Integrated framework of home comfort: relaxation, companionship and control

Abstract

This paper argues that home comfort is relaxation and wellbeing that results from companionship and control to manage the home as desired. To date, studies of comfort have been dominated by building and natural scientists, laboratory settings and technical approaches, which understand comfort in physical, and primarily thermal, terms. Yet the extensive research on the meaning and making of home by sociologists, human geographers, historians, anthropologists and philosophers highlights that there is much more to expectations of the home than ensuring physiological 'needs' such as warmth. The home is imbued with emotional, social and cultural meaning, and is significant to individuals' wellbeing in terms of it being (idealised as) a place of rest, family, continuity, control and security. For the first time, this paper brings together home and housing scholarship to conceptualise the findings of a qualitative study on the meaning of home comfort. In doing so, this paper offers a broad empirically and conceptually informed framework of home comfort.

Keywords: home comfort, thermal comfort, comfort, occupant satisfaction, home, housing, home-making

1. Introduction

> *There are two words in their language on which these people pride themselves, and which they say cannot be translated.* Home *is the one, by which an Englishman means his house… the other word is* comfort*; it means all the enjoyments and privileges of home; and here I must confess that these proud islanders have reason for their pride. In their social intercourse and their modes of life they have enjoyments which we never dream of.*
>
> (Robert Southey, Letters from England, translated from Spanish (1807) in Crowley (2001, p. 1) emphasis in original)

Home comfort is a common term that might be used to describe cosy togetherness, changing into pyjamas after work, or the feeling that you can 'do what you want' in your own home (Pennartz, 1986; Wiking, 2016). Despite its everyday usage, pinning down the meaning of home comfort has been arguably illusive and underexplored in academic literature. Indeed, as the opening quote highlights, an interest in the meanings and experiences of home comfort, including its variation spatially and temporally, has existed for centuries and this interest has not diminished. For example, last year 'coincided with a fascination, bordering on obsession, with the Danish concept of hygge' (Newman, 2017, p. 27), a term often translated to 'cosiness' in English and generally associated with the home. The absence of a framework of home comfort is surprising considering that home comfort is widely topical and of huge social significance. Much of our lives are spent in the home; where we live and how we live are important determinants of our social position and health (Cieraad, 2006; Giddens, 1991; Dupuis & Thorns, 1998); and the home is the basic unit of social organisation through which social relations are created and reproduced (e.g. gender, age

relations, class differentiation, ethnic inequality, regional and national cultures and identities) (Blunt & Dowling, 2004; Saunders & Williams, 1998). Specifically, home comfort is relevant to questions of social equality and determining basic standards of living (Crowley, 2001; Walker *et al.,* 2016) as well as a key factor in architecture and design (Chapman & Hockey, 1999; Rybczynski, 1986; Susanka, 2001). Thus, meanings of home comfort are crucial to questions of health (e.g. ensuring physical and mental wellbeing are afforded by an individuals' housing situation), social equality (e.g. determining what constitutes a minimum standard of living), and sustainability (e.g. resources consumed to fulfil visions of the desirable home life).

Whilst comfort and home, separately, constitute considerable bodies of interdisciplinary scholarship, investigation of home comfort specifically is limited to a small number of studies (Burris *et al.,* 2012; Crowley, 2001; Heijs & Stringer, 1987; Madsen & Gram-Hansse, 2017; Madsen, 2017; Pennartz, 1986; Pineau, 1982; Rybczynski, 1986). Comfort is clearly multidimensional (e.g. thermal comfort, emotional support) (Bissell, 2008; Crowley, 2001), however in much investigation of comfort, it is primarily assumed to be purely physical and to mean thermal comfort (Chappells & Shove, 2005; Fanger, 1970; Nicol & Humpreys, 1973; Shove, 2003). Yet, there is clearly more to our expectations of the home than ensuring human bodies are sufficiently warm or cool, as literature on the home readily reveals (Blunt & Dowling, 2006; Brickell, 2012; Chapman & Hockey, 1999; Flanders, 2015; Mallett, 2004). A review of the extensive literature on the home, which includes contributions from sociology, human geography, history, architecture, housing studies, philosophy, psychology, anthropology and domestic archaeology, highlights much broader desires of home (e.g. family, privacy, nostalgia) but an holistic conceptualisation of home comfort is nonetheless still absent. In fact research concerned with contemporary experiences of domestic environments are dominated by quantitative analysis of housing conditions and interior decoration as indexes of social class, status and ethnicity and qualitative research on contemporary domestic spaces is scarce (see Cieraad, 2006 for overview of key scholarship areas: ethnology, material culture studies, consumer studies, environmental psychology).

Therefore, our objective in this paper is to develop a broad framework of home comfort, which for the first time brings together home and housing scholarship to conceptualise the findings of a qualitative study exploring householders' understanding of home comfort. While based on a study of Scottish households, this conceptualisation of home comfort is arguably of relevance in other contexts due to the analysis of literature on the meaning and making of home this paper also introduces. Following a brief review of existing literature on comfort, home comfort, and home-making, the paper progresses to consider the implications past scholarship has for understanding home comfort (Section 2). Section 3 explains the data collection that employed whole household interviews with 45 Scottish householders involving open-ended questioning, drawings of 'ideal rooms' at home, and house tours. Section 4 presents twelve co-existing meanings of home comfort commonly identified by householders in our study and connects householders' discussion with comfort, home comfort and home literatures to develop a broader, holistic framework of home comfort. Finally, the paper reflects on the directions this discussion suggests for research and policy in a myriad of areas from sustainability and (in)equality to housing design, and architecture (Section 5).

2. Comfort and home literature

In order to develop a conceptual framework of home comfort this paper reviews existing literature on comfort and home. Admittedly, this scholarship overlaps considering that the home is often idealised as a place of comfort (Blunt & Dowling, 2006; Brickell, 2012; Chapman & Hockey, 1999; Crowley, 2001; Mallett, 2004; Rybczynski, 1986), yet broadly speaking these are distinct areas of research. Furthermore, whilst the home is not always connected to a physical structure that provides shelter (e.g. a person's country, 'a home from home') (Blunt & Dowling, 2005; Easthope, 2004; Mallett, 2004), this study narrows its literature review and discussion to the home-as-house. Firstly, literature on comfort is reviewed which is largely dominated by engineering and building scientists framing comfort in a purely physical way (Section 2.1). To further inform our conceptual framework, the paper then outlines common findings from studies explicitly studying home comfort (Section 2.2). However, there are only a tiny number of studies on home comfort thus wider literature on home is explored, analysing key themes that influence the process of homemaking in order to make our framework more generalizable (Section 2.3).

2.1 Comfort literature

Despite its everyday usage, comfort is a complex and contested concept and one that has attracted considerable attention in academic and grey literature. Comfort is especially topical in nursing studies focusing on relief of discomfort, with some reflection of shifting priorities in medicine between a patient's physical and emotional care (McIlveen & Morse, 1995; Kolcaba & Kolcaba, 1991; Tutton & Seers, 2003). Studies of workplace wellbeing also prioritise understanding of (dis)comfort to ensure productivity is not negatively influenced. For instance, exploring what temperatures impair effective decision-making (Gaoua *et al.,* 2012), how temperature, humidity and ventilation influence alertness or headaches (Hawkins, 1981), and whether having a view out of a window impacts 'business performance' (Aires *et al.,* 2010). In addition, investigation into the experience, conditions and attributes of comfort has long been a concern of architects, ergonomists, and engineers striving to design attractive and desirable products. These contributions from building and natural sciences have gone a long way in refining the biological, physical and physiological factors of comfort and explaining differences related to age and gender (Crowley, 2002; Fanger, 1970; Shove, 2003). Arguably, this scientific, laboratory approach dominates investigation of comfort, with the most attention going to determining how to deliver thermal comfort in indoor environments[1].

The publication of multiple recent special issues of Building Research and Information (2008, 2013, 2015) and numerous international Windsor Conferences on 'comfort and energy use in buildings' (2006, 2010, 2012, 2014, 2016) attests to this increasing attention to thermal comfort and how it is defined and achieved through building design and occupants' activity. Whilst there is a dominance of building and natural scientists attempting to measure and design comfortable environments, much recent work that deals explicitly with comfort suggests that expectations vary culturally, temporally and spatially (Chappells & Shove, 2005; Crowley, 2001; Shove, 2003). Following this line of reasoning, many social scientists writing on sustainable consumption have challenged the standardisation of comfort in buildings (i.e. based on Fanger's (1970)

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[1] For example, ASHRAE (American Society for Heating, Refrigeration and Air-Condition Engineers) and ISO (International Organisation for Standardisation) are both organisations that set 'standards for thermal environmental conditions' which are increasingly recognised and adopted internationally.

'comfort equation' which indicated that 21℃ is the optimal temperature for thermal comfort) because this distracts from cultural ways of coping with local climactic conditions (e.g. the siesta or changing clothing) (Chappells & Shove, 2005; Shove, 2003) and ignores research on adaptive thermal comfort which has demonstrated a huge range of temperatures are comfortable in different climates (Nicol & Humphreys, 1973; Oseland & Humphreys, 1994). This body of literature is particularly compelling because it reveals how social and cultural expectations of comfort are co-constructed alongside material changes. Certainly, there are a substantial number of studies showing that the proliferation of air conditioning and central heating has changed expectations of 'normal' indoor temperatures as well as strategies for thermal regulation (DECC, 2013; Hitchings & Lee, 2008; Shove, 2003; Walker et al., 2014). Indeed, in the past decade, numerous studies, including many of those identified in this paragraph, have demonstrated the symbolic, psychological and sociological aspects of thermal comfort (Devine-Wright *et al.,* 2014; Hards, 2013; Kuijer & Watson, 2017; Shove, 2003). Furthermore, researchers in sustainable consumption have begun to attend more to the meaning and making of sensory (Madsen & Gram-Hanssen, 2017; Pink & Macklay, 2012) and visual home comforts (Vannini & Taggart, 2013) as well as processes of homemaking (Aune, 2007; Dowling & Power, 2012; Madsen, 2017; Maller, 2016), suggesting there is more to the evolution of homes than the pursuit of improving thermal comfort.

The preceding paragraphs briefly outline the main areas of research on comfort (nursing studies; workplace wellbeing; occupant satisfaction in building and engineering sciences; sustainable consumption) and highlights that comfort is generally understood in thermal terms. We suggest that the focus on thermal comfort overlooks other social and psychological aspects that are part of the 'enjoyments and privileges of home' (Crowley, 2001, p. 1), 'hygge' (Newman, 2017), or which may be expected in everyday discussions of home comfort (caring for family, coming home to the smells of baking). Thus, the next section seeks to explore other potential meanings by reviewing literature explicitly on home comfort.

2.2 Home comfort literature

There are only a few studies that explore broader meanings of residential, domestic, dwelling comfort or pleasantness (Table 1) and, for convenience, hereafter this small body of work will be labelled as 'home comfort' literature.

Table 1. Literature on 'home comfort'

These home comfort texts indicate some potential avenues to expand understandings of home comfort (Burris *et al.,* 2012; Crowley, 2001; Heijs & Stringer, 1987; Madsen, 2017; Madsen & Gram-Hanssen, 2017; Pennartz, 1986; Pineau, 1982; Rybczynski, 1986). Firstly, all of these studies suggest that home comfort was not just one thing; expectations of the home are complex, co-existing and layered (e.g. Rybczynski's (1986) 'onion theory of comfort'), sometimes these comforts can be contradictory and yet they are still valid (Pennartz, 1986). For example, wanting to have children at home and spending time with family can be part of home comfort for an individual that also enjoys being alone (Madsen, 2017; Pennartz, 1986). Furthermore, meanings of home comfort are often interconnected and influence one another. For instance, householders' suggest that warmth was a key aspect of home comfort, not simply in a physical sense but also because it is part of the home being a relaxing and inviting space (e.g. an open fire is a source of 'visual entertainment, relaxation and providing security'(Pineau, 1982, p. 279)). Other physical comforts beyond thermal comfort in these home comfort studies were grouped around the senses

(e.g. visual, auditory, olfactory, tactile (Heijs and Stringer, 1987; Madsen & Gram-Hanssen, 2017)), including having somewhere comfortable to sit, and the physiological need for food (Burris *et al.,* 2012; Rybczynski, 1986). Numerous psychological comforts are also identified: expectations of the home being a place of leisure, ease and entertainment (Burris *et al.,* 2012; Madsen, 2017; Pennartz, 1986; Rybczynski, 1986); personalisation and freedom of choice are important to establishing the home as a recognisable and familiar space (Burris *et al.,* 2012; Crowley, 2001; Heijs & Stringer, 1987; Pennartz, 1986; Pineau, 1982, Rybczynski, 1986); and comfort from socialising and social contact (Burris *et al.,* 2012; Heijs and Stringer, 1987; Madsen, 2017; Madsen & Gram-Hanssen, 2017; Pennartz, 1986; Rybczynski, 1986) are common amongst these studies.

Reviewing the limited literature that explicitly set out to investigate domestic, residential or dwelling comfort and pleasantness in a broader qualitative sense suggests that meanings of home comfort are multiple and co-existing; expanding physical and physiological comforts related to the senses (e.g. visual, auditory, olfactory, tactile) as well as introducing psychological comforts such as privacy, personalisation, and freedom of choice. However, this is a limited body of scholarship and therefore the much more extensive scholarship exploring the meaning and making of home is also reviewed.

2.3 Key themes in home-making literature

As the previous sections demonstrate, current comfort and home comfort literatures are insufficient, being too narrowly defined or too empirically limited, respectively, to inform a conceptual framework of home comfort. Thus, the paper turns to the broader home scholarship, summarising the findings of our review of literature on homemaking and the meaning of home (see Ellsworth-Krebs, 2017 p. 43-54 for a more detailed account). Five key themes central to understanding the meanings and experiences of home, and thus home comfort, emerged from this review: perceptions of the home-as-ideal; centrality of the hearth; the importance of family; privacy; and, gender. These homemaking themes were developed from a qualitative synthesis of literature (Barnett-Page & Thomson, 2009), which involved keyword searches (e.g. 'home', 'the meaning of home', 'the making of home', and synonyms) in various databases (e.g. Google Scholar, Scopus, Web of Science) and journals (e.g. Housing Studies; Housing, Theory & Society, Home Cultures) to identify relevant writings. These sources were thematically analysed and included peer-reviewed journal articles as well as books and grey literature (e.g. PhD theses, conference papers, and research centre' reports). Texts were included in this qualitative synthesis because they offered their own thematic analysis of the meaning or making of home or because they offered an alternative perspective. For instance, critiquing the absence of disability (Imrie, 2004), homosexuality (Gorman-Murray, 2007) or non-Anglo-Saxon perspectives (Soaita, 2014) drew attention to taken-for-granted themes in this literature. These themes consolidate a great deal of reading on home and housing studies, and despite the brevity in explaining them below, their identification in this way is important to advance the study of occupant satisfaction and home comfort.

Home-as-ideal

The home is entangled with all sorts of ideal representations and models of 'homeliness' (Blunt & Dowling, 2006; Brickell, 2012; Chapman and Hockey, 1999; Flanders, 2015; Gilman, 1903; Gorman-Murray; 2007; Mallett, 2004; Perkins *et al.*, 2002; Rybczynski, 1986; Sixsmith, 1986; Sommerville, 1992; Valentine, 2001). The importance of the home-as-ideal does not assume that

the home is actually, or always, positive in reality, in fact this is a common point of critique in home literature (Blunt and Dowling, 2006; Brickell, 2012; Gorman-Murray, 2007; Imrie, 2004; Mallett, 2004). This home-as-ideal theme is an important reminder that householders' discussion of home comfort may often reflect an imagined or fantasised vision of home life that is not achieved in reality (e.g. Ideal Home Exhibitions, home and lifestyle magazines, home makeover television series can encourage a list of intended home improvement plans and dreams) (see Chapman & Hockey, 1999 for a great discussion of *Ideal Homes*).

Hearth

The hearth is central to the home, connected to ideas of warmth, relaxation, comfort and a welcoming atmosphere for visitors (Crowley, 2001; Flanders, 2015; Sommerville, 1992; Valentine, 2001). This is the second theme because it was literally, as well as figuratively, the centre of the home until at least the 16th century as the common design of European domestic spaces was a hall with a central fire (Crowley, 2001; Flanders, 2015). The hearth's importance in the home therefore goes beyond warmth and influences the sense that the home is welcoming and a place of relaxation, this relates to, but is distinct from, the way in which thermal comfort is conceived by building and natural scientists as discussed above (Section 2.1).

Family

The family comes as the third theme because, like the hearth, it is rooted in the meanings and making of the home. Indeed, the family is such an important aspect of home (Beeton, 1861; Blunt & Dowling, 2004; Flanders, 2015; Moore, 2000; Perkins *et al*., 2002; Smith, 1994; Soaita, 2014; Sommerville, 1992; Valentine, 2001) that the two are often conflated in housing literature (Gorman-Murray, 2007; Mallett, 2004). Drawing attention to the 'family' in home comfort and occupant satisfaction research emphasises that comfort is not always about the individual, negotiation and compromise importantly influence an individual's experience.

Privacy

The fourth theme is privacy because the home is generally expected to be a place of control (Blunt and Dowling, 2006; Brickell, 2012; Mallett, 2004; Perkins et al., 2002; Rybczynski, 1986; Saunders & Williams, 1998; Sixsmith, 1986; Soaita, 2014; Sommerville, 1992; Valentine, 2001). This sense of stability, or ontological security, is a base around which identities are constructed and in housing research this is understood to be a significant psychological necessity in life (Giddens, 1991; Dupuis and Thorns, 1998; Saunders, 1989). However, an emphasis on personal privacy may hint at an Anglo-Saxon framing of homemaking as individualism, independence, and self-reliance are emphasised in studies of British homes, yet other cultures are more group-oriented emphasising family, collectivism and interdependence (Ozaki, 2002).

Gender

Finally, in housing and home scholarship the expectation and experience of the home is accepted to be highly gendered, in the sense that where the home is a place of rest for a man, it is a place of work for women (Flanders, 2015; Mallett, 2004; Perkins et al., 2002; Valentine, 2001). If women are (traditionally) charged with the responsibility of making and maintaining the home as well as the wellbeing of the family (Brickell, 2012; Flanders, 2015; Valentine, 2001) then their choices and activities are particularly important for understanding everyday practices in the home. In emphasising gendered differences our intention is not to reproduce stereotypes, but to

acknowledge that what makes the home pleasant may be different for men and women (Chapman and Hockey, 1999).

This short account of key aspects affecting the meaning, making and experience of home can be criticised for its reliance on an oversimplified account of an extensive body of literature. However, the main point to take forward from this section is that much more is expected of the home than offering shelter or meeting certain physical or physiological 'needs': the home is idealised as a haven of relaxation, psychological connection and companionship, security and safety. Besides advances in central heating, indoor plumbing, and electricity (Rybczynski (1986), the materiality of homes has evolved as a result of complex social changes in: family structures; perceptions of entitlement to privacy, privatisation and governments' role in housing; and working patterns of men and women (Crowley, 2001; Flanders, 2015). In order to understand expectations of home comfort therefore we must engage with these broader social and cultural shifts that are overlooked by dominant technical approaches.

This section has briefly outlined the basis for developing a conceptual framework of home comfort. The building and natural sciences dominate the research of comfort and occupant satisfaction, narrowly investigating the corporeal experiences of thermal comfort as a measurable and standardised product that can be delivered through technical developments and devices. Whereas, the limited number of studies on home comfort suggests that it has both physical and psychological facets, that meanings are interconnected, and that desires can be contradictory but still valid. A review of wider literature on home and homemaking emphasised that there are common historical and cultural perceptions of what a home is, could or should be (home-as-ideal, hearth, family, privacy, and gender), and these themes have persistently shaped the design and meaning of the home. This sets the stage to explore home comfort further empirically and the paper now turns to outlining the methods adopted in our investigation.

3. Methods

Qualitative research was deemed a necessary starting point because this was an exploratory study and surprisingly little information exists on the meanings or variables of home comfort. Indeed, this study responds to calls for more in-depth, interpretivist studies that offer alternative ways of thinking (Schweber & Leiringer, 2012; Summerfield & Lowe, 2012) in order to overcome 'the relatively narrow understanding of the "social" in research on energy and buildings' (Schweber & Leiringer, 2012, p.490). This qualitative study explored what homeowners want from their homes and what 'home comfort' meant to them. It involved open-ended questioning with the whole household at the same time, drawings of 'ideal rooms' at home, and house tours with 21 Scottish households and 45 householders between February and June 2014 (Table 2). This study was part of a research project interested in energy demand and connecting expectations of home with explaining changing patterns of domestic energy demand (Ellsworth-Krebs, 2017) and participants were chosen for being homeowners who had made efforts to save energy, either by investing in improving the efficiency of their house and/or installing microgeneration technologies (e.g. solar thermal panels, photovoltaic panels, biomass boiler, heat pumps, wood stoves and wind turbines).

Table 2. Sample: household characteristics, house type and age

As a result of this recruitment, participants were predominantly white professional couples who were relatively advantaged in terms of income and health. The aim of this methodology was not

to establish a universal definition or prioritisation of meanings of home comfort, as the sample is too small and non-representative, but to generate rich data and a diversity of meanings. This does not overlook that meanings, their understanding, and relative importance depend on the context. For example, expectations of home life may vary if Norwegian or American homeowners were involved in a similar investigation because their norms are shaped by different cultural and historical contexts. In fact, this is one of the limitations of this study, as our recognition of cultural variation suggests that our broader conceptualisation of home comfort may not be universal. Participants in this study were predominantly white British; only one household was from the United States of America and had been living in Scotland for less than five years. Although the authors have attempted to make our findings more generalizable by reading widely on experiences of home in other countries (Section 2.3), this study and the majority of research on home and housing take places in Europe, Australia and North America (Blunt & Dowling, 2006; Flanders, 2015; Mallet, 2004). Subsequently similar investigations are recommended to see the extent to which the themes of homemaking and meanings of home comfort resonate in other countries.

Whole-household interviews, the drawing activity and house tours were generally 45 to 120 minutes in duration and they were all recorded and transcribed. To make sense of participants' understandings of home comfort analysis began by focusing on responses to 'what does comfort mean to you?' and 'what do you do to be comfortable?' as well as analysing the drawings of ideal rooms for common features. This thematic analysis began with in-depth line-by-line coding by hand and then the data was managed in the qualitative analysis software Nvivo to facilitate an iterative process to generate codes (Charmaz, 2014). Analysing transcripts for evidence of the homemaking themes (e.g. gendered differences in discussion of comfort or mention of family in relation to comfort) then structured another round of analysis that drew together discussion from the interviews (e.g. including ideal drawings and house tours) that had not been incorporated in the first stage (which had analysed answers to explicit questions about comfort). The coding was validated continuously by cross-coding random parts of the material and correcting for inconsistencies and the researchers met regularly to discuss and review the development of open and axial coding (Ibid, 2014). The ideal drawings and house tours were considered important for directing participants' discussion to the materiality and design of the home, and connecting social and material aspects that influenced home comfort; for example, explaining that having couches or cushy chairs related to relaxing, socialising and being a good host. This is particularly relevant as meanings of home are often recognised as embedded in the materiality of the home: objects embody memories, relationships and identity (Belk, 1992; Blunt & Dowling, 2006; Csikszentmihalyi & Rochberg-Halton, 1981; Pink & Macklay, 2012). Hence an investigation of home comfort is enhanced by taking place in the home to prompt reflection and discussion.

To protect confidentiality, all participants are identified by pseudonyms (age and household number). Ethical approval was sought and awarded by the University of St Andrews Ethics Committee.

4. Results & Discussion: Meanings of home comfort

This section presents the results of householders' understanding of home comfort to begin to create a conceptual framework. Twelve common meanings emerged and Table 3 summarises these twelve meanings, whether they were explained as physical or psychological by participants, their relative importance and examples of what these aspects of home comfort meant to householders.

Table 3. Meanings of home comfort, organised vertically from most to least discussed

The following sections present these twelve meanings of home comfort by category, physical, psychological and physical-psychological depending on whether they were explained as physical or psychological by participants. This thus begins to move understanding of home comfort beyond a physical focus and physical-psychological binary. Furthermore, this section compares literature on comfort, home comfort and home (Section 2) to the way participants of this study understood comfort in the home; exploring the extent to which the five homemaking themes (home-as-ideal, hearth, family, privacy, gender) resonated in householders' discussion of comfort, ideal rooms, and desired future improvements. Family and privacy emerged more prominently in this process, and have strong parallels with two meanings of home comfort identified by participants (i.e. companionship and control, respectively); due to the scope of this paper, these two themes are focused on below (for an analysis of how all five homemaking themes were discussed by participants see Ellsworth-Krebs, 2017, p. 105-121). To be clear, this is important to developing a framework of home comfort because it connects a small group of Scottish householders' understanding of home comfort with broader historical and cultural narratives around the meaning and making of home.

4.1 Physical home comforts: thermal comfort, tactile comfort, physiological comfort, and odour and fresh air

Participants commonly identified four meanings of home comfort that were spoken about in a physical sense: thermal comfort, tactile comfort, physiological comfort, and odour and fresh air. This section presents evidence of the importance of these meanings to householders and in so doing begins to hint at the interconnections between meanings of home comfort as well as the false binary between physical and psychological expectations of the home.

Thermal comfort, or warmth, was mentioned in all the household interviews:

> *Yeah, like being warm* (Rory, 8, H14)
>
> *Warmth must be one of the prime reasons* (Maggie, 80, H17)

As noted in Section 2.1, the focus on thermal comfort is also prominent in studies of comfort and occupant satisfaction. However, thermal comfort was also impacted on by other physical expectations of comfort in the home as elaborated below. Olfactory comfort is a common consideration in the development of building standards because these impact thermal comfort and health conditions (for example from damp) (Rudge, 2012). Similar to occupant satisfaction scholarship, participants did not go beyond this physical understanding to connect odours with more social or psychological meanings of comfort. For instance, participants did not speak about satisfaction from the smells of cooking (e.g. coming home and smelling your favourite meal) or a sense of familiarity from everyday smells (e.g. laundry detergent), which appeared important in Madsen and Gram-Hanssen's (2017) study of residential comfort and writings on 'hygge' (Wiking, 2016). Furthermore, tactile and thermal comforts were also closely linked as householders commented on times where tactile considerations either undermined or enhanced thermal satisfaction. For instance, some participants talked about choosing clothes for warmth in the winter and complained about layers feeling confining or certain fabrics being itchy.

> *Sometimes I will say, 'look I got socks on, it keeps my feet from getting crystal-y cold', but [my husband] doesn't like the feel of socks* (Mandy, 47, H16)

This connection between tactile considerations influencing thermal comfort was also raised in the home comfort scholarship (Heijs and Stringer, 1987; Madsen & Gram-Hanssen, 2017), partly because of a trade-off between soft materials which are more pleasant to feel and often warmer and hard materials that require less maintenance, but does not commonly appear in comfort scholarship (Section 2.1). Tactile comfort was also significant as participants drew attention to the desire for bedding, seating and clothing being pleasing to touch, and the importance of nice furniture is highlighted by the drawings and discussion of ideal rooms because large armchairs and comfy couches were a feature in the majority of drawings (Figure 1).

Figure 1 Ideal drawings emphasising the importance of seating and aesthetics (H4 & H12)

Finally, part of comfort depended on meeting the physiological need for food and '*not being hungry*' (Lucy, 70, H20) as well as '*not being injured or experiencing physical pain*' (Sean, 50, H10). Food was mainly mentioned as a physical need instead of for its psychological benefits, such as sentimental memories of, and connection to, past meals or places, which was stressed as part of homeliness and comfort by some home comfort and 'hygge' literature (Madsen, 2017; Wiking, 2016).

This section has briefly outlined four meanings of home comfort that were explained in a physical way by participants, yet this has also begun to highlight how these are more complex and could be understood to have psychological influence on householders' experience of home. The next section presents the psychological home comforts identified by participants in this study.

4.2 Psychological home comforts: mental wellbeing, companionship and contributory comfort

Three expectations of home comfort were explained in psychological terms: mental wellbeing, companionship and contributory comfort. Mental wellbeing, being happy, or inner peace were stressed to be more fundamental than other (i.e. physical) meanings of home comfort: *'Not just being physically comfortable but being mentally comfortable and happy'* (Helen, 24, H8). The importance of mental wellbeing relates back to historical meanings of comfort which were much more emotionally centred, relating more to consolation, mental satisfaction, inner peace, support and encouragement (Crowley, 2001); yet mental wellbeing is rarely explicitly mentioned in home comfort or comfort literatures (Sections 2.1 and 2.2).

Companionship was the most discussed psychological comfort, and having 'the right company' (Stacy, 81, H12) was a key part of participants' initial answer to 'what does comfort mean to you?':

> *Comfort to me means being able to see people* (Jack, 62, H21)

> *Definitely, for me, having my children around me, my family, my close family is a big part of comfort for me [...] when all four of us are in the house it just feels totally right, it doesn't matter what is going on. But better still if it is warm and cosy* (Sue, 55, H13)

Furthermore, about half of the ideal room drawings featured lots of seating or large tables (Figure 2). These drawings demonstrate the importance of companionship because an ideal room in the home was often expected to be shared and had features that enabled householders to accommodate

guests, another reminder that the design and materiality of the home affects psychological and social aspects of home life. The importance of companionship, socialising and sharing the home is similarly documented in literature on home (Blunt and Dowling, 2004; Dowling and Power, 2012; Flanders, 2015; Ozaki, 2002) but is only included in a couple of the writings on home comfort (Burris, 2014; Heijs and Stringer, 1987; Madsen & Gram-Hanssen, 2017; Madsen, 2017; Rybczynski, 1986) (Sections 2.2 and 2.3). Notably, the attention to companionship links to the centrality of family in home and homemaking scholarship (Section 2.3). Indeed, wanting the home to be a communal space arose spontaneously in nearly all the whole-household interviews:

> *I love having a living area which includes kitchen, dining, and sitting. So that I didn't have to retreat from the company to go to the kitchen. Everybody is in there together. That was very important to me* (Stacy, 81, H12)

Subsequently, companionship should arguably be more central to comfort and occupant satisfaction policy and research, and the paper imagines fresh intervention ideas that might translate from this shift in Section 5. Only three multiple-occupancy households did not mention the importance of sharing the home (H9, H10, H11). Interestingly, two of these interviews (H9 and H10) occurred with only one member of the household, because their partner was unavailable, and this may be an indication of the impact of the methodological choices made in our study.

Figure 2. Example of ideal drawings emphasising communal spaces (H13 & H21)

Related to companionship and wellbeing, was also the comfort that came from contributing to the wellbeing of someone or a cause (i.e. contributory comfort). This is because making others happy (e.g. family, friends, local community) was a source of comfort. For instance, Darren explained that for him and his wife, comfort was '*Christian faith. It is active and using it to benefit other people*'(87, H12). The home then was a space that householders wanted to 'use' for causes they valued, again alluding to the importance of the physical house. There is little mention of contributory comfort, or similar concepts, in the other home comfort literature (Section 2.2) and this may also reflect an individualistic framing of data collection in the empirical studies (e.g. not taking household as basic unit of analysis) or this may also be explained to an extent by a cultural bias as Ozaki (2002) demonstrated that individualism, independence and self-reliance are emphasised in studies of British homes. Contributory comfort also related to discussions around the importance of being a good host and was strongly connected to mental wellbeing, demonstrating that home comfort is not just about meeting personal and physical needs.

This section has unpacked meanings of home comfort that appear largely absent in occupant satisfaction and comfort literature and yet were stressed by participants to be vital. Whilst participants articulated mental wellbeing, companionship, and contributory comfort in psychological terms, these are also impacted by the security of having a physical house to call home, the design and layout of rooms, and artefacts for hosting guests (e.g. seating and open-plan spaces to encourage spending time together). Indeed, Csikszentmihalyi and Rochberg-Halton's (1981) study of the 'most cherished objects in the home' highlights how these are valued not for their functional or utilitarian purposes, but for their embodiment of personal achievement or ideal identity (e.g. mental wellbeing), connections to family and friends (e.g. companionship), and ties to the past (e.g. familiarity). These psychological home comforts cannot be simply separated from the materiality of the home.

4.3 Physical-psychological home comforts: relaxation, control, visual comfort, auditory comfort and familiarity

In occupant satisfaction scholarship, aspects or meanings of comfort are generally expressed as being purely physical or psychological. However, as this paper has repeatedly suggested, there is a blurry boundary between the two and thus this section presents the meanings of home comfort that were explained by participants in both physical and psychological ways. There were five physical-psychological home comforts commonly identified by householders in this study: relaxation, control, visual comfort, auditory comfort and familiarity.

Relaxation was a ubiquitous term in the whole-household interviews, and arose spontaneously. For example, for many participants relaxation was a key part of initial answers to 'what does comfort mean to you?': '*Feeling relaxed [...] it is as much about mental relaxation as it is necessarily physical*' (Amy, 47, H2). Furthermore, being able to 'relax' was the main purpose that arose when householders explained what they would use their ideal rooms for:

> *Just somewhere that I could relax and use the computer to work or to play and then also just relax and enjoy* (Helen, 24 H8)*A nice place to sit and relax, watch television, listen to music, read, that sort of thing* (Maggie, 80, H17)

Householders often identified particular activities as 'relaxing' (watching TV, using the computer, sleeping, and reading), but also suggested that relaxation was predicated on meeting (some of) the other aspects of comfort. Other home comfort studies indicated relaxation as a frequent term used in response to questions about the meaning of comfort (Burris, 2014; Marsden, 2017), yet for the most part is not explicitly mentioned in studies of comfort and home comfort (Sections 2.1 and 2.2). Nonetheless, this paper conspires to raise the importance of relaxation in occupant satisfaction and comfort studies, considering its ubiquity in these whole-household interviews and its alignment with the Oxford English Dictionary's definition of home comfort as 'a domestic amenity which contributes to physical ease and wellbeing' (OED, 2016) (Section 5).

Being able to do what you want or having some sense of control was another important physical-psychological aspect of home comfort: '*Being able to do what I want in my own house really*' (Sharon, 55, H11). Control is already considered important in comfort studies, especially in terms of householders' being able to adequately manage heating systems (Section 2.1). Whereas, in this study 'being able to do what you want' was often raised in acknowledgement of intra-household interactions. For example, children and teenagers spoke most about comfort in relation to having their own room, often elaborating on security systems and locks as integral features of their ideal rooms because these features protect the space within the home that they have more control over:

> *Imaginary room! [...] guard doors so no one can disturb me (dad laughed). What? You guys always walk in at the most inconvenient times* (Stuart, 9, H16)

Certainly, the importance of control was not limited to children and many householders commented on a desire to have enough space so that they could '*all live in [their] individual zones without massively treading on each other*' (Harold, 53, H5). This was a major consideration for Nancy and Jack designing their new home:

> *Two retired people who want to carry on doing their own thing, but living together as well. So that was reflective in the design of the house [...] The fundamental difference is that I am extremely messy and untidy and Nancy is extremely tidy* (Jack, 62, H21)

This desire is apparent in the design of their upstairs which is a mirror image, with two offices and two en-suite bedrooms (Figure 3). These rooms reflect the individual's tastes and character, with Nancy's space being less cluttered (top photo) and simple and Jack's space more cosy and filled (bottom photo). After thermal comfort, control appeared most in academic literature on home comfort (Crowley, 2001; Heijs and Stringer, 1987; Pineau, 1982; Rybczynski, 1986) and home (Aune, 2007; Blunt and Dowling, 2006; Brickell, 2012; Mallett, 2004; Ozaki, 2002; Perkins *et al.*, 2002; Saunders and Williams, 1998; Sixsmith, 1986; Sommerville, 1992; Valentine, 2001). For instance, in Pineau's (1982) study three out of the four key meanings of home comfort related to this theme of control: personalisation, freedom of choice, and space (the fourth was warmth). Similarly, Heijs and Stringer's (1987) review of the literature identified several aspects of psychological comfort, with all arguably being related to control: privacy, freedom of choice, extent of control, opportunities for establishing a recognisable place, quietness and social contacts. Indeed, participants' articulation of the importance of control, as 'being able to do what you want,' is underwritten by the homemaking theme of privacy (Section 2.3). The desire for companionship creates tensions over sharing spaces within the home and much of participants' discussion around the twelve meanings of home comfort highlights differences in preferences and other householders everyday activities (e.g. watching TV, napping, being noisy) and management of material features of the home (e.g. artwork, lighting) that caused conflicts:

> *I find it quite stressful some evenings when you [husband] are watching television and the house is full of inane noise and yet none of the other rooms are rooms that I actually want to go and sit in because they are rather cold or physically uncomfortable or this is the room with the fire and the cat* (Amy, 47, H2)

Privacy has been a driving force in (re)shaping homes' layouts, everyday activities and relationships within the household (e.g. increasing number of bedrooms, appeal (or not) of open-plan kitchens) (Cieraad, 2002; Flanders, 2015; Rybczynski, 1986), and this paper proposes that this framing of control (i.e. in relation to intra-household dynamics) should be more prominent in studies of occupant satisfaction and comfort. Correspondingly, what this might translate into for building research and policy is considered in Section 5.

Figure 3. Example of different preferences in decorating and managing the home (H21)

Related to control, another aspect of home comfort was everyday life being (somewhat) consistent and stable, related to having familiar routines and objects in the home: *'Partly that feeling of relaxation, some of which is due to furnishings, and some of which is due to having familiar things around you'* (Amy, 47, H2). This aspect of home comfort was somewhat difficult for participants to explain because it is part of what *'feels like home'* (Rachel, 45, H14). Rachel explained the significance of familiarity in terms of the difference between a hotel and a home. A hotel might have all the amenities that one would want to be comfortable: for example, being warm, quiet, aesthetically pleasing, affording a sense of privacy and containing a cosy bed. Yet a hotel room rarely has the same sense of homely comfort, in part, because it lacks familiar objects. This is a similar finding to the home comfort literature, without familiar objects and routines, places were described as 'sterile', 'impersonal', and 'anonymous' (Burris, 2014; Heijs and Stringer, 1987; Pineau, 1982). Furthermore, stability in the home is stressed in housing literature because it is understood as an integral psychological necessity in life and a base around which identities are constructed (Giddens, 1991; Dupuis and Thorns, 1998; Saunders, 1989; Smith, 1994).

The examples of control above also relate to householders' discussions of visual comfort because exerting some influence on aesthetics influenced householders' experience of the home. While participants spoke about visual comfort in a physical sense (e.g. having enough, or the right, light for their eyes and the task), there was much more to visual comfort than lighting. For instance, the desire for natural light is also linked to the visual pleasure of having a view and this was mentioned by many participants when discussing their ideal rooms (Figure 3). Moreover, while artificial lighting was mainly discussed in a functional sense to enable householders to carry out particular activities indoors, the atmosphere and mood of the room could also be affected.

> *I like the softer lamp lighting in a room like this that you are just sitting in the evening because I think it creates a better atmosphere than very bright overhead lights* (Sarah, 54, H5)

Moreover, several participants commented on the psychological comfort related to having familiar objects and pictures as reminders of past events and positive memories. For example, during the house tour Lisa stressed the importance of her wall unit for displaying her mementos, '*the ornaments and bits and pieces all mean something in my life*' (69, H6). Displaying reminders of holidays, friends and families is an important part of visual comfort and related to establishing recognisable and personal spaces within the home. Householders' discussion of visual comfort thus diverged from most research on lighting or visual comfort which is related to physiological or physical investigation (e.g. colour and brightness)(Section 2.1). For instance, research has investigated how the colour of artificial lighting affects thermal comfort (e.g. bluer lights make people feel colder than more red hues) (Fanger *et al.*, 1977) or the impact to workplace productivity.

Finally, auditory comfort was also an important facet of control because householders commented on the comfort that came from being able to control noise levels or music choices. Auditory considerations or acoustic quality are a common consideration in terms of occupant satisfaction, considering occupant satisfaction draws from the workplace context and poor acoustics could affect productivity (Section 2.1). Some participants spoke about too much noise being a source of discomfort, but mostly participants suggested that '*music would be one of the attractions of a nice comfortable room*' (Oliver, 66, H9). Thus, auditory comfort was not simply physical but was also linked to wellbeing and psychological concerns.

This section has explored five physical-psychological meanings of home comfort, suggesting that many expectations of the home are interlinked and cannot be thought about simply in physical or psychological ways.

4.4 Re-defining home comfort around relaxation, companionship and control

The preceding sections revealed that while thermal comfort was important and mentioned in all of the interviews, other concerns are commonly significant to satisfaction in the home. Relaxation was the most common synonym for comfort: it was what householders wanted to do in their ideal rooms and what often gave meaning to other desirable aspects of home life. Indeed, participants explicitly connected relaxation with all the other meanings of comfort, except odour and fresh air: tactile (e.g. comfortable seating), visual (e.g. mood lighting as opposed to bright 'task' lighting), familiarity (e.g. having your stuff and usual routines), thermal (e.g. cosy and warm), control (e.g. 'doing what you want'), companionship (e.g. socialising), mental wellbeing (e.g. at ease), physiological (e.g. relaxing with a cup of tea or alcoholic beverage), auditory (e.g. listening to

music), and contributory comfort (e.g. ensuring guests feel welcomed). Furthermore, the similarity between the homemaking themes of family and privacy (Section 2.3) and the home comforts of companionship and control identified by participants (Section 4.2 and 4.3) hints that these should be more central to conceptualisations of home comfort. Arguably, other meanings of home comfort are negotiated as part of the desire for companionship and control. For example, a householder may turn up the thermostat to make sure that their guests are warm (i.e. contributory comfort and companionship), even if they prefer a lower temperature normally (i.e. familiarity) or to use blankets (i.e. tactile). Moreover, a householder not getting to listen to their preferred radio station (i.e. auditory comfort) or have the type of lighting they prefer (i.e. visual comfort) may be a greater source of discomfort because it undermines their sense of control. Following this, the paper argues that home comfort is relaxation and wellbeing that results from companionship and control to manage the home as desired. This broader conceptualisation of home comfort moves beyond commonly imagined interventions in housing quality around temperature, air quality, noise levels, lighting, and energy efficiency and the next section considers how this might inspire studies that generate fresh ideas that account for wider social trends that impact the experience of housing.

5. Conclusion & Policy Implications

The dominance of technical approaches in comfort research, and isolation from home and housing scholarship more generally, offers little in the way of guidance which is sensitive to the social, cultural and psychological expectations of the home. Subsequently, this paper drew together literature on comfort, home comfort and home with an empirical study of 21 Scottish households on the meaning of home comfort. Twelve meanings of home comfort were identified and compared to this existing literature in order to re-conceptualise home comfort beyond its typical thermal and physical characterisation. Accordingly, the paper now offers possible directions for future investigation prompted from attending more to relaxation, companionship and control, the three meanings of home comfort that rose in profile in this paper.

There is clearly more to a basic standard of living (Walker *et al.,* 2016) and the quality of housing than being sufficiently warm or cool, and prioritising relaxation is a way to focus more on the health of occupants (e.g. physical *and* mental wellbeing). Investigation of the features of the home and practices of householders that enhance relaxation is deserving of further research. Furthermore, a re-conceptualisation of comfort onto relaxation has important implications for sustainable consumption scholarship (Ellsworth-Krebs *et al.,* 2015). For instance, the framing of occupant satisfaction as thermal comfort skews interventions to reduce energy demand to largely mechanical and technical avenues (e.g. tighten the building fabric, invest in efficiency and low-carbon heating systems), although increasingly researchers are also questioning the standardisation of the 'comfort zone' (e.g. adapting with temperature or the siesta). Whereas defining home comfort in terms of relaxation, resulting from companionship and a sense of control in the home, has the potential to shift attention onto changes in house and household sizes, which are significant determinants of energy demand per capita (DECC, 2013). Trends in house and household sizes are related to changes in family structures and globalisation (Jamieson & Simpson, 2013; Williams, 2009), which influence shared expectations of the space per person 'needed' to facilitate comfortably sharing the home with others. Thus, this suggests avenues of research that could challenge the processes by which shared expectations are generated, rather than relying on improvements in efficiency to reduce energy demand, such as investigating how privacy and personal space is negotiated in smaller dwellings and different cultures.

The trend towards smaller household sizes is also relevant to discussions of inequality and access to affordable housing as increases in new housing stock are undermined by increasing numbers of households, which is not simply due to an increase in population. Bringing attention to the importance of companionship in occupant satisfaction thus allows researchers and policy makers to potentially design interventions that target systemic changes in society affecting access to housing. For example, exploring how best to design for co-habiting (e.g. soundproofing may improve home comfort as much or more than increasing the size of a home (Soaita, 2014; Susanka, 2001)) or to market homes and furniture that accommodate peaks in household without increasing space per person (e.g. multifunctional furniture to create temporary bedrooms for guests). Moreover, recognition of the desire for companionship and much more communal home life historically hints at the potential for campaigns that support lodgers. Finally, broadening understanding of control in occupant satisfaction and comfort research and policy reflects a common perception in housing studies that it is a psychological necessity for homes to provide a sense of control and stability (Giddens, 1991; Dupuis & Thorns, 1998). Encouraging opportunities for personalisation, often constrained in rental and transitory housing (e.g. boarding school, hospital, university), may also be an opportunity for improving occupant's wellbeing that goes beyond ensuring they are sufficiently warm.

This paper is a plea to housing scholars to explore a broader framework of comfort in the future. There is a huge range of possibilities for redesigning and regulating housing in order to provide homes that promote both physical *and* mental wellbeing. This starts by imagining occupant satisfaction as more than thermal comfort and this paper has identified twelve meanings of home comfort and five homemaking themes that deserve further attention in building research and policy.

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