

The emotions of fuel poverty: Energy vulnerability and the lived experience of social housing tenants in the United Kingdom

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Abstract

Dominant policy understandings of fuel poverty tend to overlook its lived experience. This results in narrow, technical problem framings that neglect the multiple, inter-related and dynamic factors that shape everyday experiences of energy consumption. Consequently, the concept of energy vulnerability has been used as the basis of recent qualitative work that has begun to recognise the importance of subjective experiences but, to date, emotions have not been central to such analyses. This paper explores a range of emotional engagements with energy vulnerability. The paper draws on new empirical data taken from 16 semi-structured interviews with social housing tenants as well as 10 interviews and a focus group (n=8) with housing association employees. Two broad ways in which emotions shape experiences of energy vulnerability are highlighted. First, how fear, worry and care practices shape patterns of energy use and payment. Second, how care, embarrassment, stigma and trust can facilitate or prevent the receipt of support for energy vulnerable households. Crucially, and for the first time, the paper shows that emotions are not merely a consequence of energy vulnerability but can also contribute to and shape it. The paper concludes with a discussion of the policy and research implications of these findings.

1. Introduction

It is now 27 years since the publication of Brenda Boardman's landmark book on *'Fuel Poverty: from cold homes to affordable warmth'* (1991). In this period, research on fuel poverty has grown dramatically. It is now recognised as a global concern, that is configured, defined and experienced in different ways around the world (Thomson et al., 2018). The fuel poverty research community has also grown considerably to span multiple disciplines including geography, sociology, psychology, health studies, architecture and engineering as well as business and economics.

Despite this growth and diversity, however, much official research and policy continues to conceptualise fuel poverty as resulting from a combination of the three factors which were central to Boardman's (1991) original work: low income; energy inefficient homes; and high

energy costs (e.g. BEIS, 2018a). Whilst drawing important policy attention, this dominant framing serves to reduce fuel poverty to a primarily technical problem in two different ways. First, in that the problem is primarily known through the production of annualised statistics based on modelled data which provide ‘objective’ measures of fuel poverty that guide policy and interventions. Fuel poverty is thus understood as a statistical problem of rates and trends in the population (BEIS, 2018a) rather than as the daily lived experience of individuals. Second, this dominant understanding is technical insofar as the focus on energy efficiency lends itself towards technical solutions. This technicalisation of fuel poverty has two important effects. First, it excludes other ways of ‘knowing’ fuel poverty, particularly those which relate to the experiences of households and which consequently recognise a broader range of contributory factors. Second, an overly technical understanding of the problem forecloses alternative strategies and forms of intervention.

This paper therefore contributes to a growing body of literature seeking to broaden understandings and conceptualisations of fuel poverty. Much of this work involves qualitative exploration of the lived experience, often engaging with the broader concept of energy vulnerability. In contrast to the dominant technical narrative outlined above, this work seeks to expose the subjective and experiential dimensions of fuel poverty. A key outcome of this focus has been the recognition that experiences of fuel poverty are often deeply emotional, often in quite negative ways (Butler and Sherriff, 2017). To date, however, the emotional aspects of fuel poverty have almost always been seen as incidental to, and side-effects of a broader experience, and thus have rarely received sustained attention. This paper seeks to deepen the analysis of emotions within energy vulnerability by drawing on a broader set of ideas from the social sciences (Ahmed, 2004; Scheer, 2012). In doing so, it seeks to demonstrate how emotions play a critical and active role in shaping both experiences of energy vulnerability as well as trajectories into and out of it.

Section 2 reviews the existing literature on fuel poverty, describing the dominant technical understanding and more recent work on energy vulnerability before outlining a practice-based approach to emotions. Section 3 describes the methodology, and Section 4 presents our findings organised around two broad ways in which emotional practices shape experiences of energy vulnerability. Finally, Section 5 concludes the paper, detailing its key policy and research implications. Whilst the specific empirical context for this research is the UK, energy vulnerability is a global concern (Thomson et al., 2018) and, to date, emotions have not received much attention anywhere. Much more work is required to fully develop the emotional geography of energy vulnerability, and to explore its relevance in different parts of the world, but we hope this paper makes a start in building this new agenda.

2. Fuel poverty research: from energy efficiency to emotions

2.1 Technical understandings of fuel poverty

The technical understanding of fuel poverty emanates from Boardman’s (1991) original ‘10% definition’ whereby a household is considered fuel poor if it spends over 10% of its income on fuel to maintain a satisfactory heating regime. This framing results in three main forms of intervention. First and foremost are efforts to tackle fuel poverty through improving the thermal efficiency of buildings. For example, in the UK programmes such as

Warm Front, CERT (the Carbon Emissions Reduction Target) and ECO (the Energy Company Obligation) have sought to improve energy efficiency in low income households (Sovacool, 2015). Second, are attempts to assist low income households with high energy costs, through targeted discounts on energy bills, such as the UK's Warm Home Discount or benefits such as the Winter Fuel Payment for elderly householders (BEIS, 2018b). Finally, third, are attempts to improve the functioning of energy markets by encouraging fuel poor households to switch supplier in an effort to reduce household energy costs. This is particularly so in light of reports that highlight a correlation between low incomes and low switching rates (Ofgem, 2016).

Following the Hills Review (Hills, 2012), a new 'Low Income, High Costs (LIHC) measurement of fuel poverty was adopted for England. Under this approach, a household is defined as fuel poor if it has higher than median fuel costs *and* meeting these costs would mean it had lower than median income. The stated purpose of this new definition was to decrease the sensitivity of fuel poverty statistics to changing energy prices, as well as to remove those with high incomes and high costs from official statistics. As part of what Middlemiss (2017) terms the 'new politics of fuel poverty', this new definition has served to reduce the appropriate means of tackling fuel poverty even further by 'concealing' the role of the market in fuel poverty. As a result, despite continued policy focus on encouraging rational consumer behaviour and efforts to make it "easier for households to navigate competitive energy markets to ensure that more households can get the best deal for them" (DECC, 2013, p31), fuel poverty in England has effectively been reduced to a technical problem of energy efficiency. This is indicated by the primary target in the government's updated fuel poverty strategy for England being "to ensure that as many fuel poor homes as is reasonably practicable achieve a minimum energy efficiency rating of Band C, by 2030." (HM Government, 2015, p12). In Middlemiss' words, the new politics has framed fuel poverty such that it "can be solved by energy efficiency measures alone, and...attempts to address income inequality or challenges of the energy market are irrelevant" (Middlemiss, 2017, p17).

2.2 Energy vulnerability and the lived experience

Approaches that see energy efficiency and supplier switching as the most appropriate solutions to fuel poverty generally align with what Ambrose and Marchand (2017) describe as a 'positivist perspective'. This perspective, which underpins much fuel poverty policy, seeks to quantify the extent and depth of the problem by drawing on macro-level statistics, such as on patterns of income distribution or building energy efficiency ratings (e.g. BEIS, 2018b; Emden et al., 2018; National Energy Action, 2017). At the same time, Ambrose and Marchand (2017) identify a 'schism' between this positivist approach and more recent, though much less common, work that has "explored the lived experiences and consequences of living in cold homes using more ethnographically inspired qualitative approaches" (2017, p876). In short, the positivist perspective is increasingly critiqued as being divorced from everyday life both in how it: i) isolates economic decision-making about *energy* from wider everyday dynamics and concerns (rationalism), and ii) adopts a narrow, technically specified understanding of the problem (poor energy efficiency) instead of exploring the broad constellation of issues that can render households 'energy vulnerable' (Bouzarovski et al., 2013; see also Ambrose et al., 2017 who explore similar divides in relation to low energy homes).

There is a growing body of work seeking to develop new social science perspectives on fuel poverty (e.g. Gillard et al., 2017; Day et al., 2016; Petrova, 2017). One important strand of this work has been to develop the notion of 'energy vulnerability' as a means of broadening the focus of attention beyond the narrow, technical specifications of official definitions of fuel poverty. Whilst there is some definitional variation around the precise meaning of energy vulnerability, authors who use this term tend to operationalise it in ways that share some common features. First, energy vulnerability is used to draw attention to a wider set of factors that extend beyond the traditional fuel poverty triad. Bouzarovski and Petrova (2015), for example identify Access, Affordability, Flexibility, Energy Efficiency, Needs, and Practices as key factors, whilst Middlemiss and Gillard (2015) focus on Quality of Building Fabric, Tenancy Relations, Energy Cost and Supply, Stability of Household income, Social Relations, and Ill health. The argument, in both of these cases, is that changes in any of these elements, or in the relationships between them, can materially affect a household's access to affordable energy. The intention is to recognise the multi-dimensional nature of energy vulnerability and to broaden the range of factors understood as significant in the production and amelioration of fuel poverty (Baker et al., 2018). Following from this, a second stated advantage of the concept of energy vulnerability over technical, positivist understandings of fuel poverty, is that it recognises the dynamic nature of lived experience. By focussing on the many dynamic factors that render households energy vulnerable, it recognises that households can (and frequently do) move both in and out of fuel poverty (Middlemiss and Gillard, 2015). In short, energy vulnerability serves to highlight the precariousness associated with many experiences of fuel poverty, a point obscured by macro-level statistics. Bouzarovski and Petrova (2015) also argue that energy vulnerability approaches challenge socio-demographic understandings of vulnerability that see it as a deficit amongst, or characteristic of, specific consumer groups. Instead, vulnerability is understood to result from the combination of a range of structural factors in specific socio-technical settings.

A key insight from the recent turn to energy vulnerability has been to highlight the lived experience. Much work has documented the often extreme ways of coping that energy vulnerable households must resort to, from spatial and temporal rationing of heating (Anderson et al., 2012), to the heat-or-eat dilemma (Lambie-Mumford and Snell, 2015), to adjusting routines and using additional layers in order to keep warm (Chard and Walker, 2017). As part of this, subjective experiences of energy vulnerability have frequently surfaced as a critically important concern. In particular, energy vulnerability is increasingly recognised as an intensely emotional experience. For example, multiple accounts highlight the worry and anxiety caused by high energy costs and the variability and apparent unpredictability of energy bills (Middlemiss and Gillard, 2015; Ambrose et al., 2016; Tod et al., 2016). Poor quality housing is recognised as a cause of unhappiness, with persistent damp and mould being a constant source of distress and frustration; cold, uninviting and potentially malodorous homes are also noted as a source of stigma and embarrassment (Butler and Sherriff, 2017), as are many coping mechanisms such as putting on additional clothing, wrapping up in duvets or blankets or using hot water bottles to stay warm (Day and Hitchings, 2011; Chard and Walker, 2016). Landlord-tenant relations in the private rental sector are 'characterised by fear' (Ambrose et al., 2016, p. iv), and many energy vulnerable households suffer psychological stress and social isolation (Grey et al., 2017).

Energy vulnerability is also marked by a lack of trust in energy companies or housing providers (e.g. Lorenc et al., 2013).

Whilst emotions have therefore been a growing presence in energy vulnerability research, to date they have never taken centre stage. This is perhaps because, in almost all cases, the emotional experience is conceptualised as a negative side-effect of, or reaction to energy vulnerability, rather than as something which contributes to or shapes it (cf. Scheer, 2012). For example, Butler and Sherriff (2017) identify a wide range of different emotional experiences in their excavation of the psychological experiences of energy vulnerability among young adult households, but the negative emotional experiences they identify are all conceived as resulting from energy vulnerability, rather than feeding-in to it. Damp and mouldy homes are, for instance, positioned as a 'threat' to identity, and being forced to make sacrifices over household essentials is recognised to "*cause considerable psychological concern*" (p976, emphasis added). Similarly, Grey et al (2017) identify 'reduced emotional wellbeing' as a "*socio-economic factor associated with fuel poverty*" (p903). They note, for example that "*living in a cold home may contribute to poor emotional wellbeing*" (p907, emphasis added) and that the "*psychological stress resulting from heating bills were felt to trigger feelings of being 'miserable', 'depressed', 'anxious'*" (p907, emphasis added). In short, whilst emotional experiences have a strong presence in this work, the nature of their relationship with energy vulnerability is not explored.

A few studies have gone a little further. For example, the 'Warm Well Families Research Project' (Tod et al., 2016) recognised that the behaviours of energy vulnerable households were, in part "*driven by*" emotions such as fear of debt (2016, p10, emphasis added). While not explicitly discussing emotions, Middlemiss and Gillard, recognise that subjective experiences can contribute to and exacerbate energy vulnerability, rather than simply resulting from it, for example: "[t]he subjective experience of fuel poverty is hugely important, because if families feel that they are not warm enough, not able to afford energy, they begin to see more extreme coping mechanisms as legitimate, which may lead to other health and social problems" (2015, p152). Whilst emotional experiences have been increasingly recognised in accounts of energy vulnerability, much more remains to be done to fully explore how energy vulnerability both shapes and is shaped by emotions. To do this, we draw on a growing body of work that conceives of emotions as relational practices.

2.3 Emotional relations and energy vulnerability

Emotions have historically been viewed as inferior to thought and reason (Ahmed, 2004), as introducing bias, clouding vision and impairing judgement (Bondi, 2005b), and thus as an essentially private matter that should be kept out of research and policy (Anderson and Smith, 2001). This has certainly been the case in most fuel poverty policy and research, where the dominant focus has been on rationalism and efficiency. In recent years, however an increasing number of disciplines have started paying attention to the role that emotions play in different aspects of everyday life, including geography (e.g. Anderson and Smith, 2001; Bondi, 2005a; Pile, 2010), sociology (e.g. Burkitt, 1997; Barbalet, 2002), social psychology (e.g. Lawler, 2001), and cultural theory (e.g. Ahmed, 2004). As Anderson and Smith put it, "to neglect emotions is to exclude a key set of relations through which lives are lived and societies made" (2001, p7). Thus, to overcome their silencing, emotions should be recognised as "ways of knowing, being and doing in the broadest sense" (2001, p8).

A key debate in research on emotions centres on precisely how to conceive of them. Here, there has been a gradual move away from a psychological approach which sees emotions as the possessions of individuals, reflecting their 'inner' state, towards a conceptualisation of emotions as relational entities that exist in their 'between-ness' (Bondi, 2005a), serving to connect both people and things (Burkitt, 1997). Kemper (1990), for example, argues that emotions are produced through social relations such that, rather than merely residing inside individuals, emotions "result from events that happen in episodes of social interaction with family, friends, coworkers, organizational superiors and subordinates, and so on" (p207). Developing this relational, inter-subjective approach, emotions have more recently come to be seen as particular forms of cultural and social practice (e.g. Ahmed, 2004; Scheer, 2012).

We interpret 'emotional practices' (Scheer, 2012) as akin to what Schatzki (1996) calls 'dispersed practices'. Dispersed practices are widely distributed across multiple domains of social life, with examples including practices such as describing, following rules, questioning, or imagining (Schatzki, 1996, p91). By contrast, Schatzki describes 'integrative practices' as more complex and "constitutive of particular domains of social life" (Schatzki, 1996, p98) giving examples such as business, teaching or cooking practices. Dispersed practices thus become attached to and 'transfigured' by integrative practices, shaping how these integrative practices are performed and engaged in. As Schatzki puts it, "people usually, though not always, are also engaged in an integrative practice when carrying on a dispersed one. When someone describes something, for example, he or she is also carrying on farming, nautical, cooking, education, military, or building practices" (1996, p99). In relation to energy use, this suggests that the extent to which emotional practices are attached to or significant within different energy-using integrative practices will likely vary at different times and for different people.

For the purposes of this paper, there are three core implications of conceiving of emotions as practices. First, and following Scheer (2012), is the recognition that emotions are not "universal features of subjectivity" (p200) but are instead mobilized, named, communicated and regulated in different ways across time, place and culture. In short, people are *socialised* into experiencing and performing emotions in particular ways. It is common sense to observe, for example, that children have to be taught how to manage and control their emotions as they grow up and that that what constitutes an appropriate form of emotional display will therefore vary across social groups. Witness, for example, stereotypical assumptions of particular nationalities or genders as more or less emotional than others. These socialisation processes give rise to the second implication which is that a practice-based understanding of emotions recognises that they must be *performed*. Much work on the sociology of emotions, for example, has explored the forms of 'emotion work' (Hochschild, 1979) engaged in to manage and control emotions in particular settings, and the impacts this has on different individuals (Lupton, 1998). In short, whether deliberately or otherwise, people perform emotions in different ways and, depending on how these performances are interpreted by their audiences (Scheer, 2012), this shapes how they are responded to. In this way, individuals are seen to possess agency in the ways they engage in and perform emotional practices, despite the fact that what counts as an appropriate emotional performance is socially and culturally constrained. Finally, the third core implication of a practice-based understanding is that emotional practices have very real

effects, leading Ahmed (2004) to suggest that the central question should be: “What do emotions do?” (Ahmed, 2004, p4). For Ahmed herself, emotions serve to create the surfaces and boundaries of different objects – whether people or things – shaping how we understand and respond to them. For our purposes here, the relevant effects of emotional practices will likely relate to how they might shape patterns of energy demand. For instance, people may consume energy (or not) in particular ways in order to express or perform different emotions, for example, in pursuit of the Danish concept of ‘hygge’ (a ‘cosy’ home), people may use particular sources of light or heat (e.g. Jensen et al., 2018).

To date there has been almost no in-depth engagement with emotions and their effects in energy research. As outlined above, when energy vulnerability research has recognised emotions, it has tended to adopt what Scheer (2012) terms a “linear model of emotional processes” (p206) in which emotions are reactions or responses to particular stimuli that ‘happen to’ people, rather than forms of ‘active doing’. Sahakian and Bertho (2018) suggest that a core reason for this has been the “lack of meaning around energy usage, in a symbolic sense” (p1). Pierce and Paulos (2010) make a similar argument that “modern energy such as electricity has overwhelmingly been designed and interacted with as totally *undifferentiated*; the energy used for lighting, heating, and charging a mobile are, from the perspective of use, essentially the same” (p3). In short, energy has, to date, been an object that emotions have ‘slid over’ rather than ‘stuck’ to (Ahmed, 2004).

There are, however, a few recent signs in this journal that this may be beginning to change (see for example: Huijts, 2018, Sahakian and Bertho, 2018, and Hampton, 2017). Sahakian and Bertho (2018) attempt to overcome the neglect of emotions by turning to the social practices and norms that energy is part of as the key objects that may provoke emotional expressions and responses. Whilst emotions have not normally been a focus of social practice inspired accounts of energy demand (Hampton, 2017), Sahakian and Bertho (2018) show how emotions can be central to both stabilizing and changing practices. For example, they show how attempts to juggle multiple practices and meet social standards and expectations around, for example, neat, tidy and clean homes, can provoke tension and anxiety. Thus, to avoid shame or embarrassment, people feel as if they ‘ought’ or ‘must’ engage in these practices and thus serve to stabilise and perpetuate them. Alternatively, Sahakian and Bertho also show how ‘letting go’ of such standards can be key to their re-negotiation. It can thus be seen how emotions can serve to pressurise households to perform practices in particular ways, and how the failure of such performances may have emotional consequences.

Whilst emotions are just surfacing within energy research, one area where relational and practice-based understandings of emotion have been employed, and with some relevance to energy vulnerability, is within the housing market (Christie et al., 2008; Smith et al., 2006). This body of work is instructive in how it seeks to unpack the diversity of emotions important in shaping housing economies. As Christie et al (2008) put it:

“markets are saturated with all kinds of emotions, sometimes calm and predictable, sometimes wild and out of control, sometimes dependent on aggressive behaviour, but also infused with humour, warmth, affection even love...a study of markets

needs to attend to a broad 'sociality of emotions': to how a wide range of feelings circulate and generate effects." (Christie et al., 2008, p2297)

Building on this, Jorgensen (2016) argues that "markets come to work or perform...due to the interweaving of economic agency, emotions and materials" (p101). In short, emotions are starting to be recognised as potentially important not only to how the housing market is experienced, but also to how decisions are made within it and thus to how it functions. Such an understanding demands a re-evaluation of economic decision-making, that refuses to continue externalising and 'framing out' emotions (cf. Callon, 1998) and instead reflects how consumers – whether of houses or any other product – actually make decisions (Smith et al., 2006). Aune et al (2016) have begun this task in relation to Norwegian consumers' understandings of the electricity market by showing that, rather than calculating in a narrowly rational and economic sense, consumers instead engage in what Cochoy (2008) calls 'qualculation' - "quality based rational judgement...[that] does not preclude calculation; rather, it is an extension, a more comprehensive rationality that may include calculation" (Aune et al., 2016, p349).

In summary, there is a stark contrast between the currently dominant positivist ways in which fuel poverty is conceived and these emerging ways of understanding emotions as central to performances of and decision-making within practices-that-use-energy. Current technical definitions of and approaches to addressing fuel poverty rest upon the silencing of emotions from how people make decisions about energy, and on the 'purification' (Shove, 2017) of energy efficiency from the wider dynamics of everyday life. Emerging work in energy vulnerability has begun to recognise emotional reactions to energy vulnerability but, by maintaining a linear model of emotional processes, has thus far provided only a partial picture and not gone far enough to demonstrate how emotions are entangled with energy vulnerability. In the rest of this paper, and for the first time, we seek to begin this process by employing a relational, practice-based approach to emotions to show how, as well as shaping experiences of energy vulnerability, emotions can also contribute to it and frustrate attempts to address it.

3. Methods

The research consisted of 16 semi-structured interviews with tenants of Broadland Housing Association, a social landlord based in the city of Norwich which manages around 5,000 properties. Interviewee recruitment was facilitated and managed by the housing association and the broad focus on the research was to understand how the Housing Association intervened in the energy systems of their tenants. Potential households were identified by Broadland on the basis that: i) they were perceived to be at risk of energy vulnerability (or had experienced some kind of energy problem) and ii) they had recently received some kind of energy related intervention. These interventions could be both technical (e.g. new boilers, insulation, air source heat pumps) or 'social' (e.g. energy advice, tenancy support). Interviewees were approached first by Broadland (often via the Tenancy Support team) who explained the research aims and approach. Interviewees were compensated with either a £25 voucher or equivalent contribution to their energy costs depending on their own preference. The decision to pay the respondents was taken after considerable discussion with Broadland and was informed by feminist critiques of research which raises questions

over issues of reciprocity and how the benefits of research are distributed, and which has led to the growth of participatory forms of research (Pain, 2004). Where such participatory methods are not appropriate, however, others argue that compensatory payments to participants can be an appropriate mechanism to help equalise the power relations and benefits of research (Thompson, 1996). There are, however, legitimate concerns that such payments might induce or coerce participants into participating, with one suggestion that offering non-cash payments is perhaps more appropriate (Goodman et al., 2004). In discussion with Broadland, we agreed that non-cash payments was a sensible approach and we were careful to ensure that these payments were not presented to interviewees as inducements but rather as compensation and that they could withdraw from the process at any time¹. Where Broadland considered particular tenants to be too vulnerable and were concerned that the research may distress or harm them, these households were not included in the research.

All but one of the interviews were held in the tenant’s home, and in four cases there was more than one resident present. The interviews covered a range of topics including awareness of energy use; managing energy use; energy efficiency; financial aspects of energy; and energy interventions. The interviews thus focussed on domestic energy management in general and did not explicitly discuss energy vulnerability or fuel poverty (indeed, several of the interviewees would not be classified as fuel poor under official 10% or LIHC definitions). Basic demographic, socio-economic and household energy efficiency information was gathered via a short post-interview questionnaire and is summarised in Table 1.

Pseudonym	Age	Income	Rationing of heating	Payment Method	EPC Rating
Colin	60-69	Under 10K	Yes	PPM	B
Barbara	30-39	Under 10K	Yes	PPM	D
Susan	Unknown	Unknown	Yes	PPM	Unknown
Tony	30-39	Under 10K	Yes	PPM	Unknown
Janet and Steve	40-49	Under 10K	Yes	PPM	C
Michael	Unknown	Under 10K	No - but accruing debt	PPM	C
Lucy	20-29	Under 10K	Yes	DD	C
Glenda	60-69	10 - 15K	No	DD	C
Fran	Unknown	Unknown	Yes	PPM	C
Annette and Pete	20-29	10 - 15K	No	DD	B
Paulette	30-39	10 - 15K	No	PPM	D
Rob	30-39	Under 10K	Yes	Quarterly	Unknown
Sybil and Arthur	60-69	£15 - 20K	No	DD	Unknown
Francis	60-69	£15 - 20K	No	Quarterly	C
Fiona and Bob	60-69	Over £25K	No	DD	B

Key: PPM - Prepayment Meter / DD – Direct Debit

¹ We would like to thank an anonymous reviewer for encouraging us to draw further attention to this issue. Personal communication with several researchers working on the lived experience of energy vulnerability has confirmed to us that offering compensatory payments to participants is widely practiced, with several colleagues suggesting it would be unethical not to offer such payments. At the same time, we have noted that this issue is not often mentioned in the published literature and thus hope that by mentioning it here it may receive further attention in future to ensure good practice is established and becomes commonplace.

Table 1: Summary of Interviewees

Table 1 shows that many interviewees lived in relatively energy efficient homes. Only two interviewees were identified as living in properties with an Energy Performance Certificate (EPC) rating below C, which is the UK Government's stated objective to address fuel poverty. Across all of Broadland's properties, the average Standard Assessment Procedure (SAP) rating is 71.1 (equivalent to an EPC rating of C), well above the UK average of 64.5 (EPC 'D'), and marginally above the social housing average of 70.5 (BEIS, 2018a). Nonetheless, even among those living in C-rated properties or above, many were still found to be rationing their heating or cutting back on their energy use in other ways. This adds to the growing critique that the LHC measure of fuel poverty and its focus on energy efficiency as the primary solution, results in energy vulnerability within social housing being overlooked (National Housing Federation, 2016; Curl and Kearns, 2017).

A further 10 interviews were conducted with staff members from Broadland Housing. These targeted those in energy related roles, but also sought a diversity of perspectives from across the organisation – both in terms of function and distance from the 'frontline'. Again, these were semi-structured and covered energy issues as well as more general questions on housing associations and their aims and responsibilities. Finally, a focus group was held with eight members of Broadland's tenancy support team who deal with some of the most severe cases of energy vulnerability in order to discuss and compare their experiences of working with tenants.

All of the interviews and the focus group were recorded and transcribed before being analysed using Nvivo software. Initial descriptive coding categories were drawn from the energy vulnerability literature and topics which had structured the interviews themselves. Despite emotions not being an initial focus of the research or the interviews, during initial descriptive coding the importance of emotional engagement with energy became apparent in the data. On reflection it is clear that the interviews themselves created a space for the performance of emotional practices in relation to energy in ways that other research methods (e.g. quantitative surveys) may not. With the emergence of emotional engagement as a key focus of the analysis, we re-visited the data with a particular focus on the various forms of emotional engagement that were either discussed or apparent in the responses from interviewees. This was an iterative process of conceptual coding and theme development which led to the analysis presented below (Cope, 2003). Full ethical approval for the research was provided by the University of East Anglia's General Research Ethics Committee. In accordance, all interviewees' names have been anonymised. The authors have permission to share anonymised interview data with other relevant research projects and can do so on request.

4. Findings: emotional engagements with energy vulnerability

Having noted that the interviews were strongly marked by discussions of emotion, our findings are organised into two broad sections that explore the different ways in which emotions seemed to impact on and shape tenant experiences of energy vulnerability. First, we explore the roles that emotions appeared to play in shaping how our interviewees used

and paid for energy. Second, we explore the ways that emotional practices served to either facilitate or prevent the receipt of support for energy vulnerable households.

4.1 The role of emotions in shaping energy use and payment

We identified two main ways that different emotional practices shaped how our interviewees used or paid for energy. First, emotions such as worry and fear, shaped how people thought about and managed their energy use and served, in many cases, to encourage them to go onto more expensive pre-payment meters. Second, relations of care with other family members, friends and pets also shaped patterns of energy use.

4.1.1 Worry and fear shaping energy consumption

The most common emotional practice described by interviewees in relation to energy consumption was worry. As the following quotation demonstrates, worry was strongly attached to energy use precisely because it was deemed essential for the successful performance of many everyday practices. The most prevalent and immediate effect of worry was to make interviewees acutely aware of and vigilant over their energy use. One important effect of this emotional engagement was therefore to make energy consumption very prevalent and present in tenants lives:

“I probably worry about [energy] more than the food... I worry about it and I have to prioritise it. I would go, which I have done... two weeks without petrol in my car to make sure that I’ve got enough money to put on that electric key... Because if it runs out, I need it, you know. And I’ve got two children, I can’t be here with no electric and no heating.” (Barbara)

This constant vigilance – induced by worry – led to many of our interviewees managing their energy use in ways that are all too commonly described in the energy vulnerability literature (e.g. Chard and Walker, 2017; Middlemiss and Gillard, 2015). For example, our interviewees described many ways in which they adapted or limited their performance of practices to cut back on energy use in order to save money, such as: spatial and temporal rationing of heating; using cold or only minimal hot water; heating water with a kettle rather than boilers or immersion heaters; avoiding using ovens in favour of microwaves; batch cooking; making do with light from televisions; wearing additional layers; wrapping up in duvets; visiting friends to warm up etc. These different ‘ways of coping’ (Hall, 2016) clearly demonstrate how, for many of our interviewees, energy was a very pressing and worrying concern. A key underlying cause of worry about energy was fear over an unexpectedly large or unaffordable bill (Butler and Sherriff, 2017):

“It can be a worry, I don’t lose sleep but it’s there, it is there. It’s like a little niggle, “oh heck”, I get scared to open the letter [energy bill]. Sometimes I’ll put it down for a day before I’ll open it.” (Francis)

In some cases this fear of the unpayable bill was related to a fear of getting into debt:

“I have been in debt, my car was on a loan but I’ve paid that off and I am completely debt free so I don’t ever want to get into that situation, I don’t want my little one to have to go through seeing me have all that worry, so I always do try and prioritise

bills over anything else. That's why we don't really tend to go anywhere either, I'm not using diesel in the car, we tend to stay here!" (Paulette)

Tenancy Support Officers mentioned specific cases where even though tenants could afford to use and pay more for their energy they were still too scared to do so for fear of a large bill, and thus engaged in potentially harmful practices of energy rationing. For example:

Just talking about an elderly lady I worked with...it was a real fear of what it was going to cost her, I went in because she said her house was always cold but it turned out she never put her heating on, well two hours a day and that's not going to heat a bungalow... We've had surveyors round, all sorts to try and tell her [that she could afford to use more energy] and we've had people to show her how to work the boiler, I've done budgeting but she's still only putting it on for a couple of hours a day. (Tenancy support officer)

By becoming attached to energy bills and debt (real or imagined) in this way, fear had two important effects on experiences of energy vulnerability. First, as illustrated by some of the preceding quotes, it acted to make many interviewees prioritise paying their energy bills and compromise on other practices. Interestingly, whilst the 'heat or eat' dilemma is well known in the fuel poverty literature our research supports those who argue that it is more complex than this (cf. Lambie-Mumford and Snell, 2015), with both Paulette and Barbara spoke of sacrificing mobility (a different energy service) in order to secure heat and power for their homes (Simcock and Mullen, 2016). Second, it commonly resulted in interviewees wanting to go on 'the key', to have a Pre-Payment Meter (PPM) installed in order to remove the fear of a large bill and associated debt.

"Well, it's not a worry in regards to every four months we're going to get an electric bill, because we don't have to worry about that, because...we're on pay as you go." (Janet and Steve)

Tenancy Support Officers suggested that using PPMs as a means to reduce fear and regain control was a widely followed approach among tenants:

"I think for most of our tenants, they're on prepayment, most are on prepayment by default, some people actually choose prepayment because they're afraid of having a big bill every quarter." (Tenancy Support Officer)

Our data thus suggested that the preference for PPMs – which is well recognised amongst those on low incomes (e.g. Ofgem, 2017) - is at least partly driven by a desire for control in response to the fear of unknown energy costs (O'Sullivan et al, 2011). Yet for one or two interviewees PPMs were not especially successful in achieving this. In some cases, for example, by making energy expenditure a more immediate concern, PPMs actually seemed to increase daily worry. Barbara, for example, described how she was 'constantly worrying' about whether she could afford to put money on to her meter, and that if she could not she would end up going into "my emergency". Similarly, Susan, argued that being on a monthly, fixed rate tariff was less worrying than a PPM because you didn't have to worry about being cut off:

“I’ve scraped around to get the money because the electric’s popped [gone off], and that is quite nice, to know that [on a monthly tariff] you’ve got electric and it’s not going to pop.” (Susan)

So whilst PPMs appeared to reduce worry and fear about unexpected bills for some, for others they served to produce in it other ways.

In summary, the most common emotional engagements expressed by the interviewees in our study were worry and fear which served to shape energy vulnerability by making tenants i) forego or curtail particular everyday practices to reduce energy use, and ii) for most, to try and increase control over expenditure by using a PPM even if this risked increasing energy costs and thus exacerbating the initial conditions of vulnerability. Indeed, Tenancy Support Officers alerted us to specific circumstances in which worry and fear over large bills appeared to be causing people to ration their energy use, even when they could afford to use more. In these instances, therefore, emotions were not merely an after-effect of energy vulnerability but actively served to shape and exacerbate it.

4.1.2 Practices of care shaping patterns of energy consumption

A second key way in which emotions appeared to shape patterns of energy use – and thus shape experiences of energy vulnerability – was through practices of care. Following Pulcini (2017) we understand the practice of care as motivated or underpinned by specific emotions such as love, compassion or generosity. Our findings suggest that the performance of such emotional practices of care were important in shaping energy consumptions. Unlike worry, care has not been given much consideration in the energy vulnerability literature, despite a growing interest in care amongst social scientists (cf. Lawson, 2008). There were many examples across our interviews that support Middlemiss and Gillard’s (2015) observation that “social relations within the home had a substantial impact on both household priorities and on what was and was not considered negotiable” (p151). On numerous occasions interviewees noted how they often felt they had to use additional energy to express care for others that they wouldn’t necessarily have used in the absence of such care relations. For example:

“It’s too expensive but again I’ve got to keep heating the room, like I said especially when the baby’s here or my grandsons are here, that’s why I have to have heating on in the room but it just goes on for an hour and then goes off again.” (Janet and Steve)

As this quotation shows, using energy to express care was particularly apparent in relation to children and grandchildren, but other examples included turning heating on for visitors or even using energy to care for pets (cf. Strengers et al., 2016):

“If it was just me, I’d probably have it [the heating] switched off during the night but at her [my cat’s] age, she can’t keep herself warm.” (Glenda)

Whilst some might dismiss using energy to care for pets as unnecessary, particularly for those in energy vulnerable situations, as we argue later, the worst cases of energy

vulnerability we found were among those who had no apparent relations of care, and thus the ability to express care for pets is perhaps a key way to avoid social isolation and loneliness. Tenancy support officers detailed other cases where care for animals exacerbated situations of energy vulnerability, for example by preferring to spend money on their pets than themselves. This again illustrates how emotions can play a role in shaping patterns of energy consumption.

Section 4.1 has explored the main ways through which emotions appeared to shape how our interviewees paid for and used energy. As noted in section 2.2, the lived experience of energy vulnerability is widely recognised as highly emotional, but it is usually the case that negative emotional experiences are seen as resulting from energy vulnerability. In this section we have shown, for the first time, how emotional practices such as worry, fear and care can also have effects in shaping, and potentially exacerbating energy vulnerability.

4.2 The role of emotions in facilitating or preventing the receipt of support

Whilst section 4.1 explored ways in which emotions appeared to shape experiences of energy vulnerability – often serving to exacerbate it - this section focuses on how emotions shaped, both positively and negatively, tenant’s potential routes out of energy vulnerability through access to different forms of support.

4.2.1 Practices of care ameliorating energy vulnerability

Section 4.1.2 explored how practices of care shaped energy *use*, we also found care practices to be significant in helping interviewees access help and support - whether through advice, financial assistance or somewhere warm to go – to cope with particular problems. There were many instances, for example, of interviewees either providing or receiving advice from friends on how to save energy at home – such as by avoiding the tumble-dryers or getting a smart meter, or how to reduce bills by switching provider. Similarly, several interviewees mentioned visiting friends to escape their own cold home:

“I would go out...to my friend’s or a public place where it was nice and warm, so I’d spend less time at home sitting down in a cold flat, having to put the heating on, so I’d go out of my way to go round other people’s places, so I’d have the heat from there and socialise.” (Lucy)

Several interviewees also mentioned either borrowing from or lending to family members or friends to help pay bills or top up PPMs:

“Yes I have friends who help me. I have one friend who is very very important...This man was an engineer. Working in the same factory. You know my situation and what’s happened and sometimes I don’t get money I call him and say I don’t get money and he says “Don’t worry Michael” 30 minutes you go to your bank you’ve got money. He puts money in the bank for me.” (Michael)

In these instances, relations of care acted as a resource, providing a support network for those in energy vulnerable circumstances helping them to cope, particularly with acute situations. Emotional engagements with energy vulnerability are usually presented as negative, but these specific examples show how emotional practices can also have positive

effects. At the same, and the flip-side of these positive cases, the worst instances of energy vulnerability we encountered were found in situations where interviewees reported having no or very few relations of care. In such situations of social isolation interviewees neither asked for nor received help from either their personal support networks (or often from Broadland) and these were the only occasions in our sample where we observed the complete self-disconnection of heating. In Colin's case, for example, he notes that:

"I don't ever speak, well I don't see no-one...I don't put lights on, no...the only thing what's going on now is the fridge...and the telly, because if I didn't have that I'd go loco." (Colin)

Barbara also noted that the breakdown of her family initially led to her experiencing social isolation and a lack of a support network to discuss or assist with her financial problems:

"My family then broke down and I am the only person in my whole entire family who lives in a council house and I'm the only person who's single and got two children so it was a big thing for me that I didn't feel that I had anyone to talk to." (Barbara)

In these cases, as well as making the emotional burden of energy vulnerability harder to cope with, social isolation also appeared to make situations of energy vulnerability seem more hopeless, with little chance of receiving help due to a lack of social connections or support.

In summary, relations and practices of care appeared, in some circumstances, to be able to help people cope with energy vulnerability acting as a resource to draw on. In this way emotions such as love, compassion and generosity are seen to shape experiences of and potential trajectories out of energy vulnerability in the ways that they are practiced through care. At the same time, the lack of these care relations seemed to correlate with some of the worst cases of energy vulnerability we saw. This section – and section 4.1.2 above – both reinforces and extends the work of Middlemiss et al (under review) on the roles of social relations in energy vulnerability. We concur with Middlemiss et al that social relations are clearly significant in shaping experiences of energy vulnerability, but go a little further by exploring how some of these relations may be characterised as relations or practices of care and are thus underpinned by particular sets of emotions.

4.2.2 Embarrassment and lack of trust preventing households from improving their situation

It is widely accepted that there is a significant amount of stigma attached to those living in fuel poverty (Royston et al., 2014) and to poverty more generally (Walker, 2014; Lister, 2015). From our perspective this relates to the broader socialisation of emotions in relation to financial status and wellbeing. In our interviews, this stigma was expressed as embarrassment or shame. As Barbara explained, one consequence of feelings of embarrassment was to stop her from inviting others round to her home, increasing potential social isolation:

"I don't have anyone come round. I don't have friends over...No-one. I don't think I've had a friend round since about three years...I don't like the condensation and

that is a big thing for me. It's embarrassing. I get embarrassed when I pull out in the mornings and see that you cannot see through the windows." (Barbara)

Here then embarrassment is a consequence of energy vulnerability – due to the rationing of heat causing damp and condensation – but also serves to exacerbate the conditions of energy vulnerability by increasing social isolation. In addition to feeling embarrassed by damp and condensation in their homes, the main way that embarrassment appeared in our interviews was through tenants explaining that embarrassment prevented them from seeking assistance to improve their situation:

"Even if I go to my Mum...and say, "Mum, can I borrow £20 for some electric?" I find that embarrassing, so I try not to put myself in that situation." (Barbara)

For several of our interviewees, even a short delay in asking for help could contribute significantly to deteriorating circumstances. In Tony's case, for example, he had got into debt that was being recouped through his PPM. He reached a point where he felt that the proportion of debt being deducted made it uneconomical to keep topping up his gas and thus completely self-disconnected for several months. Tony explained that he didn't like asking people for help and, as such, at no point during this process had he contacted Broadland and indeed he was only identified as a result of a dispute with a neighbour. Once Broadland did identify him, they were able to help him claim some backdated benefits, to have some debts written-off and others consolidated. Had Broadland been able to identify and help him earlier, however, his situation could have been improved much more quickly and easily.

Even after energy vulnerable tenants had been identified however, both tenants and Tenancy Support Officers expressed how they still had to work hard, often over long periods, to overcome embarrassment and gradually build-up relations of trust:

"It was a relief when they put me in touch with [the Tenancy Support Office] and then when [she] came round... we sort of had meeting after meeting...I think I broke down a few times...It was sort of like she was getting a picture about me, but I did open up about it and I started talking." (Barbara)

As Barbara states, building relations of trust can demand multiple emotionally charged meetings as part of the process of getting a full 'picture' and thus being able to provide necessary help and support. The need to put in emotional work to build trust was also acknowledged by Broadland staff who recognised not only that they were effectively strangers asking tenants to share often quite personal, potentially embarrassing details about themselves, but also that tenants themselves may be wary of their motives:

"You're asking someone to actually divulge information with a complete stranger. We explain we're tenancy support...we're not the rent officer...we are there to offer support, but even with that, they still see you as somebody in authority, bureaucracy, whatever...you've got to chip that away and that takes ages." (Tenancy Support Officer)

From initial embarrassment related to the stigma associated with fuel poverty, to problems with establishing and maintaining trust in support agencies and energy companies, it should, we hope, be clear that understanding the emotional aspects of energy vulnerability has a key role to play in ensuring it is effectively addressed. Whilst questions of stigma have begun to be addressed in other areas of energy studies such as energy efficiency (Reid et al., 2015) there is clearly more scope to explore its relationship to situations of energy vulnerability.

Section 4.2 has explored how emotions can both help and hinder potential routes out of energy vulnerability. In this way it has sought to advance beyond the extant literature by demonstrating that, as well as being a highly emotional experience in itself, the emotional practices bound up with energy vulnerability also have important effects that impact on the support energy vulnerable households receive.

5. Conclusions

This paper has begun to address an important gap in fuel poverty and energy vulnerability research, the role that emotions play in shaping and potentially ameliorating situations of energy vulnerability. Drawing on a relational, practice-based account of emotions, we have demonstrated how emotions are not only negative consequences of vulnerability, but in fact play important roles in shaping relations between households, other actors and other elements of energy systems (such as bills, PPMs etc) in ways that can serve to shape energy vulnerability.

In terms of the work that emotions 'do' we can identify three overarching themes. First, they contribute to shaping heating and other energy-using practices. Fear, anxiety, worry and care can all play a role in determining spatial and temporal consumption patterns. Second, emotions impact on the kinds of support received by those struggling to secure adequate energy services and thus impact on potential routes out of energy vulnerable situations. Fear, embarrassment and stigma can stand between a tenant and the possibility of support, whether from 'official' sources or from family or social networks. At the same time, the presence of relations of care can also, in certain circumstances help some households to ameliorate the worst conditions of energy vulnerability. Thus, emotions are seen to play both negative and positive roles in shaping the lived experience of energy vulnerability. Third, emotional practices were also shown to shape engagement with the consumer energy market by impacting on how energy vulnerable households pay for their energy, and the levels of trust they have in potential sources of help and support. In this sense, we make a small contribution to work that demonstrates how the emotional and the economic are inextricably entwined (Christie et al., 2008; Zelizer, 2005).

These findings point to a number of policy, practical and research implications. For policy and practice, we would argue that foregrounding emotions acts as a crucial counterweight to the technicalisation of fuel poverty that currently shapes much policy intervention. It also substantiates recent calls to recognise the role that emotions play in public policy (Unwin, 2018). In the specific case of fuel poverty, this is not to deny the value of energy efficiency interventions in some cases, only to observe that such programmes cannot solve energy deprivation on their own (Mould and Baker, 2017). It is vital that a better understanding of the lived experience of energy vulnerability is built-in to policy from the earliest design

stages so that policy and practice can address both its causes and symptoms. Improved focus on the emotional and subjective experiences of energy vulnerability can also inform how practical interventions are delivered. Agencies such as housing associations need to recognise that trust between them and their tenants is a two-way relation and that considerable time may be needed to nurture it. With hindsight it is clear that the interviews we conducted served themselves to create a particular kind of safe space in which interviewees felt able to acknowledge and perform the different emotions bound up with their daily energy use. Creating more, similar spaces and working in a face-to-face, 'folk-first' (Baker et al., 2018) manner to help tenants express and share their concerns, may help reduce the stigma of asking for help. Similarly, working to improve the energy and financial literacy of tenants – for example through community energy cafes (Martiskainen et al., 2018) - may also help reduce their fear and worry, giving them more knowledge of and confidence to ask for available support. Nonetheless, whilst these kinds of intervention might make a difference in some cases, it is clear that households and social landlords lack the agency to address this problem on their own.

For research, our findings point towards an important new research agenda to develop the emotional geography of energy vulnerability. To be clear, this paper is based on a small sample of interviews so further research, with different and potentially larger samples, is evidently needed. Such further research could usefully catalogue a wider range of emotions beyond those identified here, to consider how they impact on energy vulnerability and energy use more broadly. We would argue it should also explore how emotional engagements are distributed within and across households, as well as across formal policy and support agencies. For example, do emotions have different impacts across genders, ages or ethnicities? How are emotions managed differently in different households or organisations? Further, given the global nature of energy vulnerability, it will be important to understand the diversity of emotional experiences and expressions across cultures and within different socio-technical contexts. The emotional engagements of practitioners, including researchers (cf. Bondi, 2005b), are also an important avenue of further enquiry. Methodologically, whilst more needs to be done to map emotions at a larger scale, it was precisely the in-depth, face-to-face nature of this work that allowed the time and space for emotions to surface and be meaningfully and ethically addressed. It is important that further research recognises and actively reflects on the role of different methodologies and metrics in 'knowing' fuel poverty and taking action upon it (Meyer et al., 2018). Crucially, we would argue that attempts to understand the lived experience of energy vulnerability should be an essential and central part of the methodological toolbox, as a complement to the dominant quantitative approaches. Finally, for energy social science more broadly, it is clear that publics engage with energy in multiple sites, spaces and ways (Chilvers and Longhurst, 2016; Chilvers et al., 2018), to which we would add that the nature of relationships to and engagements with energy are also multiple. At the very least, attending to such diverse engagements, in this case by tracing emotional relations and practices, may provide new perspectives on and open up new questions about hitherto stubborn policy issues. More broadly and importantly, developing a more thorough understanding of how emotions shape and are shaped by engagements with energy may be an important step towards putting people rather than technologies at the heart of sustainable energy transitions.

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