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‘Sticky’ energy practices: The impact of childhood and early adulthood experience on later energy consumption practices

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ABSTRACT

This article found that personal history, formed by the accumulated experience of practitioners, affected the present level of energy consumption for space heating and hot water. Moreover, the paper demonstrates how quantitative analyses may provide new insights into studies of energy consumption practices.

By following a cohort in two periods of their life; childhood (ages 10–15 in 1981) and early adulthood (ages 29–34 in 2000), I investigated how embodied experience affects how the cohorts consume energy today (2010–2015). Personal history is measured by household characteristics (household income and education level of the household), and house characteristics (house construction year and main heating source).

The results indicated that growing up in a household with more economic means correlated with higher energy consumption today regardless of the present economic situation. Moreover, the results indicated that having lived in recently built houses or houses with district heating, compared with for example a stove or a heater, leads to a tendency to consume more energy today.

The article concludes by arguing that there is a need to turn attention towards social differences in the competences of individual practitioners, which will result in practices differently performed.

1. Introduction

Understanding how households consume energy in their homes is key to achieving the global and European climate goals of increased energy efficiency and increased share of renewable energy sources in the residential sector. Most energy research is currently conducted within the natural sciences such as engineering, where consumers are predominantly viewed as recipients of energy technologies. However, the sociological interest in energy consumption has increased significantly the last decades; especially the so-called practice theoretical approach has inspired many studies of energy consumption [1–5]. This literature has contributed significantly to understanding how material arrangements (such as technologies and buildings) interact with practitioners in their performance of everyday practices, and how technological development produces and reproduces norms of cleanliness and comfort [6].

However, the focus on the socio-material configuration of social practices has attracted less attention to the role of social differentiation of consumption practices in reproducing understandings of ‘normal’ conduct [7,8]. Consequently, embodied throughout a life course, the impact of practitioners’ embodied experience on everyday practices has received less empirical attention. For example, the impact of embodied experience has not yet been investigated using quantitative data and

methods. A few qualitative studies, inspired by theories of practice, have investigated how practitioners are ‘carriers’ of practices across time and space (as described by for example Reckwitz [9], Pantzar and Shove [10], and Shove and Pantzar [11]). Most notably, Maller and Strengers [37] analyse how Australian migrants ‘carry’ domestic practices across time and space, conceptualised as ‘practice memories’, and Butler et al. [12] explore the importance of previous experience for current energy consumption practices. In addition, other studies inspired by theories of practice touch more or less upon the impact of accumulated practice experience [13–15] and several authors call for a stronger focus on embodied practical understandings and consciousness to better understand the social group dynamics of practices [16,17].

Using a quantitative methodological design, this study investigates how differences in current energy consumption practices correlate with differences in practitioners’ embodied experience, which is shared by practitioners with similar social and housing trajectories. This is done by investigating the impact of experience with different material arrangements, linked to the house, and experience with different social conditions, linked to the household, in childhood as well as in adulthood on current household energy consumption. In this study, experience with material arrangements is measured by differences in house construction year and heating installation, as well as experience with social conditions is measured by differences in household education

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level and household income. Using such general characteristics necessarily simplifies the complexity of the role of embodied experience. Nevertheless, the quantitative measures used in this study present unique data possibilities for investigating the impact of embodied history. Going back to 1981, the historical data enables life-course analysis from childhood to adulthood, and in that context, the level of detail of these measures can be considered outstanding within this research field.

By following a cohort born between 1965 and 1970 (both years included) over their life course, I estimated the effects of housing and household characteristics in 1981, when they were children (10 to 15 years) and in 2000 when they were young adults (29–34 years) on their current household energy consumption level (measured from 2010 to 2015). In this study, energy consumption refers to the amount of energy used for space heating and heating of hot water for one year. The cohort consisted of 124,349 individuals who each represented one household living in a Danish single-family detached house supplied with either district heating or natural gas.

The primary aim of this paper is to empirically investigate the importance of personal experience with material arrangements and social conditions in childhood and adulthood for later energy consumption practices. Moreover, a secondary aim of this paper is to demonstrate how a quantitative methodological approach is valuable for better understanding how everyday practices change and reproduce by focusing on the biographical history of practitioners.

As Warde and Southerton [18] point out, biographical experience contains some degree of predictability regarding current preferences and practices. Therefore, getting a deeper understanding of how embodied practical understandings take form over time through practitioners' experience with different social and material surroundings constitute a large potential for understanding future energy demands. Moreover, differences in embodied practical understandings, for example in the form of embodied habits, engagement, expectations and technical competences, are fundamental for understanding social differences in everyday practices, i.e. how and why such practices are performed differently according to the practitioners accumulated experience [19].

The paper begins by reviewing the sociological literature on energy consumption inspired by theories of practice, with a focus on studies that touch upon the personal experience of practitioners. The following section presents the theoretical background of the paper, and next I outline the analytical strategy that includes a description of data, variables and methods. The results section presents the main findings of the analysis, which is discussed in the following section. The paper concludes by arguing for a greater focus on the experience of individual practitioners in order to understand household energy consumption.

2. Insights from energy consumption studies inspired by theories of practice

Sociologically inspired energy research has increased significantly within the last decades in the course of three concurrent developments. First, the call by Gronow and Warde in 2001 [20] for a stronger focus on the routinised, unreflective and everyday aspects of consumption as a response to the strong focus on identity-making and the individualistic accounts of the 'consumer' in what has been termed the cultural turn within the sociology of consumption [20]. Second, the reformulation of theories of practice, most notably by Schatzki in 1996 [21] and Reckwitz in 2002 [9,21], which concentrated on performances and located social practices at the meso-level as the primary entities of the social world [8]. Moreover, inspired by Actor-Network Theory (e.g. Latour [22]), the importance of material elements to social practices was emphasised where objects act as resources in the form of materialised understandings [23]. Third, the research agenda set by Wilhite et al. [24] and further by Shove [6], reframing energy demand as a social demand dependent on social conventions that co-evolve with technological developments and international building standards.

In the wake of these developments, a range of studies on household energy consumption from a practice theoretical perspective have emerged; for example studies on cooling and heating practices [1,2,14,25–28], home comfort expectations [29–33], and domestic cleaning practices [34–36].

This literature has contributed significantly to the understanding of the socio-material configuration of energy-demanding practices and how material arrangements and technologies take part in producing and reproducing what is generally considered normal expectations of comfort and cleanliness.

The main contribution with relevance for this paper's perspective on energy consumption is that energy is consumed through the performance of socio-material configured everyday practices [4]. This means that energy consumption is not one unified practice; rather it is dispersed through many daily tasks. Thus, households' energy consumption relates to several inter-connected everyday practices (such as cooking, cleaning, laundering, media use etc.), and energy use is only one, often unnoticed, element in these practices [1]. Therefore, household energy consumption used for space heating and hot water is understood as the result of the often routinised and procedural accomplishment of everyday activities related to comfort and cleanliness (for example opening windows, handling bath fittings or regulating thermostats).

However, following the strong focus on the organisation of social practices, the embodied experience of practitioners tend to be given a background role in recent energy studies inspired by theories of practice, and consequently, important insights on mechanisms of reproduction and change of appropriate conduct are potentially missed. In this paper, I therefore argue that there is a need to turn attention towards social differences in competences of individual practitioners, and not merely analyse practices as if they are equally performed.

Despite the lack of attention, a few empirical studies touch upon the importance of embodied experience of individual practitioners related to energy consumption practices. These are primarily Maller and Strengers [37] Butler et al. [12], and also Hards [13] on environmental values, Watson and Shove [15] on DIY competences, and Rincken and Jalas [14] explore the role of past experience of practitioners on heating practices in new homes.

Because migrants have rich practice histories, Maller and Strengers use interviews with Australian migrants to explore how domestic practices such as bathing, gardening and dishwashing can be linked across time and space. For example through processes of integration/disintegration and transferal between generations of performers and between countries. The study shows that memories of practices previously performed by the migrants in many cases play a role in how the migrants perform these practices under the new conditions. For example, the migrants may replace missing elements of "old" practices with local elements, or the migrants integrate elements from "old" practices into new practices. To understand these processes, Maller and Strengers introduce the concept of *practice memory*, which refers to how embodied performative history affects currently performed practices, and the authors end by suggesting that "[practices] have a stronger grip on their performers [...] than previously articulated".

Based on an analysis of qualitative interviews and visual data, Butler et al. [12] showed how past experience of agents and objective structures (both material and social) impact household energy consumption practices. Drawing on Bourdieu's conceptual framework, they use habitus to conceptualise the impact of previous experience on current and future practices. The study found that intergenerational tensions or conflicts might result from differences in the habitus, i.e. embodied experience of parents and their children that reflected differences in the objective structures they had experienced during their life. The study suggests that the social reproduction of notions of, for example, child-care were important in order to understand energy consumption practices. The biographical method (see also [38]) emphasises the impact on life courses, and thus resembles the approach applied in this paper,

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