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**“How can you live like that?”: energy vulnerability
and the dynamic experience of fuel poverty in the
UK**

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Abstract

Recent evidence documents a dramatic reduction in average direct UK household energy consumption between 2005 and 2011 (ONS, 2013). This in a time when energy prices rise yearly, and incomes are static or declining. Meanwhile, the government's definition of fuel poverty is changing following the Hills review. Here we draw on qualitative data to explore the experience of fuel poverty in the UK and to suggest a dynamic set of qualitative indicators for household vulnerability. Among fifteen diverse participants from across the UK, a substantive shift has taken place in people's ability to cope, and their need to compromise on basic needs. In our data we identify six dimensions of energy vulnerability for the fuel poor, including the three commonly cited in the literature (quality of dwelling fabric, energy costs and supply issues, and stability of household income). Tenancy relations, social relations within the household and outside, and ill health also play a mediating role in households' ability to cope. Our findings problematize the existing measures of fuel poverty, and suggest that the emerging concept of energy vulnerability provides a useful lens with which to understand the dynamic nature of fuel poverty at the household level.

Key words: Fuel poverty; energy vulnerability; lived experience; energy consumption

Introduction

“It were so bad my neighbour said to me ‘look, I’ve got a spare room, just come and sleep here for the winter and keep warm.’ How can you live like that? You know, going to their house like that. They are two old people, in their 70s but they were quite willing to do that. I can’t do that, just move in like that.” (Jan)

In a recent report on household energy consumption, the Office for National Statistics (ONS) documents a 24% reduction in average household energy consumption in the UK between 2005 and 2011 (2013). This radical change in energy consumption in the home is likely due in part to increasing efficiency, but the doubling of energy prices for households during the period must also have had a substantive effect on consumption. It is reasonable to deduce from the ONS figures that the experience of living in fuel poverty during this period has altered substantially. In addition, since the coalition government came to power in 2010, it has introduced a radical welfare reform agenda, which has reduced incomes for many (Jordan, 2012). In the face of increasing prices and decreasing incomes, and with little prospect of a reversal of either in the near future, understanding how the fuel poor are coping with change is critical.

To date, relatively few studies exist that touch on the lived experience of fuel poverty (Harrington et al., 2005, Hitchings and Day, 2011, Jenkins et al., 2011, Anderson et al., 2012, Bouzarovski et al., 2013). Given the radical changes in energy consumption over time captured by the ONS data, it is likely that qualitative data on fuel poverty from the past is outdated. Harrington et al, for instance, published a study which documented the experiences of 30 families who were categorised as fuel poor between 2000 and 2003 (2005). Since 2005, energy prices have more than doubled and the cost of living has continued to rise faster than incomes for most sectors of society (Hirsch, 2013).

The experience of fuel poverty is structured by a wide range of social and economic policies, as well as changes in household circumstances, and as such has a dynamic nature. In this paper we present the results of a qualitative study, with a view to understanding how the dynamics of fuel poverty are experienced by the fuel poor themselves. In doing this we mobilise the concept of energy vulnerability and propose a set of interrelated indicators with which to analyse household vulnerability. Our first contribution here is to establish that there has been a substantive shift in the experience of fuel poverty between previous studies and our own work. Where previous studies in this area described a minority of interviewees being forced to compromise on fuel due to extreme poverty, almost all of our respondents, from a range of financial situations, are compromising on fuel. Our second contribution is the identification of six dimensions of energy vulnerability for the fuel poor, including the three commonly cited in the literature: quality of dwelling, energy costs and supply, and stability of household income. In addition, we find that tenancy relations, social relations within the household and outside, and ill health play a mediating role in households' ability to cope with rising costs and low incomes. Our findings problematize the existing measures of fuel poverty, and suggest that the emerging concept of energy vulnerability provides a useful lens with which to understand the dynamic nature of fuel poverty in a changing policy environment.

From definitive to dynamic

The phenomenon of fuel poverty in the UK, understood as the inability to secure adequate energy services, is at the centre of myriad policy debates and government targets. For instance, household energy consumption and efficiency are under increasing scrutiny (Office for National Statistics, 2013, Department for Energy and Climate Change, 2012), residential CO₂ emissions are to be reduced by 60% by 2050 (Johnston et al., 2005), the supply of affordable housing is struggling to keep pace with demand (Wilson, 2010) and reforms to public services and social welfare are extensive. The national Fuel Poverty Strategy (Department of Trade and Industry, 2001) looks set to miss the legally binding target of eradicating fuel poverty by 2016. Amidst this political turmoil, the daily lives of millions of households around the UK continue to be plagued by difficult trade-offs; deciding which basic needs are to be met as incomes stagnate or decline and the cost of living continues to rise (Hirsch, 2013). The voices of the fuel poor are rarely heard in this political melee.

Definition and measurement

The framework for defining and measuring fuel poverty has recently undergone significant change. Previously understood to be when a household must spend more than 10% of its income on fuel in order to attain adequate warmth (Boardman, 1991), the definition of fuel poverty is now a more dynamic description of 'low income and high costs' (LIHC) (Hills, 2012). Under the LIHC definition households are deemed to be fuel poor if they have 'required fuel costs' that are above average, and (if they spend above average amounts on fuel) that their income is below the official poverty line (Department for Energy and Climate Change, 2013). After controlling for household composition and housing costs the LIHC definition produces a 'fuel poverty gap'; a monetary figure indicating just how far away a household is from being able to afford their fuel bills. Such a measure of severity provides some indication of the socio-economic challenges facing the fuel poor.

Whilst the fuel poverty gap can be measured in monetary terms – it grew from an average of £310 to £438 in England and Wales between 2005 and 2011 (Department for Energy and Climate Change, 2013) – the social, economic and political factors which drive changes in this gap are less clearly defined. In order to illuminate how such processes produce change, and to understand what can be done to reverse or encourage such change, the lived experiences of the fuel poor must be heard. Given the complexity of the socio-political phenomenon of fuel poverty, narrative accounts of daily life, told by households themselves, are essential to build a richer picture of the problem.

The lived experience

The adverse effects of fuel poverty on health, financial, occupational, and social wellbeing are well documented (see Boardman, 1991, Boardman, 2010). To what extent a given household is able to avoid these consequences requires more than a meter reading or energy efficiency assessment. Detailed descriptions of the daily trade-offs and difficulties faced by the fuel poor rely on qualitative research, an area of the literature which is currently rather limited. To date, we have identified a handful of publications that deal either directly or indirectly with the lived experience of fuel poverty (Harrington et al., 2005, Hitchings and Day, 2011, Jenkins et al., 2011, Anderson et al., 2012, Bouzarovski et al., 2013).

Harrington et al published their findings from a qualitative investigation into the UK's Warm Home scheme in the year preceding the DECC and ONS statistics cited above (2005). Their study suggested that there were four main responses to fuel poverty in evidence:

“a majority who keep warm by depriving themselves in other ways; those forced to economise on fuel on account of extreme poverty; a small minority who economised on fuel in order to be able to afford other activities; and those who cannot stay warm despite substantial fuel expenditure because of the heating inefficiency of their home” (ibid., p. 266).

In 2005, then, Harrington et al find that most people are able to keep warm, by avoiding unnecessary expenditure elsewhere. On the other hand Gibbons and Singler find (in a subsequent review paper covering sources from a similar time period) that more drastic actions are being taken, including: juggling any household costs with a degree of variability (food, fuel) in order to cover regular overheads, rationing fuel consumption, and increasing indebtedness (2008).

In more recent work, Anderson et al have drawn attention to the fact that such coping strategies are integral to the experiences of low income households, for whom rising energy costs are a particularly pertinent threat (2012). In research conducted in 2009, they found that:

"Households who cannot afford to heat their homes adequately endure the winter months as best they can, using their heating intermittently or only when it is most needed, limiting their domestic lives to only one or two rooms, and wrapping up in extra clothes and blankets. All too often, life becomes a misery, physical health problems worsen and social isolation is exacerbated." (ibid. p. 50)

The authors suggest that in 2009 low income households in the UK are being forced to continually renegotiate their understanding of the boundaries between essential and desirable goods and services.

The way households themselves conceive of fuel poverty does not always concur with the framings of the official definitions. Recent evidence shows that young adults do not conceive of themselves as experiencing any form of energy vulnerability (Bouzarovski et al., 2013) and older people tend to distance themselves from the image of a passive victim unable to cope with the cold (Hitchings and Day, 2011). It also seems that interpretations of basic 'needs' (O'Neill et al., 2006) and notions of the acceptability of behaviour (Hitchings and Day, 2011, Hards, 2013) are likely to be embedded in households experiences of, and responses to, fuel poverty. As such, the day-to-day experience of living in fuel poverty is structured by people's understandings of themselves, and what is appropriate for them in their social context. This subjective experience has implications for vulnerability: for example, fuel poor households might be more or less acknowledged as having a right to government support (Walker and Day, 2012).

In summary then, work on the lived experience of fuel poverty to date is limited, and as such we do not have a rich and accurate picture of the current state of fuel

poverty in the UK. In the literature we see hints that there has been substantive change in consumption of energy over time, but we do not understand how this change has come about for those living in fuel poverty. We begin to address these two gaps in the literature in our paper.

Methods

The research consisted of 17 in-depth interviews with representatives of 15 households. The first cohort (n=7) were interviewed in 2010, and the second (n=10, including 2 from the first cohort) in 2013. Interviews lasted on average an hour, and focused on the participants' use of energy over time, experiences of fuel poverty, and (for the second cohort) the experience of policies that have been introduced since the coalition government took office in 2010. We acknowledge that self-reported behaviours may be prone to understatement or exaggeration (Gatersleben et al., 2002), but given the sensitivity of this topic it was important to allow respondents to freely express their experiences. Socio-economic data were compiled using a short survey.

Households were recruited through housing associations and health workers, who were asked to recommend respondents that they suspected were experiencing fuel poverty. See table 1 for an overview of the sample's demographic details. The maximum percentage of income that people spent on their fuel bills is given in table 1 as an approximate indicator of levels of fuel poverty. Purposive sampling was used to ensure a diverse range of family types, for instance housing associations were asked to refer respondents with specific profiles (e.g. single persons, families, multiple adult households). Households were asked to nominate one adult respondent to be interviewed; contributions from other household members were included in the analysis where relevant. All respondents have been given pseudonyms.

Semi-structured interviews were recorded and transcribed before being analysed thematically using Nvivo software. By 'focussing on identifiable themes and patterns of living and/or behaviour' (Aronson, 1994), participants' energy experiences, beyond their immediate energy consumption, were described and then analysed within the context of the existing fuel poverty literature and policies. For example, transcripts were scrutinised for evidence of energy vulnerability and coping strategies in the same way that sensitising concepts are used to guide inductive reasoning in grounded theory (Bowen, 2006). The emergent factors were then grouped into 6 distinct but interrelated dimensions of household energy vulnerability which became our qualitative indicators of energy vulnerability presented in Table 3.

Table 1: Key demographic features of the sample

Participant	Age	Household composition	Employment	Household Income (monthly)	Maximum % of income spent on fuel bills	Coping?	Interview date	Location
Alex	40-49	1 adult	Unemployed (incapacity)	Not available	Not available	Not Coping	2013	Edinburgh
Barbara	50-59	2 adults, 2 children	Foster carer	£2,500	14%	Coping	2010/2013	Wakefield
Duncan	50-59	1 adult	Unemployed (incapacity)	£636	13%	Not Coping	2013	Dunbar
Jan	60-69	1 adult, 1 child	Part time Clairvoyant	£716	17%	Not Coping	2013	Leeds
Jane	40-49	1 adult, 2 children	Mother (incapacity)	£1,280	13%	Just Coping	2010	London
John	50-59	1 adult	Unemployed (incapacity)	£480	25%	Not Coping	2013	Leominster
Kate	20-29	2 adults, 3 children	Mother	£1,600	3%	Coping	2010	Kent
Kelly	30-39	1 adult, 2 children	Mother	£600	50%	Not Coping	2013	Bradford
Louise	30-39	1 adult, 2 children	Mother	£772	20%	Just Coping	2013	Bradford
Maureen	40-49	3 adults, 1 child	Mother	£867	37%	Just Coping	2013	Bradford
Mildred	60-69	2 adults	Retired	£1,450	5%	Coping	2010/2013	Edinburgh
Mohammed	50-59	1 adult	Unemployed	£360	14%	Just Coping	2010	Edinburgh
Sally	40-49	2 adults, 4 children	Full time Cleaning Supervisor	£850	24%	Just Coping	2010	Leeds
Sarah	30-39	1 adult, 5 children	Volunteer and mother	£1,110	7%	Just Coping	2010	Kent
Steve	40-49	1 adult, 2 children	Unemployed (incapacity)	£700	24%	Just Coping	2013	Birmingham

Findings

We begin by describing the daily experience of our interviewees, highlighting the increasing prevalence of trade-offs between basic needs, and their impacts on household wellbeing. We note considerable variability among households' priorities, as well as the presence of certain non-negotiable baselines. We also note that despite deploying a range of coping mechanisms, many households struggled to meet their basic needs. This situation seems to be qualitatively different to that described by Harrington et al in 2005 (Harrington et al., 2005) suggesting that the level of deprivation being experienced by the fuel poor has deepened. Following on from this, we identify and evidence six dimensions of households' energy vulnerability.

The daily experience of fuel poverty

The majority of households reported having to make difficult decisions around energy consumption and the fulfilment of basic needs. The trade-off of 'heat or eat' was present, but its severity and impact was incremental depending on households' circumstances, coping strategies and priorities. For example, when managing the widening gap between his income and the cost of living Steve adjusted by:

"...trying to budget as opposed to just going down the shop and saying 'pick that up, pick that up'. Now we write a list of what we are going to eat." (Steve)

This forward planning meant that Steve and his daughter could keep their energy meter topped up and keep food on the table. Whereas John, after calculating his housing and energy costs, concluded that his residual income was insufficient for his dietary needs:

"...I got diabetes as well so I got to make sure I eat properly, but you just buy the cheapest stuff." (John)

The severity of such a compromise is at its extreme when keeping the lights on becomes more important than securing nourishment: "some weeks I had to go without food to put enough in the electric" (Jan).

For those in the most straightened circumstances many other practices around the home are shaped by the cost of fuel. Mohammed, for instance, bought pre-prepared meals, and cooked in bulk in order to conserve energy. Even the wealthiest of our respondents (Barbara) made some compromises. In order to pay the fuel bills she had to "trim everything else down to fit", and, for instance, shop at Lidl rather than Asda at the end of the month. As a simple heuristic here, we have categorised our respondents as 'coping', 'just coping' and 'not coping' in order to capture this diversity (after Parker and Pharoah, 2008).

Given the demographic range of our sample, both the impacts of fuel poverty, and households' priorities with regards to trade-offs varied substantively. For those in our sample that were 'coping', there was some flexibility in household budgets. Mildred, for instance, chose to use incandescent light bulbs for the quality of the light despite their running costs. For those that were 'just coping' or 'not coping', food and fuel were

sometimes placed ahead of financial solvency. If the possibility of taking on more debt to afford fuel and food was present then it was sometimes taken. Kelly, a single mum with two teenage boys saw this as an active choice. As she put it, as long as she could pay for food and energy: “they can take me to court for anything else”.

In the day-to-day experiences of low incomes and high costs, the very explicit decision-making that people engage in around fuel use belies a clear understanding that energy consumption affects the amount of money available for other basic needs as well as the household’s quality of life and wellbeing. Kelly, for instance, pointed out that a big washing day would cost her £2.50 on the electricity bill. This contradicts work on the consumption of energy by Shove, who suggests that the use of energy is an inconspicuous form of consumption (2003). In this demographic people are fully aware of the connections between practices and energy use. Further, people in the ‘just coping’ and ‘not coping’ categories pay regular attention to their use of energy, using meters and pre-payment cards as a guide:

“I constantly check to see if it is going into the emergency. I probably check it every couple of days. You know, just to see what I have used on it.” (Sally)

In fact, people utilise many different strategies to monitor and minimise their energy use. A fairly common strategy was deployed by Mohammed:

“I will put the central heating on for half an hour, an hour, put it off and keep it off until it goes cooler, then I put it on again.” (Mohammed)

Some in our sample had to take more drastic measures. Jan, for instance, had not had her central heating on for three years due to the inefficiency of her dwelling, and her insufficient income. As with many others, this meant changing the way she occupied the house. In effect, she reduced the demand for heating by occupying less space within her own home:

“What I did this winter is I put two nails up there and put a great big thick curtain across and just tried to live in that bit.” (Jan)

This reaction was typical of our sample, in particular those in the ‘just coping’ or ‘not coping’ categories. Jane, for instance, kept her family warm and entertained in the evening by staying in one room:

“Well, obviously you have to budget, don’t you? But like, what I say is to go jump into bed, turn everything off and we go snuggle up under the quilt, you know, and watch telly” (Jane)

Some respondents also used local amenities (shopping centres, libraries and public baths) as a warm place to go in the winter, or to make use of their facilities, with the express intention of saving energy at home.

Neglecting to heat the home – whether through frugal usage, redirecting capital to other amenities, or because of extremely low income and high costs – is well documented as having a detrimental effect on the health and wellbeing of the household (Liddell and Morris, 2010). In our sample, people of all ages had health needs for heat or energy-intensive practices, including babies (Barbara), children (Kelly and Jane) and older or disabled people (John, Jan, Maureen, Mildred, Duncan). John (in his fifties) reported suffering as a result of inadequate heating:

“Especially when you’ve got health problems linked to the cold. I’ve got emphysema, my chest is tight, I got arthritis in the base of my spine and that hand I can’t use when it swells up.” (John)

Others reported making compromises to ensure that vulnerable family members could be comfortable:

“I let the children use the fans more than myself, because they’ve both got asthma and eczema and I like to keep them both cool” (Jane)

Maureen’s husband’s need for warmth meant that their gas fire sometimes had to be on in the summer months.

Key dimensions of energy vulnerability for the fuel poor

Previous work on fuel poverty contends that income, cost of fuel and energy efficiency of dwelling are the main determinants (Boardman, 2010). We find that these continue to place constraints on people’s ability to act, in effect to increase or decrease energy vulnerability. In addition, the relationship between tenant and landlord seems to play an important role, as do social relations within the household and outside, and the health of the household members. We argue that these six dimensions (Table 2) are frequently responsible for impeding or empowering the agency of the fuel poor; trapping households in their current state of deprivation and leaving them vulnerable to future shocks, or increasing their resilience and facilitating a pathway out of poverty.

Quality of dwelling fabric

As noted by Boardman (2010), energy inefficiency is a primary cause of fuel poverty, thus any improvements in energy efficiency can reduce fuel costs and increase comfort. Of the households interviewed, six described their dwelling’s level of efficiency as inadequate and/or deteriorating while five said theirs was adequate or had improved in recent times. As a result of poor efficiency some of our sample had made their own attempts to improve things:

“You get so much of a draft coming through the front door there. When it’s cold I have to stuff those socks into the letterbox. I’ve tried sticking some draft excluder around the lot of it. Across the bottom I usually have a rolled up blanket.” (John)

But most respondents acknowledged that without sufficient funds, technical information and control over their dwelling they could not make any meaningful or lasting

Table 2: Dimensions of fuel poverty and the vulnerability/resilience these engender

Quality of dwelling fabric	Can undermine the ability to regulate temperature Improvements can reduce costs and improve comfort
Tenancy relations	Can result in no investment in energy efficiency Investment can provide long-term energy security
Energy costs and supply	Can trap households into high costs and debt cycles Can provide emergency credit
Stability of household income	Reduced or unreliable income can lead households into crisis Can provide an opportunity for autonomy and flexibility
Social relations in and out of household	Non-negotiable needs of household members can result in unaffordable fuel bills Family and friends help out with fuel bills and fuel-hungry practices where they can
Ill health	Poses a constant threat to income security and autonomy, as well as often requiring increased energy consumption Can be associated with increased entitlement to benefits and care and support services

improvement. Therefore, with a static or deteriorating level of thermal efficiency these households' level of comfort and warmth is at the mercy of the climate, as John put it "During the winter I have to wear a coat, it never warms up in here."

For those households where investment was forthcoming, the improvements in efficiency lead to greater comfort at home and an increase in disposable income, in effect giving them more flexibility and control over their energy consumption practices. Very little household level agency was evident in this regard with Barbara and John being the only individuals personally responsible for nominal efficiency gains (in the form of new appliances). Typically it was social housing providers (through their own initiatives or via government policies such as the Energy Company Obligation) that could take credit for any lasting infrastructural improvements. Most of our respondents would not consider borrowing money to increase energy efficiency (as required by the Green Deal) with debt seen as a last resort.

Tenancy relations

Investment in energy efficiency was to a large extent mediated by households' tenancy situation. Some respondents benefitted from their landlords' investments in the property while others were left at an impasse. For our two interviewees in the private sector (Barbara and John) this was as a result of split incentives and uncertainty around tenancy duration:

"Yeh, there is some nervousness with private landlords. The permanency of the tenants and being left for long periods of time without any income from the properties. He didn't want to spend money on the place and then be left with it not bringing in any income." (Barbara)

The same fear of impermanence affects tenant behaviour as John pointed out when asked whether he would consider using Green Deal finance to install much needed insulation:

“Uh... no because my tenancy is only on a roll over and they can kick me out anytime they want.” (John)

There was also some evidence of social housing providers taking into account tenancy duration:

“Any improvements or adaptations, they will do it but you have to be expected to stay in the property for five years...” (Steve)

In social housing, some interviewees found their housing providers to be pro-active, (fitting insulation, central heating, double glazing etc.) while others failed to react to complaints about damp, cold and old appliances. In Sally’s case this was partly due to the fabric of the building, which was an unusual, and therefore difficult to retrofit, construction with a wall made out of PVC at the front providing very limited protection against the cold. Her situation was not helped by a highly inefficient 40 year old boiler, which was overdue replacement. Where landlords took a positive approach to energy efficiency, this was not necessarily enough to prevent fuel poverty biting, but it did make it easier for those households that are ‘coping’ to function. For instance, while both Mildred and Mohammed lived in the same well maintained housing block in Edinburgh, Mildred was able to afford to heat the house comfortably, while Mohammed was not. The wealthiest of our interviewees, Barbara, moved out of an energy inefficient social housing property and into a smaller privately rented property in the interval between our interviews. While she would have preferred to remain in social housing, her move amounted to relocating out of fuel poverty by downsizing. Her reaction to moving into her first inefficient social housing property is interesting because it shows the limits of control that a household has over energy efficiency issues:

“When I first moved in to the house, because it was so much bigger than the other house, and when I first moved in it were like oh my God, look at the size of that bill, what the hell have we been doing? Massive tightening of belts and, you know, everything went to energy-saving bulbs, and like... oh my God what have I done?” (Barbara)

Barbara was both energy aware, and well resourced, but even so, it was difficult for her to make an active choice given that there was no way of predicting that her new house would be so dramatically different to previous dwellings. Other interviewees’ choices were framed by the availability of social housing. Steve, for instance, was desperate to get out of his flat in a run-down tower block:

Interviewer: “So you’re not looking at staying here for five years then?”
Steve: “We haven’t been looking at staying here five minutes!”

Energy costs and supply

Price charged per kw/h is decisive in determining levels of fuel poverty but so too is the method of payment and availability of cheaper alternatives. Due to a combination of poor credit history, lack of information and reluctance to engage with the market, many households remained on uncompetitive tariffs. For some, switching suppliers was an unpredictable process yielding minimal reward:

“The reason why I never shop about between different companies is because sometimes it can be quite expensive to transfer from one place to another place and when you’re on benefits you tend to just stick with what you’ve got.” (Duncan)

Such scepticism was seemingly vindicated by Barbara’s experience of trying to switch energy suppliers, during which she encountered numerous difficulties. The second supplier offered her a rate that was less than half that of the first, evidence of the exposure that people have to unscrupulous rates. For complicated reasons, both companies ended up charging her for the same energy, and she is now engaged in a long-running dispute, and back in fuel poverty (on the 10% measure) due to paying two bills at once. Barbara’s account is particularly illustrative of how even households with sufficient capacity to switch energy suppliers can come up against structural barriers which exacerbate their situation and discourage future efforts.

While some of our respondents were explicitly restricted to uncompetitive tariffs and pre-pay meters due to debt problems, most favoured pre-payment in any case. Despite its relative overpricing, respondents found that pre-payment makes energy use more conspicuous, thereby enabling real-time budgeting:

“Well I’m on a pay as you go meter so... if you’re on not much of an income it makes it much easier to know what you’ve got each week and not get in debt.” (John)

For some, this made coping with high fuel needs in the winter, when their income remained constant, rather difficult (Maureen, Louise, and Kelly). Others, typically those who are coping well, deliberately overpaid in the summer (Mildred and Jane) as a means of ensuring that winter months are not too hard. Paying by direct debit was equally problematic. There was evidence of energy companies allowing new customers to set up direct debits and get into debt, before placing them on restrictive and overpriced prepay meters. As Jan recalled: “They shouldn’t have let me get into that debt. It were £2000 and odd before they even said.” Another of our respondents seemed to be in the first phase of this process, seeing energy bills as a cheap form of debt:

“Because I get direct debit I don’t really have to worry about, I may be getting a wee bit into debt but they just take a bit off each month. If I had ‘nay had that, and had the [pre-payment] power cards I would have had to have just put a jumper on. So I think direct debit is the answer because you don’t have to worry too much.” (Alex)

Stability of household income

Most of our respondents were either reliant on benefits (disability living allowance or job-seekers allowance) or on low-wage jobs, either of which made energy bills a substantial cost, and any reduction in income potentially disastrous. Most noticeable in our interviews was the reaction to benefits reform introduced by both New Labour and the more recent coalition government. For example, when incapacity benefits were reassessed under New Labour it was disastrous for some:

“They stopped my money from November until April so we were basically just living on child benefits and the odd crisis loan of £20.” (Steve)

Others feared the destabilising effect of cuts to public services and caps on benefits: “on £71 a week they are all shouting about these ‘scroungers’ but you can’t even live! You don’t live!” (Jan). The ability of such reforms to destabilise household budgets was illustrated by Alex’s thoughts on the proposed Universal Credit system (where all benefits will be paid direct to the tenant on a monthly basis):

“I would spend it. If I haven’t got control of my drinking and my anxiety I could take a relapse.” (Alex)

Both Louise and Kelly were being shielded from the impact of the so-called ‘bedroom tax’ – a charge on under-occupancy of social housing introduced by the coalition government. Their social housing provider had recognised that they were unable to afford the extra £15 a month, and had exempted them, subject to review. While this might seem a small amount, it made up a considerable part of their expendable income and both dreaded losing their exemption.

Social relations

Social relations within the home had a substantial impact on both household priorities and on what was and was not considered negotiable. Adult household members would regularly adjust their own consumption and daily practices in order to secure that of their dependents:

Interviewer: “Do you have the central heating on much?”

Steve: “Not these past weeks but yeh, whenever the kids are in. If I’m in on my own I just wear a hat. She [daughter] laughs at me all the time.”

For others, from the ‘coping’ or ‘just coping’ categories, electricity-hungry entertainment was both less negotiable, and a source of tension within households. As Sally explained:

“It’s a bit harder with them like the Playstation ... it does my head in. You know, they are on it and there’s not a lot I can do about that ... I do 7 days so to be honest most of the time I’m not here. And if I says to them you can only go on ‘t Playstation three hours a day I’m wasting me breath.” (Sally)

While Sally has a very low income, she also has limited control over her children’s choices, and recognises that in any case, depriving her children of entertainment in the

home would be unfair given that there is no money for entertainment outside the home. Households with teenagers had the double bind of their children wanting the latest technology to fit in with their peers, and relying on this energy intensive technology for their social lives (Sally, Kelly, Louise).

There was also some evidence of financial support between family members outside the household that impacted on energy consumption. Kelly, for instance, regularly borrowed money from her mum in the winter. Conversely, Maureen's four grown up children and their families were often at her house, reducing their own heating costs, and she did some washing and drying for one of her daughters. In return, at her lowest financial ebb, she borrowed money to pay for heating the house from her grown up daughter, something which Steve also had to do when his young daughter received money from relatives at Christmas.

III Health

The negative health impacts of fuel poverty are well documented in the wider literature but it is important to note how ailing health is not just an effect but also a cause of fuel poverty. Certain conditions require an increase in fuel consumption to treat symptoms and maintain adequate comfort and warmth, thereby driving up household energy costs:

“My husband's health has got worse. So we spend a lot in the winter with him being housebound and the heating being on 24/7.” (Mildred)

Other conditions are exacerbated by the cold or heat. Appropriate intervention from public health services is necessary for households to mitigate these effects and to cope with their increased vulnerability. However, within this cohort it was not clear whether health visitors, housing providers or households themselves could take the most effective action, as the problem lies at the interface of several public services and, as such, was not being exclusively treated by any of them. A story from Duncan exemplifies this complexity:

“When we first moved here we were told we were going to get new bathrooms put in. And I moved in on the pretence that I was going to get a shower because sometimes I have to wash myself two or three times a day... I don't know how far down the road the council is with getting this sorted.” (Duncan)

While it is clear from Duncan's case that recognition that someone suffers from ill-health is in itself not enough, others in our sample were unable to secure formal recognition that their health condition merited help. Kelly's teenage son, for instance, who suffered from Reynaud's syndrome, a condition which required him to keep warm, was not registered disabled, but still had extensive energy needs.

Discussion

To answer the first question raised in our review: experiences of fuel poverty now seem qualitatively different to those reported by Harrington et al, in 2005. These authors found that “a majority ... keep warm by depriving themselves in other ways” and that some

were “forced to economise on fuel on account of extreme poverty” (Harrington et al., 2005, p. 266). Although ‘depriving themselves’ hints at the very explicit trade-offs we see in our data, the suggestion is that the majority are able to keep warm nevertheless. While we are relying on qualitative self-reporting of socially sensitive data, which is necessarily challenging to compare, our more recent work paints a contrasting picture to that of Harrington. Of our respondents, who represent a range of degrees of severity of fuel poverty, were all economising in some way on fuel. In cases of extreme poverty we even have evidence of people not using fuel for heating at all (Jan).

Our work problematizes both new (LIHC) and old (10% of income) measures of fuel poverty. The old measure included some relatively wealthy people (those with higher salaries and inefficient homes like Barbara), whereas the new measure excludes some of the very vulnerable people in our sample (single person households who have below average incomes but also below average fuel bills like Mohammed), offering further support for Moore’s criticisms of LIHC (Moore, 2012). It is misleading that for the LIHC measure, energy costs have to be above average before people can be defined as living in fuel poverty. The second part of this definition: if people are “left with a residual income below the official poverty line” (Department for Energy and Climate Change, 2013, p.3) after paying their bills they are fuel poor, is a more constructive starting point. Our evidence, which shows that compromise on energy use is widespread, supports Moore’s use of the Joseph Rowntree Foundation’s Minimum Income Standard (MIS) to measure fuel poverty (Moore, 2012, Hirsch, 2013). The MIS incorporates housing and energy costs into its conceptualisation of poverty and enables detailed consideration of the competing costs of basic needs (ibid). Moore’s assertion that: “On the MIS-based definition of fuel poverty nearly 5.5 million or 25.5% of households could only afford their fuel costs by cutting back on their minimum living costs.” (ibid., p. 22), comes to life in our qualitative evidence of low-income households compromising on energy use.

This raises the question: is fuel poverty, and the experiences of those living with it, any different to poverty itself? While the three commonly cited drivers of fuel poverty (high energy bills, low income and poor housing condition) are disproportionately present among the poorest in society, not everyone experiences fuel poverty in the same way. This suggests that there is something special about access to energy which, in our view, is more accurately captured by the emerging notion of energy vulnerability (see Bouzarovski et al., 2013). For example, certain households in our research demonstrated a particular vulnerability to external shocks (e.g. loss of income/ extreme weather/ deteriorating health). These households are vulnerable because they face more intense and non-negotiable energy needs as well as a lack of social and/or financial capital in emergencies. Any further rise in fuel prices or decline in incomes will hit these households hard, even if they are currently coping.

The notion of energy vulnerability encourages us to account for subjective conceptualisations of fuel poverty. It is clear that some of our sample perceived themselves to be better resourced than others. For instance Mildred and her husband managed comfortably on their income. Mildred’s husband’s ill health has recently qualified her for a carer’s allowance, which they use to cover the extra costs associated with his condition. Among others there is clearly a need to present oneself as coping in

hard times. Jane, for instance, was relatively sanguine about the need for her family to go to bed early on a winter's evening to keep warm. Others were acutely aware of their own vulnerability, pointing out that the slightest change in circumstance could leave them unable to keep the heating on (John) or to care for their dependents (Steve). The subjective experience of fuel poverty is hugely important, because if families feel that they are not warm enough, not able to afford energy and ultimately 'not coping', they become more vulnerable to all kinds of health and social problems.

At a larger scale, it is critical to understand constructions of legitimacy in thinking about energy vulnerability. Walker and Day's emphasis on notions of fuel poverty as injustice; as being constructed by the 'recognition' that someone is deserving of help, or not, is useful here (Walker and Day, 2012). The elderly, for instance, are widely recognised to be 'deserving' of fuel poverty status whereas the same conditions of energy deprivation among young, transient populations are normalised and not recognised as fuel poverty (Bouzarovski et al., 2013). Likewise other groups in society (long-term unemployed, single parents) who receive comparable government support are more likely to be stigmatised as 'undeserving'. Of our older participants, the one that had reached retirement age (Mildred) was better supported than others, especially those with health problems (John and Duncan) or experiencing financial difficulties (Jan). Cuts in state benefits can have disastrous consequences for the fuel poor, evident in John and Steve's experiences and the forebodings of others when asked about the Welfare Reform Act. Current and upcoming changes in welfare policy are likely to make a substantial difference to the vulnerability of many which may go unnoticed, especially as this is informed and shaped by the level of recognition afforded to different sectors of society. While due attention will likely be given to the elderly – as a result of being deemed vulnerable under mainstream understandings of fuel poverty – single person households of working age and families with children are overlooked, despite being the most likely demographics to be earning under the minimum income standard (Padley and Hirsch, 2013).

So how might this qualitative data allow us to better understand energy vulnerability, and, concurrently, fuel poverty? Adopting a dynamic conceptualisation of the six 'dimensions' outlined above could provide a set of qualitative indicators with which to understand this problem. As we have pointed out, each dimension can produce vulnerability or resilience, and as such, in order to understand energy vulnerability we need to describe the way in which each impacts on household experience. Thinking about our dimensions in these terms would allow us to understand whether a given household is falling further into fuel poverty or is on a pathway out of it. Clearly, some of these dimensions are interdependent (e.g. energy efficiency and tenancy), thus consideration of their ability to offset and influence each other is also important. Further dimensions not apparent in the current research may also emerge as our qualitative understanding of fuel poverty progresses. Reframing fuel poverty along energy vulnerability lines in this way would enable a much more dynamic and responsive approach, bringing the wider social and political determinants of this phenomenon into a more critical focus.

To this end, we propose a series of ‘searching questions’ to drive the analysis of the dynamics of household energy vulnerability (Table 3). These are intended to uncover the nature of energy vulnerability in a specific household, and the potential for change in the future. They amount to a set of qualitative indicators of household vulnerability.

Table 3: Some searching questions to drive analysis of the dynamics of household energy vulnerability

Quality of dwelling fabric	What is the condition of the dwelling? Do the household or landlord have any plans to improve its energy efficiency?
Tenancy relations	How committed is the landlord to the energy efficiency of the dwelling? How long does the household intend to stay in the dwelling?
Energy costs and supply	Under what conditions is energy being supplied? To what extent is it possible for the household to switch suppliers?
Stability of household income	Does the household have sufficient income to pay for adequate fuel? How stable is the household income in the short and long term?
Social relations in and out of household	Does the household have friends and family that they can rely on in hard times? Do members of the household have non-negotiable energy requirements?
Ill health	Do people in the in the household have health conditions that increase their energy needs or that are aggravated by underuse of energy? Are these recognised, and therefore paid for, by the state?

Conclusions and policy implications

Hills’s LIHC measure shows numbers of people living in fuel poverty to be constant between 2003-2009 (2012, p. 60). On the other hand the fuel poverty gap grew from an average of £310 to £438 in England and Wales between 2005 and 2011 (Department for Energy and Climate Change, 2013). Our qualitative evidence offers a rich, contextualised understanding of fuel poverty over time at a household level, which draws out a substantive change in the lived experience of fuel poverty. Our evidence suggests that the stability of total number of fuel poor under the LIHC measure is problematic, especially given this change in the lived experience we have documented, and that the fuel poverty gap begins to provide a more meaningful indicator of the current state of play. Having said this any macro level analysis (in this case an average ‘gap’) fails to recognise the diversity of experience, and the differing types of vulnerability that households experience with regards to fuel poverty. In effect, while we recognise the value of measuring prevalence at a national level, such macro measures are not helpful in thinking about the design or impact of specific policies.

As is clear in our work, various social, economic and political structures shape the daily lives of the fuel poor. We argue that using a dynamic framing, based on the concept of energy vulnerability, is highly productive in this context. As an analytical lens, our

searching questions offer useful insights at a variety of scales. For instance, using our questions to get a sense of household vulnerability would be a useful starting point for social landlords in thinking about the needs of their tenants, what types of services are called for and where, and the potential for future vulnerability should circumstances change. Starting at the household level, and using self-reported data to assess vulnerability highlights the grey areas and unintended consequences that often confound policy-makers.

We can also use our six dimensions to consider specific policies, thinking about which types of people are more vulnerable and what can be done to strengthen their resilience and agency. The Green Deal and ECO, for instance, are more challenging to engage with for households that have precarious tenancy relations (when either tenant or landlord is unwilling to 'commit' in the longer term), unstable income (when the household concerned conceives of debt as a strategy only for hard times, and when the household cannot guarantee a steady income to pay back debt), or other markers of vulnerability (lack of social support which makes such a financial 'risk' difficult to take; being in debt with an energy supplier). This may help to explain why none of our respondents or their landlords had engaged with this policy. It also suggests that substantial revisions to Green Deal and ECO need to be considered (see Guertler, 2012) in order to address these shortcomings.

The recent Energy Bill (DECC, 2013a) will remove some administrative and informational barriers to switching energy supplier or tariff. But our six dimensions, and indeed our broader findings, suggest that these barriers are about more than just access to information. For instance, those with poor credit ratings and unstable incomes, saw switching as either impossible, or as a substantial risk. This was seemingly justified by Barbara's experience in having to pay two bills at once due to administrative error. Many of our respondents with unstable incomes stuck to a pre-payment tariff because of the weekly budgeting advantages this held. Further, given the yearly rounds of price rises from the big six energy providers, more substantial intervention into the energy market (particularly to make it more competitive and to regulate the cost of energy using pre-payment meters) is needed if switching suppliers is to become a viable option for all households and is to have a lasting impact on reducing bills.

Given the number of intersecting policies that influence our six dimensions of energy vulnerability, constructing a sector-specific policy response is challenging. For instance, the significant changes to state benefits in the Welfare Reform Act 2012 play a major part in destabilizing household incomes. Many of our respondents were deeply concerned about housing benefit reductions, the so-called 'bedroom tax', and Universal Credit. We would also argue that family policy (which affects social relations in and out of the household), health policy (which affects people's health and how well resourced they are in the home), and housing policy (through agreements with social housing landlords, and initiatives such as Decent Homes Standards) also have a significant impact on vulnerability to fuel poverty. This suggests that the most appropriate policy response is a joined-up one, working across government to consider how energy vulnerability can best be addressed. Of course such cohesive responses are the most challenging to effect in government, but local authorities who have closer working

relations with landlords and vulnerable neighbourhoods are well placed to take the lead on such coordinated policy planning and delivery e.g. through Joint Strategic Needs Assessments.

Finally, we would agree with Fahmy that monitoring the experiences of the fuel poor: “over time at a household level is a prerequisite for enhancing the effectiveness of policies in this area” (Fahmy, 2011, p.8). Further qualitative, preferably longitudinal, research is needed in order to understand the changing experience of fuel poverty, with a particular emphasis on how a shifting policy and socio-economic environment affects the six dimensions identified here.

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