concepts enables researchers to direct the topic of talk, this does not mean that the actions of making decisions, using values, or being responsible can be made explicit.

### 8.5.2 Adding to body of work on identity in talk

In terms of identity, my findings in some ways resonate with prior DP work, and in other ways add new insights. In the DP literature, there is extensive work on how identity is constructed in talk, and how people negotiate their identities in interactions (McKinlay & McVittie, 2009). In DP, identity is treated as something that is ‘achieved, negotiated and contested’ through talk (Tuffin, 2005, p. 143). While some DP research explicitly aims from the outset to identify how identities are constructed in talk (Lindahl Norberg & Strand, 2022; McLean, 2012; Miller & Benkwitz, 2016), in many cases, identity work is noticed in a wide range of data and situations (Tuffin, 2005; Wiggins, 2017). In the present study, there is a pattern of interviewees responding to questions about products with accounts of personal motivation regarding sustainability. I primarily find that the participants are doing this identity
work in order to claim strong commitment to sustainability and to make their accounts more personal and meaningful. In chapter 5, we have seen how participants provided personal narratives about childhood or educational experiences when asked if their values influenced their work. Talk of values enables the participants to do identity work, through describing where the sustainability values came from. This constructs their identities as people who are deeply committed to seeking ways to protect the environment. Portraying personal commitment helps the participants navigate expectations that they should be making the products they design more sustainable, when they may not be in a position to bring this about. These findings resonate with other DP findings on how it is common for participants tell personal stories in interviews (Benwell & Stokoe, 2006). Indeed, being asked to talk about your work in an interview or being asked to speak about your work on a conference panel, is an opportunity to construct a personal account and portray yourself to others in particular ways.

We also saw in chapter 5 that these personal narratives also involved constructing comparisons, to portray the participant as different from others, who are portrayed as not caring about or considering the environmental impacts of their work sufficiently. This enables the designers to claim individuality and perhaps even moral superiority, given that sustainability is a shared moral issue. In other DP and CA studies, people are found to construct their own identities by making comparisons with others (Benwell & Stokoe, 2006; Tajfel, 1982; Tuffin, 2005; Widdicombe & Wooffitt, 1990; Widdicombe & Xie, 2020). The findings from the present study therefore reflect common discursive strategies seen in identity work. However, the fact that it is the notion of personal values that enables the designers to focus on identity, through explaining the origins of values, is a new contribution. While the concept of values is commonly theorised in psychology as being a component of identity (Hitlin, 2011), specifically how values talk plays a role in identity work has not been a focus of prior DP work.

In sections 8.2.2 and 8.2.3 I have discussed how the findings on identity work relate to portrayal of both being and doing. In the context of sustainability, Kurz et al. (2020) also identify how people can portray both being and doing as part of their identity. They propose that people can identify with opinion-based identity groups,
such as being an environmentalist, and/or practice-based identity groups, such as vegans, involving particular consumption practices. To translate this into the context of sustainable design, we have seen that the participants portray themselves both as being people who care about the environment, and people who take action through seeking to embed sustainability in their design work. The link is thus made between identity and taking action.

8.5.3 Insights on negotiating agency

In terms of agency, my findings also in some ways resonate with other DP work in other contexts, and in other ways add some new insights. Widdicombe and Marinho (2021) have discussed how agency can be reconceptualised from a DP perspective in a chapter about researching identity, proposing that agency can become researchable through analysing how it is constructed and navigated in the ways people talk. My findings on how agency in decision-making is navigated in talk resonate with those of several other studies that have analysed accounts of decision-making in different contexts. For example, in analysis of focus groups with nurses looking at how they accounted for decision-making, Traynor et al. (2010) found that participants talked both about a lack of autonomy to make clinical decisions, but also about their influence on such decisions. Like in the present study, the participants navigate agency by claiming their role as influencing decisions rather than making decisions. In interviews with job seekers in Greece, Figgou (2020) found that participants described themselves as both having agency to find jobs, and also being victims of economic crisis and so unable to find a job. Across these studies we see a pattern of constructing both control and limits to control in the same situation. In giving an account of decision-making, there are different ways of depicting what counts as decisions and of portraying agency in making or influencing decisions. The present study contributes to this body of work in highlighting how the issue of lacking agency to make final decisions, while often being expected to be the decision-maker, is managed in the context of sustainable design. Additionally, the findings on the phenomenon of constructing the practice of ‘pushing’ to influence decisions point to a new area of focus for DP literature, to consider where ‘pushing’ is used in other contexts and for what ends, as well as other ways people construct accounts of influencing and convincing others.
8.6 Evaluation of the research

8.6.1 Strengths, limitations, and recommendations for further research

The key strengths of this work are as follows. Firstly, the DP approach has been successfully applied to a new setting, that of sustainable design. The thesis demonstrates how DP can be used to analyse interviews and panel discussions with designers from an interactional, action-oriented perspective. Secondly, the findings have successfully answered the three research questions on how designers account for their actions regarding sustainability and navigate expectations of what they should be doing. Additionally, talk relating to a data-led topic of influencing has been analysed to provide a fourth focus of the thesis. The connections between the four analysis chapters have been identified and discussed in this chapter, demonstrating that the different topics analysed are closely related and form a coherent body of work as a whole. The findings on what the designers accomplish when accounting for their work have particular relevance to reflective practice in design and to design research involving analysis of accounts. Thirdly, the research has included examination of the co-created setting of research interviews, plus the naturally occurring setting of conference panel discussions, finding similar patterns of actions on values/caring regarding identity work, and on influencing/pushing to claim agency. This use of two types of data shows that research interviews can involve similar patterns of interactions to other settings in which accounts are given.

Three key limitations and areas for further research are identified. The first limitation relates to the fact that there has been less focus on the panel discussion in the analysis. The fact that the analysis focused more on the interviews is justified in a DP analysis of a corpus of data, since the data to be analysed closely are selected based on their relevance and being interesting, and on where sequential patterns are seen (Wiggins, 2017). Nevertheless, further examples of conference discussions on sustainable design, in which designers are asked about their work and roles, could be gathered over time to produce a larger corpus of this type of interactions. This may add to the present findings on accounting for decision-making, values, and responsibility, or may provide new additional insights into ways of navigating assumptions about designers’ roles.
The second limitation is that the findings from the analysis of interviews primarily give insights into how accounting is done in interviews (as discussed in section 8.3). While this is useful in itself as, discussed in section 8.4.2, there is an opportunity to also examine further settings where designers are held to account for their actions. Since this thesis has already looked at the public setting of conference panel discussions, further research could involve examining additional naturally occurring interactions to see how designers account for their work and navigate expectations regarding sustainability. Such data could be collected from recording appraisals and review meetings between designers and managers, review meetings between designers and clients, and job interviews where designers are asked to talk about their actions and responsibilities in their past roles. In these different settings, it may be useful to also examine multi-modal forms of interaction, such as gestures, sketching or noting things down, if interesting ways of communicating are observed beyond talk. Since such meetings are likely to include sensitive data, particular effort would be needed to secure informed consent and to ensure anonymity.

The third way in which this research could be enhanced is to look beyond designers’ accounts, to other stakeholders. Given the multistakeholder character of design, there is an opportunity to also examine how people in different roles, such as managers, clients, technicians, etcetera, account for their actions related to making products more sustainable. Building such a body of research would enable interesting comparisons between how different stakeholders involved in design conceptualise and account for their actions and navigate different expectations of more sustainable production.

8.6.2 Reflections on the interdisciplinary approach
This thesis demonstrates how research can draw on and contribute to two disciplines, social psychology, and design studies. The research approach of DP came from social psychology, which was used to study the context of sustainable design. The research is primarily situated within sustainable design and production literature, and so primarily (although not solely) aimed to make contributions to this literature by showing how designers account for and conceptualise their actions related to sustainability. Since DP is not commonly used in design studies, this study seeks to introduce the methodological approach to a sustainable design audience.
Navigating expectations for sustainable product design: a DP analysis

The thesis has therefore needed to be written in a way that is accessible to researchers who are not familiar with DP.

This interdisciplinary approach has presented some challenges. Writing a thesis that is accessible and convincing to both design and DP scholars means engaging with and explaining norms and theories from both, without assuming prior knowledge of specific literature, ideas, and methods. Seeking appropriate journals to publish the outputs of this interdisciplinary research is difficult, since journals situated in different disciplines have different norms and expectations regarding what constitutes methodological rigour, the role of theory in research, what constitutes a theoretical contribution, and what sorts of practical implications can or should be extrapolated from a given set of findings.

Nevertheless, using a psychological research method to analyse the context of sustainable design has been fruitful since it has given rise to some new insights that contribute to the design literature on decision-making, values, responsibility, agency, identity, and influencing. Interdisciplinary research is increasingly favoured by funding bodies, policy makers, universities, and students (Leahey & Barringer, 2020; Rhoten & Parker, 2004; Van Noorden, 2015). For complex global challenges such as sustainability, it is widely recognised that knowledge must come from a wide range of disciplinary perspectives, and that it is often fruitful to combine perspectives to gain new insights (Freeth & Caniglia, 2020; Leahey & Barringer, 2020). Having carried out this research, I conclude that the benefits of working across disciplines in terms of the outcomes outweigh the challenges associated with disciplinary rigidity.

8.7 Conclusion

This thesis has argued that literature on sustainable design constructs numerous assumptions about designers’ roles and actions. It has presented analysis of designers’ accounts of their work to show how they manage such assumptions. In the sustainable design literature, assumptions can be inferred about designers’ agency to make decisions; about how these decisions should be made; about the role of values in decision-making; and about who is responsible for how sustainable outcomes are. Much of this literature is either theoretical or normative, providing prescriptive advice to designers on how they should act. Yet there is a gap in terms of understanding how designers themselves characterise decision-making, the role
of values, and responsibility in design with regards to sustainability. This research has used discursive psychology (DP) to analyse sustainability-focused product designers’ accounts of their work, collected using semi-structured interviews and from conference panel discussions, to understand how they conceptualise their actions and roles. DP examines talk in terms of what actions are being accomplished, and treats talk as constructed in its specific context rather than reflecting an external reality. This use of DP to study reflective accounts of sustainable design makes a methodological contribution to design studies.

The analysis has given rise to several key findings. Firstly, decision-making, values, and responsibility are shown to be treated as delicate, and difficult to articulate in terms of how they work in design. The data show how these concepts are constructed and accounted for in different ways depending on the interactional context. These findings contribute to a reconceptualisation of how decision-making, values, and responsibility are understood in design theory and research. Secondly, the analysis shows how identity work is used in accounts of design projects to claim longstanding commitment to sustainability, and to portray being different from other designers. This enables the participants to make their accounts of their work personal and meaningful. These insights contribute to an emerging body of literature on designer identity. Thirdly, the analysis shows how the designers navigate the complex issue of agency in design decision-making. They describe a lack of power to make decisions regarding how sustainable products are but claim agency by portraying influencing or pushing others towards sustainability. This enables them to focus on what they can do, rather than on their limits to agency, and portray themselves as taking action on sustainability. This insight on how the participants depict their agency makes a contribution to the debate on designers’ roles in decision-making. Practical implications of these findings for guidance on sustainable design are outlined, taking into account the constructed nature of talk. Overall, this thesis demonstrates the usefulness of interdisciplinary research when examining aspects of complex issues such as sustainable production.
Navigating expectations for sustainable product design: a DP analysis

References


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


http://centaur.reading.ac.uk/69312/


https://doi.org/10.1115/1.802469.ch24


https://doi.org/10.1016/j.jclepro.2015.02.009

https://doi.org/10.1080/13504622.2016.1157681


https://doi.org/10.1108/17511341011073988


https://doi.org/10.3390/su12114680

Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Lindahl Norberg, A., & Strand, J. (2022). “We have to be the link between everyone”: A discursive psychology approach to defining registered nurses’ professional identity. *Nursing Open, 9*(1), 222–232. https://doi.org/10.1002/nop2.1056


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Silva, N. D., Jawahir, I. S., Jr., O. D., & Russell, M. (2009). A new comprehensive methodology for the evaluation of product sustainability at the design and
Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis


Navigating expectations for sustainable product design: a DP analysis

*From Engineering to Architecture* (pp. 77–89). Springer Netherlands.

https://doi.org/10.1007/978-1-4020-6591-0_6


https://doi.org/10.2139/ssrn.1559087


https://doi.org/10.1162/desi.2009.25.1.5


https://doi.org/10.1016/j.jenvman.2017.06.034


Navigating expectations for sustainable product design: a DP analysis

https://doi.org/10.4135/9781473983335

https://doi.org/10.1080/14780887.2020.1725953


https://doi.org/10.1007/s10676-018-9476-2


https://doi.org/10.1108/IJSHE-12-2014-0171


https://doi.org/10.1080/17547075.2009.11643291


Appendices

8.8 Appendix A – Participant information sheet

You are invited to take part in PhD research on design decision-making, by being interviewed about how you make design decisions related to sustainability. You are eligible to participate due to your role as a product designer working on a sustainable design project.

The interview

Interviews will be held online or by phone and will be recorded. You will be asked questions about how decisions are made in your sustainable design work, and about the context of your role. The interview will not cover sensitive topics and there is no known risk of harm associated with this research. Your participation is entirely voluntary. You do not have to answer all the questions, and you may stop the interview at any time. The interview is expected to take around 45 minutes.

How will the interview be used?

The conversation will be transcribed word for word, in order to analyse what is said and gain insights into design decision-making.

Confidentiality, anonymity, security of data and consent

Transcripts will be anonymised soon after data collection, for example to remove any identifiable references to names of people, products, or organisations. Data will be stored securely on the University of Edinburgh servers and will only be accessed by the researcher and colleagues. Extracts of anonymised data may be included in published work. Fully anonymised data may be stored indefinitely by the UK Data Service. This study has received ethics approval from the University of Edinburgh’s School of Philosophy, Psychology and Language Sciences Research Ethics Committee, reference number 324-1920/1(29/05/20).

All individuals recorded must consent to their data being used for research purposes. At the start of the interview, you will be asked to verbally respond to the following questions: Have you read and understood the participant information sheet? Have you got permission from your employer or manager to take part in this interview, if relevant? Are you happy for the recording to be analysed for research purposes, and for anonymised quotes to be used in publications? Are you ok with the anonymised transcript of our conversation being stored by the UK Data Service/equivalent to potentially be used by other researchers in future?

You have the right to withdraw consent at any time during the study, and for up to two weeks after the time of data collection. Email xxxx if you wish to withdraw consent for the use of some or all of the data provided.

Contacts

Please get in touch by email if you have any questions at any time. If you would like to be informed about the findings of this research in future, let me know by email. Many thanks for your participation!

Liz Cooper, PhD researcher in Psychology, School of Philosophy, Psychology and Language Sciences, University of Edinburgh.

Project supervisors: Sue Widdicombe (Psychology); Craig Martin (Design).
8.9 Appendix B – Summary of findings for participants

Report of findings from a research project on product designers' accounts of sustainable design undertaken by Liz Cooper, PhD Researcher in Psychology, University of Edinburgh.

This document briefly outlines the findings of a PhD research project undertaken between 2019 and 2022 on decision-making, values, and responsibility in sustainability-focused product design. The purpose of this document is to offer research participants a summary of what was found in analysing the data they contributed to. The full thesis can also be shared on request. Questions and comments are welcome and should be sent to xxxx.

Research rationale and objectives

The aim of this research project was to explore how sustainability-focused designers managed expectations related to decision-making, values, and responsibility when giving accounts about their work. In academic literature on sustainable design, and among sustainability practitioners, there is a lot of focus on designers needing to make better decisions to ensure more sustainable products. There is advice on what methods to use to make more sustainable decisions and on how to draw on personal values to make more ethical decisions. There are calls for designers to take responsibility and to feel responsible for product sustainability. However, there is a gap in terms of understanding how designers themselves navigate the assumptions inherent in this literature and conceptualise their roles in and approaches to design decision-making with regards to sustainability. This research project has sought to start to fill that gap.

Methods

Two data collection methods were used. Firstly, sixteen designers took part in semi-structured interviews between May and October 2020 via video call. Designers who worked on sustainability in design were invited to take part, mostly via LinkedIn. Secondly, seven recordings of relevant panel discussions at sustainable design conferences were selected for analysis, from YouTube.

The data were analysed using discursive psychology, which is a method for identifying what actions people are achieving through their talk, rather than only focusing on the content of what is being said. For example, discursive psychology allows us to identify how designers are accepting or refuting expectations regarding their roles in sustainability in the ways they talk about their work. Discursive psychology treats what people say as constructed within a particular context, rather than reflecting an underlying reality of what people actually think or
Navigating expectations for sustainable product design: a DP analysis

do. The audio recordings of the interviews and panel discussions were transcribed for analysis. Anonymised versions of the interview transcripts have been made available to other researchers via the UK Data Service at https://reshare.ukdataservice.ac.uk/855100/ (a researcher login is required to gain full access).

Summary of findings

Research question 1: How do sustainability-focused product designers construct what design decisions are and how they are made?

Findings: Some participants described many design decisions as being embedded within a creative process, and portrayed the actions involved in decision-making as difficult to identify and articulate. The notion of decision-making is therefore used to make sense of a wide range of actions and processes, rather than a specific action of deciding. Some participants gave accounts of using rational processes to weigh up options against criteria, but then ‘confessed’ that the actual decision at the end was made intuitively. Common expectations that decision-making should be explicit and rational are thus seemingly influencing these designers to treat intuitive decision-making as lesser. Participants also depicted themselves as lacking agency to make key decisions regarding product sustainability. The designers found a way to claim agency in such decision-making by describing their efforts to ‘push for sustainability’, to influence decisions made by others. This included portrayal of significant effort and perseverance, despite resistance.

Research question 2: How do designers construct the significance and role of personal values in sustainable product design?

Findings: While there is an expectation in the literature that designers’ values inform their design decisions, in the accounts, the participants instead used the notion of values to portray their identities, through describing longstanding and deep commitment to sustainability. They also depicted themselves as different from other designers due to their commitment to sustainability. When asked about whether or how their values influenced their work, the designers explained where their sustainability values came from. There was difficulty portrayed in accounting for how values influenced design work – this was depicted as just somehow naturally happening.

Research question 3: How is the notion of responsibility for sustainability practically managed in talk by product designers?
Findings: Different ways of asking about responsibility for sustainability were met with different types of responses. The notion of responsibility can therefore be constructed and managed in several different ways. When asked ‘who took responsibility’, participants treated the question as difficult, and eventually identified a senior person based on their decision-making power. When asked ‘who is responsible’, participants treated this question as confrontational, explaining why they couldn’t be responsible themselves as the designer since they were unable to make key decisions, thereby not answering the question and deflecting responsibility. In responding to these first three questions, participants portrayed responsibility as tied up with the action of making a decision (in these responses, decision-making is portrayed as an identifiable action, in contrast to the more complex portrayal of decision-making discussed above). When asked if they felt responsible, participants responded with strong agreement, and associated responsibility with possible culpability.

Overall themes:

- Decision-making, values, and responsibility are complex concepts that are difficult to navigate and articulate in the context of sustainable design. Participants portrayed and managed the delicateness of giving accounts of these actions and ways of working in different ways.
- Participants found opportunities to focus on portraying their identities, both as a person who is committed to sustainability, and so different from other designers, and as a person who takes action regarding sustainability (for example, by trying to influence others), despite structural barriers in the context of professional design.

Implications of the findings

The findings make contributions to how decision-making, values, responsibility, and agency are conceptualised in the context of design. Design academics and sustainable design advocacy organisations should consider what expectations they construct of what designers should do to achieve sustainable design. The portrayal of sustainability-focused identities and of claiming agency through influencing others, rather than deciding, resonates with the concept of a sustainability champion in business literature. Sustainability champions are said to seek to influence other stakeholders from within an organisation. The findings of this study suggest this concept may also have some relevance in design settings. Guidance on how to do more sustainable design should take into account how designers themselves construe their actions and roles. It may be useful for such guidance to include some examples of designers’ reflective accounts of how decision-making is done, to highlight the delicateness and complexity of what is involved and the challenge of agency.
End of thesis.